



ABSTRACT BOOK

Posters

Abstract no.: 49446

INFLUENCE OF ATLANTOAXIAL FUSION ON SAGITTAL ALIGNMENT OF ADJACENT OCCIPITOCERVICAL AND SUBAXIAL SPINES IN OS ODONTOIDEUM WITH ATLANTOAXIAL INSTABILITY

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Introduction: it has been our experience that sagittal malalignment, such as kyphosis or loss of lordosis, occurs at C0-C1 as well as C2-C7 following atlantoaxial fusion. Our hypothesis was that the larger the C1-C2 fusion angle, the more severe sagittal malalignment of C0-C1 and C2-C7. Methods: we examined 21 patients who achieved solid atlantoaxial fusion for reducible atlantoaxial instability (AAI) secondary to Os odontoideum. Radiographic parameters were measured before surgery and at the final follow-up: C0-C1 angle, C1-C2 angle, C2-C7 angle, C0-C1 range of motion (ROM), C1-C2 ROM and C2-C7 ROM. Patients were divided into two groups depending on C1-C2 fusion angle. In group A (n = 11), C1-C2 fusion angle was $\geq 22^\circ$, and in group B it was $< 22^\circ$. The differences between the two groups in radiographic parameters were evaluated. Results: at the final follow-up, C1-C2 angle was increased but was not statistically significant while C0-C1 angle and C2-C7 angle was significantly decreased. Final C1-C2 angle was negatively correlated to the final C0-C1 angle and final C2-C7 angle. The final C0-C1 angle and C2-C7 angle were smaller in group A than in group B (both $p < 0.05$). After atlantoaxial fusion, C0-C1 ROM and C2-C7 ROM were significantly decreased. Conclusion: we found a negative association between sagittal alignment of C0-C1 and C2-C7 following atlantoaxial fusion and C1-C2 fusion angle, along with decreased ROM. We now strive to fuse the C1-C2 angle in $< 22^\circ$ in order to decrease the likelihood of sagittal malalignment of C0-C1 and C2-C7.

Abstract no.: 49455

RCT COMPARING OUTCOME OF HYBRID ILIZAROV VERSUS DISTAL TIBIAL METAPHYSEAL LOCKING PLATE FOR TREATMENT OF DISTAL TIBIAL FRACTURES IN ADULTS

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Background: Distal tibia fractures include extraarticular fractures of the metaphysis and the more severe intra-articular tibial plafond fractures. These fractures are estimated to comprise 3% to 10% of all tibia fractures. Several studies regarding distal tibial fracture treatment are available. They are mainly prospective and retrospective studies with variable results. Few of them are only randomized controlled trial. So, we conducted this research comparing distal tibial plating (P) versus hybrid ilizarov (HI) for treatment of distal tibial fractures. Methods: This RCT was conducted at BPKIHS, a tertiary care hospital in Eastern Nepal, from June 2015 to August 2016 with sample size of 80. Ethical clearance was obtained from Institutional Review Committee (IRC). Results: Gender ratio for male: female was 2.63 in HI, 1.35 in P group. Mean age was 47.03 \pm 15.93 and 42.1 \pm 12.788 for HI and P respectively. Most fractures in both group belonged to AO A3 type. Mean hospital stay was 6.43 \pm 4.545 and 4.93 \pm 4.676 for HI and P respectively. Mean lower extremity functional score (LEFS) was 66.55 in HI and 67.15 in P group. Percentage of maximal function (LEFS/80 *100) ranged from 73.75 to 91.25 with mean of 83.56. At the end of 12th week, 3 cases among 40 in P had infection but no infection in HI group was seen. Conclusion: There is no significant difference in terms of LEFS criteria, union, fracture alignment, ROM (knee, ankle), infection and other outcome measures between HI fixation and P in the treatment of distal tibia fracture in adults.

Abstract no.: 49457

SUPERCUTANEOUS LISS PLATING OF THE PROXIMAL TIBIA IN A POLYTRAUMA PATIENT WITH 'FLOATING KNEE' INJURY

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Background: Recently, supercutaneous plating was introduced using LCP as definitive external fixator in patients with severe soft tissue injuries and/or short stature. This clinical case report aims to describe our outcomes using LISS plate for definitive external fixation in polytrauma patient. Case presentation: 50-year old male polytrauma patient after high-energy trauma car accident with fractured base of the skull, serial fractured ribs, AO/OTA 31-B2.1 and 32.A2 fractures of the left femur, 41-C2 fracture of the ipsilateral tibia with compromised soft tissue, and imminent infection, was operated 11 days post admission. After fixation of the condyles with two cannulated screws, the patient underwent one-stage supercutaneous plating of the proximal tibia using LISS plate as definitive external fixator. Both femoral neck and diaphyseal fractures were treated with long trochanteric nail. Outcomes: LISS plate was kept in situ 60 weeks. The femoral neck and the diaphyseal fractures fully united after 24 weeks, the tibial fracture united after 28 weeks without clinically significant screw-site infection. At the most recent follow-up (range 2-36 months) the patient was infection-free and fully weight-bearing with healed femur and tibia. Conclusion: The supercutaneous plating with LISS was successfully performed without occurrence of nonunion, deep infection, screw breakage or screw loosening. The procedure was less invasive and easy to perform, the implant was easy to take care of and easy to remove without anesthesia. With the implant concealed under the clothing, the patient experienced a comfortable clinical course and good functional result with excellent hip, knee and ankle joint motion.

Abstract no.: 49460

SUPPLEMENTAL INTRAMEDULLARY GRAFTING INCREASES STABILITY OF PLATED PROXIMAL HUMERUS FRACTURES

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Purpose: This study's aim is to investigate the biomechanical competence of PHILOS plating of normal and osteoporotic proximal humerus fractures augmented with supplemental intramedullary graft in comparison to conventional PHILOS fixation. **Methods:** Four-part proximal humerus fractures were created in 30 artificial humeri, assigned to 3 groups. Fracture pattern in group 1 was with loss of medial support. Fractured specimens in group 2 were with intact medial support, but with simulated aggravated bone quality in the humeral head. Fracture model in group 3 was combination of the pattern in groups 1 and 2. Following fracture reduction, each specimen was first instrumented with PHILOS plate and tested non-destructively in 25° lateral angulation under axial loading ranging up to 400N. Anteroposterior X-rays were shot between 150N and 400N loads in 50N increments. Subsequently, all biomechanical tests were repeated with an additional 3D-printed cylindrical polylactide graft inserted into each specimen to simulate plating augmented with intramedullary fibula graft. Axial stiffness and varus tilting of the humerus head were evaluated. **Results:** Non-grafted specimens represented higher stiffness and lower varus tilting in group 2 compared to groups 1 and 3, whereas no differences were detected among the three groups in grafted state. Intramedullary grafting resulted in higher axial stiffness in groups 1 and 3, but not in group 2. Varus tilting decreased in each group post graft insertion. **Conclusion:** PHILOS plating augmented with intramedullary graft has potential to increase stability against varus collapse in unstable proximal humerus fractures, when compared to conventional PHILOS fixation.

Abstract no.: 49468

COMPARISON BETWEEN WALANT AND SURGERY UNDER GENERAL ANAESTHESIA WITH TOURNIQUET FOR DISTAL RADIUS FRACTURE: A RETROSPECTIVE STUDY

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Purpose: Wide-Awake Local Anesthesia No Tourniquet (WALANT) technique is applied on various hand surgeries. Herein, perioperative variables and clinical outcomes of open reduction and internal fixation (ORIF) for distal radius fractures under WALANT versus surgery under general anesthesia (GA) with tourniquet use were compared. **Methods:** Between January 2015 and June 2016, 37 patients with distal radius fractures underwent ORIF under WALANT (16 cases) or GA with tourniquet (21 cases). All patients were followed-up for at least 12 months. Perioperative parameters, visual analogue scale (VAS) of postoperative day 1 for pain evaluation, days of hospitalizations and time to union of both methods were compared. **Results:** No significant differences in patients' gender, age, and fracture classifications were observed between the groups. Time from arrive to incise ($p < 0.001$), VAS of postoperative day 1 ($p < 0.001$), and days of hospitalizations after operation ($p < 0.001$) in the WALANT group were significantly less than those in the GA group. However, the amount of blood loss ($p < 0.001$) was significantly greater in the WALANT group than in the GA group. Furthermore, there was no significant difference in operation time ($p = 0.272$) and time to union ($p = 0.416$) between the groups. **Conclusions:** Compared with surgery under GA with tourniquet, WALANT surgery provided immediate intervention, less postoperative pain, and shorter hospitalization stay. With local hemostatic agent use, WALANT may produce more blood loss, but it represents low medical costs owing to short hospitalization stay and less cost for preoperative surveys for GA.

Abstract no.: 49473

THE TITANIUM ELASTIC NAIL SERVES AS AN ALTERNATIVE TREATMENT FOR ADULT PROXIMAL RADIAL SHAFT FRACTURES: A COHORT STUDY

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Introduction: To investigate whether closed reduction and internal fixation (CRIF) with titanium elastic nails (TENs) is a viable alternative treatment in proximal radial fractures. **Methods:** In Kaohsiung Veterans General Hospital, from November 2013 to April 2015, five adult male patients with forearm injuries (average age: 43 years; range: 35–64 years) were treated for proximal radial shaft fractures. CRIF with TENs for radial shaft fractures were performed in these five patients. Radiographs, range of motion, visual analogue scale (VAS); quick disabilities of the arm, shoulder, and hand (Quick DASH) questionnaire, and time to union were evaluated in our study. **Results:** Mean follow-up period was 30 months (range: 28–36 months). Average time of radius union was 7.3 months (range: 6–10 months). Functional outcomes 1 year after operation revealed an average Quick DASH score of 7.92 (range: 4.5–25), an average VAS of 1.5 (range: 1–3), and average forearm supination and pronation of 69.2° (range: 45–75°) and 82.5° (range: 80–85°). No major complication was noted. **Conclusions:** CRIF with TEN for adult proximal radial fractures is a method to avoid extensive exposure or nerve injury during ORIF, especially in multiple trauma patients who require short operative time, uremia patients with ipsilateral forearm AV shunt, severe soft tissue swelling due to direction muscle contusion or strong muscularity before surgery, extensive radial fracture, and those in pursuit of cosmetic outcomes.

Abstract no.: 49489

MIS IN THORACOLUMBAR SPINE FRACTURES

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Twenty four (24) cases of acute thoraco lumbar spine fractures were treated using minimally invasive spine surgery techniques (MIS). The average age of the patients was 28 years. There were 19 males and 5 females. The mechanism of injury was fall from height in twenty (20) cases and road traffic accident in four (4) cases. There were fourteen (14) patients who had Burst fractures and ten patients (10) had Chance fractures. Material and Methods: All patients were treated using minimally invasive technique – MIS. 18 patients were treated by posterior only approach with percutaneous pedicle screws. In six (6) patients, a mini-open anterior approach was used in addition to posterior percutaneous pedicle screws fixation, for decompression and anterior reconstruction. Anterior reconstruction was done with Expandable cages in four (4) cases and a Mesh cage was used in two cases. 18 patients were neurologically intact (ASIA E) and remained so post operatively. There were two patients with complete paraplegia (ASIA A). Three patients were ASIA 'C' and one patient was ASIA 'D'. All patients were mobilized after 48 hours, post operatively. Results: Union was achieved in all cases. We had no case of Pseudo arthrosis or implant failure. A neurologic improvement one ASIA grade was found in three patients, two ASIA grades in two patients and three (3) ASIA grades in one patient. Conclusion: Minimally invasive surgery is an excellent option for treatment of unstable Burst fractures and Chance fractures in neurologically intact patients.

Abstract no.: 49492

POSTERIOR SUBLAMINAR WIRING AND/OR TRANSARTICULAR SCREW FIXATION FOR ATLANTOAXIAL INSTABILITY SECONDARY TO OS ODONTOIDEUM: A NEGLECTED TECHNIQUE?

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Introduction: We retrospectively evaluated the clinical and radiological outcomes of posterior sublamina wiring (PSLW) and/or transarticular screw fixation (TASF) for reducible atlantoaxial instability (AAI) secondary to Os odontoideum. **Methods:** We examined 23 patients with Os odontoideum with reducible AAI. The mean age was 44.2 years, and the mean follow-up duration was 4.5 years. Thirteen patients with anterior AAI underwent PSLW alone, and 10 patients with combined (anterior + posterior) AAI underwent PSLW and TASF. Nine patients complained of neck or suboccipital pain and 14 complained of myelopathy. All patients with myelopathy showed intramedullary signal change or retrodental reactive lesions on magnetic resonance imaging. **Results:** Angular instability (18.7° vs. 2.1° , $p < 0.001$), translational instability (16.3mm vs. 1.8mm, $p < 0.001$), and segmental angle of the C1-C2 joint (23.7° vs. 28.4° , $p < 0.05$) significantly improved postoperatively. Neck visual analog scale (6.2 vs. 2.5, $p < 0.05$) and the modified Japanese Orthopaedic Association (9.1 vs. 13.2, $p < 0.05$) scores also improved, with a recovery rate of 51.8%. Three patients (13%) developed nonunion and/or wire breakage. Among them, 1 patient underwent revision surgery with repeat PSLW and finally achieved fusion. The final fusion rate was 91.3% (21 of 23 patients). One patient underwent vertebral artery injury during TASF but successfully managed with packing of bone wax. There were no neurological complications in all cases. **Conclusion:** Our results suggest that PSLW and/or TASF can be still considered as viable surgical option in selected cases of Os odontoideum with reducible AAI.

Abstract no.: 49501

MEDICAL COMPLICATIONS REQUIRING TRANSFER OF CARE IN T&O PATIENTS OPERATED ON AT A DEDICATED ELECTIVE SURGERY SITE, THE CHESHIRE AND MERSEYSIDE TREATMENT CENTRE

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Introduction: It has been suggested that orthopaedic patients operated in dedicated elective orthopaedic hospital, may have to be transferred to the acute site too often due to medical complications that can't be managed safely on the "cold" site. Objective: To identify the rate of medical complications leading to transfer and compare to published data (2% patients, mainly arthroplasty). Methods: Retro and prospective data collected between Jan and August 2017. Complications and final diagnosis retrieved from hospital computer records. The quality of medical advice and speed of response recorded by RMOs on separate proforma. Results: 1900 patients operated on during examined period. 28 (1.5%) developed non-surgical complication requiring transfer to acute site. Majority of patients (average age of 69) underwent arthroplasty surgery (20), spinal (3) or other (5). 2.4 day passed on average between the surgery and transfer. Satisfactory medical advice was obtained on average in 13 min from initial contact with specialty. Patients transferred to medics: 22, surgeons: 2, T&O: 2, A&E: 1, psychiatry: 1. Final diagnosis: Nil acute/serious 10, LRTI 9, PE 4, cardiac 1, acute surgical 2, TIA 1, psychiatric 1. 3 patients deceased after transfer due to unpredictable complications. Patients with final Nil acute diagnosis presented with serious neuro or cardiological symptoms. Conclusion: Rate of transfers lower to numbers published. Most of transfers were post arthroplasty. Satisfactory medical advice obtained in a timely fashion. Current practice of operating CMTC as a "cold" orthopaedic site is safe and increased rate of medical complications hasn't been confirmed.

Abstract no.: 49502

RECORDS OF THE OPERATING SURGEON: AN AUDIT OF THEATRE NOTES FROM WARRINGTON HOSPITAL

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Introduction: It has been noted in the past in that in T&O trauma procedures, name of the lead surgeon in both surgical notes and theatre computer system has been recorded incorrectly. Aim: To identify the level of incorrect surgeon's name being recorded in the operating notes and theatre computer system. To improve record keeping. Methodology: Prospective data collection from paper notes and theatre computer system during 3 weeks of trauma surgery performed in June/July 2017. 26 cases analysed. Standards: Good Surgical Practice Guidelines by Royal college of Surgeons of England 2014 section 1.3. Results: Only 8% of paper and computer records were correct overall. Paper notes were correct in 92% of cases and theatre computer system in only 15%. Identified problem leading to this result seemed to be inability to hand type the name of the surgeon into computer system if it hasn't been pre-loaded by the IT team. Conclusion: Paper records were more reliable than theatre computer system. Theatre staff leaving the Lead surgeon/Assistant box empty allowing surgeon performing the notes to complete the paper record themselves has greatly improved the accuracy of notes. Surgeons completing the paper operating notes should be vigilant to potential mistakes in prefilled forms and correct it should necessary. Following the audit, names of all currently practicing SpRs and SHOs at Warrington Hospital and future lot starting in August 2017 have been added to the computer system. This should improve the record keeping in the future.

Abstract no.: 49504

INTEROBSERVER AND INTRAOBSERVER VARIATIONS IN RADIAL HEAD FRACTURE CLASSIFICATION: AN ASSESSMENT OF TWO CLASSIFICATION SYSTEMS

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The aim of this study was to evaluate the intra- and inter-observer variation of two classification systems for radial head fractures (Mason and Charalambous classifications) using plain radiographs. Patient and methods: Five observers classified the radial head radiographs as per the two classifications using anteroposterior and lateral elbow radiographs. Assessments were done on two occasions at least 6 weeks apart. Results: The interobserver variation and intraobserver variation of the Mason classification showed fair (mean kappa=0.33) and moderate agreement (mean kappa=0.43) respectively. The interobserver variation and intraobserver variation of the Charalambous classification showed moderate agreement for both (mean kappa =0.42 and 0.49 respectively). A greater proportion of radial head fractures could be classified using the Charalambous classification compared with the Mason classification which is statistically significant. Conclusions: The Mason and Charalambous classifications for radial head fractures confer similar reliability when using plain radiographs, but the latter allows a greater proportion of fractures to be classified. Our findings also demonstrate the limitations of using plain radiographs in classifying radial head fractures for clinical or research purposes, and suggest that evaluation with more sensitive modalities such as Computed Tomography may be preferable.

Abstract no.: 49505

A RARE CASE REPORT OF EXTENSIVE FOOT OSTEOMYELITIS BY CORYNEBACTERIUM STRIATUM FOLLOWING PENETRATING INJURY

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Introduction: Corynebacterium subspecies has been reported to cause osteomyelitis in immunocompromised patients. This rare case is being reported due to the extensive nature of infection caused by this organism in healthy young adult and relative lack of inflammation for such an infection. Case: A 27 year old male sustained a penetrating injury in the sole of foot. He developed cellulitis and was given Flucloxacillin by GP for 3 weeks. He was given IV Clindamycin by primary care physicians and later changed to Ceftriaxone as he did not respond as per microbiology advice. Ultrasound was done and it did not show any deep-seated abscess. A week later he developed a subcutaneous abscess which was drained. His cellulitis improved and was discharged from ward. His culture did not grow any organism. He came back with recurrent cellulitis and discharging wound and was put on Clarithromycin. MRI was performed and it showed extensive osteomyelitis of cuboid, cuneiforms with 3rd, 4th and 5th metatarsal base involvement with subcutaneous oedema. He was taken to theatre and debrided again and sent the tissue for culture and sensitivity. The culture grew Corynebacterium striatum. started him on Linezolid. His cellulitis resolved completely and his osteomyelitis subsided. There is no recurrence at 7 months follow up. Discussion: Most of the infection occurs in immunocompromised patient. There is no report previously this organism causing such an extensive osteomyelitis in foot in a healthy young adult. Another interesting fact is that the inflammatory markers have been normal throughout the treatment period.

Abstract no.: 49506

QUALITY OF LIFE IN FLEXIBLE PAINFUL FLATFOOT: THE PATIENT'S AND FAMILY'S PERSPECTIVE

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BACKGROUND: This study aimed to evaluate quality of life and satisfaction in patients with flexible painful flatfoot. **METHODS:** The Oxford Ankle Foot Questionnaire for children (one to be completed before the surgical correction and another after the screw removal), the PedsQLTM Healthcare Satisfaction Generic Module and the PedsQLTM General Well-Being Scale were administered to all patients who underwent arthroereisis for flexible painful flatfoot between January 2014 and December 2016. **RESULTS:** two hundred and fifty patients were sent the questionnaires and, so far, 72 (40 male and 32 female) of them responded. The surgical correction was performed at a medium age of 11,92±1,76 years. When the Oxford Ankle Foot Questionnaire for children scores before surgical correction and after the screw removal were compared, the latter scored significantly better for all domains. Healthcare satisfaction was good in all families. Most of the patients scored medium-high on the PedsQLTM General Well-Being both when asked about themselves (mean 86,50±7,44) and in general about their health (76,06±12,32). **CONCLUSION:** Our results confirmed that flexible painful flatfoot is significantly affecting the quality of life of children and that the arthroereisis is a valuable technique, which improves their quality of life.

Abstract no.: 49507

A PROSPECTIVE COHORT STUDY OF PERIOPERATIVE FASTING ABBREVIATION IN TRAUMATIC PATIENTS FOLLOWING ERAS PROTOCOL

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Objective: To evaluate the effectiveness of perioperative fasting abbreviation for traumatic patients undergoing elective surgeries. **Methods:** Traumatic patients for elective surgeries were selected and divided into intervention group and control group prospectively. In the intervention group, patients were fasted for solids 6 hours prior to surgery and received oral solution with maltodextrin 2 hours prior to surgery. In the control group, patients were fasted for both fluids and solids the night before surgery. Pre- and post-operative fasting time for fluids and solids were recorded. And perioperative well-being were compared. Complications were observed. **Results:** There were 69 and 121 patients included in the intervention group and control group, respectively. The preoperative average fasting time for liquids were 4.5 ± 2.9 hours and 14.3 ± 3.9 hours for intervention group and control group respectively, showing obvious statistical significant ($P < 0.01$). The preoperative average fasting time for solids in intervention group were slightly longer than that in control group ($P < 0.05$). About well-being status, perioperative anxiety, thirst, hunger, fatigue and stomach discomfort were improved in the intervention group. No major complication was observed in both groups. **Conclusions:** perioperative fasting abbreviation protocol was safe and feasible in selective traumatic patients, with benefits of improved well-being, including anxiety, thirst, hunger, fatigue and stomach discomfort.

Abstract no.: 49510

THE PATIENT AND SURGICAL FACTORS AFFECTING RETURN TO SPORT FOLLOWING ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

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Aims: Return to sport (RTS) following anterior cruciate ligament (ACL) reconstruction may be less frequent than expected, and the factors influencing this can facilitate counselling patients. We aimed to assess RTS following ACL reconstruction, and the factors associated with this. **Patients and Methods:** We evaluated 78 consecutive patients undergoing hamstring ACL reconstruction using medical records and a questionnaire, with a mean follow-up of 50 months (24-224). Patients were divided into RTS and not returning sport (NRTS) groups for comparative and multivariate analyses, to identify independent predictors of RTS status. **Results:** The mean age was 31.5 years (18-51), and 46 were male (59%). The RTS rate was 56.4%(44), most commonly at 9-12 months, for a duration of >60 months. Fear of re-injury was the highest reported reason for NRTS. There were no significant baseline differences in demographics, concomitant injury, adjuvant surgery and sport. Mean Tegner scores were significantly higher in RTS group post-injury (6.9 vs 4.6) and at present (6.6 vs 4.6), with a higher IKDC score (83.9(24.1-100) vs. 70.8(49.1-93.4) (p<0.001). Fear of re-injury, lack of confidence, lack of time and change in job were significantly more reported in the NRTS group. Playing soccer, giving way and change of job independently predicted RTS status. **Conclusion:** A significant number of patients did NRTS, and this was influenced by activity level, sport, and psycho-social factors. The results will help athlete counselling prior to ACL reconstruction.

Abstract no.: 49512

**OPEN TRAUMATIC PATELLAR OR QUADRICEPS TENDON RUPTURES:
A LESS INVASIVE TECHNIQUE**

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Introduction: To perform traditional transosseous tunnel repair of open traumatic patellar or quadriceps tendon ruptures, the traumatic wound is extended longitudinally, creating a flap with potential healing issues and anterior knee pain due to scar tissue in the prepatellar area. A less invasive technique is presented, avoiding traumatic wound extension, potentially decreasing these drawbacks. **Methods:** The traumatic wound and the edges of the ruptured tendon are débrided. Two heavy non-absorbable sutures are passed in the tendon in a Krackow fashion. Three longitudinal tunnels are drilled in the patella using a 2.4 mm passing needle with a drill tip. A transverse incision is made at the tunnels' exit point. The lateral end of the lateral suture is passed through the lateral tunnel, the medial end of the medial suture through the medial tunnel, and both other ends through the central tunnel. Two knots are tied allowing knee flexion to 90° without tension. Standard rehabilitation follows (isometric quadriceps exercises, protective hinged brace allowing progressive flexion to 40° within the first six weeks). **Results:** The patient on whom this method was used had full range of motion and a M5 quadriceps force three months postoperatively. The cosmetic aspect was acceptable. **Conclusion:** This less invasive technique allows for safe and strong open patellar or quadriceps tendon ruptures reinsertion, without the potential drawbacks of an extensive dissection of the prepatellar area (wound healing issues, anterior knee adhesions, pain and stiffness, poor cosmetic aspect). Stronger evidence is needed to unreservedly promote this technique.

Abstract no.: 49518

CAN A WELL-BALANCED SOFT-TISSUE SITUATION SPEED UP THE POSTOPERATIVE TREATMENT AND IMPROVE THE POSTOPERATIVE RESULT?: AN INITIAL STUDY USING A DYNAMIC LIGAMENT BALANCING DEVICE IN COMPARISON WITH CONVENTIONAL SURGICAL PROCEDURE

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The number of implantations of TKAs is increasing worldwide. The common prosthesis show a high satisfaction rate, although there are 15 to 20% dissatisfied patients. Soft tissue balancing is one of the most discussed topics. We initiated a study using an electronic device ('dynamic ligament balancing sensorplate') to compare the benefit of the measurement of pressure, distance and angle. It was set up as single surgeon, single center study and consists of 25 patients treated by the use of the sensorplate and a control group of 25 patients. OKS and AKSS were evaluated preoperatively, postoperative, 6 weeks, 3 months, 6 months and 1 year, FJS was only used preoperatively, after 6 months and 1 year. Beside routine FU, we performed an EMG testing at all FU dates. The EMG testing was set up under a dynamic protocol during walking, stepping up and down and contraction of the muscle against resistance. After 1 year we saw the following results: In the dlbg group the OKS changed from 28 to 44; control group: from 16 to 40/ DLB-AKSS from 35 to 94 , CG from 46 to 92. The DLB system is a new option to value the soft tissue situation during the surgical treatment. It allows to measure pressure, angle and distance all over the ROM. It's the first time to show the midflex situation and to avoid problems therefore. By the use of this electronic device we saw a faster rehabilitation and increased patient satisfaction.

Abstract no.: 49528

INCREASED STABILITY OF UNSTABLE DISTAL RADIUS FRACTURES AFTER SUPPLEMENTAL DORSAL LOCKED PLATING

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Purpose: This study's aim is to investigate the biomechanical competency of double-plated distal radius fractures in comparison to volar locking plating. **Methods:** Complex intra-articular distal radius fractures AO/OTA 23-C2.1 and C3.1 were created in 30 artificial radii, assigned to 3 groups. Lunate facet was divided in 3 equally-sized fragments in group 1, split in smaller dorsal and larger volar fragment in group 2, and divided in 2 equal fragments in group 3. Following fracture reduction, each specimen was first instrumented with a volar locking plate and tested non-destructively in 40° flexion, 40° extension and 0° neutral position. Mediolateral radiographs were taken under 100N loads in flexion and extension, and under 150N loads in neutral position. Subsequently, all biomechanical tests were repeated after supplemental dorsal locking plating. Stiffness and angular displacement between the shaft and lunate facet were evaluated. **Results:** Stiffness in neutral position increased after supplemental dorsal plating in groups 2 and 3, but not in group 1. In addition, stiffness in extension it remained without increase after dorsal plating, whereas in flexion it increased after dorsal plating in each group. Angular displacement in neutral position decreased after dorsal plating in each group. Additionally, angular displacement in extension decreased after dorsal plating in groups 1 and 2, but not in group 3, whereas in flexion it decreased after supplemental dorsal plating in each group. **Conclusion:** Supplemental dorsal locked plating increases fixation stability of unstable distal radius fractures after volar locked plating. However, its effect depends on the fracture pattern.

Abstract no.: 49529

BONE CEMENT AUGMENTATION INCREASES THE FIXATION STRENGTH AND CUT-OUT RESISTANCE OF TFNA HELICAL BLADES AND SCREWS

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Purpose: This study's aim is to assess impact of bone cement augmentation on the fixation strength and cut-out resistance of TFN-ADVANCED Proximal Femoral Nailing System (TFNA) blades and screws within the femoral head in a human cadaveric model. **Methods:** Ten pairs fresh-frozen osteoporotic and osteopenic human cadaveric femoral heads were randomized to 2 paired groups with 5 pairs each for instrumentation with either TFNA blade or screw. The implant in one specimen of each pair was augmented with PMMA-based bone cement, whereas its contralateral part was left without augmentation. All specimens were biomechanically tested under progressively increasing cyclic loading until failure in setup simulating unstable intertrochanteric fracture with lack of posteromedial support and load sharing at the fracture gap. Varus tilting was monitored by inclinometer mounted on the femoral head. Varus collapse of 5° was defined as clinically relevant failure criterion and number of cycles to failure was determined together with the corresponding load at failure. Statistical evaluation was performed at level of significance $P=0.05$. **Results:** Cycles to failure for augmented/non-augmented TFNA blades and screws were $30492 \pm 8715 / 19131 \pm 11160$ and $19307 \pm 802 / 12612 \pm 9138$, respectively. The corresponding loads at failure were $4049.2 \pm 871.5\text{N} / 2913.1 \pm 1116.0\text{N}$ and $2930.7 \pm 802.1\text{N} / 2261.2 \pm 913.8\text{N}$. Both cycles to failure and loads at failure were significantly higher for augmented versus non-augmented TFNA blades ($P=0.003$) and TFNA screws ($P=0.032$). **Conclusion:** Implant augmentation with PMMA-based bone cement significantly increases the fixation strength and cut-out resistance of TFNA blades and screws within the femoral head. From a biomechanical perspective it is a valid supplementary treatment option in osteoporotic bone.

Abstract no.: 49530

DEVELOPMENT AND TESTING OF NEW GLIDING SCREW CONCEPT FOR PLATING OF PROXIMAL HUMERUS FRACTURES

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Purpose: This study's aim is to develop and test biomechanically a prototype plate for fixation of proximal humerus fractures which integrates a new gliding screw concept enabling dynamic compression in the fracture gap. **Methods:** The design of the prototype implant was adopted from PHILOS plate by replacing its proximal locking holes with four short barrels inclined at 30° for fixation with 3.5mm gliding shaft screws. Following, three-part proximal humerus fractures were simulated in twenty-four paired human cadaveric specimens. Eight pairs were randomly assigned for pairwise fixation with either a prototype gliding plate or a PHILOS plate. In addition, four pairs were fixed with the gliding plate whose proximal screw tips were augmented with bone cement. All humeri were cyclically tested in 30° adduction under progressively increasing cyclic loading until detection of screw perforation. Initial construct stiffness was evaluated from machine data. Varus tilting, screw telescoping and screw cut-through were captured by optical motion tracking. **Results:** Initial stiffness, varus tilting and cut-through after 7500 cycles, as well as cycles to 5° varus tilting were comparable between the gliding plate, PHILOS and gliding augmented plate fixation. Telescoping of the most proximal screw after 7500 cycles was similar for the gliding plate without or with cement augmentation. **Conclusion:** Although from biomechanical perspective plate fixation with the new gliding concept did not show considerable advantages in comparison to PHILOS plating, based on the initiation of screw telescoping it may represent a valid alternative to the latter, especially in terms of cut-out prevention.

Abstract no.: 49532

SURGICAL TREATMENT OF PROXIMAL TIBIAL FRACTURES IN THE ELDERLY

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In the treatment of proximal tibial fracture in the elderly, it is concerned about postoperative correction loss and soft tissue troubles because of osteopenia and thin soft tissues. We retrospectively reviewed 22 cases of patients with proximal tibial fracture of over 70 years old treated in Okayama Saiseikai General Hospital (3 men, 19 women, mean age 80.5 yr). Based on AO classification, one patient had 41-A2 fracture, 2 had A3, 11 had B1, 5 had B3, 2 had C2, and 1 had C3 fracture. There were two patients in which external fixation were performed at initial treatment. As the definitive fixation, ORIF with intramedullary nail was the treatment choice for one patient, and ORIF with plates was used to treat 21 patients. Artificial bone grafting was used in 7 patients. The primary outcome measures of this study were femorotibial angle (FTA), joint subsidence and complications. In X-ray evaluation, FTA at the final check-up was average 174.8 °, joint subsidence was average 0.36 mm. Hohl & Luck 's functional evaluation was 13 patients of excellent and 9 patients of good. Two patients experienced complications: 1 had superficial infection requiring implant removal, 1 had skin necrosis. Even in patients with the collapse at the metaphysis, good alignment could be maintained by using open-wedge HTO device and wedge-shaped artificial bone. Even permissible implant placement in younger patients may be unacceptable for the elderly because it is bulky. Therefore a careful preoperative plan considering not only the fracture type but also the age is important.

Abstract no.: 49535

DOES LATERAL MENISCAL ALLOGRAFT TRANSPLANTATION USING THE KEY-HOLE TECHNIQUE RESTORE THE ANATOMICAL LOCATION OF THE NATIVE LATERAL MENISCUS?

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Background: It is important to restore the normal anatomy of the native meniscus in meniscal allograft transplantation (MAT) for successful surgical results. **Objectives:** The purpose of this study was to compare the anatomic positions of the anterior horn (AH) and posterior horn (PH) before and after lateral MAT using the keyhole technique. **Methods:** Between December 2012 and December 2014, a total of 70 patients underwent lateral MAT using the keyhole technique. The anatomic positions of both horns of the native lateral meniscus and the meniscal allograft were measured on MRI. **Results:** For the AH, the mean delta value of the absolute position was 0.7 ± 1.8 mm (95% CI, 0.3-1.1 mm) in the coronal plane and 0.5 ± 1.6 mm (95% CI, 0.2-0.9 mm) in the sagittal plane. For the PH, the mean delta value of the absolute position was 2.4 ± 2.6 mm (95% CI, 1.8 to 3.1 mm) in the coronal plane and 20.1 ± 2.1 mm (95% CI, 20.6 to 0.4 mm) in the sagittal plane. For the AH, the proportion of patients with an absolute delta value of ≥ 5 mm was 4.3% in the coronal plane and 2.9% in the sagittal plane. For the PH, the proportion of patients with an absolute delta value of ≥ 5 mm was 18.6% in the coronal plane and 4.3% in the sagittal plane. **Conclusions:** The keyhole technique in lateral MAT can reconstruct the lateral meniscus close to its native anatomic position by avoiding displacement of >5 mm.

Abstract no.: 49536

CHANGE IN CARTILAGE VOLUME AFTER MENISCAL ALLOGRAFT TRANSPLANTATION: A ONE-YEAR MRI STUDY BASED ON SEMI-AUTOMATED GRAPH-CUT ALGORITHM METHOD

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Meniscal allograft transplantation (MAT) has been accepted as an effective treatment to the patients with meniscal deficiency. However, further studies are needed to evaluate the chondroprotective effect of MAT. Advances in MR imaging enabled us to obtain quantitative metrics of cartilage morphology. The purpose of this study is to investigate the one-year change of cartilage volume following meniscal allograft transplantation. Between January 2008 and March 2013, 315 patients underwent MAT. Among these patients, 24 patients were enrolled in the study and followed up using a 3.0 T MR scanner at baseline (preoperative day), 3 months, 6 months and 1 year after MAT. Cartilage segmentation and volumetric measurement was performed by using a semi-automated graph-cut algorithm. Cartilage volume of femur and tibia was quantified. We divided cartilage volume into medial and lateral compartment to compare the difference. Additionally, we measured cartilage volume of femur and tibia in defined regions of interest (ROIs) in order to get rid of segmentation errors. Cartilage volume in ROIs was divided into the meniscus covering zone and the cartilage to cartilage zone. Cartilage volume in ROIs showed no significant difference between before and 1-year after MAT. Cartilage volume of femur and tibia in ROIs decreased until 3 months after MAT and recovered to an approximate figure of preoperative value by 1-year after MAT. After MAT, cartilage volume displayed immediate postoperative decrease and gradual recovery approximately equal to preoperative value. Long term follow-up is needed for investigation of further change of cartilage volume.

Abstract no.: 49538

CT ANALYSIS FOR LATERAL HINGE FRACTURE AND POSTERIOR TIBIAL SLOPE AFTER MEDIAL OPEN WEDGE HIGH TIBIAL OSTEOTOMY

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Background: Lateral hinge fracture (LHF) is a major complication that can lead to failure of the medial open wedge high tibial osteotomy (MOWHTO). But there was no study about the LHF and posterior tibial slope (PTS), sagittal osteotomy gap angle (SOGA) using computed tomography (CT). Purpose: We presumed that LHF can be detected in post-operative CT more than simple radiographs, and it was assumed that there is a significant change in the medial & lateral PTS if LHF exists. We also assumed that change of PTS are related to SOGA. Methods: 51 knees (50 patients) underwent MOWHTO were enrolled. Mean follow-up period was 14.4 month. Intra-operative fluoroscopic radiography, immediate post-operative simple radiography and post-operative 2 days CT before weight-bearing, preoperative and postoperative 1, 3, 6, and 12 months simple radiographs were taken. Timing of union, presence of LHF, changes of medial proximal tibial angle (MPTA) & femoral tibial angle (FTA) were evaluated. Pre-operative MRI and post-operative CT sagittal images were compared for measuring PTS & SOGA. Result: We found 9 LHF in simple radiographs. Additionally, We detected 7 LHF in CT. When LHF occurred, medial PTS showed various changes that were difficult to predict ($p=0.780$). however, without LHF, the change in medial SOGA was significantly correlated with changes in medial PTS ($p = 0.011$) and lateral PTS ($p < 0.001$). Conclusion: CT can detect additional LHF. In the absence of LHF, medial SOGA has a significant correlation with both medial and lateral PTS.

Abstract no.: 49539

FEMORAL SHAFT BOWING IN THE CORONAL PLANE HAS MORE SIGNIFICANT EFFECT ON THE CORONAL ALIGNMENT OF TKA COMPARED TO PROXIMAL OR DISTAL VARIATIONS OF FEMORAL SHAPE

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Purpose: The aim of this study was to determine (1) the preoperative relationship between these three parameters and the distal valgus cutting angle referenced off the femoral intramedullary guide, and (2) whether there was any relationship between femoral bowing and variations in the shape of the proximal or distal femur in the coronal plane. **Methods:** The preoperative long-standing anteroposterior radiographs of 316 consecutive osteoarthritis patients who underwent primary TKA from 2009 to 2011 were examined. The femoral neck shaft angle, the femoral shaft bowing angle, and the mechanical lateral distal femoral angle were measured to assess the shape of the proximal, middle, and distal femur, respectively. The valgus cutting angle of the femur was defined as the angle between the distal anatomical and mechanical axes of the femur. **Results:** The mean femoral intramedullary guide angle was $6.5 \pm 1.3^\circ$. The femoral shaft bowing angle was the factor that showed the strongest correlation with this angle ($P < 0.001$). Femoral bowing ($>3^\circ$ of lateral or medial bowing) was found in 42 (13.3 %) of cases (37 cases of lateral bowing and five of medial bowing). Cases with lateral apparent femoral bowing $>3^\circ$ had a distal cutting angle of $8.6^\circ \pm 2.2^\circ$ relative to the femoral intramedullary guide. **Conclusion:** The femoral intramedullary guide angle was mainly influenced by femoral shaft bowing in the coronal plane. Therefore, to increase the accuracy of distal femoral cut during TKA, it is necessary to measure the femoral intramedullary guide angle preoperatively from coronal radiographs covering the whole femur.

Abstract no.: 49549

LOCAL ANAESTHESIA PERFORMED FOR KNEE ARTHROSCOPY CAN BE USED ROUTINELY FOR TREATING ELECTIVE DIAGNOSES

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Introduction: Nowadays the use of mini-invasive techniques in surgery, like arthroscopy, is becoming very popular. Knee arthroscopy is easily performed under general, spinal, epidural or local anaesthesia. In the soft tissue procedures and diagnostic ones, local anaesthesia can be a good option. Purpose: The aim of this study is to analyse and report whether knee arthroscopy is safe and costeffective if performed routinely under local anaesthesia. Materials and Methods: 93 patients underwent knee arthroscopy under local anaesthesia for various soft tissue pathologies in the period from April 2014 to April 2017. We divided the population in 2 groups according to their gender. We did not use the tourniquet in any of the interventions included in this study. The procedure of anaesthesia included the injection of 7 ml lidocaine, 7 ml bupivacaine, 1 ml adrenaline intra-articular and 2 ml of lidocaine in each portal. Results: The mean age of the 93 patients was 42.29 y.o. The ratio m/f was 53/44. The percentage of treated pathologies was as follows: 73.1% meniscal tears, 7.5% intra-articular loose bodies, 6.5% osteochondritis dissecans, 13% synovitis. Female patients in the second group (41 to 62 y.o.) complained of pain or discomfort more than patients in the other groups. 87 patients were completely satisfied with the procedure under local anaesthesia while 6 patients did not like this kind of procedure. Conclusion: Knee arthroscopy under local anesthesia is cost-effective and patients are satisfied. An experienced arthroscopic surgeon is required in order to proceed precisely and in a short time.

Abstract no.: 49551

IS FEMORAL TROCHLEAR DYSPLASIA RELATED TO GLOBAL JOINT HYPERMOBILITY?

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Hypermobility is a known risk factor for patellar instability. In this study, we hypothesized that a significant relationship exists between generalized joint hypermobility and trochlear dysplasia. Methods: Follow-up patients from the shoulder department of our institution with global joint hypermobility (Group 1, n = 42) and healthy volunteers (Group 2, n = 42) without known knee complaints were included in our study. All participants underwent knee magnetic resonance imaging (MRI) for the evaluation of possible trochlear dysplasia. The age and gender distributions of the groups were similar ($p > 0.05$). The radiological evaluations revealed that the lateral trochlear inclination ($p < 0.001$), trochlear facet asymmetry ($p < 0.001$), depth of the trochlear groove ($p < 0.001$), lateralization of the patella ($p < 0.001$), sulcus angle ($p < 0.001$), and central trochlear height ($p < 0.001$) were significantly different between the two groups. The condylar asymmetry and lateral and femoral condylar height parameters were similar between the groups ($p = 0.297$, $p = 0.890$ and $p = 0.521$, respectively). According to the Déjour classification, 39 patients had dysplasia in Group 1, whereas dysplasia was detected in only 4 of the participants in Group 2. Our study revealed that most of the trochlear dysplasia criteria were met in patients with generalized joint hypermobility. In addition to a clinical patellofemoral examination, the precise radiological evaluation of the joint is beneficial before exact surgical decisions are made in patellofemoral instability patients with concomitant hypermobility.

Abstract no.: 49566

IS MINIMAL UNDERCORRECTION THE WAY FORWARD TO ACHIEVE A BETTER FUNCTIONAL OUTCOME FOLLOWING TOTAL KNEE ARTHROPLASTY IN SEVERE VARUS KNEES?: ANALYSIS OF 162 KNEES WITH VARUS GREATER THAN 15°

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Introduction: To document and compare the functional outcome of overcorrection, neutral alignment and undercorrection after total knee arthroplasty (TKA) in severe varus knees of more than 15° at 90 days post surgery. **Materials and Methods:** 124 consecutive patients (162 TKAs) of an average age of 61.9 years (52-79) with a pre-operative varus more than 15° were categorized based on the post operative mechanical femorotibial alignment (FTMA) into three groups namely: neutral (180°+3°), mild varus(173° to 176°) and severe varus (172°and below). The outcomes of these three groups were assessed at 90 days by the Oxford Knee score and the WOMAC score and co-related to the extent of correction. **Results:** The 3 knees which were overcorrected more than 180° had the poorest results with an average Oxford knee score of 28.6 (25-32) and an average WOMAC score of 40.6 (39-42). Knees in the mild varus group (n=88) had the best results with an Oxford knee score of 41.76+1.44 and a WOMAC score of 19.29+2.93 compared to the severe varus group and the neutral alignment group which had Oxford knee scores of 37.43+2.51 and 31.91+3.51 and WOMAC scores of 22.57+1.51 and 24.46+4.15 respectively. A scatter plot done for post-operative FTMA and the functional outcome score for both scores showed a bell curve with the best outcome corresponding to a FTMA of 175°. **Conclusion:** The results of our study show that in patients with a severe pre-operative varus of more than 15°, minimal undercorrection leads to a better functional outcome at short term follow up contradicting the conventional dictum that neutral alignment must be achieved following TKA.

Abstract no.: 49567

A SURGICAL ALGORITHM FOR THE MANAGEMENT OF RECALCITRANT DISTAL FEMUR NONUNIONS: EXPERIENCE FROM 62 CASES

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Purpose: Recalcitrant distal femur nonunions (RDFN) are a challenge in management due to factors like poor bone stock, multiple surgeries, metaphyseal bone loss and joint contractures. Based on our experience, we propose an algorithm for a successful surgical outcome. **Materials & Methods:** Between 2012 and 2015, 62 patients with RDFN of an average age of 47.4 years (26-73) with an average 2.3 number of surgeries (2-6) were assessed. Four factors affecting outcome namely distal femoral bone stock, extent of medial void, alignment of the fracture and stability of fixation were identified and addressed specifically to achieve a good outcome. **Results:** 58 patients required revision osteosynthesis to improve alignment and achieve a stable fixation. 4 elderly patients with poor bone stock were managed with arthroplasty. Extent of medial void was found to significantly influence the surgical decision. 5 patients with no medial void required only bone grafting whereas 47 patients with less than 2 cm void were managed with an allograft strut pegged in the metaphysis and 6 patients with a void greater than 2 cm were managed with medial plating. All patients treated with osteosynthesis achieved union at an average of 7.4 months (6-11) and the patients managed with arthroplasty also had a favourable outcome. The average LEFS score of all our patients was 67 (51-76) at an average follow up of 18.2 months (12-33). An algorithm was devised based on our experience. **Conclusion:** Our experience of managing 62 cases of RDFN allowed us to formulate an algorithm for successful management of this problem.

Abstract no.: 49569

MUSCLE PEDICLE BONE GRAFTING USING ANTERIOR ONE-THIRD OF GLUTEUS MEDIUS ATTACHED TO THE GREATER TROCHANTER FOR TREATMENT OF ARCO STAGE II OSTEONECROSIS OF FEMORAL HEAD

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Purpose: The aim of this study was to evaluate the effectiveness of our technique on further collapse of the femoral head in Association Research Circulation Osseous (ARCO) stage II, patient's functional improvements and analyze the survival rate of the affected hip. **Methods:** Between June 2007 and March 2015, 24 hips diagnosed with ONFH were treated our modified MPBG technique. The group was consisted of 15 men and 8 women, mean age of 36 years at the time of surgery. Mean follow-up was 6.2 years. **Results:** Four hips showed regeneration, 11 hips showed no progression and 9 hips showed slight extent of the lesion. But during the follow up, 3 hips underwent THA at the mean follow-up of 5.8 years after the surgery. The survival rate at the last follow-up was approximately 87.5%. Excluding the three failed cases, the mean total Harris hip score was improved from 57.2 to 82.3 points ($p<0.05$). We had no case of complications such as limping, wound infection, deep vein thrombosis, heterotopic ossification, nor intra- & post-operative fracture. **Conclusion:** We showed 87.5% of survival rate by average of 6.2 year follow up, maximum of 10.1 years. And compared to other reports, our technique showed relatively good survival rate and clinical outcomes. In the short term, MBPG using anterior one-third of gluteus medius attached to the GT seems to be effective in ARCO stage II ONFH. We, therefore, suggest this modified technique as one of promising treatment of choices for patients with ARCO stage II ONFH.

Abstract no.: 49570

MID-TERM RESULTS OF FOURTH GENERATION CERAMIC-ON-CERAMIC TOTAL HIP ARTHROPLASTY AND CERAMIC LINER PULLING-OUT PHENOMENON DUE TO RESONANCE EFFECT

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Background: There are limited reports for the results of the fourth generation ceramic-on-ceramic articulation total hip arthroplasty. And during the surgical experience, we encountered some cases of liner pulling-out phenomenon after liner fixation and femoral preparation. The objective of this study was to evaluate the incidence, risk factors of delta ceramic liner or head fractures, and also the clinical and radiological results of using the fourth generation ceramic-on-ceramic (CoC) articulation in total hip arthroplasty. Method: We retrospectively reviewed 242 patients (263 hips) who underwent primary THA using the fourth generation CoC articulation with minimum follow-up of two years. Demographic data, Harris Hip Score, Western Ontario and McMaster Universities Osteoarthritis Index, Patient's satisfactory level were recorded. Radiological evaluation were used to evaluate the implant fixation and complications. Mean follow-up duration was 5.2 years. Results: Mean Harris hip score (HHS) and WOMAC score were significantly ($P<0.05$) improved at the last follow-up. 98.5% of the patients were satisfied with results of the surgery. All acetabular components were placed in adequate position and no patient showed osteolysis on acetabular or femoral components without any femoral stem subsidence. Four patients showed complications including one liner fracture. Conclusion: Our midterm study showed excellent clinical and radiological results with only one ceramic liner fracture. And this study indicated that Dorr type A can show liner pulling-out phenomenon through resonance effect. If the surgeon is aware of the liner mal-position throughout the operation, the fourth generation CoC articulation THA could be an outstanding treatment.

Abstract no.: 49578

CLINICAL AND RADIOGRAPHIC PREDICTORS OF ACUTE COMPARTMENT SYNDROME IN TIBIAL SHAFT FRACTURES

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Introduction: the relationship between epidemiological, clinical and radiographic factors of tibial shaft fractures patients and the development of acute compartment syndrome (ACS) was retrospectively evaluated. Methods: 270 consecutive adult patients sustaining 273 tibial shaft fractures between I/2005 and XII/2009 were included in this retrospective cohort study. The outcome measure was ACS, which was clinically diagnosed. Patient-related (age, sex), fracture-related (high-energy/low-energy injury, monotrauma/polytrauma, closed/open fracture) and radiological parameters (AO/OTA classification, presence/absence of a noncontiguous tibial plateau/pilon fracture, distance from the center of the tibial fracture to the talar dome, distance between tibial and peroneal fracture if associated, total angulation and translation of main tibial fragments) were evaluated. Logistic regression was used for the analysis, predictors significant at $p < 0.2$ were included in the final model. Results: ACS occurred in 31 (11.4%) fractures. In the multivariate analysis, age < 45 years, male gender, closed fracture, polytrauma and a longer distance from the center of the tibial fracture to the talar dome remained statistically significant predictors ($p < 0.2$). Conclusions: one radiological parameter has been highlighted in this study, namely a longer distance from the center of the tibial fracture to the talar dome, meaning a more proximal fracture. A potential explanation is that a fracture occurring at a location surrounded by a bulkier muscle mass may lead to more energy transmitted to the soft tissues and to the potential development of ACS. This observation may be useful when clinical findings are difficult to assess (doubtful clinical signs, obtunded/sedated/intubated patients). Larger studies are mandatory to confirm this finding.

Abstract no.: 49584

**CURRENT MANAGEMENT OF DISTAL RADIUS FRACTURES:
OPPORTUNITIES OF MIPO-SURGERY**

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Introduction: Distal radius fractures represent the most common fracture of the upper extremity and can be treated by a variety of methods. In the past 15 years, an increasing interest in volar plate fixation for these fractures has evolved. Currently, these plates are placed through a standard approach. However, it may be associated with more soft tissue dissection than is necessary. This may contribute to postoperative pain and also to scarring, which may impede the range of motion. Fortunately, the MIPO-technique recently emerged and it can minimize soft tissue stripping and damage to the vascularity of the bone and hence reduce complications caused by conventional technique. In our study, we analyzed results of MIPO-technique that used a volar locking plate through two small incisions to stabilize distal radius fractures, compared it with standard volar locking plate fixation and evaluated the functional outcomes and complications. **Methods:** We retrospectively evaluated 156 patients treated at Trauma Department of Moscow City Hospital #29 between 2014 and 2017. This study included two groups of patients: 81 patients who underwent traditional ORIF using volar plating and 75 patients treated by MIPO-technique. **Results:** Fractures were classified according to D. Fernandez as type I (n = 59), type II (n = 43), type III (n = 27), type IV (n = 19) and type V (n = 8). Primary union was achieved in all cases. We checked X-rays, ROM, cosmetic satisfaction, QuickDASH-9 score and PRWE. **Conclusions:** MIPO-technique is safe and can be used for treatment of distal radius fractures. It also may provide better cosmetic results and faster functional recovery.

Abstract no.: 49587

SURGICAL TREATMENT OF PAEDIATRIC SUPRACONDYLAR HUMERUS FRACTURES COULD BE SAFELY PERFORMED BY GENERAL ORTHOPAEDISTS

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Objectives: Displaced pediatric supracondylar humerus fracture (SCHF) requires a reduction and instrumentation. The trend is to send the cases to a fellowship-trained pediatric orthopaedist. This study reviewed the outcomes and complications of SCHF surgically managed by orthopaedic surgeons with different backgrounds of subspecialty training. **Methods:** The medical records of 87 children (87 elbows) with an average age of 5.9 ± 3.1 (range; 1.3-14.1) years with SCHF Gartland 2 and 3 who underwent operative fixation were reviewed. The demographics data and operative details were obtained. Radiographically, the Bauman and Humerocapitella angles were measured. The lateral rotational percentage of Gordon was calculated. The Griffet index 1 and 2 were retrieved. The parameters were compared among groups of surgeons with a pediatric fellowship-trained background and surgeons with other subspecialty training. A univariate analysis was calculated for the risk of post-operative complications. **Results:** The demographics data were comparable between the two groups. Children who were treated by non-paediatric fellowship trained orthopaedists showed higher but not significant degrees of post-operative Bauman angles; however, the proportion of children with an acceptable range of Bauman angle were similar. The overall complications rate was 17.5% and comparable between the two groups. Only SCHF Gartland 3 was associated with complications ($p = 0.01$). **Conclusions:** Paediatric SCHF could be efficiently managed by a general orthopaedic surgeon because the radiographic outcomes and complications were comparable to paediatric fellowship trained orthopaedists. Extra precautions need to be exercised in SCHF Gartland type 3 because the chance of complications is higher among these types of injuries.

Abstract no.: 49591

**HOFFA'S FAT PAD RESECTION IN TOTAL KNEE ARTHROPLASTY:
WHAT ARE THE RESULTS?**

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Introduction: Hoffa fat pad is the fat beneath patellar tendon. Some surgeons resect and some preserve it. This study tries to compare the results of preserving or scarifying it.
Materials and methods: From 2010 to 2015, 185 consecutive patients which had Total knee arthroplasty were studied. Two surgeons did the operations. One preserve and one discard fat pad. Age, sex, limb alignment, component position, postoperative superficial and deep infection, patella tracking, anterior knee pain, knee range of motion, knee scores, operation time, hematoma formation, patellar tendon rupture were variables. They were followed at 2 weeks, 3 months and one year post operatively.
Results: Two groups were identical about age, sex, limb alignment, component position, post operative superficial and deep infection, patella tracking, knee range of motion, knee scores, operation time, patellar tendon rupture. There were statistical difference in hematoma formation and and anterior knee pain. Both were better in hoffa's fat pad preserving group.
Discussion: Hoffa's fat pad is better to be preserved during TKA when it is possible. Because it is a source of bleeding and later fibrosis and pain in anterior segment of knee. It should be removed only if it interferes with identifying important landmarks.

Abstract no.: 49592

TOTAL KNEE ARTHROPLASTY AFTER PLATEAU FRACTURE: A CHALLENGING SURGERY

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Introduction: Plateau fracture with or without treatment may result in knee arthrosis and then need total knee arthroplasty with many challenges. This study tries to show the results of total knee arthroplasty after tibial plateau fracture. **Materials and methods:** From 2007 to 2016, each case of tibial plateau fracture with and without previous open reduction and fixation which need Total knee arthroplasty entered the study. Age, sex, previous ORIF, knee alignment, knee range of motion, postoperative superficial and deep infection, knee score, patella tracking and patellar tendon rupture were variables. They were followed for 2 weeks, 3 months and one year post operatively. **Results:** There were 12 cases. There were one female and 11 males. One case had no previous surgery but in 11 cases, there were history of previous open reduction and internal fixation of fracture. All of them had one stage implant removal and TKA in the same stage. There were 2 superficial and one deep infections which respond to irrigation and debridement. Pre operatively, 3 had valgus and 9 had varus knee alignment. Post operatively, there were only one excessive valgus knee malalignment. Post operative Knee scores were rise significantly. There were some limitation of motion in the 2nd week and third months follow up. But in the final visit, there was no remaining loss of motion. **Discussion:** Total knee after tibial plateau fracture have some complications (infection, decrease motion) in early post operative period but in longer follow up visits, it has reasonable results.

Abstract no.: 49594

A RARE PRESENTATION OF PUBIC SYMPHYSIS OSTEOMYELITIS WITH BILATERAL ADDUCTOR MUSCLE ABSCESS

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Pubic symphysis septic arthritis is a particularly rare condition, and often difficult to diagnose due to its wide spectrum of clinical manifestations and undetectable radiological signs at early stages. It most commonly arises after childbirth, surgical instrumentation, trauma and in intravenous drug users. Some cases of pubic symphysis septic arthritis also present with secondary abscess formation. The most common causative organisms are *Staphylococcus aureus* and *Pseudomonas aeruginosa*. We report a case of an immunocompetent 72 year old patient who presented with pubic symphysis osteomyelitis and bilateral adductor muscle abscesses which was managed successfully with a multidisciplinary approach involving ultrasound guided aspiration and 6 weeks course of intravenous antibiotics.

Abstract no.: 49595

HIP PRESERVATION SURGERY FOR FEMOROACETABULAR IMPINGEMENT IN PATIENTS WITH OSTEONECROSIS OF FEMORAL HEAD

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Objectives: To describe femoro-acetabular impingement (FAI) in patients with osteonecrosis of femoral head; To study outcomes of hip preservation surgery in these patients. **Methods:** We studied 15 patients with FAI secondary to osteonecrosis of femoral head. This entity has not been described before. Partial collapse of femoral head occurs, particularly in the antero-superior part of femoral head, secondary to osteonecrosis. With subsequent remodelling, periphery of the femoral head flattens with formation of osteophytes. These patients had symptoms of impingement. Joint space was well maintained on radiographs and magnetic resonance imaging (MRI). Cam deformity was studied on computed tomography and MRI. In 6 patients open osteochondroplasty was done using surgical hip dislocation. In 9 patients arthroscopic femoral head osteochondroplasty was done. Patients were followed prospectively for hip pain (VAS), Harris hip score (HHS), Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) and hip range of motion. Statistical analysis was performed using Students t-test. **Results:** Statistically significant improvement in the VAS for pain, HHS and WOMAC score and hip range of motion was noted. Mean HHS improved from 71.3 (SD, 13) to 89.7 (SD, 14.5), p-value 0.0079. Mean WOMAC improved from 73.6 (SD, 15.4) to 92.4 (SD, 16), p-value 0.0154. Impingement test became negative in all the patients. There was no conversion to total hip arthroplasty at the mean follow-up of 2 years. All patients could sit on the floor cross-legged and squat. **Conclusion:** Hip preservation surgery leads to good outcomes in carefully selected patients with osteonecrosis and partial collapse of femoral head.

Abstract no.: 49597

A MODIFIED DISTAL TIBIOFIBULAR ARTHRODESIS TECHNIQUE FOR CHRONIC INSTABILITY OF THE SYNDESMOSIS

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Purpose: Failure to treat an acute syndesmotic injury can result in chronic instability of the syndesmosis and lead to a poor functional outcome. We reported a modified technique for distal tibiofibular arthrodesis using a contoured plate with application of autogenous bone graft. **Methods:** From October 2010 to January 2018, 8 patients with chronic syndesmotic instability who underwent modified distal tibiofibular arthrodesis with special precontoured plates were retrospectively reviewed. Clinical evaluation was made using the American Orthopaedic Foot and Ankle Society (AOFAS) Ankle-Hindfoot Scale and Visual Analogue Scale (VAS). In addition, patients were questioned on their satisfaction with the operation and willingness to undergo the operation again. **Results:** 3 patients with short-term follow-up or loss to follow-up were excluded. The mean follow-up period was 53 months. The mean AOFAS score improved from preoperative 55.6 points (range, 44 - 79) to 97.4 (range, 95 - 99) at follow-up ($P < 0.05$). The mean VAS score improved from 4 points (range, 3 - 7) to 0.8 (range, 0 - 2) ($P < 0.05$). The average passive ankle dorsiflexion was 21.6 degree (range, 10 - 29), 5.4 degree (range, 0 - 18) less than the uninjured side. The average active plantar flexion was 50.2 degree, 1.6 degree (range, 0 - 8) less than the contralateral. All patients reported satisfaction with and a willingness to undergo the operation again. **Conclusions:** The modified distal tibiofibular arthrodesis seems to be an effective treatment for chronic syndesmotic instability, and can achieve desirable functional outcome.

Abstract no.: 49605

SELF-REPORTED FUNCTIONAL OUTCOME IN PATIENTS WHO WERE SURGICALLY TREATED FOR BIMALLEOLAR FRACTURES

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Introduction: Bimalleolar fractures in ankle joint (AJ) is a debilitating injury. As the locomotion is dependent on the stability and function of AJ, post-operative function of AJ is important. **Aim:** To assess the functional outcome of AJ in patients who were surgically treated for bimalleolar fractures. **Methods:** A retrospective study of 48 patients with bimalleolar fractures of AJ, managed surgically during the period from January 2014 to January 2016. They were asked to fill Foot and Ankle Disability Index (FADI) score which assess the activities of daily living (ADL), functional mobility, gait, occupational performance, pain, sleep and strength. **Results:** Forty-eight patients included in the study (average age - 44.56 years, male - 56.25%). Mean follow-up was 18.43 months. Although all had started physiotherapy at the mean of 4.3 weeks, only 11 (22.9%) patients completed its full course. FADI score was ranging from 37 to 102. Out of them 1 (2.08%) has no functional disability [FD] (FADI \geq 100), 19 (39.5%) had mild FD (FADI= 80-99), 17 (35.4%) had moderate FD (FADI= 60-79) and 11 (22.9%) had severe FD (FADI \leq 59). Twenty-six (92.8%) patients, who had either moderate or severe FD, thought that their FD is due to the metal orthopaedic implants (OI) and wanted their OI to be removed. **Conclusions:** Postoperatively considerable percentage of patients have functional ankle disability. In literature physiotherapy is linked with a good functional outcome following surgical fixation of bimalleolar fractures, its importance need to be taught to the patients as the physiotherapy follow-up was poor in our study.

Abstract no.: 49606

OUTCOMES AFTER OPERATIVE FIXATION OF COMPOUND, PARTIAL ARTICULAR DISTAL FEMUR FRACTURE ASSOCIATED WITH IPSILATERAL PATELLAR FRACTURES TREATED IN A RESOURCE LIMITED UNIT

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Introduction: Distal femur multi fragmentary intra articular fractures (AO classification 33-B) are high energy injuries usually associated with comminution, open wound and soft tissue injuries. This study assessed functional outcome of affected knee joint, treated for compound 33-B1/B2/B3 fractures associated with ipsilateral patellar fractures, which managed in a resource limited developing country. Consecutive 7 patients who were treated with femoral condylar compression screws (FCCS) which were supported by a lateral femoral locking plate and patellar trans-osseous suturing (PTS) at the time of primary wound management. All patients requested for non-weight bearing for six weeks and then started partial weight bearing. Knee joint active movement started from second week postoperatively. Methods: They were assessed at the follow up visits and fracture healing confirmed by clinical examination and imaging. Knee Society Score (KSS) was used for the assessment of the functional outcome of the affected knee joint. Results: All patients were victims of high energy trauma with the mean age of 36.3 years. The mean follow up period was 10.4 months. KSS scores were 66 (fair), 72, 74, 77 & 78 (good) and 84 & 92 (excellent). Discussion and conclusions: All of them were approached via Parapatellar incisions to reconstruct articular surface. Intraoperative decision of internal fixation with FCCS made. Even though pre-operative X- rays may be deceiving, intra-operative decisions about fixation methods are paramount important. Majority of our patients got good knee joint function according to KSS, following operative fixation. Further studies with larger number of patients needed for validating this study.

Abstract no.: 49608

ARTHROREISIS PERFORMED IN LOCAL ANAESTHESIA: IS IT SAFE?

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The symptomatic flatfoot treatment in children and adolescents with arthroreisis provides good results. As a mini-invasive procedure it is performed under general anaesthesia. In adolescents this procedure can be performed under local anaesthesia too. In this study we aimed to bring in focus the insertion of arthroreisis under local anaesthesia at adolescent patients as a reliable method. Between 2014 and 2017 we undertook an open prospective cohort study. 57 patients were operated for flexible flatfoot correction (23 boys, 34 girls). The average age was 14 years old (11-17). Were excluded the patients that had neurologic rigid flatfeet and post-trauma too. We performed the arthroreisis intervention bilaterally in the same time using a calcaneo-stop conic-screw. The screw was inserted through sinus tarsi into the talus. We divided the patients in 2 groups. In the first group (28 patients) anesthesia was done locally by the surgeon, injecting lidocaine and bupivacaine solution mixed together in a 6 ml solution inside the sinus tarsi. In some cases the sedation during injecting local anesthesia was used. In the second group (29 patients) was performed general anesthesia. The time of intervention resulted in 18 minutes (13-30). Two hours after the intervention we gave to the patients acetaminofen. In all patients we have not seen any discomfort or complain and all them were discharged on the next day of intervention. Arthroreisis is a mini-invasive technique that performed in local anesthesia is safe and comfortable for both patients and physicians. It is cost-effective, giving good results in a short time.

Abstract no.: 49616

FUNCTIONAL OUTCOME OF SURGICAL TREATMENT IN INTRA-ARTICULAR FRACTURES OF CALCANEUM

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Background: Significant progress had been made in the management of calcaneal fractures, with the advent of special implants and improved surgical technique. This study has been done in a single hospital by the same team of surgeons. Objectives: This study has been done to compare the results in the peer reviewed literature. We did this with new S-shaped plate. Encouraging results made us to do ORIF in all intra articular fractures of calcaneum. Study Design & Methods: This is a retrospective review of 36 intra-articular calcaneal fractures treated with open reduction and internal fixation by a specialist team under supervision of a single surgeon a single handed between 2012 and 2016, The fractures were evaluated with plain radiography and computed tomography, and graded using the Eastwood-Atkins classification. A lateral approach was used and all fractures were fixed with calcaneal plates. Results: All patients had clinical and radiological follow-up. Clinical assessment included foot and ankle disability index, and Kerr-Atkins scores and Bahler's angle. The mean follow-up duration was 60 months (range: 12-112 months). The mean age of patients was 50.6 years (range 20-71 years). There were three open fractures and the patients had other injuries. The mean Bahler's angle improved from 6° preoperatively to 22° postoperatively. The mean foot and ankle disability index score was 75.62 and the mean Kerr-Atkins score was 72 (range: 36-100). Conclusions: Our long term results are comparable with those in the peer reviewed literature. We recommend ORIF in all intra articular fractures of calcaneum.

Abstract no.: 49618

EFFECTS OF EPIDERMAL GROWTH FACTOR (EGF) AND EGF-LOADED POLYCAPROLACTONE SCAFFOLDS ON TENDON DEFECT HEALING

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Introduction:In order to obtain the most accurate anatomical and histological tendon regeneration, therapies including the administration of PRP, BMP, mesenchymal stem cells and growth factors are being applied along with the conventional treatment. In this study, the aim was to investigate the potential role of EGF in tendon repair and regeneration which hasn't been investigated previously. **Methods:** 3 experimental groups of 10 tendons were made including:(1)"Sham"group:1cm tendon defect was splinted leaving the gap with nonabsorbable suture;(2)EGF(+)group:1cm tendon defect was splinted leaving the gap with nonabsorbable suture and 25µg/kg EGF injection was made in the defect;(3)Scaffold+EGF(+)group:1cm tendon defect was grafted with biodegradable, porous polycaprolactone (PCL) scaffolds loaded with 25µg/kg EGF and stabilized using nonabsorbable suture. In groups 2-3, 25µg/kg EGF injections were made every other day for 10 days. Animals were sacrificed at 8 weeks. **Results:** Histologically, "Sham"group:Vessel formation and TypeIII collagen have been observed to be newly constructed. Rare adiposity was observed. EGF(+)group:Vessel formation, peripheral nerve buds and more adipocytes were observed. A high level of typeIII collagen was detected. Scaffold+EGF(+)group:Vessel formation and peripheral nerve buds were again observed, but the amount of adipocytes and laid typeIII collagen were less compared to EGF(+)group. Type I/TypeIII collagen ratio was highest in Scaffold+EGF(+)group and at least in "sham" group. Biomechanically, there was no statistically significant difference between groups in terms of the breaking forces and the amount of elongation at break ($p>0,05$). **Conclusion:** EGF application didn't negatively affect tendon healing in biomechanical aspects. Histologically effective tendon healing was achieved by the addition of EGF.Treatment with EGF(+)scaffold.

Abstract no.: 49619

ACCURACY OF OPEN-WEDGE HIGH TIBIAL OSTEOTOMY: A COMPARATIVE STUDY OF TWO METHODS

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Long-term outcomes of patients, who suffer from medial osteoarthritis, treated with a medial open-wedge high tibial osteotomies (OWHTO) depend on the final hip-knee-ankle angle (HKA) obtained after surgery. The objective of this study was to compare the accuracy of the post-surgical correction after OWHTO obtained by 2 different methods, with a predetermined target. In this retrospective monocentric study 36 patients were enrolled. For planning and realisation of surgery: 19 cases were operated with the « Hernigou's table », and 17 with a conventional method based on radiological data. There was one single operator for each group, expert in the technique used. Both surgeons were looking for a final correction between 2-4° valgus on HKA. The primary evaluation was surgical accuracy of correction, where small values represent greater accuracy, from the intended correction written within the operative report. Second evaluation was the rate of post-surgical correction reaching the target range. There was a significantly more important preoperative varus deformity in the conventional group (mean HKA 168° vs 173°; p=0,001). For coronal plane corrections, Hernigou's table method was shown to have a greater accuracy ($1,4^{\circ} \pm 1,16^{\circ}$ Vs $2,63^{\circ} \pm 1.78^{\circ}$, p=0.027). In the conventional group, 35% (6/17) of the patients were corrected within the target range compared to 63% (12/19) in the « Hernigou's table » group (p>0.05). The difference in tibial slope before and after surgery reached a statistical significance ($+3,82^{\circ}$, p=0,013) in the conventional group only. One revision in « Hernigou's table » groups was needed for nonunion, with consolidation achieved.

Abstract no.: 49625

CEMENTED DOUBLE MOBILITY PRIMARY HIP ARTHROPLASTY IN ELDERLY PATIENTS SUFFERING A FEMORAL NECK FRACTURE

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Introduction: Hip dislocation is a troublesome complication after total hip arthroplasty (THA). Patients over the age of 70 years suffering femoral neck fractures have a higher rate of dislocations. Aim of our prospective study was to compare dislocation rate in this patient group after the standard cemented THA and after the double mobility cemented THA. Material and Methods: 60 cases operated between 2014 and 2016 were included in the study. Inclusion criteria were: patients 70 years of age and older with a fracture of the femoral neck. These patients were selected at random into two groups. In Group I (30 cases), patients were treated with the standard cemented THA. In Group II (30 cases), patients were treated with the cemented double mobility THA – standard stem and double mobility cup. The posterolateral approach was used in all cases. The follow-up was at least 12 months. Results: 2 patients of each group died. From remaining 28 patients in Group I, the dislocation occurred in 4 of them (14 %). We did not observe any dislocation in Group II. Conclusion: Our experience, in line with published literature, shows the suitability of the use of the cemented double mobility THA in cases with a higher risk of dislocation, e.g. in older patients with a femoral neck fracture. Larger number of cases in a level I study is necessary to verify this concept.

Abstract no.: 49626

FEMORAL DEROTATIONAL INTERTROCHANTERIC OSTEOTOMY IN THE MANAGEMENT OF RECURRENT LATERAL PATELLAR DISLOCATION

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Introduction: Recurrent patellar instability is often multifactorial and can also be the result of coronal limb malalignment (malrotation secondary to increased internal femoral torsion). Excessive femoral anteversion alters the forces across the patellofemoral joint with a greater laterally directed force vector and causes the patellar instability when a patient is trying to enhance hip joint congruence by active internal rotation of the femur. In these cases, femoral intertrochanteric derotation osteotomy should be added to distal procedures which alone can fail. The principle is to place the trochlear groove under the patella rather than trying to put the patella back into the trochlear groove. Material and Methods: In every patient with suspected rotational malalignment, CT scanning was performed to quantify the deformity. Intertrochanteric femoral derotational osteotomy was done in 17 prospective cases with femoral anteversion greater than 40°. To address all contributing factors concomitantly, the anatomic medial patellofemoral ligament reconstruction (double-bundle) was performed in all these cases. In 3 patients with abnormal trochlear morphology, a trochleoplasty was undertaken simultaneously. Results: In at least 18 months follow-up no recurrent lateral patellar dislocation occurred. All patients are very satisfied or satisfied with the result. Pseudoarthroses in the intertrochanteric region developed in two very obese females and were treated with resection, spongioplasty and reosteosynthesis. Conclusions: Excessive femoral anteversion should always be thought of in patients with recurrent patellar instability. Femoral derotational osteotomy should be considered in these cases. Larger number of cases in a level I study is necessary to verify this concept.

Abstract no.: 49628

TEN-YEAR RADIOLOGICAL RESULTS OF A SHORT BONE-CONSERVING STEM IN CEMENTLESS HIP ARTHROPLASTY

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Introduction: Stress-shielding may occur after standard stems implantation. Short bone-conserving cementless stems should preserve proximal femoral bone stock. These stems differ in design (there are 4 types) and outcomes. Metha short hip stem is a calcar-loading category stem with the plasmapore CaP coating of the entire proximal surface. Material and Method: 113 Metha stems with press-fit hemispherical cups (ceramics-ceramics pairing) were implanted through a posterolateral approach between 2005 and 2007 in patients younger than 70 years with primary osteoarthritis and with BMI < 30. 11 patients were lost to follow-up. In remaining 102 controlled cases (61 males and 41 females), standardized standing antero-posterior and lateral radiographs were taken and analyzed by an independent radiologist in respect of the modified Gruen zones. The average follow-up was $10 \pm 0,6$ years (at least 10 years). Results: In two patients infraction of the femoral neck occurred during the surgery (healed with a wire cerclage). Subsidence was found in two men at 3 months postoperatively due to non-compliance (full-weight bearing) leading to an early revision to a standard stem. No radiolucent lines of more than 1 mm in thickness or osteolysis were observed in any other patient. No deep infection occurred. Conclusions: Our middle-term radiological results encourage us in implanting this type of the short stem. However, caution is needed during first implantations and the patient compliance is necessary in the early period after the surgery. Long-term results are necessary to verify this concept.

Abstract no.: 49629

COMPARATIVE EFFICACY OF INTRAVENOUS WITH INTRAARTICULAR VERSUS INTRAVENOUS-ONLY ADMINISTRATION OF TRANEXAMIC ACID TO REDUCE BLOOD LOSS IN KNEE ARTHROPLASTY

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Background: Efficacy of intravenous (IV) with intraarticular (IA) versus IV only administration of tranexamic acid (TXA) to reduce blood loss in total knee arthroplasty (TKA) is controversial. The objective of this study was to ascertain whether combined IV and IA use of TXA to reduce blood loss in primary simultaneous bilateral TKA is beneficial when compared to the IV route only. We also ascertained whether the prevalence of DVT and PE were higher in any of the group. Methods: 154 patients received combined IV and IA injection of TXA in one knee and IV injection in the other. Transfusion rates, volumes and the amount of blood loss were recorded at 8 hours, 24 hours, and 48 hours. Results: Mean blood loss in both groups was not significantly different at 8 hours ($p=0.56$) and at 24 hours ($p=0.64$). However, the difference in the blood loss was significant ($p=0.01$) at 48 hrs. Yet overall total blood loss was not significantly different ($p=0.22$) between the 2 groups. The prevalence of DVT was 11% (17 knees) in the combined IV and IA administration group and 14 % (22 knees) in the IV only group. This difference was not significant ($p=0.25$). Conclusion: The combined TXA as IV and IA routes in simultaneous bilateral TKA has no additional benefit in reducing total blood loss post-operatively when compared with IV administration only. The prevalence of DVT was low and it was not significantly different between the 2 groups. Furthermore, no PE was found in either group.

Abstract no.: 49631

ROLE OF RUNX2 IN THE REGULATION OF BMP9 IN PROMOTING OSTEOGENIC DIFFERENTIATION OF MESENCHYMAL STEM CELLS

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Introduction: To investigate the role of RUNX2 in osteogenic differentiation of mesenchymal stem cells (C3H10T1 / 2) induced by bone morphogenetic protein 9 (BMP9). **Methods:** The effect of BMP9 on the expression of RUNX2 gene was detected by reverse transcription polymerase chain reaction (RT-PCR) and the total protein level of RUNX2 was detected by Western blot. Alkaline phosphatase (ALP) activity assay, staining and calcium deposition assay were used in the case of RUNX2 overexpression. **Results:** The expression of RUNX2 mRNA and protein in C3H10T1/2 cells treated with BMP9 was significantly higher than that in blank control group (C3H10T1/2 cells without any treatment) and C3H10T1/2 treated with Ad-GFP. BMP9-induced gene expression of osteocalcin (OCN), Distal-less homeobox 5 (DLX5) was strongly increased by Ad-RUNX2 in C3H10T1/2 cells. The results of ALP activity assay and staining showed that overexpression of RUNX2 increased BMP9-induced ALP activity compared with BMP9 plus RFP group. After two weeks of culture, overexpression of RUNX2 was found to enhance the deposition of BMP9-induced calcium salt nodules by Alizarin Red S staining. **Conclusion:** RUNX2 can promote osteogenic differentiation of mesenchymal stem cells C3H10T1/2 induced by BMP9.

Abstract no.: 49632

EFFECTIVE USE OF PI3K INHIBITOR BKM120 TO TREAT HUMAN OSTEOSARCOMA

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Introduction: Aberrant activation of the PI3K/AKT pathway is associated with chemoresistance, disease progression and unfavourable outcome in osteosarcoma (OS) patients. Therefore, inhibition of this pathway may improve therapeutic approach in OS. The aim of this study was to evaluate the effects of NVP-BKM120 (BKM120), a selective pan-class I PI3K inhibitor, on OS in vitro and vivo. Methods: we have examined the effect of BKM120 on SOSP-9607/MG63 proliferation and apoptosis in vitro. BKM120 inhibits osteosarcoma and on OS tumour growth in vivo using the SOSP-9607 mouse model. Results: BKM120 inhibited OS cell proliferation and promoted apoptosis in a dose-dependent manner. In addition, BKM120 decreased P-AKT expression without effecting total AKT in the OS cell lines. Finally, BKM120 also suppressed tumor growth in vivo, reducing the size of OS xenografts. Conclusion: The findings indicate that BKM120 has potential as a novel therapeutic agent for the treatment of OS.

Abstract no.: 49634

NEGLECTED TOTAL HIP ARTHROPLASTY DISLOCATION

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It is possible to see some unreduced total hip arthroplasties in developing countries. It can be happened because of the future of patients or difficulty in getting access to high quality specialists. From 2005 to 2018 there are 16 cases of total hip arthroplasties which after dislocation had not been reduced and are neglected by patients and their families. They are treated by revision surgery after recognition of the potential cause of dislocation. In 3 cases both components were revised and in 2 cases only stem was revised and in 11 cases, acetabular components were revised. 10 cases were managed with constrained liner and one with dual mobility cup and in remaining 5 cases, usual cups were used. In all cases Harris Hip Score and leg length discrepancy were improved dramatically.

Abstract no.: 49635

ENDOSCOPY-ASSISTED TUBULAR SURGERY IMPROVES THE QOL IN THE PATIENTS WITH LUMBAR HERNIATED NUCLEUS PULPOSUS; AN ANALYSIS USING JOA BACK PAIN EVALUATION QUESTIONNAIRE

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INTRODUCTION: Microendoscopic discectomy (MED) advantage over conventional open discectomy has been reported in the literature, few studies were published in terms of the superiority on disease-specific QOL measure. This study was to evaluate the clinical results of the MED by using an established patient-oriented QOL scoring system, JOABPEQ. **SUBJECTS AND METHODS:** This study was a retrospective review of prospectively collected surgical data. There were 31 patients with lumbar herniated nucleus pulposus treated by the MED with a minimum of 2-year follow-up were evaluated (18 males and 13 femg VAS and JOA scoring system. The QOL was evaluated with the disease-specific QOL measure, JOABPEQ. BSPOP is also utilized to evaluate psychiatric problems in the subjects. **RESULTS:** All scores in VAS and JOA evaluation at 1-year fales; a mean age of 51.6 years). The following symptoms were evaluated usinollow-up significantly improved compared with those before surgery ($p < 0.001$). In the JOABPEQ, low back pain, lumbar function, walking ability, and social life function improved 87.5%, 79.2%, 87.5%, and 91.7%, respectively. However, the improvement of mental health was low in 29.2%. Step wise multiple regression analysis showed that the low rate of improvement in mental health was independently correlated with BMI, preoperative BS-POP and postoperative 3 months BS-POP. **DISCUSSION:** This study demonstrated that the MED for lumbar herniated nucleus pulposus is a safe and effective surgical technique to improve the disease-specific QOL such as the JOABPEQ. Mental health remained low even after the surgery. It was affected by the BMI and the psychiatric factors.

Abstract no.: 49636

FUNCTIONAL OUTCOME OF TOTAL HIP ARTHROPLASTY

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Introduction: Outcomes of total hip arthroplasties in rheumatoid are commonly considered as poor and with high rates of complication. Keeping in mind these conflicts of opinions we are going to analyse the functional and radiological outcomes of total hip arthroplasty between osteoarthritis and rheumatoid arthritis. Patients and Method: Of the 44 hips, the indications are rheumatoid arthritis in 20 patients and osteoarthritis in 24 patients. We used the Harris hip score (Modified) for clinical and functional evaluation and plain X-ray pelvis with both hips and proximal femur—AP view and X-ray of the operated hip lateral view for radiological evaluation. Mean follow up is 9 years (8-13 years). Results: The mean pre and latest harris hip score are 44 and 88 respectively. The mean harris hip score in 1st, 3rd and 5th years are 86, 87 and 87 respectively. The mean pre and latest harris hip score in osteoarthritis is 49 and 92, in rheumatoid arthritis is 35 and 74. Conclusion: The results in patients who underwent total hip replacement for osteoarthritis are better than those for rheumatoid arthritis, however the gain in harris hip score is the same. As far as complications are concerned there is no difference between rheumatoid and osteoarthritis. Complications are mostly due to the faulty technique. Both uncemented and cemented total hip replacement give good results in non traumatic indications. In bilateral hip diseases there is considerable pain relief and improvement after the first THR, but the optimal improvement is not seen until the second replacement.

Abstract no.: 49637

SPINOPELVIC SAGITTAL ALIGNMENT AFTER MINIMALLY INVASIVE DECOMPRESSION SURGERY WITHOUT FUSION IN PATIENTS WITH LUMBAR DEGENERATIVE SPONDYLOLISTHESIS

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Purpose: We aimed to evaluate the change in spinal sagittal alignment after decompression alone in patients with low-grade degenerative spondylolisthesis (DS). **Methods:** We retrospectively reviewed the records of 87 patients who underwent microendoscopic laminotomy. We enrolled 35 patients with DS and 52 patients without DS. Spinopelvic parameters were evaluated, including the sagittal vertical axis (SVA), lumbar lordosis (LL), sacral slope, pelvic tilt, and pelvic incidence (PI). Primary outcome was a change in spinopelvic alignment between the baseline and latest follow-up values (DS group versus non-DS group). Secondary outcomes were the relations between the improved global sagittal alignment and the preoperative spinopelvic parameters. **Results:** Both groups showed significantly alleviated low back pain (LBP), leg pain, and leg numbness. Preoperative SVA and PI were significantly higher in the DS group than in the non-DS group ($p < 0.05$). SVA significantly decreased and LL significantly increased in the DS group ($p < 0.05$), whereas those parameters did not differ significantly from before to after surgery in the non-DS group. In both groups, the SVA improvement correlated significantly with the preoperative SVA (DS: $r = 0.702$, non-DS: $r = 0.397$). There was also a significant intergroup difference in the correlation coefficient ($z = 1.98$ $r = 0.048$). **Conclusions:** VA and LL significantly improved after microscopic laminotomy in patients with low-grade DS and neurologic symptoms. SVA improvement in the DS group was correlated with preoperative spinopelvic sagittal imbalance. The strength of those correlations was greater in the DS group than in the non-DS group.

Abstract no.: 49639

TRULY TENSION FREE NERVE REPAIRS USING A NERVE CONDUIT: A BIOMECHANICAL STUDY IN AN ANIMAL MODEL

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Objective: Primary repairs of transected peripheral nerves usually leave them in tension which requires post-operative immobilisation in a tension-free state until there is adequate healing of the repair. This may produce joint stiffness and affect post-operative rehabilitation. In this biomechanical study, we demonstrate the breaking strength of a peripheral nerve in sheep with a primary repair technique versus repair using a nerve conduit. Due to the additional length and strength contributed by the nerve conduit, we propose that repaired nerves will have less tension thus allowing for early mobilisation without fear of tension or repair failure. **Methods:** We took fresh cadaveric sheep hooves and dissected their peripheral nerves. We transected and separated these nerves into 2 groups - the primary repair group and the nerve conduit repair group. We then tensioned each of these repairs via biomechanical transducers and recorded the distraction and force required till repair failure occurred. **Results:** 6 nerves were repaired primarily and 6 were repaired with a nerve conduit. The average breaking strength in the nerve conduit group was 0.92N and that in the primary repair group was 0.46N ($p=0.001$). All the nerves repaired using nerve conduit had an additional 5mm added to their total length. **Conclusion:** Nerve repair using a conduit ensures a higher breaking strength and potentially a greater tension-free repair in a sheep model. This concept may be extrapolated to humans for immediate post-operative mobilisation and enhanced recovery without a worry about repair failure due to breakage or tension.

Abstract no.: 49641

**MULTIPLE SITES OF KIMURA'S DISEASE OCCURRING ALONG
MULTIPLE PERIPHERAL NERVES IN THE SAME PATIENT: A CASE
REPORT**

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Kimura's disease is a rare chronic inflammatory process of unknown origin. Less than 200 such cases have been reported to date. Commonly, the disease is manifested in the head and neck region, primarily the subcutaneous tissue and dermis. Kimura's disease has been very rarely described to involve the peripheral nerves and there has not been any literature showing more than a single peripheral nerve involvement in the same patient. Our case report is the first of its kind to describe the occurrence of Kimura's Disease in 3 different peripheral nerves in the same patient. EMBASE, PubMed, CINAHL and Google Scholar were used to confirm our claims of this first such report. This case report details a 25 year old Chinese male with asymptomatic swellings of his left arm, the radiological investigations he underwent, intraoperative findings and histopathological results. MRI findings reported 3 well defined nerve sheath tumours over the medial cutaneous nerve of forearm, median nerve and the anterior interosseous nerve. Intraoperative findings were compatible in location with the MRI findings, but were suspicious against a schwannoma or neurofibroma due to the gross appearance of the tumours. Histopathological diagnosis confirmed the 3 tumours to be lymph nodes with findings representative of Kimura's Disease. Although Kimura's Disease has been described in the eyes, ears, sperm ducts and kidneys, only a few reports have been described in peripheral nerves and our case report is the first such finding of 3 locations of Kimura's Disease in peripheral nerves of the same patient.

Abstract no.: 49642

LIMITATIONS OF ACUTE MANAGEMENT OF HIGH ALTITUDE CLIMBERS WITH FROSTBITES INJURIES: A CASE SERIES OF THREE PATIENTS WITH FROSTBITE INJURIES TREATED IN SINGAPORE HOSPITALS

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More Singaporeans are participating in high altitude and extreme outdoor sports these days. Frostbite, a condition which was unheard of in this tropical island, is now starting to present itself. Singaporeans with frostbite sometimes present after a high altitude mountain expedition in foreign countries and choose to seek treatment in Singapore due to inadequate treatment facilities available in the host nation. In extreme environments similar to that on the mountains, proper institution of correct treatment for frostbite may not be possible. Local medical knowledge in these remote mountainous regions may also not be adequate for proper treatment. This is a case series of 3 local climbers who underwent overseas high altitude expeditions and suffered frostbite on the mountains; the acute treatment they received and their follow up in Singapore hospitals till time of recovery. The 3 climbers suffered various degrees of frostbite with 1 climber needing to undergo surgical debridement and coverage. All of them recovered fully within a period of 6 months from initial onset of frostbite. The number of cases of frostbite seen in Singapore are on the rise. There are different challenges faced when delivering ideal treatment for frostbite in extreme altitudes. It is important to know certain first aid measures that could be undertaken to prevent worsening frostbite until definitive treatment can be sought in these extreme environments. Knowledge of acute and delayed treatment of frostbite will ensure best care for patients and prevent unnecessary disabilities from lack of proper medical care.

Abstract no.: 49645

THE CASE OF THE FLOATING BODY: A CASE OF SIMULTANEOUS BILATERAL HUMERUS AND BILATERAL FEMUR FRACTURES IN A YOUNG, HEALTHY, ACTIVE, ADULT FILIPINO MALE

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There has been very few descriptive papers or case reports on simultaneous bilateral upper and lower extremity fractures. This turned out to be a very uncommon combination of injuries. According to our extensive literature review, this combination of injuries has only been reported two other times, with only one of the two reported cases undergoing surgical management. Here we are presented with a 22-year old soldier who was involved in a motorcycle accident sustaining closed fractures on his bilateral humerus (OTA 12A3) and bilateral femur (OTA 32A3). The patient also incurred fractures on multiple levels of his ribs and an open knee injury. Following the principles of Damage Control Orthopaedics, the patient was first stabilized prior to definitive orthopaedic intervention. He eventually underwent plating of his bilateral humerus and antegrade intramedullary nailing of his right femur as first stage procedure two weeks post injury. He then underwent antegrade intramedullary nailing of his left femur as second stage procedure 7 weeks later. The patient was initially observed to have praxia on his right upper extremity, presenting as wrist drop, which eventually resolved over the course of his recuperation. Within the first post-operative year, the patient was able to ambulate without assistive devices and perform regular military duties without difficulties.

Abstract no.: 49647

**OUTCOME OF THIRD GENERATION CEPHALOMEDULLARY NAIL IN
FIXATION OF PERITROCHANTERIC FRACTURES IN CENTRAL RURAL
INDIA**

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Background: Incidence of hip fractures worldwide would double to 2.6 million by 2025. Impact of these injuries on social and economic front is more in rural part of India. Internal fixation of these fractures has gained widespread acceptance but the problems i.e. Malunion, non-union, implant failure, refracture, and infection after surgical correction has prompted continued development of new devices and treatment programmes. Material and methods: We report a prospective study on 84 patients with peritrochanteric fracture between May 2011 – November 2013 treated with a Proximal Femoral nail. 36.4% of patients were of the age group of 61-70 years with male preponderance. 92.4% patients had a domestic fall and right side was involved in 52.7% of patients. 51.7% were unstable fractures. Mean surgical time was 70 minutes and 14 patients required open reduction. There were no cases of pulmonary embolism and deep venous thrombosis. We encountered 'Z' effect in 5(6.7%), reverse 'Z' effect in 2 (2.7%), cut out in antirotational screw in 3 (4.05%), antirotational pin breakage in 1 (1.6%) and non-union in 1(1.6%). Average time of full weight bearing was 6.4 weeks and union was 17.6 weeks. Result: Post-operative mean Harris Hip score was 77.6. Excellent results were seen in 56%, 66% patients showed good to fair results. Conclusion: Osteosynthesis with PFN (proximal femoral nail) in peritrochanteric fractures features the advantages of high rotational stability of the head – neck fragment, an unreamed implantation technique and possibility of static or dynamic distal locking.

Abstract no.: 49648

RATE OF SACROILLIAC JOINT DEGENERATION AND ANKYLOSIS OF JAPANESE ELDERLY PEOPLE

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S2 allar iliac screw fixation technique(S2AIS) is a useful technique. But there was no evidence of adverse effect on sacroiliac joint. We investigated rate of sacroiliac joint degeneration and ankylosis for Japanese elderly people with axial view of 1mm slice CT. We investigated 600 sacroiliac joints of 300 patients over 50 years old and they were performed spine or hip surgery at our hospital between 2011 and 2017. There were graded 4 categories; type0: no change, type1: mild degenerative change, type2: substantial degenerative change, type3: ankylosis. Type0; 0 case, type1; 47cases, type2; 103 cases, type3; 86 joints. Patients of type3 were mean age 73.8 years and 18 women (6%). It was published in the USA that people who fused of sacroiliac joints 50 years over patients were more than 75%. We concluded that the fusion rate of Japanese elderly people was considerably lower than that of overseas, especially women. The sacroiliac joint has a range of motion of about 3 degrees and it is said that women will degenerate with time triggered by childbirth, which is said to result in lower back pain due to slight incompatibility. From the results of this study, sacroiliac joints were degenerated by aging, and the fusion rate did not increase by aging. There is a report that females are slightly larger in size of movement of the sacroiliac joint than men. In the case of women, it is inferred that it is difficult to coalesce even if degeneration progresses. When using S2AIS, careful long-term follow is necessary especially for women.

Abstract no.: 49650

A 60-MONTH RANDOMISED PLACEBO CONTROLLED STUDY ABOUT EFFICACY OF REPEATED YEARLY USE OF HIGH MOLECULAR WEIGHT INTRA-ARTICULAR HYALURONIC ACID IN KNEE OSTEOARTHRITIS

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Introduction: Cartilage damage in symptomatic osteoarthritis is strongly related to diminishing concentration and molecular weight of endogenous HA. Exogenous intra-articular HA treatment helps in correcting elastoviscous properties of synovial fluid, rendering pain relief. Objective: Compare against placebo the efficacy and safety of long term repeated use of IA HA as disease modifier over 60 months. Methods: Randomised, controlled study in 72 patients of grade II/III OA received once yearly five IA high molecular weight HA / placebo over 60 months from 2011 to 2016 with 6 monthly followup post injections. OARSI responder criteria used to quantify efficacy /need of NSAID as rescue medicine. Individuals over 50 years with radio graphic stage not exceeding grade III and VAS score of pain exceeding 55 mm were the inclusion criteria while secondary arthritis to trauma, inflammatory disease and knees treated with IA steroid were excluded from the study. Individuals weighing more than 75 kg were not included in the series. Results:At 60th month, more number of patients showed improvements to repeated use of HA as per ORSA tool when compared to placebo. The HA group continued to show progressive response during the course of the study, while the placebo group remained static. The HA responder group showed difference in individual component of ORSI. Conclusion: Study gives evidence that repeated yearly injections of HA in moderate knee OA has a disease modifying effect and required less use of NSAID /other treatments. However, long term carry over effect of such treatment whether beneficial or adverse cannot be commented upon.

Abstract no.: 49653

**NEW INTERMUSCULAR APPROACH FOR POSTERIOR FIXATION
UTILISING CERVICAL PEDICLE SCREW**

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Background: A midline incision approach has been conventionally utilized when cervical pedicle screws (CPS) are inserted. However, in maintaining the trajectory of CPS, massive posterior part of cervical paraspinal muscles needs to be retracted laterally. Hence, we develop new intermuscular approach between longissimus muscle and semispinalis muscle with midline skin incision. Using this approach, the insertion of CPS could be performed safer, physically easier and less invasively especially. Materials and Methods: Six patients (three males and three females) with cervical spine pyogenic spondylitis (n=3), metastasis (n=2) and trauma (n=1) underwent cervical posterior fixation with CPS using this intermuscular approach. All the patients had no or little neurological defect. Therefore, no decompression should be required. The average age was 67.2 years old. A CT scan was performed to evaluate the position of inserted CPSs. The operation method was as follows: 1) After a midline skin incision was made, nuchal ligament were precisely divided and then a trapezius, and a splenius muscle with the divided nuchal ligament were detached from the spinous process; 2) After the intermuscular plane between longissimus muscle and semispinalis muscle was identified and incised, the entry point of CPS on lateral mass was exposed; 3) CPSs were introduced using an X-ray image of the pedicle axis view and a rod was put to connect the screws. Results: The average of fixed number of vertebrae was 4.5 vertebrae. All CPSs inserted for all the patients were put inside the pedicles precisely.

Abstract no.: 49656

WOUND COMPLICATIONS AFTER OPEN REDUCTION AND INTERNAL FIXATION OF TIBIAL PLATEAU FRACTURES IN THE ELDERLY: A MULTICENTERE STUDY

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Purpose: The incidence of wound complications after open reduction with internal fixation (ORIF) of tibial plateau fractures in young patients has been reported to range from approximately 5% to 15%. Reports on wound complication rates in the elderly patients are limited. This study investigates the incidence of postoperative wound complications in elderly patients undergoing ORIF of their tibial plateau fractures. **Methods:** A retrospective study was performed within three accredited level 1 trauma centers. Patients >60 years of age undergoing open reduction and internal fixation of their tibial plateau fractures were included. The primary outcome measure was wound complications of the surgical site. These were divided into superficial infections versus deep infections. **Results:** One hundred-two patients matched the inclusion criteria. Of these, 16 patients (15.7%) developed a postoperative wound infection. The analysis of underlying comorbidities and risk factors revealed that patients with American Society of Anaesthesiologists (ASA) class 3 and 4 were at significantly increased risk of sustaining a wound complications as compared to ASA class 1 and 2 (23.7% versus 5.1%, $p = 0.015$). **Conclusions:** The overall infection rates in elderly patients undergoing ORIF for tibial plateau fractures is in a similar range to published data on younger patient populations. In particular, elderly patients without significant co-morbidities seem to be appropriate candidates for ORIF of their tibial plateau fractures. However, elderly patients with significant co-morbidities must be considered as high risk and alternative treatment options, such as nonoperative treatment or less invasive surgical options, should be explored in these patients.

Abstract no.: 49657

OUTCOMES OF DISTAL FEMUR FRACTURES TREATED WITH THE SYNTHES 4.5 MM VA-LCP CURVED CONDYLAR PLATE

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Objective: Recent reports have suggested drastic early failure rates of the Synthes 4.5 mm VA-LCP Curved Condylar Plate. This study examined the safety and efficacy of the Synthes 4.5 MM Variable Angle Locking Compression Distal Femur Plate. **Materials and Methods:** This was a retrospective case series performed at an urban university-based level-1 trauma center and an urban level-3 trauma center. Patients 18 years of age and older who underwent plate fixation of their acute distal femoral fracture (OTA/AO 33A1 - 33C3) using the Synthes 4.5 mm Variable Angle Locking Compression Distal Femur Plate were included in this investigation. A total of 74 patients (77 fractures) were included. Thirty-two out of 77 fractures presented as open fractures (41.6%). The main outcome measure was mechanical hardware failure. Secondary outcome measures included nonunion, malunion, medical and surgical complications. **Results:** The Synthes 4.5 mm Variable Angle Locking Compression Distal Femur Plate showed a low mechanical failure rate of 9.1%. A reoperation to achieve fracture healing was required in 17 patients, fifteen of which were open fractures with a median bone defect of 81.5 mm (range 28.3 to 143.5). **Conclusions:** The Synthes 4.5 mm Variable Angle Locking Compression Distal Femur Plate is a safe and effective implant. The surgical outcomes associated with this plating system compare favorably with the outcomes of other plate fixation systems reported in the literature.

Abstract no.: 49659

**COMPARISON BETWEEN OPEN AND CLOSED WEDGE PROXIMAL
TIBIAL OSTEOTOMY IN CHILDREN WITH GENU VARUM**

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During the early years of childhood, genu varum are common concern for parents. These problems represent normal physiologic variations in most children. However, a few children will experience pathologic lower extremity malalignment leading to cosmetic and functional deficits. Proximal tibial osteotomy is the most acceptable procedure in treatment of pathologic genu varum. Variety of techniques have been advocated, the most famous two techniques are closing wedge and opening wedge high tibial osteotomies. This study included 20 cases with pathologic genu varum 12 cases were treated by open wedge high tibial osteotomy technique and 8 cases with closed wedge high tibial osteotomy technique. Closed wedge osteotomy was more helpful than open wedge in correction of deformity, and the only benefit of open wedge rather than closed wedge was tibial lengthening after operation.

Abstract no.: 49661

BIZARRE BITES OF THE MIDDLE EAST

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In this presentation we will review 2 interesting cases of animal bites in UAE. Snake bites: Venomous snakes can be found on every continent apart from Antarctica. Most species of snake are not venomous and they characteristically kill their prey with constriction rather than venom. It is not mandatory to report a snake bite and therefore precise and accurate data is not available. There are no statistics on snakebites in the Middle East. Majority of snake species are non-venomous and typically kill their prey with constriction rather than venom. Camel bites: Camel bites are common among handlers. They usually occur when pulling on the reins of the camels' heads to make them kneel down to allow for mounting. The bites are often in revenge for cruel treatment by the handler and usually occur in the winter (due to mating season when the camels may be more aggressive and agitated). According to a review of 153 cases of camel bites, 84% of those bitten were men and 68% of them occurred during the winter months. The upper limbs were involved in 94% of cases. Fractures occurred in 48 cases (31%) while traumatic amputation was seen in five cases (3.3%).

Abstract no.: 49662

RADIAL HEAD FRACTURE AND ESSEX-LOPRESTI-LESION OF THE FOREARM

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The upper extremity represents a chain of motion, which enables to get the hand into any desired position. This is possible because of the extremely free range of motion in the shoulder girdle, the elbow and wrist. But not least important is the rotational motion of the forearm: pronation and supination. The Essex-Lopresti lesion represents a severe injury of the forearm unit. If, in the case of a full-blown Essex-Lopresti lesion, the radial head, the interosseous membrane and the distal radio-ulnar joint are injured, proximalisation of the radius will take place and will come along with secondary symptoms at the elbow joint and the wrist. According to actual studies, the lesion seems to occur more often than realised up to now. Thus, to avoid missing the complex injury, subtle clinical diagnosis combined with adequate imaging has to be undertaken. If the lesion is confirmed, several operative treatment options are available, yet not proofed to be sufficient.

Abstract no.: 49663

A LIMB THREATENING CONDITION: COMPARTMENT SYNDROME OF THE FOREARM

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Introduction: The forearm is the most common site for compartment syndrome in the upper extremity. The three compartments of the forearm include the volar, the dorsal, and the mobile wad. Both-bone forearm fractures and distal radius fractures are common initial injuries in adults that lead to acute forearm compartment syndrome. Supracondylar fractures, especially those with associated vascular injuries, are frequent causes of compartment syndrome in children. Method: In between 2010 – 2012 we had 356 patients who suffered forearm fractures, 5 (1.4%) patients had compartment syndrome. If symptoms do not resolve rapidly with elevation and closed reduction trial, fasciotomy is indicated. Decompression fasciotomy of the forearm is performed through volar or dorsal approaches. The medial nerve is decompressed throughout its course, including high-risk areas deep to the lacertus fibrosus; between the humeral and ulnar heads of the pronator teres, the proximal arch, and deep fascial surface of the flexor digitorum superficialis; and the carpal tunnel. Results: Wounds closure was done by simple absorbent dressing, or semipermeable skin-like membrane and using dynamic vessel loop “bootlace” closure technique. The wounds were closed in 3-5 days. Conclusion: Keep a high index of suspicion and treat as soon as you suspect compartment syndrome. If clinically evident, do not measure. Fasciotomy is reliable, safe, and effective. It is the only treatment for compartment syndrome, when performed in time.

Abstract no.: 49664

**INTERLOCKING NAILING OF HUMERAL SHAFT FRACTURES
COMPARED WITH PLATING**

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Introduction: In spite of that most humerus shaft fractures are well treated conservatively, in a lot of cases the operative procedures are the best way to treat them. The operative methods can be plating, external fixateur or intramedullary nailing. Our study was to evaluate and compare the results of interlocking nailing vs. plating in the treatment of HSF. **Aim:** To determine the best way of surgical management of HSF. **Material and methods:** The retrospective study covered the period from 1st of November 2000 till 31st of July 2007. During that period 145 patients underwent surgical treatment we classified the fracture according to AO and the anatomical site of it. We used Rommens score to evaluate the postoperative functional results. **Results:** Among the 145 patients, 75 patients underwent closed reduction and intramedullary nailing (CRIN), and 70 patients underwent open reduction and plate fixation (ORPF). According to Gustillo classification, 10 (6.9 %) suffered type I, 5 (3.4 %) type II and 3 (2.06 %) type III/A open fractures. Among those who underwent CRIN 1 (1.4 %) patient suffered iatrogenic radial nerve palsy and 12 (17 %) patients who underwent ORPF. The mean follow up was 18 months. The results were in the benefit of CRIN. **Conclusion:** HSF surgical treatment had better postoperative outcome for those who underwent CRIN from the postoperative complications and functional outcome point of view. Indeed, not to forget that plating should be preferred in some special fractures of the humerus and it secures a perfect anatomical reduction.

Abstract no.: 49666

PIE-CRESTING OF PROXIMAL MEDIAL COLLATERAL LIGAMENT FOR VARUS DEFORMITY IN KNEE ARTHROPLASTY

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Introduction: Pie-cresting technique is used in valgus knees but there is fear of over-release of medial collateral ligament (MCL) and resultant instability in varus knees. We propose that this technique of MCL release is a safe and less invasive approach for MCL release. **Methods:** A total of 60 patients undergoing bilateral primary total knee replacement for osteoarthritis were included. All had varus deformity between 15-30 degrees. They were divided into two groups- 30 patients undergoing a conventional medial release, and 30 patients undergoing pie-cresting of MCL. Sequential medial release involved excision of osteophytes, release of deep MCL, posteromedial capsule, semimembranosus and pes anserinus. Medial side of joint is open using lamina spreader. If medial gap is tighter pie-cresting of the superficial MCL is carried out, 1.5 cm from its femoral insertion, using a sixteen gauge needle. Lamina spreader or 10 mm block is used to open up the medial gap with a slight valgus force. **Results:** There was no difference in mean age, sex-ratio, body mass index, preoperative range of motion, Knee Society Scores and WOMAC scores between the two groups. Mean thickness of poly insert used was 10.7 ± 1.3 mm (range 10-14 mm). There was no cases of over-release intraoperatively or failures at follow up (>3 mm of medial laxity). There was no difference between two groups in Knee Society Scores, WOMAC scores and range of motion achieved at one year. **Conclusion:** Pie-cresting of superficial MCL is safe and effective in correction of moderate to severe varus deformities in knee arthroplasty.

Abstract no.: 49675

COMPARATIVE STUDY OF FUNCTIONAL OUTCOME FOLLOWING DYNAMIC HIP SCREW FIXATION WITH PROXIMAL FEMORAL NAIL IN INTERTROCHANTRIC FRACTURES

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INTRODUCTION: Dynamic Hip Screw with side plate assembly is the most commonly used device for the fixation of intertrochanteric fractures. Proximal femoral nailing is a cephalomedullary device and advantage of controlled rotation is maintained. Sliding is limited by intramedullary location. **AIM:** To determine the rate of union, complications, operative risks and functional outcomes in intertrochanteric fractures treated with DHS and PFN. **METHODS:** The study is a prospective and retrospective Randomized Control Study done February 2015 - July 2017. Number of patients included in the study is 50. Inclusion Criteria: age 50 to 95 years all Fractures according to BOYD & GRIFFIN classification. Fracture less than 6 weeks from date of injury Exclusion criteria age less than 50 years and greater than 95 years, and Pathological fractures. Group A for Dynamic hip Screw fixation and Group B for Proximal femoral nailing. Each patient was evaluated preop and postoperatively using (PARKER & PALMER MOBILITY SCORE) and HARRIS HIP SCORE. **RESULT:** In the DHS group excellent result was 60%, good was 20%, fair was 12% and poor 4% of the patients and in the PFN group excellent was 68%, good was 24%, fair was 4% and poor was 4% of the patients. In conclusion it appeared that PFN had significant benefits over DHS in terms of operative time, blood loss, shortening, neck shaft angle, which has got significant p value. But with respect to the functional results both the DHS and PFN remains the same.

Abstract no.: 49676

COMPARISON OF COMPONENT ROTATIONAL POSITION BETWEEN TOTAL KNEE ARTHROPLASTY PERFORMED WITH CUSTOMISED CUTTING BLOCK VERSUS CONVENTIONAL CUTTING INSTRUMENT USING COMPUTED TOMOGRAPHY

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Background: Although many studies investigated the accuracy of customized cutting block (CCB), few have focused on the rotational alignment. The study aimed to assess whether CCB improved the component rotational position compared with conventional cutting instrument (CCI) using computed tomography (CT) scanning. **Methods:** 86 of 102 total knee arthroplasty (TKA) from the previous randomized study were analyzed. The outcomes were rotational position of the femoral and tibial components, frequency of outliers and intra-class correlation coefficient. **Results:** The mean femoral component rotation was not different between the CCB vs CCI: 0.90 ± 0.80 vs 1.10 ± 1.10 ($P = 0.29$). Both groups had similar outlier frequencies: 2% (CCB) vs 2% (CCI) ($P = 0.74$). CCB had nearly one degree less mean tibial component deviation compared to CCI ($P < 0.001$): (i) dorsal tangent reference (DTR): 0.70 ± 0.80 vs 1.50 ± 1.00 , and (ii) tibial trans-epicondylar reference (TTR): 0.50 ± 0.90 vs 1.40 ± 1.10 . Outlier frequencies were similar: (i) DTR: 0% CCB vs. 5% CCI ($P = 0.24$), and (ii) TTR: 5% in CCB vs 12% CCI ($P = 0.20$). Measurements based on tibial tubercle showed that CCB had ~ 1.40 less mean tibial component deviation compared with CCI: 0.30 ± 1.40 vs 1.70 ± 1.60 ($P < 0.001$) with a corresponding, less frequency of outliers: 0% vs 19% ($P = 0.002$). However, there was poor intra-observer reproducibility (0.61). **Conclusions:** CCB did not improve femoral component rotational alignment compared with CCI nor affect outlier frequency but it marginally improved the accuracy of tibial rotational alignment. The tibial tubercle reference point had poor intra-observer reproducibility.

Abstract no.: 49682

**SINGLE-STAGE DEBRIDEMENT AND AUTOGENOUS BONE GRAFTING
WITH LATERAL INTERBODY FUSION IN THE SURGICAL MANAGEMENT
OF PYOGENIC SPONDYLODISCITIS**

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Introduction: Traditional treatments of pyogenic spondylodiscitis include long-term antibiotic therapy and the bracing. However, these treatments are not sufficient in the destructive stage spondylitis. In terms of surgical procedure LIF has been widely performed as a minimally invasive lumbar fusion approach. This approach via retroperitoneal enable us to perform adequate debridement of the infected disc and vertebral body, along with anterior column reconstruction and vertebral stabilization. Object: To report clinical results of Lateral Interbody Fusion (LIF) for pyogenic spondylodiscitis. Methods: We retrospectively reviewed the patients who had presented with lumbar spondylodiscitis and had undergone LIF from 2013 to 2017. Structural iliac crest autograft was used for anterior column reconstruction and posterior instrumentation with percutaneous pedicle screw was added in all cases. We reviewed data included comorbidity, preoperative magnetic resonance imaging, surgical blood loss, operation time, complications, hospitalization period, post operative C-reactive protein, and need for secondary procedures. Results: 7 patients (68.5±13yo 5male,2female) had underwent LIF. 6 patients had medical comorbidities (chronic kidney disease, diabetes). MRI showed destructive vertebra and epidural abscess in all cases. The surgical blood loss was 280±135ml. The operation time was 183±24minutes. Hospitalization period was 56±25days. Period until a CRP turn to be negative was 30±7days. There were no major complications and revision surgery. Conclusions: LIF allow us to directly access into the disc space in a minimally invasive manner. This procedure should be considered as an alternative to the traditional anterior approach for the treatments of pyogenic spondylodiscitis.

Abstract no.: 49683

VALIDATION OF A FALL RISK ASSESSMENT TOOL IN HOSPITALISED ORTHOPAEDIC PATIENTS

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Introduction: Patient falls have been identified as a significant problem in hospitals. Fall risk assessment is essential for effective fall prevention program. The purpose of this study was to validate the Japanese Association of Rehabilitation Medicine (JARM) fall risk assessment tool in hospitalized orthopedic patients. The tool consisted of six items: history of fall, walking ability, mental function, visual disturbance, urinary disturbance and drugs. The score ranges from 0 to 10. Higher score means higher risk of fall. Methods: The subjects were consecutive orthopedic patients who admitted to our hospital from April 2016 to March 2017. Our hospital is an acute care community hospital accredited by the Joint Commission International. All the patients were evaluated by JARM fall risk assessment tool on admission. The receiver operating characteristic (ROC) curve analysis was used to analyze the relationship between fall incidence and the fall risk assessment score. Results: The study population consisted of 1380 patients with a mean age of 63.4 years and mean length of hospital stay of 17.4 days. Of those enrolled, 33 (2.4%) patients fell during hospitalization. The ROC curve derived from this model had an area under the curve of 0.70 (95% CI: 0.60-0.79). The threshold determined by the ROC curve was 3/10. Applying this prediction model, the sensitivity was 75.8% and specificity was 55.1%. The accuracy was considered to be acceptable. Further validation is needed in various settings to demonstrate the reproducibility of the tool.

Abstract no.: 49685

COULD THE ESWT BE A VALID OPTION TO TREAT THE BONE MARROW EDEMA SYNDROME OF THE KNEE?: PRELIMINARY RESULTS IN A PROSPECTIVE RANDOMISED STUDY

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Primary bone marrow edema syndrome of the knee represents a reversible but really highly painful and disabling pathology. The diagnosis is usually made performing an MRI in patients suffering of acute knee pain and showing negative X-ray. The pathogenetic processes are not completely known and there is no gold standard for treatment. Anti-inflammatory medication, bisphosphonates, prostaglandin inhibitors, reduction of weight-bearing load are some of the possibilities of conservative treatment. Recent researches have been shown the effectiveness of extracorporeal shock wave therapy (ESWT) in the treatment of proximal femur avascular osteonecrosis and in other condition when bone marrow edema is present. The aim of this prospective randomized study is to compare the effectiveness of the two different methods in the treatment of knee bone marrow edema. On this basis, 10 patients have been treated with ESWT (Group A) and 10 patients have been enrolled in the group treated with bisphosphonate (Group B). The Western Ontario and McMaster University Osteoarthritis Index (WOMAC), the Wong-Backer and the Visual Analogue Scale for pain (VAS) and Knee MRI have been obtained before treatment, 4 weeks, 4 and 12 months after treatment. We obtained a rapid pain relief and functional improvement in both groups, with complete resolution of bone edema at the MRI images. No statistical differences between the two groups. ESWT seems to be a valid and non-invasive technology can be use to give a rapid solutions to patients suffering of knee bone edema, without substantial complications. However more data has to be collected and further developments are required.

Abstract no.: 49688

INTRAMEDULLARY SCREW FIXATION OF JONES FRACTURES

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Introduction: Fractures of the fifth metatarsal present a unique set of challenges for treatment to the foot and ankle Specialist. Understanding the local anatomy, vascular supply, function, and dynamic stresses placed upon the bone, as well as fracture classifications, mechanisms of injury, and expected responses to treatment aid immensely in the decision-making processes. Material and methods: Twenty adult patients with fracture base of fifth metatarsal were selected from the emergency department of the university hospital of Faculty of Medicine (Damietta) Al azhar University. From July 2016 to Jan 2018 and were fixed operatively by cannulated cancellous 4mm screw. Results: Followed all patients for pain, function, footwear requirement, walking distance, gait abnormality, alignment and radiological assessment, for union. The sample size 20 patients, all patients achieved full union, 1 patient complicated by superficial infection treated by antibiotics. Conclusion: early surgical treatment by cannulated intramedullary screw results in quicker union and allows patients to return to normal daily activities than the cast treatment.

Abstract no.: 49689

ILIZAROV HIP RECONSTRUCTION OSTEOTOMY FOR NEGLECTED DISLOCATION OF THE HIP IN YOUNG ADULTS

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Background: Neglected dislocation of the hip joint in the young adult is a difficult problem. Unstable hip secondary to any aetiology usually have loss of bone from the proximal femur or shortening of the limb or both. Objective: In this study, we report our results in the treatment of the Neglected dislocation hip joint in young adults by pelvic support osteotomy using Ilizarov method. Patients and Methods: From 2007 to 2018, 30 patients (20 females and 10 males) with neglected dislocation hip were treated in the orthopaedic department of Al azhar University Hospital, Damietta Egypt. Their mean age was 22.5 years. Main complaints were pain, length discrepancy, limping, and limited hip abduction. All patients underwent valgus extension osteotomy in the proximal femur and distal femoral osteotomy for lengthening. Average follow-up from two to 7 years. Results: All hips were pain free. Trendelenburg sign became negative in 25 patients. No limb length discrepancy and alignments of the extremity were re-established. Five patients had a lurch gait. Valgus extension osteotomy has provided stability of the hip joint and maintained some motion of the hip joint.

Abstract no.: 49691

OUTCOME OF COMBINED RECONSTRUCTIVE PROCEDURE WITH REROUTING OF THE TIBIALIS ANTERIOR TENDON IN SEVERE FLEXIBLE FLATFOOT

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Introduction: the severe flexible flat foot consists of a collapsed medial longitudinal arch. Heel valgus fore foot abduction heel cord tightness and forefoot supinatus on review of literature surgical treatment has been reserved for children with symptomatic severe flexible flatfoot not responding to the usual conservative measures (2-6) surgical procedures fall into three general categories: 1) tendon transfer or lengthening; 2) osteotomy moreover; 3) arthrodesis. However, no surgical technique is universally accepted. In this study, a combined reconstructive technique is described that addresses all components of the deformity in one sitting. Materials and methods: Thirty feet in 20 patients (ten males and ten females) were the subject of study performed in Al Azhar university Hospital in Damietta. The ages ranged from 9 to 14 years (average 36 months). Most of patients presented with their parents in outpatient clinic asking for referral to the physiotherapy for the periodical dispensing of medical or inserts shoes for flatfoot. Twenty parents agreed for their children to have surgery to address one or more of the following complaints: foot strain on long standing (fifteen patients). Excessive shoe wear (fifteen patients). Unsightly appearance (20 patients), and generalized inactivity with poor participation in physical activity that requires running. Two patients had previous surgery. One had unilateral over correction of congenital talipes when she was 1 year old. The other had a failed overcorrection for severe flexible flatfoot in both feet using the Evans procedure alone 2 years earlier.

Abstract no.: 49696

ACCURACY OF DOCUMENTATION OF NEUROLOGICAL EXAMINATIONS IN UPPER LIMB FRACTURES

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Background: A careful examination of the peripheral nerves must be performed and clearly recorded for upper limb injuries and should include individual nerve examination. Examination must be repeated and recorded after any procedure. **Aim of this study:** to assess the initial orthopaedic documentation of neurological status in patients presented with upper limb injuries in our hospital. **Methods:** The clinical notes of patients presented into the orthopaedic unit with upper limb injuries were retrospectively reviewed over a month (March 2017). Patient demographics, injury sustained and detailed neurological examination documentation were reviewed. **Results:** 644 orthopaedic referrals from emergency department (362 upper limb injuries, 282 other injuries). 24 different upper limb injury categories were recorded. The commonest injuries were hand fractures (38%), followed by distal Radius fractures (17%). Clear neurological examination documentation recorded in 26 patients (7%), incomplete neurological documentation was recorded in 166 cases (46%) and no comment on neurological examination was recorded in 170 cases (47%). Documentations involved the following terms “intact distal neurology” in 25.1%, “no neurological deficit” in 7.7%, “distal neurological status is okay” in 4.7%, and “satisfactory movement” in 2.2%. 8 patients were recorded with neurological deficits (2%). Procedures performed for 39 cases, however documentation of repeated neurological examination post-procedure recorded in 28%. **Conclusion:** When assessing upper limb injuries, clear documentation of neurological examination is essential. Our study shows that although neurological examination of patients presenting with upper limb fractures is documented in 54% of cases, it tends to be incompletely documented and neurological injuries may be missed.

Abstract no.: 49697

SIMPLE AND COST-EFFECTIVE ARTHROSCOPIC SKILLS SIMULATOR

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Background: Obtaining arthroscopic skills can be challenging but is essential for orthopaedic surgeons. We propose a method to produce a simple and cost-effective training tool that can be used to improve technical skills and help in performing arthroscopic simulation, it can be used at home, in laboratories, or in theaters. **Methods:** we used simple and low-cost materials, readily available from hardware store or online shops. It includes: 1-Digital USB Endoscope Camera with 10-200X Magnification. (Low cost); 2-Anatomical human knee joint (shoulder, ankle or hip models); 3-Cardboard box; 4-Alligator Forceps. Total cost of this system is less than \$100 and any notebook, tablet or smartphone can be used for display (multiple display option is available and this option is very useful in group teaching). Simulation exercises are performed in a cardboard box using the camera. Cardboard is easy to cut and can be pierced with arthroscopic instruments to simulate procedures and improve triangulation skills. The light source is not required as this camera has build in light source. **Results:** The system improves the learning curve of the complex surgical techniques. Patient safety can be improved using simulation. All 6 basic arthroscopic tasks can be performed with our simulator: probing, grasping, tissue resection, shaving, tissue liberation and suture passing, and knot tying. **Conclusion:** Simulation can be used to improve both skills and knowledge and decrease the time required to obtain the necessary skills to perform arthroscopic procedures. Advantages of our simulator are that it is very cheap and relatively easy to build with readily available materials.

Abstract no.: 49702

WHAT IS AN OPTIMAL INTERNAL FIXATION FOR INTRACAPSULAR FEMORAL NECK FRACTURES?

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Aim: The aim of this study was to identify the proportion of hips that underwent reoperation following internal fixation using DHS, DHS with DRS or CHS and the causes of these reoperations. **Methodology:** 182 consecutive patients aged 18 and older with intracapsular femoral neck fractures treated with internal fixation were retrospectively reviewed between 2010 and 2015. Demographic data and radiographs were reviewed. Ninety four received 2-hole DHS, 28 had DHS with DRS and 60 underwent CHS fixation. The average age was 68.5 years (range, 21- 100). Mean time to follow-up was 2.4 years (range, 0- 5.2 years). **Results:** 45 underwent revision surgery at a mean of 12.2 months (range, 0- 41 months). Of these, 33 % were revised within 3 months of primary fixation due to secondary to fixation failure. AVN and early fracture re-displacement were significantly higher in cases with comminuted posterior wall of the femoral neck ($p<0.0001$). There was no significant association between age, gender, time to primary operation, fracture displacement and type of alloy, and revision surgery. Revision surgery was lower in DHS compared to CHS and DHS with DRS ($p<0.05$). Reoperation due to fixation failure was significant in cases with inadequate fracture reduction ($p<0.0001$). **Conclusion:** 2-hole DHS provides less complication rate particularly in unstable intracapsular femoral neck fractures when compared to CHS and DHS with DRS. In fractures with comminuted posterior cortex, the risk of fixation failure was lower when DHS was placed adjacent to the calcar and close to the posterior wall of the femoral neck.

Abstract no.: 49704

COMPARATIVE STUDY ON THE FUNCTIONAL OUTCOMES OF ADULTS WHO UNDERWENT ARTHROSCOPIC ACL RECONSTRUCTION WITH BONE-PATELLAR TENDON-BONE AND HAMSTRING TENDON AUTOGRAFTS

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Background: Anterior cruciate ligament (ACL) reconstruction is among the most common Orthopaedic sports procedures done. The most common autografts used are the bone-patellar tendon-bone (BPTB) and hamstring tendons which depend on surgeons preference. No previous study has been done in our institution. Objective: To compare the functional outcomes between BPTB and hamstring tendons autograft on adults with ACL tears operated at our institution after at least 2 years post-operatively. Methods: Records from 2004 to 2013 of ACL tear patients who underwent arthroscopic ACL reconstruction with BPTB and hamstring tendon autografts were retrieved. Patients were examined using the KT 1000 knee arthrometer then each answered the International Knee Documentation Committee (IKDC) and Lysholm Knee Scoring surveys. Results: 18 patients were included, 9 with BPTB and 9 with the hamstring tendons autograft. The BPTB had less frequent and less severe knee pain as well as more favorable knee functional scores except for sitting with bent knees and rising from a chair. The BPTB favored better in going up and down the stairs which was statistically significant and had higher Lysholm functional knee scores. The hamstring tendons autograft had higher knee laxity scores post-operatively. Summary/Conclusion: Both autografts had similar knee function scores after at least a 2 year follow-up based on the IKDC system but the BPTB tends to have a higher functional outcome based on the Lysholm system. This suggests that the use of the BPTB autograft in ACL reconstruction may have more functional advantages compared to the hamstring tendons autograft.

Abstract no.: 49705

THE USEFULNESS OF PERFORMING EXTENSIVE DEBRIDEMENT TO PREVENT INFECTIONS IN OPEN FLEXOR TENDON INJURIES OF THE HAND

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Background: Infection after flexor tendon repair in the hand is uncommon but may cause debilitating problems if not prevented. In centers where delayed presentation after injury happens often, early bacterial colonization is assumed and an initial debridement is indicated ensuring a clean environment for subsequent repair. Preference for the type of initial debridement differ from surgeon to surgeon. Objective: This paper aims to compare limited and extensive initial debridement in preventing post-operative infection in patients treated more than 24 hours after open tendon injury. Methods: A retrospective review of records for demographics, the type of debridement and occurrence of infection was performed. Statistical comparison of proportions of post-operative infection was done. Results: Of thirty-one records included, twenty-four patients underwent extensive debridement while 7 had limited. Two patients from each group developed infections resulting to 8.3% infection in the extensive group and 28.6% in the limited group. The difference is not statistically significant. Summary/Conclusion: The trend for a higher infection rate in the limited debridement group supports the need for aggressive debridement in managing delayed presenting patients with open tendon injuries. While the non-significant difference potentially supports the less cumbersome option, a better powered study is recommended to confirm.

Abstract no.: 49706

BILATERAL ASYMMETRIC HIP DISLOCATION: A CASE REPORT

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Background: Bilateral asymmetric hip dislocations (BAHD) are uncommon. These injuries are results of severe trauma and often associated with other life-threatening injuries. These injuries are sometimes missed because of the association with other injuries. Objective: To present a case of BAHD and to draw attention to the occurrence of this severe pattern of injury in our environment and discuss options of treatment in low resource settings. Case Report: A 31-year-old female presented 24 hours following RTA. Post resuscitation X-rays (inadequate) revealed a fracture dislocation of the left hip (Pipkins Type I) and a suspicious right hip subluxation. The dislocation was immediately reduced. She had a Computerised Tomography Scan of the pelvis with 3D Reconstruction which showed reduction of the fracture left femoral head with a step as well as a posteriorly subluxed right hip. After discussion with the patient, she opted for conservative management which was done with skin traction on both lower limbs with 5kg weights for 6 weeks following which she had satisfactory radiographs and was discharged to out-patient follow-up. Discussion: Management of injuries in this region are influenced by patient choices, expectations and acceptance of outcomes, available facilities and expertise. These were major considerations in decision making in the management of this patient. In carefully selected cases, conservative management will result in good to acceptable outcomes. Conclusion: Management of BAHD requires detailed evaluation of patient, facilities and expertise available to make the best management choices and ensure acceptable outcomes.

Abstract no.: 49707

DISTAL FEMORAL BRODIE'S ABSCESS IN AN ADULT PATIENT WITH HAEMOGLOBIN SC GENOTYPE: A CASE REPORT

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Background: Brodie's abscess is a well-recognized form of subacute osteomyelitis. Report of occurrence in patients with sickle cell haemoglobinopathies is rare and may present a diagnostic dilemma. We are unaware of any reports of occurrence of Brodie's abscess in a patient with Haemoglobin SC (HbSC) genotype who often have milder manifestations of the disease. Objective: To draw attention to persistent bone pain in sickle cell haemoglobinopathy patients being possibly due to a Brodie's abscess rather than a vaso-occlusive crisis. Case Report: A 30-year-old female, known HbSC patient presented to the Haematology clinic with severe distal left thigh pain, constitutional symptoms, and tenderness to deep palpation. PCV was 28%, WBC 8,510/cm³ with neutrophilia (86%). Blood culture yielded staphylococcus aureus sensitive to Augmentin. She was hydrated, commenced on antibiotics and made clinical improvement and was discharged. She presented to us 21 days after onset of symptoms with persistent thigh pain, mild tenderness, no swelling or systemic symptoms. At surgery, we found 40mls of frank pus under pressure within a 7x3x4cm marrow cavity with sclerotic edges. We curetted, irrigated sequentially with hydrogen peroxide, povidone iodine and saline and filled the cavity with reabsorbable bone cement mixed with antibiotics. Microbiology of the pus revealed staphylococcus aureus sensitive to Augmentin. She is currently pain free and on follow-up in the out-patient clinic. Conclusion: Brodie's abscesses occur in patients with haemoglobinopathies. A high index of suspicion is required to differentiate from bone pain crisis or infarcts. Adequate prompt intervention will result in satisfactory outcomes.

Abstract no.: 49708

FREQUENCY AND UTILITY OF PRE-CONSULTATION MRI USE IN PATIENTS REFERRED TO A REGIONAL JOINT ASSESSMENT PROGRAM MEFOR POSSIBLE TOTAL KNEE ARTHROPLASTY

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The literature has long questioned utility of magnetic resonance imaging (MRI) in evaluation of knee osteoarthritis (OA). We have observed trends toward increased use of MRI by primary care physicians (PCP) as a diagnostic tool for advanced knee OA. This raises concern regarding impact to the healthcare system with respect to access to diagnostic services, wait-times and costs. A prospective one-year audit was conducted to determine frequency and utility of pre-consultation MRI in patients referred for knee arthroplasty consult. Patients were assessed by Advanced Physiotherapist Practitioners specializing in hip/knee OA assessment and treatment planning. Frequency of MRI and utility in determining OA diagnosis and treatment plan were assessed. Of 4,505 patients attending for assessment, 80.8% presented with weight-bearing radiographs. Obvious OA was evident on 83.5% of radiographs, and clinically evident in 91.8% of patients on examination. Of the sample, 19.6% presented with a knee MRI. Mean age of MRI patients was 61.6 (± 9.7) years. MRI findings were deemed to be of no value in determining OA diagnosis in 58.7%, and of no value to treatment planning in 62.6%. Once weight-bearing radiographs have confirmed OA, MRI has little value. Moreover, MRI is not warranted in knee patients aged 50+ where osteoarthritic changes are evident on radiographs. There appears to be unnecessary use of MRI among referring PCPs for patients with knee OA, despite a lack of evidence to the same. Education to patients and PCPs to curtail the demand and use of MRI in assessment of knee OA is warranted.

Abstract no.: 49715

**OVER 500 PATIENTS WITH DEVELOPMENTAL DYSPLASIA OF THE HIP
TREATED BY SHORT STEM COMBINED WITH 3D TEMPLATE**

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Introduction: Developmental dysplasia of the hip (DDH) has anatomical abnormality, such as proximal-distal canal mismatching, excessive femoral anteversion, decreased femoral offset and leg length discrepancy. Purpose: The purpose is to evaluate clinical and radiographic performances of short stem for DDH patients. Materials and Methods: Five hundred sixty-eight DDH patients who were underwent THA with short stem were enrolled between 2013 and 2016. There were 477 females and 91 males. The average age at operation was 63 years old. The average follow-up term was 30 (12-48) months. Bone qualities were Dorr type A in 85, B in 460 and C in 23 hips. Preoperative planning was performed by 3D template software. Clinical hip score and radiographic bone reactions around the stem were estimated. Results: Preoperative and the last follow-up Harris hip score was respectively 39.6 and 88.5 points. Any radiolucent lines were not seen on the porous surface of stem. Spot welds were observed in 98%. The proximal femoral bone atrophy by stress shielding was judged as none in 23% and the 1st degree in 74%. Leg length discrepancy was within 5 mm in 90%. Femoral offset of involved hip joint was restored within 5 mm in 98% for contralateral hip. Postoperative dislocation (0%), intraoperative calcar crack (1.4%), stem subsidence not revised (0.5%), early loosening (0%) and revision (0.18%: infection) were experienced. Discussions: Good bony ingrown fixation and decreased stress shielding could be expected in DDH patients treated by short stem combined with 3D template.

Abstract no.: 49719

CONSERVATIVE TREATMENT OF DISLOCATED SH TYPE-2 INJURY OF THE DISTAL FEMORAL PHYSIS: A CASE REPORT

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Injuries of the distal femoral physis represent about 5% of all physeal injuries. Most cases are treated by closed reduction and percutaneous pinning with wires and screws. Complications are noted in about 40% of all operatively treated patients. Conservative treatment of dislocated SH type 2 injury by a closed reduction and immobilization is rare. We present a 13-year-old girl with a dislocated SH type 2 injury of the distal femoral physis with the presence of the Thurston-Hollande fragment. Standard radiographs presented SH type 2 injury of the distal femoral physis with anterior and medial dislocation and a free fragment medially. A closed reduction was performed under general anesthesia. The leg was immobilized above knee for four weeks with weekly radiographic control. After the cast removal a knee orthosis was applied and worn for two months. The physical therapy procedures started one month after the injury. Six months after the injury she had a full ROM of the knee and tolerates full activity. There were no signs of "frozen physis" or knee instability. Although in scientific literature the conservative treatment of dislocated SH type 2 injury of distal femoral physis is rarely described, our assumption is that with a good reduction and cooperative patient it is possible. Taking into account a high percentage of complication after the operative treatment, the conservative way should be considered. Further prospective studies are needed to set the standards and protocols.

Abstract no.: 49732

COMPLICATIONS IN ORTHOPAEDIC SURGERY: IS OUR RECOGNITION AND MANAGEMENT APPROPRIATE?

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Within modern healthcare every clinician needs to inform patients of the likely complications of a proposed procedure. Surgeons are required to analyse complications to participate in clinical governance and appraisal and fulfil the duty of candour when they occur. Complications are a common cause of litigation against orthopaedic surgeons and an understanding of the evidence is vital in these cases. A scoping critical review of the available literature was undertaken, relating to; the definition of complications, the methods of collection and, the interpretation of such data. In orthopaedic surgical practice, complications are often recognised quickly and intuitively. However, there is no standard definition; it is often assumed to be understood but it is seldom provided. We define a complication as any less than perfect outcome that increases the cost of treatment. Reported evidence often uses retrospectively collected data, of varied quality. Complications following joint replacement are better documented, due to the data collection required by national joint registries. However, a percentage complication rate, a single figure, to assess complications requires careful data collection and analysis, which is often lacking in the literature. Therefore, cautious use of this data is recommended. Literature concerning the definition, collection and interpretation of complications is often difficult to interpret, causing difficulty in comparison, analysis and improvement of surgical practice. Health boards needs to standardise a system of complications data collection and analysis. The NJR concept of online data reporting has potential to be introduced to a wide range of surgical procedures.

Abstract no.: 49733

IMAGELESS NAVIGATION TOTAL HIP ARTHROPLASTY: WHAT IS THE LEARNING CURVE?

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Background: Imageless navigation has been successfully integrated in knee arthroplasty to improve implant alignment and functional outcomes. However, its effectiveness in total hip arthroplasty has been debated, and use has been resisted. Navigation has consistently been portrayed as adding significant time and cost to arthroplasty procedures, particularly when first adopted. Further, the relative success of traditional hip replacements has impeded the adoption of new techniques aimed at improving already good clinical outcomes. Objectives: To delimit the 'learned' phase of imageless navigation and to determine the efficacy of a new workflow. Methods: We compared the operative time between fifty total hip replacements with and without the use of imageless navigation by a single senior surgeon in a retrospective study. We employed standard statistical tools to compare the two methods. Results: Contrary to what has previously been reported, there was no significant difference between operative time in navigated, when compared to traditional operations ($p=0.70$). Only fourteen operations were required to delimit the learning phase of this operation. Conclusions: This is the first study that demonstrates no added operative time when using imageless navigation in total hip arthroplasty, achieved with an improved workflow. The results also demonstrate a very reasonable learning curve needed in relation to this procedure. Imageless navigation offers a favourable operative adjunct, enabling more accurate implant placement and aiding improved clinical outcomes. This adjunct should be considered as a potential method of continuing improvement within hip arthroplasty.

Abstract no.: 49736

HOW DO CLINICAL SERVICES CHANGE?: A TEMPORAL ANALYSIS OF IMPLEMENTING A DEDICATED HIP FRACTURE UNIT

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Background: Hip fractures are a significant burden on health services, with an ever increasing financial pressure the need to achieve satisfactory outcomes with efficiency is paramount. Through audit we can guide service provision and improvement. Interventions are assessed by comparing two datasets using statistical methods, but are underlying trends being missed. Objectives: Our objective was to determine whether through temporal analysis we can improve interpretation of underlying trends. Study Design & Methods: To evaluate the effects of introducing a dedicated hip fracture unit (HFU), we analysed multiple datasets (time to surgery, length of stay and mortality) from April 2011 to September 2016. Using both standard statistical methods and linear regression techniques we compared 2,777 patients, to establish any trends within the data. Results: Statistical tests demonstrated a reduction in the time to surgery (21.51 to 20.75 hours $p = 0.150$), length of stay (15 to 14 days $p=0.410$), 30-day mortality (5.47% to 3.13% $p = 0.014$), 120-day mortality (12.68% to 10.13% $p=0.078$) and 365-day mortality (21.46% to 20.57% $p=0.769$). Temporal analysis revealed further trends: improvement in time to surgery began prior to HFU introduction, length of stay is reducing at a faster rate after HFU introduction, and an underlying improvement in mortality throughout the study. Conclusion: Temporal analysis using a segmented linear regression model provides a simple and valuable tool in assessing change. This technique complements other statistical analysis, allowing the observer to determine the true change of an intervention, offering a powerful addition to standard statistical methods.

Abstract no.: 49739

CHONDROSARCOMA PELVIS: A REAL CHALLENGE FOR THE ORTHOPAEDIC SURGEON

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This study is conducted at Department of Orthopaedic Surgery Dow University of Health Sciences /cCvl Hospital, Karachi from April 2014 to 2017. Five patients with Chondrosarcoma pelvis included in this study. All five patients were male. 2 patient age was in 20s , one in 40s and two in 60s. Three patient have left pelvis involved and two have right side. Two patient have pubic bone and ischium (Level III) involved, one have have illium (Level I) and two have ilium, acetabulum and pubis (Level I,II,III). One patient with have preoperatively sciatic nerve palsy. Two patients have medical comorbid. One was asthmatic and one had psychiatric illness. As there is no role of chemotherapy and radiotherapy in chondrosarcoma patient so surgery planned after all investigations and workup for metastasis. No patient had metastasis at presentation. Pubis and ischium with tumor resected in two cases, partial illium resection in one case, one patient have internal hemipelvectomy and one patient had internal hemiplvectomy that bone recycled in liquid nitrogen and pelvis reimplanted and fixed with recon plates and hip joint reconstructed with total hip replacement. Total duration of surgery in patient having thirteen hour, and remaining have 3 to 5 hours. Blood loss during these surgeries was in between 1000 to 1200 ml. Two patient have wound infection, one patient had L5 nerve root injury.

Abstract no.: 49740

**GRADE JJJ GIANT CELL TUMOUR DISTAL FEMUR AND TIBIA
TREATED WITH WIDE MARGIN RESECTION AND RECONSTRUCTION
WITH DISTRACTION OSTEOGENESIS**

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This prospective study was conducted at department of orthopaedic surgery Dow University of Health Sciences/Civil Hospital, Karachi from March 2012 to January 2017. Six patients with Biopsy proven Giant cell tumor campanacci grade III tumor patients were included in this study. Three patient were male and three female. Three patient had distal femur involved, two proximal tibia and one had distal tibia. Right side affected in four patient and two on left side. Wide margin resection done in all patients. Eight centimeter bone resected in two patients, nine centimetre in one patient, two patient had ten centimeters, one had eleven centimeters. Two patient had trifocal transport and distraction compression done other four had bifocal. Illizarov was placed for variable duration from three months to eleven months. Corticotomy was performed with gigli saw in all patient except one with osteotome. Patient had corticotomy with osteotome had fracture at corticotomy site. Problems with Illizarov application and transport were noticed. Superficial pin traction noted in all patients. Two patient had retraction of transported bone after Illizarov removal. Additionally bone graft done in four patients and patient with distal tibia transport fixed with T-plate. Consolidation and union was noted in all patients. Five patient had knee arthodesis and one had ankle arthodesis. All patient had satisfactory score except one female which had problem with corticotomy.

Abstract no.: 49741

**SYMPTOMATIC NONUNION OF A TOE DISTAL PHALANX FRACTURE:
TREATMENT WITH A PERCUTANEOUS COMPRESSION SCREW**

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Introduction: Distal phalanx fractures of the toe are common injuries. Majority of them are treated conservatively with good outcome. We present a case of a patient with a right 4th toe distal phalanx transverse fracture complicated by symptomatic non-union. Our patient sustained the injury when a trolley ran over the right 4th toe. It was a closed injury with no significant deformity. The patient was initially treated conservatively with buddy splinting and advised to mainly weight-bear on the heel. Serial reviews did not show any signs of union. 5 months after the initial injury, the patient was symptomatic especially with prolonged ambulation. **Methods:** The patient underwent surgical fusion of the fracture site incorporating the distal phalangeal joint (DIPJ) as well. A transverse dorsal incision was made just distal to the DIPJ to allow preparation of the fracture site and DIPJ. Fibrous tissue at the fracture site was removed and the opposing surfaces drilled with a 0.88mm K-wire. Cartilaginous tissue at the DIPJ was removed and similarly drilled with the 0.88mm K-wire. The toe was reduced with manual axial compression and stabilized with K-wires. Compression was achieved with a percutaneous headless compression screw (Acutrak2 Micro: Acumed, Portland, OR). The patient was kept on heel weight bearing with a forefoot-offloading shoe for 2 months. **Results:** She achieved radiographic union and resolution of her symptoms 10 weeks after the surgery. This is the first case report of a surgically treated symptomatic non-union of distal phalanx fracture of the toe in the literature.

Abstract no.: 49757

ENTRAPMENT OF THE EXTENSOR POLLICIS LONGUS TENDON IN A SMITH'S FRACTURE: A CASE REPORT

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A 14-year-old patient sustained a Smith's fracture after falling down riding a bicycle. The fracture was not reduced at all by closed reduction and treated with open reduction and volar plate fixation. At postoperative 6 weeks follow-up visit, the patient reported that he could not extend his thumb and complete rupture of the extensor pollicis longus (EPL) was confirmed by ultrasonography. Surgical exploration was performed at postoperative 10 weeks. Entrapment of the EPL was confirmed and the EPL tendon was reconstructed with extensor indicis proprius tendon transfer. In Smith's fractures, the EPL tendon may be injured directly by sharp edges of the proximal fracture fragments or incarcerated between proximal and distal fracture fragments. Entrapment of the EPL tendon with the Smith's fracture was firstly reported in 1969 by Hunt. Because of its rarity, only several case reports followed since Hunt's publication. Hunt suggested axial compression and forced pronation of distal fracture fragment and concomitant supination of proximal fracture fragment as the mechanism of EPL tendon entrapment associated with the Smith's fractures. The current case cannot be explained by previously postulated injury mechanism. We suggested new injury mechanism and three types of EPL tendon entrapment with the Smith's fractures. Although it is a very rare complication, treating surgeons must remain aware of this potential complication and surgical exploration should be considered when it is suspected.

Abstract no.: 49759

ARTHROSCOPIC REPAIR FOR CHRONIC ANTERIOR SHOULDER INSTABILITY

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INTRODUCTION: The frequency of anterior shoulder instability is quite high, due to the anatomical and functional particularities of the shoulder, and the frequent recurrences after orthopedic treatment of traumatic dislocation of the humerus. The arthroscopic method of treatment of this type of pathology became standard practice and is fairly widespread. **METHODS:** In our study 102 patients, (94 men and 8 women, with the mean age of 25 years) on whom we performed arthroscopic stabilization of anterior shoulder instability between the years 2010-2016. The diagnosis was confirmed by clinical, radiological, ultrasound and MRI methods. We performed the reinsertion of anterior-inferior part of the glenoid labrum and joint capsule using bioresorbable anchors (23 patients), metal (30), transglenoidal unresorbable thread suture (49). In 3 patients Bankart lesion was associated with the SLAP lesion. Hill-Sachs lesion was found in 11 cases. **RESULTS:** After surgery the patients were evaluated at an interval of 24 to 48 months using the Rowe and Zarins score. We obtained excellent or good results in 96 patients (76.5%), satisfactory - 3, unsatisfactory - 3 patient. Negative result we have found a year after surgery in a patient, who suffered a minor injury which caused the dislocation of the humerus and recidivism signs of instability. **CONCLUSIONS:** Arthroscopic treatment of anterior shoulder instability providing good functional results in most cases. The results depend on multiple factors, including age, participation in contact sports, technical errors, bone defects, number of dislocations, type of anchors, the presence of Hill-Sachs lesion.

Abstract no.: 49771

INFECTIVE LESIONS OF THE CERVICAL SPINE: A CROSS ANALYSIS OF 35 PATIENTS

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Introduction: Cervical-spine infections constitute only around 3-6% of vertebral infections. They often rapidly deteriorate, leading to neurological complications. **Methods:** A cross sectional analysis of 35 patients was done. **Results:** 71% were diagnosed as Tb and 29% were pyogenic (PI). 80% of Tb were females and 80% of PI were males. The mean age at presentation in years was 35 (Tb) and 48 in PI. The mean time lag to diagnosis was 120 days in Tb and 44 days in PI. Multi-focal involvement was 24% in Tb and 10% in PI. Contiguous involvement in Tb was 56% and 10% in PI. C1-C2 involvement was seen only in Tb group in 32%. Commonest level of infection was C5-C6 in both groups. 40% of all patients had neurological deficits. Sensitivity of biopsy in Tb (76%) was more than Tb PCR (53%). In 50% of PI, microorganisms were isolated which included *Staphylococcus aureus*, *E. coli* and *Pseudomonas stutzeri*. The mean ESR and CRP in Tb were 74 mm/hr and 23 mg/L compared to 90 mm/hr and 40 mg/L in PI. **Conclusion:** Cervical spine-infections behave in a much more fulminant manner. Tuberculosis constitutes majority of the cervical spine infections and the positivity rate of Tb PCR is poor when compared to histo-pathological studies. Most patients require anterior procedure alone. Multilevel epidural abscess formation warrants posterior decompression as well. Vertebral collapse with instability, deformity and neural deficits require combined approach. Despite the early complications, they generally have good outcomes when appropriate treatment is instituted.

Abstract no.: 49772

MINIMALLY INVASIVE MOTION- AND FUNCTION-PRESERVING CT NAVIGATED PRIMARY OSTEOSYNTHESIS OF ISOLATED UNSTABLE ATLAS FRACTURES

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Introduction: Surgical management of unstable C1 injuries is an accepted entity. Recently, concerns have been raised over loss of motion following traditional C0-C2 / C1-C2 fixation or fusion surgeries, as it causes movement restriction. **Methods:** The patients were positioned prone and cranial traction was applied with Mayfield tongs to restore C0-C2 height and reduce fracture displacement. After minimal surgical exposure, navigation arm was attached to cranial portion of C2 spinous process. Using intra-operative CT navigation, lateral mass screw trajectories were planned, drilled and checked for optimal placement of C1 screws. A transverse rod was placed connecting the two screws and controlled compression was applied across the fixation to obtain further reduction. Patients were evaluated for functional and radio-logical outcomes. **Results:** A total of 10 screws were placed in 5 patients. Mean duration of surgery was 1.3 hours and the average blood loss was 62 ml. Mean follow up period was 4.3 years. The mean range of movement in degrees were, rotation (73.6 ± 8.1), flexion (35.4 ± 4.1) and extension- (39.8 ± 8.3), lateral bending on the right (28.4 ± 9.4) and left (24.8 ± 10.5). Follow up CT showed excellent placement of screws and good healing. The mean combined Lateral Mass Dissociation (LMD) at final follow up was 5.22 mm with average correction of 9.2 mm. There was no screw-malpositioning or atlantoaxial instability. **Conclusion:** Successful C 1 reduction and fixation allows for a motion preserving option in managing unstable atlas fractures. CT navigation not only enables intra-operative assessment of fracture reduction but also permits accurate and adequate fixation.

Abstract no.: 49773

CERVICAL KYPHOTIC DEFORMITY CAUSING THORACIC INLET COMPRESSION RESULTING IN CARDIAC ASYSTOLE IN PRONE POSITIONING: A CASE REPORT AND TECHNICAL NOTE

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A 17 year old adolescent with deformity of neck and upper back had mild weakness and exaggerated Deep Tendon reflexes. His plain radiography revealed a severe dystrophic cervical kyphotic deformity of 126°. CT showed C5-C6 and C6-C7 facet joint subluxation with buckling collapse of cervical spine with apex at C5-C6 level. MRI demonstrated stretching of the cord with thinned out caliber over the acutely deformed cervical spine. No intra-spinal mass lesions were detected. Pre-operative Halo Gravity traction (HGT) could achieve 36° correction. After C5, C6 and C7 corpectomy, when the patient was positioned prone for posterior procedure, immediate cardiac asystole occurred, which reverted back to normal on supine positioning. After three failed attempts in positioning the patient prone, surgery was called off. A retrospective analysis of CT and MRI showed severe narrowing of thoracic inlet. After a multidisciplinary team meeting involving anesthetists, otolaryngologists, spine surgeons and cardiothoracic surgeons, the probable diagnosis of Superior Vena Cava (SVC) obstruction due to narrow thoracic inlet was made. The medial end of the clavicles along with partial manubrium excision relieved the SVC obstruction and it was possible to position the patient prone. C2-T4 instrumented decompression followed by anterior reconstruction and cervical plating were performed and final deformity was only 45°. Cervical kyphosis and thoracic lordosis is a deadly combination and may result in severe Thoracic Inlet Obstruction (TIO). We recommend the usage of preoperative CT and MRI to diagnose TIO and address it before embarking on a complex deformity correction surgery.

Abstract no.: 49774

THE EFFECTIVE ROLE OF NON-INVASIVE POSITIVE PRESSURE VENTILATION IN SUBARACHNOID PLEURAL FISTULA: A CASE REPORT AND REVIEW OF LITERATURE

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Subarachnoid pleural fistula (SPF) is an aberrant communication between pleural cavity and subarachnoid space resulting in uncontrolled cerebrospinal fluid (CSF) drainage. The negative pressure of pleural cavity creates a continuous suctioning effect, thus impeding the spontaneous closure of these fistulas. The failure of recognition of this entity may result in sudden neurological or respiratory complications. Hence a high index of suspicion is required for early diagnosis and prompt management. Noninvasive positive pressure ventilation (NPPV) has been described to be effective in managing such fistulas, thus mitigating the high morbidity associated with explorative surgery for primary repair. A patient who sustained SPF resulting in massive post operative pleural effusion following anterior thoracic spinal surgery for spinal tumour surgery was put on CPAP mode with the FiO₂ set at 0.3, pressure support ventilation (PSV) at 12 cm of H₂O and Positive End-Expiratory Pressure (PEEP) at 5 cm of H₂O. NPPV via a full contact face mask was used for a total of 9 days. Serial chest radiographs showed good improvement with clearance of haziness and the patient got symptomatically better with no evidence of recollection. The catastrophic nature of the consequences of SPF if untreated, leading to massive pleural effusion or intracranial hemorrhage and pneumocephalus demands awareness of this entity by every spine and cardiothoracic surgeon to ensure prompt treatment. NPPV is a noninvasive cost effective intervention which effectively applies a sealant effect to the negative intrapleural pressure, yielding a tamponade effect and helps in spontaneous healing of SPF.

Abstract no.: 49776

NEW CLASSIFICATION SYSTEM FOR HOFFA'S FRACTURE: A REVIEW OF 30 CASES AND THE LITERATURE

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Introduction: Coronal fractures of distal end of the femur, referred as Hoffa's fracture are rare injuries that lack proper consensus regarding the diagnosis and treatment strategy. They are classified into a single group 33B3 as per the AO fracture classification system despite having various other configurations. **Methods:** A case series of 30 cases of Hoffa fracture from a tertiary care centre were studied for the fracture pattern, fragment size, comminution and possible variations to formulate a new CT based classification and treatment guidelines. Additionally, a literature search was used to analyse 77 studies based on Hoffa fracture to find out the common fracture patterns and treatment modalities used. Six independent observers participated for testing the inter-observer reliability of the proposed classification. **Results:** A new proposed CT based classification for Hoffa fracture consists of four main types. Type 1 is with fracture fragment >2.5cm, Type 2 with fragment <2.5cm, Type 3 is comminuted fracture, Type 4 includes special types which are further subdivided as Type 4a- Anterior Hoffa's, Type 4b- Bicondylar Hoffa's, Type 4c- Osteochondral type and Type 4d- Hoffa's fracture with supracondylar extension. Optimum treatment modality will depend on the type of Hoffa's fracture. Inter-observer reliability test showed a strong Kappa value of +1.0. **Conclusion:** The new suggested classification is much simplified and can assist in the pre-operative planning as well as deciding the treatment modality. However, further validation studies are required to improve the integrity of this new classification.

Abstract no.: 49777

DUAL BUNDLE MPFL RECONSTRUCTION: AN MRI STUDY OF PATELLA BONE TUNNELS

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Introduction: The anatomical dual bundle medial patellofemoral ligament (MPFL) reconstruction technique is one of the techniques used in cases of patellar instability. This commonly involves the creation of two patella bone tunnels through which grafts are inserted. The risks are patellar fracture and penetration of patellofemoral articular surface. Thus, it is critical to have a good knowledge of diameter and alignment of bone tunnels. The aim of this study is to investigate the dimensions and geometry of the patella bone tunnels. **Methods:** In this pilot study, we investigate the MR knee images of patients with intact MPFLs. The following parameters were recorded: superior and inferior bone tunnel maximum lengths; inclination to the medial articulating and medial non-articulating surfaces; and diameters of the tunnels at the medial, lateral, and widest aspect. **Results:** Our current study population consists of 23 male patients. The superior patella bone tunnel has a mean length 45.46mm; mean inclination to medial articulating surface and non articulating surface of 39.19 and 23.92 degrees respectively; mean medial-most, lateral-most and widest diameter 9.79, 9.88 and 24.24mm respectively. The inferior bone tunnel has a mean length 47.57mm; mean inclination to medial articulating surface and non articulating surface of 38.50 and 24.07 degrees respectively, mean medial-most, lateral-most and maximum diameter 10.18, 10.27, and 25.03mm respectively. The limitations of this study are small sample size. Further patient recruitment and data collection is ongoing. **Conclusion:** With optimal bone tunnels placement, the risk of fracture or articular surface penetration can be reduced during surgery.

Abstract no.: 49778

SIMPLE ALGORITHM FOR 3D PRINTING FOR ORTHOPAEDIC SURGEONS

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3D printing biomodels for surgery planning and simulation is often referred to as 3D graphy. 3D Graphy has now become integral part of preoperative planning while performing complex surgeries such as fixing fractures of acetabulum, tibial condyles, calcaneums and other peri articular areas. They are also being increasingly used to design patient specific jigs for complex trauma and routine arthroplasty. Based on our experience of performing 300 cases of trauma -arthroplasty, we designed simple modules for ordering 3D prints for orthopedic conditions. These modules and algorithms are based on open source software that are free and can be downloaded from the internet. The generation of the 3D biomodel involved the following stages: (1) Image acquisition and denoising, (2) Segmentation, (3) Generation of a 3D CAD model, (4) Post processing of CAD model, and (5) 3D printing of biomodels. We evolved our own protocol after evaluating several free wares available on the internet. We also compared them with the output generated from the proprietary expensive software that was available with engineering department in our university and found that with some ingenuity the free wares when used with certain pre defined algorithm gave similar outputs. We believe that with the use of these algorithm and modules that are free, universally available and easily learnt – orthopedic surgeons can print 3D models from the comfort of their offices and in the operating rooms. Further more they can be refined to do more complex tasks such as printing patient specific jigs and implants.

Abstract no.: 49779

EFFECTIVENESS AND SAFETY OF Hylan GF-20 IN PREVENTING PROGRESSION OF KNEE AND SHOULDER OSTEOARTHRITIS IN PATIENTS WITH RHEUMATOID ARTHRITIS: A RETROSPECTIVE ANALYSIS

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Objective: Evaluation of effectiveness and safety of hylan GF-20 in control and prevention osteoarthritis (OA) progression in rheumatoid arthritis (RA). Material and methods: In this retrospective study, patients treated for active RA for > 6 months from February 2012 to February 2015 were administered single intraarticular hylan GF-20 (knee OA-6 ml; shoulder OA 2 ml) injection along with methyl prednisolone 80 mg after 2 ml lignocaine 2% injection. OA progression was evaluated by X ray at baseline and after 2 years. Results: Thirty seven patients [age 35-52 years; 23 (62%) female) with RA and mild to moderate OA received methotrexate 10-20 mg/week, leflunamide 10 to 20 mg/day, hydroxychloroquine sulphate 200-400 mg/day and supportive vitamins and oral non-steroidal analgesics for RA. Hylan GF-20 was injected in 32 (86.5%) patients for knee OA and 5 (13.5%) for shoulder OA. Knee OA at baseline was as follows: grade 1-12 (37.5%), grade 2-16 (50%); grade 3-4 (12.5%). There was no effusion in any joint whereas mild synovitis was present in 20 knees. Adhesive capsulitis (grade 1-2) was seen in 3 shoulders. After 2 years, grade 1 and 3 knee OA did not show any progression whereas 4 (25%) patients with grade 2 progressed to grade 3. Patients with shoulder OA, did not show radiological deterioration. Overall, 33 (89.2%) patients did not show any progression. Hylan GF-20 was very well tolerated without any complication. Conclusion: In well controlled RA, intra-articular hylan GF-20 injection can prevent progression of knee and shoulder OA and it is safe.

Abstract no.: 49780

ARE SEX STEROIDS, BONE TURNOVER MARKERS AND BONE DENSITY LOSS IMPORTANT IN MEN WITH LOW TRAUMA DISTAL RADIUS FRACTURES?

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Introduction: To determine the effect of sex steroids, bone turnover markers and bone mineral density in men with low trauma distal forearm fractures. **Material and Methods:** This case-control study from 28th September 2014 to 27th September 2017. Patients with low trauma isolated distal radius fractures having age 50 years or above were included in the study. Patients were divided into two groups. Group A included fracture patients while B with control individuals. All patient underwent Dual X-ray absorptiometry (DXA) scan in order to estimate the bone mineral density (BMD). Serum Vitamin-D levels, Sex steroids: Testosterone, estrogen, sex hormone binding globulin (SHBG), FSH, LH. Bone turnover markers: serum Ctelopeptide (CTX) and Procollagen type I N-terminal propeptide (P1NP). **Results:** Total of 365 patients included in the study. 189 patients in group A while 176 in group B. There was a significant difference between the BMD of distal forearm in fracture group (0.7290) as compared to the control group (0.7760) ($p=0.002$) for dominant arm and non-dominant arm (0.7830) ($p=0.007$). For fracture group BMD lower in spine and hip as compared to control group. Ultra distal forearm BMD gives the most accurate prediction of distal radius fractures as demonstrated by logistic regression analysis (odds ratio=0.902, $p=0.002$). Difference of sex steroids statistically insignificant between the two groups ($p>0.05$). There was a statistically significant difference between the bone turnover markers. Between the two groups, P1NP ($p=0.002$) and CTX ($p=0.016$). The likelihood of fracture was increased by 5.6% for every ng/mL increase in P1NP. **Conclusion:** According to this study, low BMD and P1NP parameters play an important role in determining the risk of low trauma fractures in men.

Abstract no.: 49782

ARE RADIOGRAPHS NECESSARY BEFORE KIRSCHNER-WIRE REMOVAL IN SUPRACONDYLAR FRACTURE OF HUMERUS IN CHILDREN WHO HAVE UNDERGONE OPERATIVE PROCEDURE?

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INTRODUCTION: To assess the need for radiograph one day prior to kirschner (k-) wires removal in supracondylar humerus fracture, who had undergone percutaneous wire fixation. **METHODS:** In this prospective cohort study, we divided the patients into 2 groups. Group A was the one in which the radiographs (AP and lateral view of elbow) were obtained one day prior to k-wire removal, whereas no prior X-rays were obtained before k-wire removal in group B. Patients of supracondylar humerus fractures were operated by percutaneous k-wiring. Follow-up done at 2nd and 4th week of surgery. Baumann's angle was calculated and compared from radiographic evaluation that was done during surgery and the final follow up X-ray. **RESULTS:** Out of the 100, male patients had a mean age of 5.35 years while female patients had a mean age 5.26 years. Of the total, 63 patients had left upper limb involvement while 37 had involvement of the right upper limb. Patients in group A had a mean difference in Baumann's angle of 2.324 while in group B 2.329. p-value of 0.452 showed that the mean difference of Baumann's angle in two groups was not significant. **CONCLUSION:** If operative procedure is not followed by any undesirable event, then it is deemed safe to remove these wires at the time of removal of cast so no extra visit to the hospital is required. It not only helps ease the patient and his family but also saves the children from excessive radiation exposure.

Abstract no.: 49784

RARE SITE TUBERCULOSIS: A CASE SERIES

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INTRODUCTION: Tuberculosis is emerging as one of the most challenging pathologies which amount to significant morbidity and mortality. We present two cases of tuberculosis involving the foot and ankle. **CASE:** A 23 year old male, non-smoker with no known co-morbid, presented in the out-patient department with complaints of pain, swelling and non-healing wound in the right foot for 04 months. He had history of trauma to his right foot 04 months back while driving his motor-bike. He also had a history of fever, night sweats, weight loss and anorexia for the past 06 months. On General Physical Examination (GPE), a thin lean patient having a weight of 51 kg (BMI = 17.4kg/m²) having a fever of 99°C. Marked swelling was observed on the right foot with raised temperature, a wound 3x1 cm on the medial malleolus, tenderness, restricted movements and palpable distal pulses. Radiograph of the foot and ankle showed multiple ill-defined lucencies in right medial malleolus. On blood investigations, total leukocyte count 11200, erythrocyte sedimentation rate (ESR) = 48 mm/hr, C-reactive protein(CRP) = 39 mg/dL. Open biopsy showed areas of caseous necrosis, many epithelioid cells granulomata alongwith langerhan's giant cells (chronic caseating granulomatous necrosis – most likely tuberculous osteomyelitis). Anti-tuberculous therapy was started. After completing the treatment, his wound healed with improved clinical symptoms. **CONCLUSION:** Tuberculosis not only involves the common areas like chest, spine but also rare sites like foot and ankle. Especially in underdeveloped or developing countries, if a patient presents with symptoms suggestive of tuberculosis it must be ruled out at an early stage.

Abstract no.: 49785

INCIDENCE AND COMPLICATIONS OF FRACTURES MANAGED BY TRADITIONAL BONE SETTERS

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INTRODUCTION: Traditional bone setters (TBS) or Quacks are common in under-developed and developing countries. This study was done to determine the incidence, complications and reasons behind patients visiting TBS. **METHODS:** This descriptive study was done for a period of 02 years. All patients presenting to the orthopaedic emergency and OPD who had undertaken any treatment for an orthopaedic injury from a TBS were included. All the information regarding injury, no. of days to injury, type of treatment done by a TBS, complication, reason for visiting a TBS, definite treatment done in the hospital recorded. **RESULTS:** 652 patients included in the study. 364 males and 288 females. 172 patients belonged to the 11-20 year age group while 181 to more than 50 year age group. 81% of patients had closed fractures, 10% open fractures and 9% dislocations. Among the complications, infections (32.67%) were pre-dominant. Among other complications, Malunion (20.55%), contractures (13.65%), non-union (10.58%), avascular necrosis (9.51%), gangrene (3.37%) of patients. In 45.55% of patients, internal fixation was done for definitive treatment. 18 (2.76%) had to undergo amputation. Mostly the patients had primary education (49.85%) while 6.44% were illiterate. When inquired about reason for visiting the TBS, 42.02% said they had faith in TBS treatment, 21.32% had an opinion that TBS is easily available while 16.26% opted that TBS treatment is cheaper. **CONCLUSION:** Patients visiting a TBS for orthopaedic injuries and getting complications cannot be neglected especially in under-developed countries where there is lack of awareness, poverty, ignorance or lack of health care services.

Abstract no.: 49789

FLAP AND FRAME FOR THE TREATMENT OF OPEN OR INFECTED TIBIAL PLATEAU FRACTURE

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Introduction: Tibial plateau is an articular surface of tibia with thin skin coverage anteriorly. Wound problem secondary to open fracture or infection frequently result in an exposed bone. Gastrocnemius flap has been proven to be durable soft tissue cover for proximal tibial defect. It also allows gliding of patella tendon and movement of the knee joint thus avoiding joint contracture that is caused by skin grafting. Circular frame allows fixation of small articular fragment with wire without the need to immobilise the knee joint. Together with flaps, the circular frame is an ideal method to treat severe open or infected fracture at the tibial plateau. Method: From 2006 till 2017 we treated 10 patients with flap and frame in Hospital Tengku Ampuan Afzan, Kuantan, Pahang. There were 7 males and 3 females with mean age of 36.7 years old (range 13 to 60). Eight were due to open fractures while 2 due to infection following plating. Six wound were closed with gastrocnemius flap and 4 with gastrocnemius myocutaneous flap. In 3 patients, bone transport was used to reconstruct the bone defect. Results: Nine patients achieved union and control of infection with mean union time of 6 month (range 4 to 15). One patient underwent above knee amputation due to infected non-union of distal femur. Conclusion: Local flap with circular frame gives high union rate and control of infection.

Abstract no.: 49791

SERUM GLS LEVELS WERE SIGNIFICANTLY DECREASED IN PATIENTS WITH RA WHO WERE TREATED WITH TOFACITINIB

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Introduction: Gliostatin (GLS) is known to have angiogenic and arthritogenic activity in rheumatoid synovial tissues. GLS concentrations in the synovial fluid and sera of patients with RA were higher than those of patients with osteoarthritis or normal control subjects. We previously reported that serum GLS levels are decreased in responsive patients with RA who were treated with conventional synthetic DMARDs. Tofacitinib is an oral janus kinase inhibitor which is effective in treating RA. The purpose of this study was to evaluate the modulatory effects of tofacitinib on serum GLS levels in patients with RA. Methods: Seven patients with RA were receiving tofacitinib therapy were included in this study. Serum C-reactive protein (CRP) and MMP (matrix metalloproteinase)-3 levels were assessed. Serum GLS levels were measured by an enzyme immunoassay. Overall disease activity was assessed in DAS28-4 [ESR], before treatment and after 4, 8 and 12 weeks of treatment. Results: Serum GLS levels were correlated with other clinical indicators of RA severity, such as CRP and MMP-3 concentrations and DAS28-4 [ESR]. The mean values of the indicated clinical and laboratory parameters were significantly decreased after 12 weeks of treatment with tofacitinib compared with these values before treatment. Conclusion: We found that tofacitinib reduced serum GLS, CRP and MMP-3 concentrations, which were correlated with rheumatoid disease activity. This study has provided the first evidence indicating that tofacitinib can effectively regulate serum GLS levels in patients with active RA.

Abstract no.: 49794

SELECTION OF IMPLANTS IN CORRECTING GENU VALGUM

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Genu valgum is common in adolescent females. After the disease has healed the patients quite often have residual deformity. Genu valgum is commoner than genu varum. Supracondylar osteotomy of affected Femur corrects the deformity and gives the patient confidence and increased mobility and agility besides cosmetic improvement and increased psyche. 32 limbs were selected for correction of deformity. 14 patients were having bilateral deformity and 4 having unilateral deformities. All the patients were young females except one male, with skeletal maturity. In all the deformity happened as a sequel of rickets. After the active disease healed, supracondylar femoral osteotomy was performed. 12 were fixed with supracondylar nails, remaining 18 were fixed with condylar plate. The results were almost similar and the patients were more than satisfied. Under tourniquet by a lateral incision the femur was exposed. The guide wires were placed according to the preoperative calculation of angle of deformity and a bony wedge was removed. The osteotomized edges were temporarily fixed with K wires Plate or Nail was put and the wound was closed in layers. Movements started from the next day on bed. Non weight bearing walk as soon as patient can and gradually progressive weight bearing started after 2 weeks. Minimum follow up was 3 years.

Abstract no.: 49796

**PROTOCOL-BASED MANAGEMENT FOR BEST POSSIBLE OUTCOMES
IN HIGH ENERGY TIBIAL PLATEAU FRACTURES**

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Introduction: High energy tibial plateau fractures are complex injuries, associated with significant bone and soft tissue damage, making their treatment extremely compelling. This study was carried out to evaluate the effectiveness of a staged protocol in the management of these fractures, with regards to reduction of complications and improvement of the functional outcome. **Materials and Methods:** 20 cases sustaining high energy tibia plateau fractures, treated according to the protocol were studied. First stage involved knee joint aspiration, multiple needle puncturing of the swollen limb, along with stabilization via external fixator application or K-wire fixation of the fracture fragments. Definitive fracture fixation was done at a later stage using plates and screws. Patients were followed up at regular intervals. The Knee Society Score was used for functional outcome assessment. **Results:** The mean patient age was 44.25 years, with the mean follow up duration being 14 months. The mean union time was 16 weeks. At the end of the follow-up period, the Knee Society score was excellent in 3 patients, good in 9 patients, fair in 7 patients and poor in 1 patient. Complications consisted of superficial infection in 1 patient and malalignment in 1 patient. **Conclusions:** The staged protocol with delayed fixation has been successful in management of high energy tibia plateau fractures. It helps to minimize edema, preserve skin and soft tissue vitality and maintain fracture fragment stability, thus making easier definitive fixation at a later stage, ultimately improving the post-operative outcome and reducing complications.

Abstract no.: 49798

HIP ARTHROPLASTY IN PATIENTS WITH END-STAGE RENAL DISEASE WITH LOCAL USE OF 1,25 OH D3

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Introduction: the number of patients with end-stage renal disease is increasing worldwide. Hip is the most frequent localization of bone and joint pathological changes in chronic hemodialysis patients. The results of hip arthroplasty in these patients remains unsatisfactory. Materials and methods: the results of 32 end-stage renal disease patients with hip arthroplasty were studied. In the first group there were 17 (53,1%) patients, on whom local infiltration of 1,25 OH D3 in trabecular bone was done during implantation of acetabular component. Additionally patients of the first group underwent intraoperative wound irradiation with ultraviolet. In the postoperative period all patients received vitamin D3 400 ME orally per day. About 15 (46,9%) haemodialysis patients from second group with hip arthroplasty received only systemic use of vitamin D3. Results: Harris Hip Score (HHS) improved to 75 points in the first group during 6 months after arthroplasty. In the second group 75 points of HHS were achieved only in 12 month after surgery. In first group patients there were no aseptic loosening of implants during 24 months, in the second group about 2 (13,3%) cases of acetabular cup loosening, further required revision surgery.

Abstract no.: 49800

TEN-YEAR AVERAGE FULL FOLLOW-UP AND EVALUATION OF A CONTOURED FOCAL RESURFACE PROSTHESIS (HEMICAP®) IN UK PATIENTS

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Introduction: A focal resurfacing system utilising a matched contoured articular prosthetic (HemiCAP®) has been introduced for the treatment focal articular defects. Independent long-term results on these implants are limited. **Materials and methods:** We retrospectively evaluated the use of this resurfacing system in 14 patients (13 male, one female), mean age 40.3 years (range 28-49) with focal femoral condyle defects. The same consultant orthopaedic surgeon performed all procedures. Our primary outcome measure was revision rate. Secondary outcome measures included radiographic evaluation (prosthesis migration signs, radiolucency), patient reported functional evaluation (knee injury and osteoarthritis outcome scores) and complications. **Results:** Ten patients were treated on the medial femoral condyle, two on the lateral, and two received bicondylar implants (14 total). Average follow-up was 107 months (range 59-135). Three patients were lost to follow up at the time of study. One patient was excluded from the study. Of the 10 left, two had to be revised, making the survival rate 80% at 9.4 years. Of the 4 contactable patients, average KOOS score at 121 months post surgery (9.75 years) was 92.9 (as compared to 57.7 pre-operatively). There were no complications. **Conclusions:** This series demonstrates focal resurfacing is a safe, suitable and useful temporising step in knee arthroplasty surgery. The use of the focal resurfacing implant in this way allows the delay in transition to knee arthroplasty. This series shows an excellent functional outcome for remaining implants at average 10 years, with low complication rates.

Abstract no.: 49804

CLINICAL APPLICATION OF FLEXIBLE STABILISATION WITH ACCURATE DECOMPRESSION IN SYMPTOMATIC DEGENERATIVE LUMBAR SPONDYLOLISTHESIS

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Objective: To evaluate the flexible stabilization with accurate decompression in degenerative lumbar spondylolisthesis. **Methods:** A total of 27 patients underwent the Dynesys system with accurate decompression from January 2014 to December 2015. Outcomes were evaluated by ODI and VAS. The degree of lumbar spondylolisthesis, range of motion (ROM) and disc height were measured by using X-ray. Cross-sectional area of the dural sac at surgical segments was measured by using magnetic resonance imaging (MRI). Improvement of back pain, leg pain, neurogenic claudication and surgical satisfaction were recorded. **Results:** Patients completed the operation successfully. The average operative time was (106.96 ± 8.89) min, and blood loss was (112.96 ± 23.99) ml. A dural tear was reported in one procedure. Patients were follow-up for mean 30.5 months (range 18-39 months). The ODI decreased from $(51.22 \pm 9.47)\%$ to $(14.04 \pm 3.43)\%$ at the final follow-up ($P < 0.001$). The back pain VAS scores and leg pain VAS scores decreased from (5.74 ± 1.10) , (5.26 ± 1.29) to (1.33 ± 0.68) (1.22 ± 0.64) at the final follow-up ($P < 0.001$), respectively. Cross-sectional area of the dural sac significantly increased from (70.03 ± 17.61) mm² to (134.11 ± 22.53) mm² at the final follow-up ($P < 0.001$). Degree of spondylolisthesis did not increased ($p > 0.05$), and disc height increased at the final follow-up compared with the preoperative ($P < 0.001$). At the final follow-up, the ROM of stabilized segments was $(4.25 \pm 1.18)^\circ$, and ROM of upper adjacent segments increased ($P < 0.001$). 2 cases (7%) were noted with radiographic adjacent segment degeneration (ASD). Patients improving in back pain, leg pain, neurogenic claudication were 24 (89%), 22 (81%) and 27 (100%), respectively, and surgical satisfaction was 85%.

Abstract no.: 49805

ACL RECONSTRUCTION WITH BONE-TENDON-BONE GRAFT USING C-ARM

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Background: ACL reconstruction is usually complicated by inadequate position of tunnels. CARM was used for tunnel placement to minimize complications during ACL reconstruction. Purpose: To assess efficacy of CARM in ACL reconstruction using BTB graft and patients evaluated in terms of stability, return of full motion, postoperative knee stiffness, return to previous activity and Lysholm knee score for ACL reconstruction. Methods: A total 30 cases were enrolled consecutively from Jan 2015 to Dec 2017 with complete ACL tear. Patients underwent transtibial ACL reconstruction under C-ARM guidance using a BTB autograft. Arthroscope and sector map by Trentacosta et al used for tibial and femoral tunnel placement. All patients were operated under tourniquet control. Results: 30 male patients, average age of the patient was (26.7 +/- 5.8) having ACL tear with 18 (60%) patients with twisting injury during sports and 12 (40%) patient presented with road traffic accident. Right knee in 18 (60%) and left knee in 12 (40%) patients. Isolated ACL tear in 16 (53%) while meniscal injury was in 14 (47%) patients. Mean Lysholm knee score before surgery was 66.1 +/- 5.47 and after surgery was 92.233 +/- 4.2. 27 (90%) patients did extremely well, with negative lachman preoperatively and 3 (10%) patient with positive lachman. Weight bearing on average of 8 hrs and return to previous activity on 90 days. 29 (97 %) had no infection but 1 patient (3%) reactive arthritis. Full ROM was achieved in (30) 100% patients. Conclusion: The use of the C-arm with image intensifier enabled accurate and precise tunnel placement and the elimination of common complications like graft tunnel mismatch, screw divergence.

Abstract no.: 49806

**CLINICAL COMPARISON OF TWO MINIMALLY INVASIVE TECHNIQUES
IN TREATMENT OF DISTAL TIBIAL FRACTURES**

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Introduction: Minimally invasive plate osteosynthesis (MIPO) and Intramedullary nailing (IMN) are the most commonly used treatment methods in distal tibial fractures. However, which is the ideal treatment is still controversial. So, we retrospectively compared IMN versus MIPO for the treatment of distal tibial shaft fractures. Methods: During January 2012 – 2015, fifty-nine patients with distal tibial fractures were randomly assigned into IMN or MIPO treatment groups. Time interval between the injury and operation, duration of operation, intra-operative fluoroscopy time, intra-operative blood loss, foot function index, union time were compared between groups. Results: Follow-ups with 12-24 months were carried out on all the patients. The IMN healed within 17 ± 3 weeks; MIPO healed within 17.5 ± 5 weeks. Time interval between the injury and operation, intra-operative blood loss were lower in the IMN group; intra-operative fluoroscopy time was higher in the IMN group. Foot function index, and union time were similar between groups. Conclusions: IMN and MIPO have similar therapeutic efficacy to treat distal tibial fractures, and should select according to the specific condition of the patients, departments and their own proficiency.

Abstract no.: 49808

**PRELIMINARY REPORT: OUR EXPERIENCE OF USING BONE DUST,
RECEIVED AFTER HIGH SPEED DRILLING BUR, AS BONE GRAFT
EXTENDER**

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Spinal fusion is the end goal of many operations on the spine and at the same time an important problem in neurosurgery. Using high speed motor drill for decompression in spinal surgery minimizes surgeon's efforts and time spent. There always arises the question: which transplantant for spinal fusion to use - autograft from local place or donor site, allograft or others? Utilising a high speed drill results in loss of local bone and insufficient amount of material for spondylodesis at the end of operation. Whereas donor site autografts lead to complications in 5-20% of cases. We have constructed special device for bone dust filtration and transporting. The mass possesses such property as osteogenic, osteoinduction, osteoconduction. The study includes 18 patients treated with one level TLIF, using the created device for bone dust filtration. The clinical effects were assessed with Oswestry disability index, CT-control 6-12 months after surgery. No complications were met. No age, gender, type of disease, segment level taken into account because of small sample size. The frequency of spinal fusion in the study group was the same as in case of patients, treated with the use of autograft from donor site and local bone graft without drilling. The advantage of the method is receiving enough plastic material without the need of additional graft harvesting (which means less complications) but with the same results as for autograft from donor site.

Abstract no.: 49810

PREVALENCE OF STRESS AND BURNOUT IN AN ORTHOPAEDIC RESIDENCY PROGRAMME

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Objective: With increasing awareness of the social and professional costs of physician burnout, the aim of this study is to quantify the level of burnout and psychosocial dysfunction in an orthopaedic residency programme. **Methods:** 20/44(45.4%) Residents and 5/11(45.5%) Faculty in an orthopaedic surgery residency programme completed a voluntary and anonymous survey incorporating the Maslach Burnout Inventory (MBI), General Health Questionnaire-12 (GHQ-12) and Revised Dyadic Adjustment Scale (RDAS), questions on stress, potential stressors and coping mechanisms. This study was exempted from IRB approval. **Results:** 20/25(80.0%) respondents were married or in a committed relationship. Residents scored low in MBI's domains of Emotional Exhaustion (EE), average for Depersonalisation (DP) and high for Personal Achievement (PA). 1 (5.0%) Resident scored high for EE, 4 (20.0%) high for DP and 4 (20.0%) low for PA. 4 (20.0%) Residents had significant psychiatric morbidity on GHQ-12. 4/16 (25.0%) Residents demonstrated marital/relationship distress on RDAS. 15/20 (75.0%) felt able to balance work and private life. 9/20 (45.0%) worry about work when not working. Faculty scored low in EE, average for DP and average for PA. All Faculty scored low for EE, 1 (20.0%) high for DP and 2 (40.0%) low for PA. None had significant psychiatric morbidity. 2/4 (50.0%) demonstrated marital/relationship distress. 4/5 (80.0%) felt able to balance work and private life. **Conclusion:** We report lower levels of Emotional Exhaustion and higher levels of Depersonalisation and Personal Achievement in Residents and Faculty compared to existing literature which could be due to cultural differences. Despite lower psychiatric morbidity, more Residents and Faculty scored for relationship distress in our population.

Abstract no.: 49811

MODIFIED SUPER PATH® APPROACH FOR JAPANESE DYSPLASTIC HIP

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I will explain Super Path® Approach which is a minimally invasive supercapsular approach. This method is carried out in the lateral and hip flexion (about 70 to 80 degrees), complete the operation without taking the apparent dislocation position in all the steps, almost completely preserving the joint capsule and the conjoint tendon. Although there is an advantage that postsurgical dislocation is less likely to occur. The original method which performs rasping before cutting the femoral neck has particularly narrow working space for the dysplastic hip, so in our hospital we changed to the first cervical osteotomy and taking out the femoral head. The postoperative prohibited limb position was only the action of sitting in pairs of legs. Since July 2016 we performed this operation for 70 cases (97%) during consecutive 72 THAs, remaining two cases were one ankylosis and one congenital dislocation hip (Crowe typeIV). There was no postsurgical dislocation. Especially, the THA female case for RDC (Rapidly Destructive Coxarthropathy) became delirium and Japanese sitting at one day after surgery but she didn't dislocate. In addition, out of the recent 35 cases in this case group, 33 cases (94%) are capable of elevation of lower limb extensions immediately after surgery (arousal of anesthesia) and are a measure of early recovery. However, there are many precautions in this procedure and we think that careful advance training is necessary before introduction. In the lecture, introduce pitfall and useful tools.

Abstract no.: 49819

ARTIFICIAL HIP ARTHROPLASTY IN PATIENTS WITH TRISOMY 21

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This is systematic review of 9 studies (321 patients with Trisomy 21) who underwent hip arthroplasty (THA). The review demonstrated that the functional hip scores (Harris and WOMAC hip scores) improved substantively after hip replacement. The overall revision rate was 15%. The 5-year cumulative revision rate was 7.5%. Medical and surgical complications were 3 times higher than matched controls. In conclusion, THA should be offered to patients with T21 and severe arthritis provided patients and carers appreciate that the complications rates are higher.

Abstract no.: 49820

COMPARTMENT SYNDROME IN CHILDREN: 11-YEAR EXPERIENCE IN TERTIARY REFERRAL UNIVERSITY HOSPITAL

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Methods: Retrospective study of all children admitted to RMCH from 01/2006 to 11/2017 with compartment Syndrome. Inclusion criteria - limb compartment syndrome caused by trauma, infection, post elective surgery, burns. Exclusion criteria - non limb compartment syndrome, prophylactic fasciotomy. 63 records looked at, 29 meet inclusion criteria. 10 were associated with trauma, 10 with infection, 2 with burns and 7 were related to elective operations. Results: Trauma subset; 10 patients. Age 2 to 14 years. 6 were in lower limb and 4 in upper limb. Aetiology - 1 stab, 2 fall, 3 RTA, 2 crush injuries, 1 IV fluids into hand and 1 cause not known. 2 had burns. Outcome - 6 patients made a good recovery, 1 had stiff ankle, 1 developed severe ulnar nerve palsy and 1 had growth arrest. Infection subset; 10 patients. Age 1 month to 15 years. Aetiology - 9 patients had sepsis - (4 streptococcal, 3 meningococcal, 1 unknown and 1 pneumonia). Outcome - 4 died, 2 developed contractures, 2 had severe bone deformities and 1 had osteomyelitis. Elective subset; 7 patients. Age 5 to 16 years. Aetiology - 3 were in cerebral palsy patients who had major surgery, 3 in patients who had limb deformity corrections. Outcome - 2 had good results, 1 developed claw foot. Conclusion: Only 34% patients with compartment syndrome were related to trauma and majority had satisfactory outcome. Post infective causes are 34% of CS they have very high - 40% mortality and high morbidity. Post elective surgery CS, majority were in upper limb and we would recommend prophylactic release in major deformity correction.

Abstract no.: 49822

FREE FIBULAR BONE GRAFT IN RECONSTRUCTION OF TRAUMATIC BONE DEFECTS: A CASE SERIES

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Introduction: High energy trauma with significant bone loss presents a challenge in management of bone defects. Free fibular grafts are used to treat large post traumatic defects. **Patients and methods:** We present a 5 High energy trauma case series treated between 2016-2017 all open Gustilo Anderson type 3b, compound fracture of left elbow with 4cm bone loss of proximal ulna (case1), compound fracture of right distal femur with 5cm bone loss (case2), right tibial shaft fracture with 10 cm bone loss (case3), right distal femoral shaft fracture with 6cm bone loss (case4) and left tibial shaft fracture with 15cm bone loss (case5). All cases underwent emergency wound debridement external fixator application. After proper soft tissue coverage, residual bone defects were treated with free fibular strut graft resected subperiosteally fixed with plate and screws. **Results:** Patients were followed for minimum of 6 months, no patient had signs of infection, all patients have radiological evidence of graft union, functional results were good in all patients. **Conclusion:** Free fibular grafting is an excellent option in management of traumatic bone defects in selected cases with good vascular bed and soft tissue coverage.

Abstract no.: 49823

**TREATMENT OF ATROPHIC NONUNION FOLLOWING INTERNAL
FIXATION OF FEMORAL FRACTURE WITH AUGMENTATION PLATING
TECHNIQUE**

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Introduction: To explore the treatment effectiveness of augmentation plating technique in treating atrophic nonunion following internal fixation of femoral fracture. Method: Retrospective analysis is conducted on data of 80 patients with atrophic nonunion following internal fixation of femoral fracture treated with augmentation plating technique during the period from January 2012 to January 2016. Such patients include 31 cases with nonunion following lateral plating fixation of femoral shaft fracture, 24 cases with nonunion following intramedullary nailing of femoral shaft fracture, and 25 cases with nonunion following lateral plating fixation of lower or distal femoral fracture. An incision ranging from 6 to 10 cm is made around the fracture ends for augmentation plating for all patients. Autogenous iliac bone graft is performed in patients with nonunion following reduction. Results: All patients are followed for 12-36 (mean, 18.9 months) months. All patients with nonunion are healed after an average time of 6.5 months (from 4 to 12 months). The time for initial partial weight-bearing averages 6.5 weeks (from 4 to 8 weeks) and the time for initial full weight bearing averages 3.4 months (from 2 to 4 months). Evaluation according to the Karlstrom and Olerud criteria at the last follow-up revealed 32 excellent, 40 good and 8 fair cases. No complication such as infection, loosening, bending or breaking of internal implants, or refracture is noted during follow-ups. Conclusion: Treatment of atrophic nonunion with augmentation plating through a small incision can enhance the stability and reduce the dislocated bone blocks.

Abstract no.: 49824

HIP ARTHRODESIS FOR ARTHRITIC HIP IN CHILDREN AND YOUNG ADULTS

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Background: Arthritic hip in children is a sequel of many hip disorders either being congenital, developmental or traumatic. Several options are present for management. A debate is present for arthrodesis vs arthroplasty. Both aim at eliminating pain. Methods: Prospective follow up of 17 patients (15 males and 2 females) 14 - 19 years old with arthritic hip underwent hip fusion using either Cobra or locked anatomical distal femur plate. Hip was fused in 20-30° flexion with neither rotation nor abduction-adduction. Patients were evaluated postoperatively by serial X-rays immediate post-operative, 1.5 months, 3 months, 6 months and 12 months for the first-year then every 6 months starting from second year. Harris Hip Score is used for evaluating pain and hip function preoperative and post-operative at 3 months and 6 months post-operative. Results: The average follow-up was 1.5 years. 88.2 % showed union of hip fusion at 1.5 months while 11.8 % showed delayed union at 2.5 months post-operative. Only one case showed aseptic loosening of the screws at 9 months post-operative and metal removal performed. 76.5% of the cases showed increase in Harris Hip score by 24-32. Two cases raised by 40 points while remaining 2 cases got 15 points improvements. Conclusion: Hip arthrodesis is still a good salvage surgical treatment for different conditions of arthritic hip in children for eliminating pain. It can be converted into Total hip replacement (THR) in late adulthood for possible avoidance of serial replacement revision surgeries due to wear process.

Abstract no.: 49826

ASSESSMENT OF TYPICAL TROCHANTERIC FRACTURE LINE OF THE FEMUR BY 3D COMPUTED TOMOGRAPHY

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Purpose: The purpose of this study is to consider the complicated fracture line in trochanteric fractures of the femur by three dimensional computed tomography (3DCT). **Methods:** 80 cases of trochanteric fracture of the femur, Type 1 according to the Evans Classification, were targeted and the fracture line of 80 joints was considered in detail by 3DCT. **Results:** The fracture line of a trochanteric fracture is comprised of a primary fracture line which is considered to be the standard fracture line, and a secondary fracture line which occurs afterwards. The anterior section of the primary fracture line runs from the trochanteric fossa in the frontward direction, passing through the lateral intertrochanteric bump and then inward and downward along the intertrochanteric line. The posterior section of the primary fracture line occurs at the insertion of the ischiofemoral ligament adjacent to the trochanteric fossa, and goes in the upward direction of the lesser trochanter along the intertrochanteric groove, and connects to the anterior fracture line. In most cases of a secondary fracture line, the fracture runs from upper edge of the lateral intertrochanteric bump outwardly, traveling from upper front of the greater trochanter towards the lesser trochanter, causing a greater trochanter fracture or lesser trochanter bone fragment. **Conclusion:** The primary fracture line occurred along the attached area of the capsular ligaments. The posterior section of the primary fracture line is especially characteristic, and is a very important factor in differentiating between a neck fracture and a subtrochanteric fracture.

Abstract no.: 49828

MITCHELL OSTEOTOMY FOR MODERATE TO SEVERE HALLUX VALGUS DEFORMITY

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Introduction: Traditionally, Mitchell osteotomy is considered to be used for treating mild to moderate hallux valgus deformity. Some literatures reported this type of osteotomy was only indicated in cases with inter-metatarsal angle less than 15 degrees and should not be used in severe hallux valgus deformity. Is this true? Methods: From Jan 2011 to Dec 2015, 458 patients received Mitchell osteotomy by two surgeons in our hospital. These cases included mild, moderate and also severe hallux valgus with HV angle greater than 40 degrees. All patients were evaluated preoperatively and postoperatively using weight bearing radiograph and hallux valgus angle, inter-metatarsal angle were recorded. The pronation of big toe was also accessed preoperatively to decide if it was necessary to perform rotational correction. The preoperative assessment also included the tightness of adductor tendon. If passive reduction of 1st MTP joint was difficult, lateral release was added during operation. The post-op radiographs were taken at 6th week, 12th week and 6th month follow up. Results: In our series, HV angle improved from 32.6 degrees preoperatively to 12.2 degrees postoperatively. Inter-metatarsal angle improved from 13.1 degrees preoperatively to 6.4 degrees postoperatively. The patient's subjective satisfaction rate was 91%. Conclusions: Based on our results, Mitchell osteotomy is not only indicated for mild hallux valgus deformity. It can also be used to treat moderate to severe hallux valgus. The other advantage of Mitchell osteotomy is it can correct big toe pronation easily without additional Akin osteotomy.

Abstract no.: 49829

PERCUTANEOUS TRANSFORAMINAL ENDOSCOPIC DISCECTOMY TO TREAT SYMPTOMATIC ADJACENT SEGMENT DEGENERATION FOLLOWING LUMBAR FUSION SURGERY

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Objective: To assess the effectiveness of percutaneous transforaminal endoscopic discectomy (PTED) in patients with symptomatic adjacent segment degeneration after lumbar spinal fusion. **Methods:** We retrospectively reviewed the medical records of 16 patients who underwent PTED to treat symptomatic adjacent segment degeneration following lumbar fusion surgery from September 2010 to August 2015. The average follow-up duration was 15.5 months. **Results:** Mean \pm standard deviation VAS scores for back pain decreased significantly from 6.57 ± 1.23 preoperatively to 3.78 ± 1.43 ($P < 0.01$) immediately postoperatively; to 2.67 ± 1.32 and 2.25 ± 1.24 ($P < 0.01$) 6 weeks and 6 months postoperatively, respectively; and to 1.82 ± 1.16 ($P < 0.01$) at the last follow-up. VAS score for leg pain preoperatively was 8.13 ± 1.64 , which improved to 2.95 ± 1.24 , 2.32 ± 0.85 , 1.78 ± 0.74 , and 1.62 ± 1.62 at 1 day, 6 weeks, 6 months, and 1 year postoperatively, respectively ($P < 0.01$). Oswestry Disability Index scores also decreased significantly preoperatively (78.2 ± 15.3) to immediately postoperatively (57.3 ± 14.8), and to 32.5 ± 12.6 , 23.1 ± 11.4 , and 19.3 ± 13.2 at each follow-up ($P < 0.01$). Five patients had excellent outcomes, eight had good outcomes, two had fair outcomes, and one had a poor outcome, according to the modified MacNab criteria. **Conclusions:** PTED is effective for patients with back or leg pain after lumbar spinal fusions secondary to symptomatic adjacent segment degeneration, with the advantages of less trauma, short operative time, rapid recovery, and few complications.

Abstract no.: 49830

EXPERIENCE WITH PROXIMAL RIB CONSTRUCT IN EARLY ONSET SCOLIOSIS SURGICAL MANAGEMENT

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Introduction: The safety and efficacy of Growth-friendly techniques in the treatment of EOS in addition to improvements in the quality of life in EOS patients was documented in the literature. We demonstrate our experience in the treatment of EOS that involved the use of distractive based system of dual rods attached to proximal rib-hooks anchors, and distal spine/pelvic screws. Methods: With total 71 cases, 64 had scoliosis or kyphoscoliosis, 7 had kyphosis, with a mean of 43.9 months of followup, and mean age at index surgery was 66.6 months. 40 patient underwent 4rib construct, 28 had 3rib construct. 3 patients had 2rib construct. Results: Coronal cobb angle was 63.1 and became 51.6 in last follow up (16.8% correction). P value <0.00. Coronal balance preoperatively was 22.8 and became 22.3 in the last follow up. AVT was 33.4mm, became 34.7 in the last follow up. Both coronal balance and AVT changes were not significant statistically. For T1-S1 spine height, it was 248.7 mm, became 282.4 in the last follow up. For kyphosis was 66.7 and became 38 in the last follow up (42.6% correction). P value <0.005. Sagittal balance was 35.4 mm and became 24.39 in the last follow up. P value was 0.019 (significant). 44 complications were detected with no neurological complication. Conclusion: The modifications demonstrated by the author suggest improvement of construct stability, correction of coronal scoliosis curve, with minimal complications in addition to its unique role in correcting kyphotic deformities.

Abstract no.: 49831

PREOPERATIVE MANAGEMENT OF DIABETES IN ELECTIVE ORTHOPAEDIC PATIENTS: A CLINICAL AUDIT

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Background: Ten percent of elective orthopaedic patients have diabetes. It is well known that these patients demonstrate excess perioperative morbidity and mortality. National guidance on the management of adults with diabetes undergoing surgery was published in 2015 by the association of anaesthetists of Great Britain and Ireland. We present an audit of adherence to this guidance in our district general hospital. Methods: We have prospectively collected data according to a locally approved protocol. Pregnant, paediatric and non-elective patients were excluded. Patient characteristics, type of surgery and aspects of perioperative management were collated and centrally analysed against audit criteria based upon national recommendations. Results: 72 diabetic patients were identified, 46 female and 26 male, mean age 67.6 years. HbA1c was recorded in 69% of patients preoperatively; 8% of patients with an abnormal HbA1c were not known by, or referred to, the diabetes team. 22% of patients were admitted the evening preceding surgery. The mean fasting time was 12.3 hours. Variable rate IV insulin infusions (VRIII) were not used when indicated in 11%. Only 8% of patients received the recommended substrate fluid, along with the VRIII. Intra-operative capillary blood glucose (CBG) was measured hourly in 55% of patients. Intra-operative CBG was within the acceptable range (4–12 mmol.L⁻¹) in 85% of patients. 73% of patients had a CBG measurement performed in recovery. The WHO checklist was used in all the patients. Conclusions: National perioperative guidelines were not adhered to in a substantial proportion of patients. We have presented our results to the local M&M meeting and have created a proforma for these patients. We are planning to re-audit in 3 months.

Abstract no.: 49832

RELIABILITY AND VALIDITY OF THE ARABIC VERSION OF THE EARLY ONSET SCOLIOSIS 24 ITEMS QUESTIONNAIRE

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Introduction: Despite the importance of radiographic parameters in assessing the treatment outcomes, early Onset Scoliosis Questionnaire -24 (EOSQ-24) was developed to measure the wider dimensions of outcomes. The aim of this study was to evaluate the validity and reliability of culturally adapted Arabic version of the EOSQ-24. Methods: Translation and cross-cultural adaptation were performed on the original English EOSQ-24 by a committee and based on published guidelines. 58 EOS patients were chosen randomly and Arabic version of EOSQ-24 was applied to their caregivers after signing a consent form. Reliability was assessed using Cronbach's α and item-total statistics for the whole questionnaire initially and the for each domain separately. Data quality was assessed by mean, median, percentage of missing data, ceiling and floor effects. Discriminative validity was done by using non parametric tests. Results: The response for all items was excellent with only 1.7% of responses missing. The floor effect ranged 0% to 36.2% of patients and ceiling effect ranged 0% to 46.6%. Cronbach's alpha test reliability was found excellent (0.919), internal consistency of all domains was excellent (Cronbach α : 0.903-0.918). Corrected item-total correlations were good for all domains (>0.3). Only one item (Question 21) showed low Corrected item-total correlations ($r = 0.222$). However, Cronbach's alpha didn't increase significantly when this item was deleted 0.920. Conclusion: The first adapted Arabic version of EOSQ-24 has been found to have good validity, reliability and it can be used to assess children in Arab societies with early onset scoliosis.

Abstract no.: 49833

COMPLICATION RATES IN 3B OPEN TIBIAL FRACTURES: ARE WE MEETING THE STANDARD OF CARE?

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Introduction: Managing open tibial fractures according to national guidelines is a primary focus for major trauma centres, however pressures of capacity and expertise limit the capability to achieve all of these standards for every patient. Debate remains over the impact of particular aspects of guidance, especially in relation to the timing of surgical interventions. The aim of this study is to assess the complication rates and the associations with difficulties in achieving the national guidance standards. Methods: Retrospective analysis of the 2015/2016 cohort of 3B open tibial fractures treated at the Queen Elizabeth Hospital Birmingham. Data collected, through the use of the patient electronic records, cross referenced against hospital coding and trauma injury database, included patient demographics, injury details, clinical interventions, surgical management, complications and time to bony union. Results: 40 patients were identified, 2 patients died during the period of management, 3 patients were lost to follow up. Median time to definitive soft tissue coverage was achieved at 5 days post injury, definitive fixation at 6 days post injury. 25% of the cohort breached the 7 day maximum recommended limit. Overall complication rate was greater than 50%, with deep infection rate of 11% and non-union rate of 9%. Median time to union was 9 months. Conclusions: Missed opportunities to provide optimal patient care for severe lower limb open fractures are contributing to the high complication rates for these injuries. In order to aim for improvements in clinical outcomes, considered multispecialty clinical decision making needs to be coupled with institutional support and resources to adequately provide care for this injury cohort.

Abstract no.: 49834

DIRECT SUPERIOR AND DIRECT ANTERIOR TOTAL HIP ARTHROPLASTY: A COMPARISON OF TWO MINIMALLY INVASIVE APPROACHES

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Purpose: Aim of the study was to compare early results of Total Hip arthroplasty using either Direct Superior Approach (DSA) or Direct Anterior Approach (DAA). **Methods:** This was a retrospective case control study from a single fellowship trained surgeon including 78 patients from each group (DSA and DAA). Variables used for case control included demographic data (age, gender, body mass index), preoperative hemoglobin (Hb) and preoperative clinical scores. The minimum follow up was one year. Outcomes assessed included postoperative Hb, operative time, intraoperative complications, postoperative adverse events, length of stay (LOS) in hospital, discharge destination, 30 day unanticipated visits or readmission rates, acetabular cup orientation (with target orientation defined as inclination 30-50° and anteversion 10-30°), one year follow up clinical scores and revision rate. **Results:** There were no differences in postoperative Hb, intraoperative complications, 30 day unanticipated visits or readmission rates and clinical outcomes or revision rate at one year follow up. DAA group performed better than DSA with respect to median operative time (105 min for DSA vs 95 mins for DAA, $p < 0.002$), median length of stay in hospital (3 days for DSA vs 2 days for the DAA, $p < 0.001$), discharge destination (62 DSA patients went home vs 73 DAA patients who went home, $p = 0.010$) and radiographic target cup orientation (54 DAA cups within target zone vs 35 of DSA cups in target zone, $p = 0.002$). **Conclusions:** Although clinical score and early revision rates are comparable, DAA tends to perform better in some of the other outcomes studied.

Abstract no.: 49836

LUMBAR SPINE DECOMPRESSION WITH OR WITHOUT INSTRUMENTATION IN A LIMITED RESOURCE SETTING

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Background: Lumbar degenerative spine disease is a leading cause of chronic low back pain and disability. Surgery is indicated to improve clinical condition when non-operative measures fail. Objectives: To determine the outcome of surgical management of lumbar spine degenerative disease. Methodology: Study was retrospective in design and carried out at the Orthopaedic Department of the National Orthopaedic Hospital, Lagos. Records of patients who had surgery for lumbar spine degenerative disease between 2007 and 2016 were retrieved. Variables of interest extracted included indication for surgery, type of surgery, complications, neurologic outcome and length of follow-up. Descriptive and chi-square analysis were done using SPSS version 16.0. Results: Eighty eight patients had surgery of which sixty five were analyzed. Duration of follow-up was 12 to 96 months (mean 31.69±21.37 months). The age range was 32 to 75 years (mean 57.91±8.95 years) with male: female ratio of 1:1.3. Fifty three (81.5%) had improved pain relief, of which 7 (10.8%) had pain relapse at mean of 27.5 months post-operative. Twenty-six (40%) had pre-operative limb weakness of which 16/26 (61.5%) improved, 10/26 (38.5%) had no changes, while 2/26 (7.8%) had worse neurology after surgery. The complications included wound infection (7.7%), implant-related (6.2%), dural tear (3.1%). Surgical technique ("decompression alone" vs "decompression and instrumented fusion") and complications (none/any complication) are significantly associated with a likelihood ratio of $p=0.023$. Re-operation rate was 7.7%. Conclusion: There is good surgical outcome in carefully selected patients with lumbar spine degenerative disease.

Abstract no.: 49842

OPEN REDUCTION OF THE DISTAL RADIUS MORE THAN FOUR WEEKS AFTER PHYSEAL INJURY: A REPORT OF THREE CASES

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Introduction: Closed reduction should be performed for largely displaced physeal injury of the distal radius, but there is no consensus on performing this reduction within a few weeks after the original injury. We report three cases of performing open reduction of the distal radius >4 weeks after physeal injury. **Methods:** We performed open reduction for >50% translationally displaced physeal injuries of the distal radius by using Kirschner wires >4 weeks after the injury. All patients were male and the average age was 11.7 years (range, 10–14 years). According to the Salter and Harris classification system, all patients had type II injuries. The average time to surgery was 36.7 days (range, 28–42 days). The average follow-up was 16.5 months (range, 15–18 months). We evaluated the clinical outcomes of grip strength and range of motion, and the radiological outcomes of ulnar variance, nonunion, and premature epiphyseal closure. **Results:** Per radiological findings, there were no nonunion cases, but all of them exhibited premature epiphyseal closure. Average ulnar variance was 1.93 mm positive (range, 0.8–3.7 mm positive) at the site of injury and 0.17 mm negative (range, 0.5–0 mm negative) at the site of non-injury. Average wrist flexion and extension angles were 90° and 95°. Average supination and pronation angles were 88.3° and 95°. **Conclusions:** Physeal arrest of the distal radius is rare, but all our patients exhibited premature epiphyseal closure at the last follow-up. We recognized the risk of physeal arrest and the need for atraumatic reduction for largely displaced physeal injury of the distal radius at the original injury site.

Abstract no.: 49844

MANAGEMENT OF ELDERLY HIP FRACTURES BY AN ORTHOPAEDIC TRAUMA SURGEON REDUCES SURGICAL DELAYS BUT DOES NOT IMPROVE OUTCOMES

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Purpose: Recent literature on hip fractures has focussed on the optimal environment for best outcomes. One factor not been studied is the managing surgeon's training background. Our study aims to examine if hip fracture patients managed by fellowship trained orthopaedic trauma surgeons have better outcomes compared to non-trauma trained general orthopaedic surgeons. **Methods:** This is a retrospective study performed at a tertiary hospital with an established orthogeriatric co- managed hip fracture care pathway. All surgically treated elderly hip fracture patients over a period of 2 years were included and divided into 2 groups based on the managing surgeon: trauma and non-trauma. Patient characteristics, fracture and surgery information, post-operative complications, 1 year mortality and the Modified Barthel Index (MBI) scores were collected and compared. **Results:** 871 patients were included. 32.1% (N=280) were managed by trauma surgeons and 67.9% (N=591) by non-trauma surgeons. There was no significant difference in the MBI scores pre-operatively and at 6 and 12 months post-operatively between the 2 groups. There was no difference in the incidence of postoperative complications and mortality. However, patients managed by trauma surgeons had significantly shorter time to surgery ($p=0.028$) and higher proportion of surgeries performed within 48 hours ($p=0.039$). Trauma surgeons also took a shorter time to fix intertrochanteric fractures ($p=0.000$). **Conclusions:** This study did not find any difference in the functional outcomes of hip fracture patients managed by trauma surgeons or non-trauma surgeons. However, trauma surgeons did have faster time to surgery and shorter surgical time when fixing intertrochanteric fractures.

Abstract no.: 49847

**POSTOPERATIVE CASTING AFTER HALLUX VALGUS CORRECTION
WITH A REVE-L +/- AKIN OSTEOTOMY: A TECHNICAL DESCRIPTION**

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ISELIN, Helen ANWANDER, Helen ANWANDER
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Introduction: Postoperative casting after a Hallux valgus correction is controlled with a Hohmann bandage or Hallux valgus cast. The patient has to redo the Hohmann bandage every day. For more patient comfort and controlling a individual postoperative position of the Hallux, in our institute we use during the early postoperative time the Hohmann bandage. When the stitches are removed, Kinesiology Tape replaces the Hohmann bandage using the following scheme. We use a 3D stretchable tape 5cmx450cm. Patients are instructed to apply the tape, a change is recommended every five to seven days. CONCLUSION: Taping is a feasible technique for external fixation after hallux valgus correction with a Reve-L +/- Akin osteotomy. The application is simple and daily body care (eg. shower) is easily done with the tape.

Abstract no.: 49848

SURVIVAL AND MID-TERM CLINICAL RESULTS OF A MODIFIED 'CROSSE DE HOCKEY' PROCEDURE FOR CHRONIC ISOLATED PATELLOFEMORAL JOINT OSTEOARTHRITIS

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The incidence of symptomatic isolated patellofemoral joint osteoarthritis (PFJ-OA) in older patients ranges from 5 to 8 % of all OA. The optimum surgical treatment remains controversial at present. The crosse de hockey procedure has been mostly employed for recurrent dislocation of the patella. In this study, we have applied this procedure to the treatment of isolated PFJ-OA using a PFJ decompression effect by elevation of the tibial tuberosity, which characterizes this procedure. The procedure has the advantage of not requiring a bone graft for decompression of the PFJ. We assessed 41 knees in 35 patients treated with this procedure, with a mean age of 57.6 months (range, 46-75 months) and mean follow-up of 91.7 months (range, 24-216 months). We evaluated a clinical, radiographic outcome in the mid-term follow-up. The Kujala (mean improvement of 46.7, $P < 0.001$) and the Fulkerson (mean improvement of 19, $P = 0.001$) score were significantly higher compared to preoperative values. Overall clinical results were rated excellent in 24.3%, very good in 21.6%, good in 35.1%, fair in 13.5%, and poor in 5.4% of knees. The patellar tilting ($P = 0.015$) and congruence angle ($P = 0.018$) significantly improved postoperatively. Disease consecutive progression in the tibiofemoral joint and PFJ-OA were 18.9% and 5.4%, respectively. The operative complication rate was 5.4% in this case series. and these percentage was lower than those of various techniques. In most of patients with chronic isolated PFJ-OA, modified crosse de hockey is a reliable procedure that provides good/excellent mid-term clinical results.

Abstract no.: 49849

COMPARABLE SHORT-TERM CLINICAL OUTCOME OF PFC-SIGMA VERSUS ATTUNE TOTAL KNEE PROSTHESIS IN ASIAN PATIENTS

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Introduction: Noise or crepitus around patellofemoral joint are important causes of dissatisfaction after total knee arthroplasty (TKA). The purpose of this study was to compare short-term clinical outcome of 2 different designs of TKA. Methods: The mean age at the time of surgery was 73.9 years (range,58-87). A total of 72 PFC-Sigma (S group) and 61 Attune (A group) TKA were reviewed for range of motion (ROM), Japanese Orthopaedic Association (JOA) score, 2011 New Knee Society Score (New KSS), incidence of crepitus, and patellar tilt angle at median 19.2±7.3 months follow-up. Results: There were no significant differences between groups related to ROM (115.6°±12.1 in S group and 116.3°±13.2 in A group), JOA score (83.0±9.0 in S group and 83.1±3.5 in A group), New KSS knee (P=0.055) and function (P=0.987), patients satisfaction (P=0.796) and expectation score (P=0.206). In this study, there was a tendency for decreased crepitus (6.6% vs 8.2%) in patients with A group compared to those with S group. The patellar tilt angle was also significantly greater in the S group (3.51±3.35°) than that in the A group (1.67±3.36°) (P=0.006). The percentages of patients whose knees allowed high-flexion greater than 130° post-operatively was greater in the A group (15.7%,10 of 61) than in the S group (13.5%,10 of 72). Conclusions: Modern prosthesis group had a lesser incidence of crepitus. We suppose that component changes including anterior flange of the femur or a medialized patella reduces tension of extensor mechanism. However, no significant differences were detected between the two groups with regard to subjective, objective assessment postoperatively.

Abstract no.: 49852

POSTERIOR MINI-INCISION TOTAL HIP REPLACEMENT: COMPARISON WITH THE STANDARD MOORE'S APPROACH

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Introduction: The mini-incision total hip replacement (MITHR) has been popularized in the last few years in specialized arthroplasty centers. However, only few comparative studies are available in the current literature. **Methods:** In order to compare the early results of MITHR to the standard posterior approach and evaluate its possible advantages, 15 patients who underwent MITHR were compared in a pilot study to a cohort of 15 patients treated through the standard posterior approach, matched for age, weight and diagnostic indication, as regards operative time, total blood loss, length of hospitalization, component positioning, hip function, early complications, postoperative mobilization and return to work. Patients weighing more than 100 kg and those with semi-ankylosed joints, severe protrusio, or hip dysplasia were excluded. **Results:** There was a significant decrease ($p < 0.001$) in the length of hospital stay, the mean operative time and the need for blood transfusion in the minimally invasive approach. Furthermore, the MITHR group had better cosmetic results, a faster rehabilitation and early return to work than the conventional THR group ($p: 0.0001$). No significant differences were seen between both groups as regards the radiological results and the functional outcome after 6 months using the WOMAC and Harris hip scores. **Conclusions:** The posterior MITHR is a reliable minimally invasive approach that offers several early advantages over the conventional posterior approach in total hip replacement with a satisfactory functional and radiographic outcome and a faster rehabilitation.

Abstract no.: 49854

ADDRESSING THE BURDEN OF ORTHOPAEDIC TRAUMA AND CATEGORICALLY IDENTIFYING THE PATTERN OF INJURIES PRESENTING AT A TRAUMA CENTRE (CIVIL HOSPITAL, KARACHI, PAKISTAN)

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Objective: This study was executed to address the burden of orthopaedic trauma presenting in Trauma Centre Civil Hospital, Karachi Pakistan. This Study also presents the pattern of injuries categorically. **Method:** This descriptive study was conducted from Sept 2017 to Dec 2017. **Results:** The study was conducted on 2850 patients of all age group, including 1957 males (68.7%) and 893 females (31.3%). Among the total, the number of patients of paediatric age group (1 to 12 years) were 942 (33.05%). Mean age was 35 in adults. SD 28.69. Road traffic accidents are found to be major cause of injuries and rest was due to other causes. By addressing the categorical arrangement of patients with their pattern of injuries, the cases with mild type of injury like foreign body, soft tissue trauma and muscular pain of sudden onset were 446 (15.6%). The patients with single bone closed fractures including clavicle fracture 180 (6.31%), humerus neck and shaft fracture 83 (2.91%), supra-condylar humerus fractures 355 (12.4%), radius/ulna shaft fracture 90 (3.1%), colles fracture 389 (13.6%), neck of femur fracture 56 (1.96%), intertrochanteric fracture 62 (2.1%), femur shaft fracture 186 (6.5%), fracture of tibia/fibula 133 (4.6%) and bi-malleolar fracture 45 (1.57%). The patients which suffered from joint dislocations like shoulder 48 (1.68%), elbow dislocation 17 (0.59%), hip dislocation 22 (0.77%) were also addressed. **Conclusion:** Road traffic accidents were the leading cause of trauma esp. motorbike accidents. This study is also categorizing the pattern of injuries selectively with all parameters. People should be acknowledged about how to provide first aid and the mode of transport should be improved.

Abstract no.: 49855

ROLE OF ALENDRONATE/TERIPARATIDE IN STEROID INDUCED OSTEOPOROSIS IN DEVELOPING COUNTRIES

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BACKGROUND: Bisphosphonate therapy is the standard of care for the prevention and treatment of steroid-induced osteoporosis. Studies of anabolic therapy in patients who are taking long-term steroids and are at high risk for fracture are lacking. **MATERIALS AND METHODS:** This is double-blinded randomized controlled trial that was conducted in Civil Hospital Karachi from January 2015 to June 2017. In this study comparison of alendronate with teriparatide in 214 women and men with osteoporosis (ages, 22 to 65 years) who had received glucocorticoids for at least 3 months (prednisone equivalent, 5 mg daily or more). A total of 107 patients received 20 µg of teriparatide once daily, and 107 received 10 mg of alendronate once daily. The primary result was the change in bone mineral density at the lumbar region. Secondary outcomes included changes in bone mineral density at the total hip and in markers of bone turnover, the time to changes in bone mineral density, the incidence of fractures, and safety. **RESULTS:** Conclusively, the mean (\pm SE) bone mineral density at the lumbar spine had increased more in the teriparatide group than in the alendronate group ($3.2 \pm 0.5\%$ vs $6.9 \pm 0.6\%$, $P < 0.001$). A significant difference between the groups was reached by 6 months ($P < 0.001$). At 12 months, bone mineral density at the total hip had increased more in the teriparatide group. **CONCLUSIONS:** Patients with osteoporosis who were at high risk for fracture, bone mineral density increased more in patients receiving teriparatide than in those receiving alendronate.

Abstract no.: 49858

INTRA-OPERATIVE IMPLANTATION ERRORS DURING AUSTIN MOORE HEMIARTHROPLASTY: A RETROSPECTIVE REVIEW

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INTRODUCTION: In elderly patients with neck of femur fracture Austin Moore hemiarthroplasty is a established treatment. Being commonly performed operation, it is also associated with several technical errors of implantation which results in complications and failure both in early and late post-operative period requiring revision surgery. **OBJECT:** To analyze the frequency of technical errors during implantation of Uncemented Austin Moore endoprosthesis. **METHODS:** We did a retrospective analysis of post-operative radiographs of patients who underwent un-cemented Austin Moore hemiarthroplasties from Jan 15th 2015 to Nov 15th 2016 at The Indus Hospital. 6 critical points were used to analyze the post-operative X-rays. Data was analyzed using SPSS version 21. **RESULTS:** Total of 100 patients were included in the study. 59 patients had no error of implantation. The commonest intraoperative error observed was over hanging of prosthesis, which occurred in 41 patients, followed by inadequate length of the neck remnant in 36 patients. 16 patients had inadequate calcar seating. None of the patient was with incorrect prosthetic head size. 16 patients sustained intraoperative periprosthetic fractures (Vancouver A) managed with cerclage wire. Inadequate proximal metaphyseal fill was observed in only 15 patients. Majority of patients had a Dorr type A morphologic pattern of proximal femur. **CONCLUSION:** We concluded that uncemented hemiarthroplasty with Austin Moore endoprosthesis is a technically demanding procedure frequently associated with intraoperative implantation errors. Preoperative templating can avoid technical errors and postoperative radiographs can be critically analyzed by assessing them in view of 6 points of consideration.

Abstract no.: 49859

CONSTRAINED LINERS FOR REVISION HIP ARTHROPLASTY IN AN ELDERLY POPULATION

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Introduction: Dislocation continues to be a major problem encountered in revision total hip arthroplasty. Rates increase in line with the number of revision procedures performed, often, in a very elderly population. One current option is the use of constrained liners. Our study aims to identify the complications such as redislocation and further revision surgery in a high-risk patient group. **Methods:** We describe the outcomes of twenty patients who underwent implantation of a constrained liner between: 2013-2017. Eight patients underwent cup revision, eleven had both stem and cup revised, which included two proximal femoral replacements. A single patient underwent bearing change only. The mean age at surgery was 84.2 years with ten patients having undergone re-revision surgery. Our mean follow-up was 1.5 years. We analysed whether patients had any further dislocations or further surgery. **Results:** We encountered no further dislocations in our series. Three patients suffered a fracture, two of which occurred intra-operatively and were treated during the same procedure. The remaining fracture has been treated conservatively. One patient developed a sciatic nerve palsy post-operatively which failed to resolve. **Conclusions:** The use of constrained liners for revision hip arthroplasty in an elderly and high-risk patient group can be highly effective. We observed good results in a variety of component exchanges including proximal femoral replacements.

Abstract no.: 49860

**QING-QI RICKSHAW: A BOON OR BANE FOR PUBLIC
TRANSPORTATION? A STUDY OF ROAD TRAFFIC INJURY PATTERNS
INVOLVING QING-QI RICKSHAWS IN KARACHI, PAKISTAN**

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Introduction: This study aims to describe the crash characteristics and injury patterns for Qing-qi rickshaw occupants and other road users hit by Qing-qi rickshaw in Karachi, Pakistan. **Method:** An Observational/ Descriptive study was conducted at Accident & Emergency and Orthopaedic Surgery Department, Jinnah Post Graduate Medical Center, Karachi Pakistan from July 2014 to June 2015. All patients who came with Qing-qi rickshaw accident were included. Crash characteristics, details of injuries, injury severity parameters and outcome were documented in detailed interviews. **Results:** 486 rickshaw related injuries were noted in road traffic accidents by Qing-qi rickshaw. 350 injured victims were males and 136 were females. By occupation most victims were laborers and daily wage workers (45%) and students (21%). Overloading of vehicle with more than two passengers was found in (28.5%). The most common cause of injury was collision with a moving vehicle (56%), followed by fall from rickshaw. The most common contributing factor was the overloading of rickshaw and roll over on turning (61%). Injury severity on arrival were mild (49%), moderate were (32%), and severe were (19%). Injuries related to head and neck (26%), face (14%), thorax and abdomen (5%), lower extremity and pelvic girdle (31%) and upper extremity (23%) were observed. **Conclusion:** This study concluded that Qing-qi rickshaw injuries are common and these vehicles are vulnerable to road traffic accidents. Urgent preventive measures targeted towards this group are needed to reduce injuries involving rickshaws which results in increasing morbidity and mortality. The need for improved understanding of the risk characteristics of Qing-qi rickshaw is emphasized.

Abstract no.: 49864

**LEVEL OF OSTEOPOROSIS AWARENESS AND ITS RELATED FACTORS
IN LOW DENSITY DISTAL RADIUS FRACTURES PATIENTS AGED 50
YEARS AND OLDER IN AN ASIAN COUNTRY**

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Objective: The aim of this study was to evaluate the awareness of osteoporosis and related factors in distal radius fracture patients. **Method:** Cross sectional study was conducted on low energy distal radius fracture patients aged 50 years and over who presented in Emergency Department of tertiary care hospital Karachi Pakistan from Jan 2016 to Dec 2016. The questionnaire designed had three sections: demographic information, knowledge about osteoporosis and the risk factors for osteoporosis which was applied to all patients after receiving consent. **Results:** Total number of patient with distal radius fracture were 480, 352 (73.33%) female and 128 (26.66%) male. The average age was 72.5 years, with a minimum of 50 and a maximum of 95 SD± 31.81. Only 98 (20.41%) had awareness about osteoporosis, and 382 (79.58%) did not know what it was. Considering the educational levels 210 (43.75%) of patients were not able to read and write or ever went to school, 52.5%, 158 (32.91%) did not get primary education and 112 (23.33%) were secondary or high school graduates. Awareness of osteoporosis was directly related to the level of education. 382 (79.58%) indicated they did not know anything about osteoporosis and could not answer the remaining questionnaire. Lifestyle practices varied considerably. **Conclusion:** With this study we were able to demonstrate that the level of awareness of osteoporosis in patients with distal radius fracture is very low and related to the educational level of the patients. Public education campaigns must address risk factors and the strategies to overcome those that are modifiable in order to prevent the development of osteoporosis and its complications.

Abstract no.: 49865

INADEQUATE VITAMIN D LEVEL: ASSOCIATION WITH LOW ENERGY FRACTURES OF THE DISTAL RADIUS IN YOUNG PATIENTS AND ITS PREDICTORS IN KARACHI, PAKISTAN

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Objectives: To determine association of inadequacy of Vitamin D level with low energy fractures of distal radius and its predictors in young patients in Karachi Pakistan. **Method:** This cross-sectional study conducted in Accident and Emergency department. Patient visited hospital with low energy fracture of distal radius and fulfilled the inclusion and exclusion criterion, A questionnaire was designed and filled after taking consent. Serum Vitamin D3 levels were determined and compared with serum Calcium levels, serum Phosphorus and Alkaline Phosphatase levels. Serum Vitamin D level $<20\mu\text{g/ml}$ defined as deficiency. **Results:** Among 220 patients ranging from 12-45 years, mean $28\pm23.33\text{SD}$. Female were 172(78.18%). Exposure of face and hands while outdoor by most of them was (52.2%). Mostly are resident of apartments (46.6%). Variable coloured clothes used by majority participant (61%) and variable fabric (46%). 202 (91.8%) patients had deficiency of Vitamin D and correlated with duration of sunlight exposure significantly, also with exposure of large skin area, dietary consumption of vitamin D rich food and worn variable clothing colours. Serum Phosphorus level and serum Alkaline Phosphatase level were negatively correlated with Vitamin D significantly whereas positively correlated with serum calcium. **Conclusion:** Prevalence of vitamin D deficiency is very high in low energy fracture of distal radius in young population and sun exposure duration found to be most common predictor of inadequate D levels. A national food fortification program of vitamin D and campaign of public awareness to increase sunlight exposure and increase intake of vitamin D rich food are urgently needed.

Abstract no.: 49866

TRENDS IN URGENT CARE UTILISATION FOLLOWING ANKLE FRACTURE FIXATION

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Introduction: The Centers for Medicare and Medicaid services have implemented initiatives to improve post-discharge care and reduce unnecessary utilization of medical resources. This study evaluates the frequency of and factors associated with urgent care visits within 30-days of discharge after ankle open reduction and internal fixation (ORIF). **Methods:** All patients who underwent ORIF (CPT codes 27814, 27822, 27823, 27792, 27766, 27829) at our institution between 7/1/2016 and 6/30/2017 were included. The primary outcome was the frequency of urgent care visits within 30-days of discharge. Secondary goals were to evaluate the reasons for post-operative urgent care utilization, and demographic trends associated with it. **Results:** A total of 333 patients were included. Thirty-five patients (10.51%) utilized an urgent care within 30-days of discharge. Patients presented at a mean of 11.83 days from the day of surgery. Sixteen patients (45.71%) had cast/splint related issues, seven (20%) presented with pain and seven (20%) with increased surgical site drainage. Univariable analysis demonstrated a statistically significant association between post-operative urgent care utilization and patients with diabetes ($p=0.03$) and underlying psychiatric disorders ($p=0.03$). **Conclusion:** The rate of urgent care utilization within 30-days exceeds the historical rate of inpatient readmission following ankle ORIF (10.51% versus 3.17%, respectively). Patients with diabetes and psychiatric disorders are significantly more likely to visit an urgent care during this time. Future studies must identify additional risk factors for post-operative urgent care visits and develop strategies for reducing these added costs to our already stressed healthcare system.

Abstract no.: 49870

CAN WE PREVENT COMPLICATIONS IN LIMB SALVAGE FOR BONE TUMOURS?

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With the advent of neo-adjuvant chemotherapy the patient survival has improved from 10-20 % to 50-70% in malignant bone tumours. Limb salvage operations, performed with wide margins and chemotherapy do not compromise the survival or local control compared to amputation. More and more malignant bone tumours are being taken up for limb salvage but due to ignorance of tumour behaviour and natural history, non rigid protocols, pt. and peer pressure and growing confidence levels the surgeon ignores precautions leading to a poor outcome. The paper deals with a surgical audit of common complications following limb salvage. The surgical audit has been done on 12 cases following limb salvage in bone tumours with a poor result. The common causes of a poor outcome were delay in diagnosis and surgery, unavailability of recommended noninvasive imaging modalities, wrong biopsy, wrong timing in relation to neo-adjuvant chemotherapy and chemotherapy, selection of a wrong method of reconstruction, wrong plane of dissection and poverty where by the patient could not follow instructions or come for a timely follow-up. The psychological state of the patient is also important in deciding the outcome. In India most centers do not have CT, MRI and radionuclide imaging and many times the investigations will not be repeated due to the cost involved. We recommend rigid protocols in place of individualistic judgments to avoid the majority of complications.

Abstract no.: 49871

EXCISION OF PROXIMAL FOREARM BONES AS A SALVAGE METHOD FOR EXTRACOMPARTMENTAL MALIGNANT FIBROUS HISTIOCYTOMA OF THE ULNA

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Limb salvage for malignant bone tumours is the current flavour in orthopaedic oncology. Excision of both proximal radius and ulna was not described in literature. We could salvage a limb in which following excision first the radius was lengthened by fibular graft and elbow fusion and later the fused elbow was removed and Baksi type constrained total elbow replacement was done. **METHODS:** A 32-year-old female presented to us with pain and rapidly enlarging swelling of her left proximal ulna. An X-ray of the forearm with elbow revealed a large, osteolytic, extracompartmental destruction of Ulna from coronoid process to ulna in the proximal third with saucerization defect in the proximal Radius suggesting pressure and infiltration. A core needle biopsy confirmed the diagnosis. Excision of the proximal radius and ulna was done and then radius was lengthened by a fibular graft and elbow fusion was done. As the fibula could not bear weight of the limb the salvage broke and following several attempts for salvage, a total elbow replacement was done by a Baksi sloppy hinge prosthesis. **RESULTS:** Uyttendale criteria for the case is reported to be good. **DISCUSSION AND CONCLUSION:** Excision of both proximal radius and ulna is a difficult task and people usually opt for an amputation. A two-stage procedure where initially the radius is lengthened and then a Baksi type constrained hinge prosthesis for elbow function is an ingenious way for limb salvage and this technique should be explored further.

Abstract no.: 49872

LIMB SALVAGE FOR BONE TUMOURS

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Introduction: Long term studies in the literature show that limb salvage surgeries performed with adequate margins and chemotherapy have a patient survival and local control of disease comparable to a radical amputation (Sim 1985 and Rougart 1994). With this background we are reporting our results of limb salvage in primary bone tumours/secondaries. Material and Methods: 16 cases of malignant bone tumours i.e., 2 cases of osteogenic sarcoma, 3 cases of Ewing's sarcoma, 1 case of chondrosarcoma, 1 case of malignant fibrous histiocytoma and 9 cases of recurrence in previously operated GCT of the limbs were treated with en-masse excision and reconstructions. The cases were selected based on local pathology, acceptable biopsy scars and absence of metastasis. Cost effective strategies of reconstruction including Enneking's procedure, arthrodesis, Ilizarov and bone grafting done are evaluated. Discussion: In patients with malignant bone tumours the patient's survival depends upon eradication of primary disease process either by amputation or excision followed by reconstruction. We have found that at times achieving radical margins becomes very difficult and even wide margins are difficult to obtain as neurovascular bundle, the skin and soft tissues adjacent to the swelling and the introsseous membrane in cases of radius- ulna and proximal tibia - fibula act as limiting factors. We feel that, especially in high grade malignant bone tumours definitive procedures giving early function are better compared to limb reconstruction by Ilizarov as it gives the patient more functional days of life till survival.

Abstract no.: 49876

A CASE SERIES OF 30-DAY MORTALITY IN DISTAL FEMUR FRACTURES

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Introduction: Distal femoral fractures have many of the same challenges as hip fractures, but there has been limited research into outcomes following these. The aim of this study was to assess 30 day mortality following distal femoral fractures. Secondary outcomes included risk factors for mortality, post-operative complications and union. Methods: A retrospective case series of all distal femoral fragility fractures in patients over 65 between over a 5 year period at a single institution. Patients were excluded if the fracture was in the diaphysis or proximal femur, was a periprosthetic fracture, was due to high energy trauma or was in a patient less than 65. Results: 88 patients, 80 females and 8 males with a mean age 82.4. 67 fractures were classified as 33-A, 5 were classified as 33-B, and 16 were classified as 33-C. 85.2% underwent open reduction internal fixation, 5.7% intramedullary nail and 9.1% conservative treatment. The median length of stay 15 days. 11.4% suffered a medical complication. 9.1% required at least 1 further surgical procedure. The 30 day mortality was 9.1% and 1 year mortality was 34.1%. The only significant risk factor for 30 day mortality was age. For 1 year mortality the significant risk factors were an increasing age, lack of capacity, living in institutionalised care, and a worse pre-operative mobility. Conclusions: Distal femoral fractures occur in a complex group of patients. They have high mortality and complication rates. These patients should be given the same priorities as hip fracture patients to improve outcomes.

Abstract no.: 49877

REVISION ACL RECONSTRUCTION USING A PEDICLE HAMSTRING TENDON AUTOGRAFT

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Introduction: The purpose of this study was to evaluate the results of revision ACL surgery with use of a pedicle hamstring tendon autograft with the hypothesis that the results would be satisfying and comparable to previous studies. Methods: January 2012 to December 2014, 14 patients were enrolled. The mean age was 26 years. The primary reconstruction used a fascia-lata autograft (12 cases) and a bone-tendon-bone twice. The cause of failure was a new traumatic injury in 12 cases. The mean interval between primary and revision surgery was 6,2 years. Patient had clinical evaluation before and after surgery: LYSHOLM score, subjective IKDC score, objective IKDC score. A side to side laxity difference was measured (KT-1000): 14 cases > 5mm. X-Rays and MRI were performed to confirm diagnostic and to evaluate the tunnels positioning based on quadrant methods by Bernard and Hertel (10 were correct). Results: at the follow-up (45 months) a significant improvement of subjective IKDC scores was observed ($p<0,0004$), as the objective IKDC scores ($p<0,0002$), but LYSHOLM score was not significant ($p>0,5$). All the patients were classified grade I at the Lachman test. Upon the pivot shift test a grade I result was found in 79%. The side to side laxity difference was inferior to 3mm in 12 cases. No infection was observed. Conclusion: The hypothesis is confirmed in agreement with previous studies. However, our study differentiates itself by the interval between primary and revision surgery and by the cause of failure. Level of evidence: retrospective study, level IV.

Abstract no.: 49878

A CASE SERIES OF THE OUTCOME OF SURGICAL TREATMENT OF INTERPROSTHETIC FRACTURES

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Introduction: There is currently a paucity of literature looking at the outcomes of interprosthetic fractures. The primary aim of this study was to determine fracture union in patients following surgical treatment of a femoral interprosthetic fracture. Secondary outcomes included mortality, complications, length of stay, re-admission, and time to surgery. **Methods:** A retrospective case note review of all interprosthetic femoral fractures admitted to a single institution over a 7 year period. All patients had at least 2 years clinical follow-up. **Results:** There were 24 patients with a mean age of 82.29 (65-98). There were 4 males and 20 females. The initial implant was a total hip replacement (THR) and total knee replacement (TKR) in 19 patients, 1 THR and revision TKR, 4 hip hemiarthroplasty and TKR. There were 23 cemented stems, and 1 uncemented stem. All the knee replacements were cemented. The median time to surgery was 84. The median length of stay was 16 days (4-38). 19 patients underwent open reduction internal fixation, 1 of these used a strut graft, 2 patients underwent revision knee replacements and 3 revision hip replacements were performed. 1 patient died in 30 days following fracture and a further patient died in the 1st year following fracture. 3 patients suffered a complication that required further surgery within 2 years following initial surgery. The fracture united in 82.6% of patients. **Conclusions:** Interprosthetic fractures have long delays to surgery and length of stay. Despite this they have high rates of union, relatively low complications and mortality rates.

Abstract no.: 49886

RESULTS OF SURGICAL TREATMENT OF HYDATID CYST OF THE THIGH: A SERIES OF 15 CASES

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Introduction: The muscle localization of the hydatid cyst is rare, even in endemic countries. This primitive and isolated parasitosis poses a differential diagnosis with soft tissue tumors. The aim is to analyze the topographical, diagnostic and therapeutic aspects of the hydatid cyst of the thigh. Material and methods: 15 cases of muscular hydatid cyst of the thigh (2005 - 2016). 12 men, 2 women and a girl (10 year). The average age is 35 years. Rural origin is noted in 6 cases. A cold swelling of the soft parts was the main reason for consultation. CT and MRI confirmed the diagnostic. Biology: hyper eosinophilia and hydatid serology were negative. No visceral localization. Results: Surgical treatment consisted of total perikystectomy in 4 cases, subtotal in 6 cases and in 5 cases a cyst evacuation with washing with oxygenated water due to large volume and vascular relations of the cyst. 2 cysts were infected. The cyst was uni vesicular 3 times and multi vesicular 12 times. The postoperative course was simple. . The average follow-up is 35 months, with only one recurrence with extension to the sacrum. Discussion: Muscular hydatidosis, rare, is often isolated and primitive. The muscle is not conducive to the development of the hydatid larvae by muscular contractility and lactic acid. It affects referentially the proximal muscles of the lower limbs. The clinic is not specific. MRI confirms the diagnosis. The treatment remains surgical. Conclusion: Muscle hydatidosis remains benign. The treatment is surgical. Prevention is the best treatment.

Abstract no.: 49887

SURAL FLAP IN COVERAGE OF LOSS OF SUBSTANCE OF ANKLE AND FOOT: A SERIES OF 28 CASES

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Introduction: The objective of this study is to evaluate our results of the coverage by the sural flap, and to determine his limits. Material and methods: 28 patients benefited from covering the loss of substance with a sural flap (2005- 2016). 25 adults and 3 boys. The flap was used in 5 open fractures, 15 post-traumatic skin losses, and 5 osteoarthritic substance losses in the ankle, 2 heel eschars, and an infected benign tumor. The receiving site: anteromedial: 13 cases, anterolateral: 9, posterior: 2, 2 heels, 2 feet. The average flap area was 24 cm² at 108 cm². We search the complications; delay of healing, the aesthetic quality of the flap and sensory disorders. Results: All patients were reviewed. In 20 patients, the result is excellent. 4 flaps with partial necrosis are classified as good results. 4 total necrosis of the flap. Hypoesthesia of the external border of the foot was observed in 4 patients. Discussion: The sural flap provides coverage for loss of substance around the ankle. The technique is simple and reproducible. The recovery of the flap must be done with delicacy. The pivot point is 5 cm for the adult and 4 cm for the child at the tip of the lateral malleolus. Peripheral necrosis would be the result of the physiological limits of the flap. Conclusion: the sural flap can be used at any age, with multiple indications and easy technique. His limits: the lateral and medial edges of the ankle and foot, the Lisfranc joint.

Abstract no.: 49888

**THE TWO-STAGE TREATMENT OF COMPLEX PILON TIBIAL FRACTURE
BY ANATOMIC PLATE**

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The objective of this study is to determine the treatment result of severe fractures of the tibial Pilon using a two-stage treatment with anatomic plate. It is a consecutive series of patients with a retrospective data evaluation. Soft-tissue treatment is extremely important for fractures of the tibial plafond. After promising results reported about a two-staged treatment plan with external fixation and secondary internal fixation, we incorporated this method in our treatment protocol. This consisted in a second stage of internal fixation with an anatomic plate. Between January 2007 and December 2015, 38 patients with 40 high-energy fractures of the tibial plafond were treated using a two-staged treatment plan: firstly the fracture was stabilized with an external fixator immobilizing the ankle joint. Secondly, after stabilization of the soft-tissue situation (7 to 14 days) open reduction and internal fixation with an anatomic plate was performed. Complications experienced included 3 cases of superficial wound necrosis, four superficial infection, and TWO malunion in varus. All fractures healed with no bone graft. At follow-up, the functional score (Mazur) was Excellent: in 16 cases, Good in 11 cases, and in 9. For the post-traumatic arthritis of the ankle occurred stage0: 10, stage1: 12, stage2: 11, stage3: 3. There was no secondary loss of reduction or need for arthrodesis. A two-stage treatment for Pilon tibial fractures with external fixation followed by plate osteosynthesis reduces local complications with a good functional result. Delayed surgery allows to operate on soft parts in good condition.

Abstract no.: 49889

A NOVEL DEVICE TO ASSESS INTRA-ARTICULAR SCREW PENETRATION TO JOINT SPACE

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Introduction: Articular penetration of screws is a challenging problem in surgical practice. The clearance of articular penetration is done by fluoroscopy but sometimes the images may not be accurate. In this novel method, we aimed to detect penetrated metal implants relying on their specifications of conductivity and compare it with fluoroscopic confirmation of penetration. (Patent pending, no: PT2016-01022.) **Methods:** In this ex vivo study, we used five fresh sheep shoulder joints. First joint space was filled with hypertonic saline solution. An insulated cannula was placed to the joint capsule and a conductive wire was sent to joint from the cannula. A single titanium screw sent from tuberculum majus to postero-inferior quadrant of the humeral head under fluoroscopic view. The conductivity measurement was done continuously and when a sudden decrease in resistance was detected, a fluoroscopic view is taken in AP and lateral directions and assessed by a blind surgeon in regards to penetration. The penetrations were confirmed by dissection of the joint. **Results:** There was a significant decrease in electrical resistance with the penetration of the screw ($p<0,001$). All penetrations were confirmed by our novel method. In all five of the specimens, the penetration could not be confirmed by either AP or lateral of both views. Two of these specimens the penetration couldn't be detected both AP and lateral fluoroscopy images, but the decrease in resistance could be recorded. **Conclusion:** The described method has higher sensitivity and accuracy compared to fluoroscopic assessment and it is a safe, radiation-free technique.

Abstract no.: 49890

EVALUATION OF A SINGLE DOSE OF DEXAMETHASONE IN POSTOPERATIVE PAIN, IN PATIENTS UNDERGOING TOTAL HIP REPLACEMENT WITH A MINIMALLY INVASIVE ANTERIOR APPROACH: PRELIMINARY RESULTS OF A PROSPECTIVE STUDY

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Introduction - Objectives: Postoperative pain management after total hip arthroplasty is very important for patient care and quality of life. The purpose of this study is to evaluate the analgesic effect of a single dose of dexamethasone on the reduction of postoperative pain after total hip arthroplasty with minimal invasive anterior approach (AMIS). **Materials - Methods:** This prospective, randomized study included 50 patients, with a mean age 67.6 years, who underwent AMIS total hip arthroplasty. Population study was divided into 2 groups: Group A (n = 28) was given subarachnoid anesthesia and a single intravenous dose of dexamethasone (0.15mg x kg weight) and group B (n = 22) administered subarachnoid anesthesia and intravenous normal saline (placebo). All patients received intravenous 1 gr paracetamol. Pain intensity (VAS score) and analgesic consumption were evaluated within the first 24 hours after surgery for all participants in the study. **Results:** There were no statistically significant differences between the two groups, with respect to age, sex, BMI, ASA score and surgical duration (p> 0.05). Pain intensity in group A was significantly lower than group B at 4 and 8 hours post-operative (p-value <0.001). There were no statistically significant differences in pain intensity after 24 hours post-operative (p-value = 0.17). For the first 24 hours after surgery, analgesic consumption in group A was significantly lower than group B (p-value = 0.001). **Conclusions:** A single intravenous dose of dexamethasone reduces postoperative pain intensity and analgesic consumption in patients undergoing total hip arthroplasty with the AMIS method.

Abstract no.: 49891

INTRAOPERATIVE AND POSTOPERATIVE COMPLICATIONS OF THE ANTERIOR MINIMALLY INVASIVE SURGERY FOR TOTAL HIP ARTHROPLASTY: SHORT-TERM RESULTS IN 422 PATIENTS

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Introduction - Objectives: The aim of the study is to report the intra-operative and post-operative complications using the anterior minimally invasive surgery (AMIS) technique for total hip arthroplasty. **Study Design & Methods:** We investigated all cases of patients that were treated with AMIS total hip arthroplasty in our department during years 2012 - 2016. The technique includes a 8 - 10 cm incision, centered over the tensor fasciae latae and directed laterally toward the lateral aspect of the distal femur. The approach utilizes anterior internervous and intermuscular plane, and has been described as a modified Hueter approach. Patients were allowed for full weight bearing at the 1st postoperative day, and returned to their daily activities 4 weeks after surgery. **Results:** The study included 421 patients (271 women - 150 men) with a mean age of 66.2 years (range 34-91 years). The mean duration of hospitalization was 4.7 days (range 1-15 days) and the mean follow up was 34 months. The mean duration of surgery was 55 minutes. Complications included: Intraoperative greater trochanter fractures (3.3%), intraoperative periprosthetic fractures (2.4%), intraoperative acetabular perforation (0.2%), intraoperative femoral perforation (0.2%), dislocations (0.9%), aseptic loosening (0.7%), heterotopic ossification (1.2%), superficial infections (0.7%), sciatic nerve injuries (0.2%) and lateral femoral cutaneous nerve injuries (1.4%). There were no deep infections or major thromboembolic events. **Conclusions:** The AMIS technique is a safe method for total hip arthroplasty. The decision on the choice of method should be individualized for each patient.

Abstract no.: 49892

EVALUATION OF PATIENT-SPECIFIC INSTRUMENTATION WITH REGARDS TO PERIOPERATIVE BLOOD LOSS AFTER TOTAL KNEE ARTHROPLASTY

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Introduction: Total knee arthroplasty (TKA) is associated with substantial blood loss. Patient-specific instrumentation (PSI) does not require violation of the intramedullary canals, reducing blood loss. **Objectives** The aim of this study was to assess the impact the PSI method on blood loss and transfusion requirement in patients with knee osteoarthritis treated with TKA. **Materials and Methods:** A retrospective cohort study was conducted in a series of 87 consecutive primary TKAs. Group A (n = 69) was operated with standard instrumentation, and group B (n = 22) was operated with PSI. Demographic characteristics of the patients were recorded, along with transfusion rates and levels of hematocrit (Hct), hemoglobin (Hb), red blood cells (RBCs) and platelets (PLTs), pre- and post-operatively. **Results:** Mean age of patients in Groups A and B was 72.90 and 70.23 years respectively. Mean decrease of Hct was 5.87% for Group A and 5.64% for Group B (p-value = 0.73). Mean decrease of Hb was 1.71 gr/dl for Group A and 1.69 gr/dl for Group B (p-value = 0.6). Mean reduction of RBCs was 643/mm³ for Group A and 618/mm³ for Group B (p-value = 0.73). Mean reduction of PLTs was 39710/mm³ for Group A and 24570/mm³ for Group B (p-value = 0.081). The rate of transfusion was 12% for Group A (mean transfusion 45 ml) and 5% for Group B (mean transfusion 14 ml) (p-values = 0.34 and 0.29). **Conclusions:** In conclusion, PSI seems to reduce blood loss and transfusion rate when compared to standard instrumentation TKA.

Abstract no.: 49893

**DIRECT ANTERIOR MINIMALLY INVASIVE TOTAL HIP REPLACEMENT:
ASSESSMENT OF COMBINED INTRAVENOUS AND TOPICAL
ADMINISTRATION OF TRANEXAMIC ACID**

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Introduction: There is no consensus regarding optimal administration of TXA in total hip arthroplasty. Objectives: The purpose of our study was to report the efficacy of combined intravenous and topical TXA administration in total hip replacement with anterior minimally invasive surgery (AMIS). Study Design & Methods: We prospectively enrolled 239 patients undergoing AMIS total hip replacement, separated in 2 groups. In patients of group A (n=150), 1 gr of TXA was administered intravenously 30 minutes prior to surgery and 2 gr of TXA were administered through the drain, intraoperatively. In patients of group B (n=89), normal saline was administered as placebo. Demographic characteristics of the patients were recorded, along with transfusion rates and levels of hematocrit (Hct), hemoglobin (Hb), red blood cells (RBCs) and platelets (PLTs), pre- and post-operatively. Results: Mean change of Hct was 9.37% for Group A and 9.42% for Group B (p-value=0.93). Mean change of Hb was 2.90 gr/dl for Group A and 2.98 gr/dl for Group B (p-value=0.6). Mean reduction of RBCs was 1026/mm³ for Group A and 1036/mm³ for Group B (p-value=0.66). Mean reduction of PLTs was 50500/mm³ for Group A and 74060/mm³ for Group B (p-value=0.0001). The rate of transfusion was 15% for Group A (mean transfusion 54 ml) and 27% for Group B (mean transfusion 101 ml) (p-values=0.028 and 0.022). Conclusions: Combined topical and intravenous administration of TXA in patients subjected to total hip replacement with the AMIS technique seems to decrease the perioperative blood loss and the need for blood transfusion.

Abstract no.: 49894

'PROTRUSIO TECHNIQUE' IN TOTAL HIP ARTHROPLASTY WITH DYSPLASTIC HIP

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Total hip arthroplasty is a standard treatment for patients with symptomatic osteoarthritis secondary to developmental dysplasia of the hip. Better long-terms survival has been observed among patients who have undergone anatomical hip reconstruction. However, as a result of deficient acetabular bone loss, autogenous bone grafting was performed to improve acetabular coverage. In acetabular reconstruction in patients with dysplasia at our institution, we routinely place the cup at the anatomical hip center or slightly high hip fixation aiming at cup-CE angle over 0 degree with 'Protrusio technique'; medialization and morselized bone graft to floor of acetabulum. The purpose of this study was to evaluate the 5 to 12 years follow-up result of dysplastic hip with cementless cup without bulk bone or reconstruct-device. There were 111 primary THA. We examined the clinical and radiographic evaluation. Cup coverage and hip center were measured as cup-CE angle and horizontal and vertical distance. The minimum cup-CE angle was -5° (mean, 25.8°) and tended to be high hip center and many bone graft. Protrusion percentage was 24.2% (Crowe I/II/III/IV 5.3/8.0/38.2/50.8). No cup revisions were required, and there was no radiographic loosening. All cases uses morselized bone only and no need for bulk bone. Low CE angle, even if lower than 0 °, as long achieved good press-fit fixation, not only long-term results are obtained, remodeling of the bone can be expected.

Abstract no.: 49896

SYME AMPUTATION OF THE MANGLED FOOT: A CASE SERIES OF TWO CASES

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Introduction: Lower extremity amputation generally seeks to preserve as long a limb as possible. We report two Syme amputation cases of a mangled foot. Case report: Each male patient, one aged 51 and the other aged 19 years, underwent Syme amputation for the mangled foot sustained during a motor vehicle accident. Each patient was discharged from the rehabilitation hospital walking with the aid of prosthetic device three months post-injury. Although one patient complained of slight phantom pain, he could walk for more than three kilometers and returned to his previous work as a crane operator four years post-injury. The other patient abandoned his previous work as a gardener and began ground keeping eight months post-injury. Discussion: These patients obtained the ability of end-weight-bearing, which was the central advantage of Syme amputation. However, there were subsequent complications including the inability to sit-squat because of ankle joint deficiencies and perceived instability when walking on a sloped surface or rough road. Preoperatively, we explained the advantages and disadvantages of each level of amputation; however, patients and families usually request a long stump if possible. Recently, transtibial amputation is preferred compared with Syme amputation because of the development of remarkable prosthetic parts. Consequently, indications surrounding the amputation level, even for patients with similar injuries, might be different. The indication for Syme amputation, particularly in young and middle-aged patients, should be clarified by large-scale research.

Abstract no.: 49899

THE SHORT-TERM OUTCOME OF OPEN WEDGE TIBIAL OSTEOTOMY

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Objective: This study aimed to report short term outcome of open wedge tibial osteotomy using bone graft substitute (Frabone). Materials and methods: A retrospective study was performed from January 2013 to May 2016 in 24 patients, 29 cases. The mean follow-up period was 18 months (6~41 months). The patients were divided into two groups according to the types of bone graft(Frabone = Hap and β -TCP, n = 14; Cancellous bone chip, n = 15), and mean union time were compared. Resorption of bone substitute and new bone formation were confirmed using van Hermert grading in the group of patients who used bone substitute (Frabone). Results: Both group achieved radiological bone union. 14 cases were observed resorption of the bone substitute and bone remodeling in total 14 cases, the group of patients who used bone substitute (Frabone). Conclusion: Based on these data, bone union time were similar between Frabone and allogenuous bone graft, and bioabsorbability of Frabone was confirmed. We propose that Frabone is an effective treatment for open wedge tibial osteotomy.

Abstract no.: 49900

CLINICAL APPLICATION OF FLEXIBLE STABILISATION WITH ACCURATE DECOMPRESSION IN SYMPTOMATIC DEGENERATIVE LUMBAR SPONDYLOLISTHESIS

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Objective: To evaluate the flexible stabilization with accurate decompression in degenerative spondylolisthesis. **Methods:** A total of 27 patients underwent the Dynesys system with accurate decompression from January 2014 to December 2015. Outcomes were evaluated by ODI and VAS. The degree of spondylolisthesis, ROM and disc height were measured by X-ray. Cross-sectional area of the dural sac at surgical segments was measured by MRI. Improvement of back pain, leg pain, neurogenic claudication and surgical satisfaction were recorded. **Results:** Patients completed the operation successfully. The average operative time was (106.96±8.89) min, blood loss was (112.96±23.99) ml. A dural tear was reported in one procedure. Patients were follow-up for mean 30.5 months (range 18-39 months). The ODI decreased from (51.22±9.47)% to (14.04±3.43)% at the final follow-up ($P < 0.001$). The back pain VAS scores and leg pain VAS scores decreased from (5.74±1.10), (5.26±1.29) to (1.33±0.68), (1.22±0.64) at the final follow-up ($P < 0.001$), respectively. Cross-sectional area of the dural sac significantly increased from (70.03±17.61) mm² to (134.11±22.53) mm² at the final follow-up ($P < 0.001$). Degree of spondylolisthesis did not increased ($p > 0.05$), and disc height increased at the final follow-up compared with the preoperative ($P < 0.001$). At the final follow-up, the ROM of stabilized segments was (4.25±1.18)°, and ROM of upper adjacent segments increased ($P < 0.001$). 2 cases (7%) were noted with radiographic adjacent segment degeneration (ASD). Patients improving in back pain, leg pain, neurogenic claudication were 24 (89%), 22 (81%) and 27 (100%), respectively, and surgical satisfaction was 85%. **Conclusions:** The flexible stabilization with accurate decompression for degenerative lumbar spondylolisthesis can lead to significant clinical improvement and radiologic stability, and it has advantages of minimal trauma, less blood loss, quick recovery, less complication. Flexible stabilization can be advocated as an effective alternative to fusion.

Abstract no.: 49901

BOW TIE TECHNIQUE FOR AKIN PROCEDURE

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Hallux valgus is a common condition of the forefoot, 1st ray, resulting in cosmetic deformity, pain and biomechanical changes. The Akin osteotomy is a widely used procedure where various fixation methods are available, predominantly with the use of metallic component(wire, screw, staple etc.). The authors present a new fixation system constituted by absorbable vicryl suture materials, the use of which is proposed for Akin osteotomies. Our modified Akin procedure, so called "Bow tie technique", uses absorbable suture materials that can minimize irritability. Furthermore when the gap appears, additional tie can be given encircling the bow tie to reduce the gap and to give additional stability after Akin procedure. The authors perform Akin procedure in modified technique. After proximal phalanx of great toe osteotomy, the authors make pin hole for penetration of suture materials. And then ties suture materials in completion of bow tie like pattern. The gap that related with instability still appears even though ties tightly, additional tie encircling the bow tie can be applied to reduce the gap and consequentially solve the instability problems. Although the authors tie with absorbable suture materials, there have not been any non-union cases. Therefore the modified Akin procedure, "Bow tie technique", can be excellent alternative treatment option for hallux valgus patients who undergoes Akin procedure.

Abstract no.: 49902

COMPARISON OF LOCAL STEROID INJECTION AND SURGICAL DECOMPRESSION IN TREATMENT OF CARPAL TUNNEL SYNDROME

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OBJECTIVE: To compare the efficacy of local steroid injection versus surgical decompression in treatment of carpal tunnel syndrome in terms of frequency of pain. **STUDY DESIGN:** A Randomized controlled study. **DURATION:** 02 years from 3rd January, 2015 to 2nd January, 2017. **METHODOLOGY:** The study included 130 patients with carpal tunnel syndrome. Patients were graded according to severity of pain based upon Visual Analog Pain Scale (VAS). Lottery method was used to allocate the patients randomly into two groups. Group A contained 65 patients who were subjected to surgical decompression and 65 patients were in Group B who were injected with local steroid injection. Complete history was obtained from all patients. All the surgical decompressions through mini incision technique. Information were recorded on a pre designed Performa. **RESULTS:** Efficacy (at least one grade improvement in pain at one month) was observed to be significantly high in group B patients who were treated with local steroid injection (87.8%) as compared to group A patients who underwent surgical decompression for carpal tunnel syndrome (72.3%), $p=0.028$. **CONCLUSION:** Steroid injections are more effective than surgical decompression in management of carpal tunnel syndrome as was observed on a one-month follow up.

Abstract no.: 49904

MANAGEMENT OF UNDISPLACED AND MINIMALLY DISPLACED COLLES' FRACTURE WITH THERMOPLASTIC SPLINT VERSUS CONVENTIONAL COLLES CASTING

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Background: To compare the outcome in Colles' fracture treated with thermoplastic splint versus conventional Colles cast. Methods: In this observational study 62 patients having Colles fracture were included. Patients were placed in two groups; group A were treated with Colles' cast while group B with Thermoplastic splint. Radiographic evaluation was done, using antero- posterior and lateral view wrist radiographs. Functional outcome assessed with Gartland and Werley Score demerit system. Results: Out of 62 patients, 28 (45.1%) were male with mean age of 38.67 and 34(54.8%) were female patients having mean age of 47.20. The total number of patients that had excellent functional outcome was 34 out of 62 (54.8). The excellent functional outcome was achieved in 16(50%) patients treated with colles brace. However, in patients treated with thermoplastic splint the functional outcome was excellent in 18 (60%) patients. Conclusion: Best functional outcome after the treatment of Colles' fracture is achieved by the use of thermoplastic splint.

Abstract no.: 49907

HEEL OPEN SHORT LEG CAST

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To report the results of applying heel open (figure 8) short leg cast on foot & ankle trauma or disease patients requiring short leg casts. 380 patients diagnosed of foot & ankle trauma or diseases were included between November 2014 and July 2016. Comprised of 222 males and 158 females. Diagnoses of the subjects were comprised of 180 cases of foot & ankle fractures included. The bottom of the figure 8 cast covered the metatarsal head to half portion of the medial longitudinal arch, while leg portion covering consisted from the prominence of the both malleolus to halfway of the lower leg, resulting in complete exposure of the heel and distal portion of the achilles tendon. After application of the figure 8 cast, changes in the ROM in active ankle dorsiflexion & plantarflexion, passive foot inversion & eversion, and foot internal & external rotation were measured. Using a VAS score for figure 8 cast was investigated. In all cases, measurements of active ankle flexion & extension was less than 5 degrees, foot inversion & eversion was less than 5 degrees, foot no rotation, and were stably held without skin injury. VAS discomfort score was an average of 2.6 and figure 8 short leg cast was selected in all cases. The use of figure 8 short leg cast in patients of foot & ankle trauma and diseases requiring short leg cast provides safety and prevention of skin necrosis from open heels while providing high patient satisfaction.

Abstract no.: 49909

CLINICAL OUTCOME OF SUBCHONDRAL INSUFFICIENCY FRACTURE OF THE FEMORAL HEAD IN OUR HOSPITAL

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The purpose of this study is to detect the clinical outcome after the surgical treatment for the subchondral insufficiency fracture of the femoral neck (SIFFH) patients in our hospital. METHOD: Ten cases with SIFFH were diagnosed and treated in our hospital from January 2010 to October 2015. There were 2 males and 8 females. The mean aged was 72.6 years (range 58 to 83). Mean postoperative follow-up period was 29.3 months (range 8 to 56). The first three cases (a male and 2 females) underwent BHA. The remaining 7 cases (a male and 6 females) underwent THA. We made comparison between the BHA group and THA group using the pre- and postoperative Japanese Orthopedic Association Score (JOA) of the hip, postoperative complication and X-ray. RESULT: In the Both group, Postoperative JOA score were significantly improved. Two cases of BHA groups were detected the migration of the femoral head on postoperative plane X-ray. One case underwent the conversion THA postoperative 26 months because of sever hip pain. Other complication such as infection, dislocation were not detected in both group. CONCLUSION: Although SIFFH is the lesion of the femoral head, we should pay attention to postoperative migration when BHA were performed. We suggested that THA is better treatment option than BHA for SIF patients although this is small case study.

Abstract no.: 49914

SURGICAL TREATMENT OF OSTEOPOROTIC VERTEBRA COMPRESSION FRACTURE AT THORACOLUMBAR LEVELS: ONLY PEDICLE SCREW CONSTRUCTS WITH PMMA AUGMENTATION

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Introduction: Correction of focal kyphosis using a minimal pedicle screw in osteoporotic vertebral compression fracture (OVCF) patients is still challenging part of spine operation. Therefore, we hypothesized that polymethylmethacrylate (PMMA) augmentation of pedicle screw fixation could improve focal kyphosis in patients with OVCF. Methods: Fifteen OVCF patients who underwent only posterior fusion using pedicle screw with PMMA augmentation were included in the study. The mean follow-up period was 13.80 months. To analyze the radiological outcomes, we measured the following parameters as time serial follow-up (pre-operation, immediately post-operation (Pop), Pop 6 weeks, 3, 6 months, and 1 year follow-up): (1) Cobb angle of focal kyphosis; (2) Cobb angle of instrumented kyphosis; (3) Sagittal index; and (4) Anterior vertebral body height of fracture site. Results: The preoperative Cobb angle of focal kyphosis averaged $34.33^{\circ} \pm 6.98$ and was significantly improved to $9.87^{\circ} \pm 6.25$ postoperative ($p < 0.001$), with maintenance of correction at serial follow-up, postoperatively. And, the wedge angle averaged $25.73^{\circ} \pm 5.31$ and was improved to $12.53^{\circ} \pm 6.10$ postoperative ($p < 0.0001$), with maintenance of correction at serial follow-up. And the sagittal index averaged $23.53^{\circ} \pm 7.36$ and was corrected to $6.80^{\circ} \pm 5.60$ postoperative ($p < 0.0001$), with maintenance of correction at serial follow-up, postoperatively. The Cobb angle of instrumented kyphosis has shown similar pattern. Conclusion: Reinforcement of pedicle screws using PMMA augmentation may be a feasible surgical technique for osteoporotic vertebral compression fractures.

Abstract no.: 49915

SURGICAL REPAIR OF ACUTE ACHILLES TENDON RUPTURE: A PROSPECTIVE COHORT STUDY OF 639 CONSECUTIVE CASES WITH A MINIMUM FOLLOW-UP OF SIX YEARS

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Objectives: To stratify the risk for complications after surgical repair of acute achilles tendon rupture in a large unselected patient population. Design: Prospective study. Setting: Outpatient setting in one large urban hospital in downtown Stockholm, Sweden. Patients/Participants: 639 consecutive achilles tendon repairs in 631 patients. Intervention: Surgical repair of an acute achilles tendon rupture. Main Outcome Measurements: All kinds of complications. Results: 25 (3.9%) reoperations, out of which 22 were due to rerupture. 51 (8.6%) cases of deep vein thrombosis, no difference in patients given vs. patients not given prophylaxis. 19 (3.0%) cases of surgical site infection, all of which resolved upon oral antibiotics. Conclusions: Surgical repair of acute achilles tendon rupture is a safe treatment. There is still no effective prophylaxis against deep vein thrombosis.

Abstract no.: 49919

ACETABULAR RECONSTRUCTION USING A GANZ RECONSTRUCTION RING: LONG-TERM RESULTS

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This study investigates the long-term results of acetabular reconstruction in total hip arthroplasty (THA) with the Ganz reinforcement ring (GRR). 135 hips (119 implanted for failed revision, 16 for dysplasia) were consecutively implanted with a GRR at our hospital between 1998 and 2001. The mean age at implantation was 65 years (range 26-90). Clinical, functional and radiographic evaluations were performed. Implant survivorship was estimated using a competing risks analysis, and multivariate survivorship by a Cox regression model was used to identify risk factors for implant failure. At mean follow-up (FU) of 16 (range 15-18) years, 3 patients were lost to FU and 19 had implant failure: 4 aseptic loosening without revision, 4 septic and 11 aseptic revisions. There was an 86% (95% confidence interval [CI]: 78.5–90.9%) survivorship with regard to radiographic loosening or revision for any reason, and a 91.2% (95% CI: 84.5–95.0%) survivorship for aseptic loosening only. Multivariate analysis revealed that age at surgery was a significant risk factor for failure of the GRR. With acetabular revision or loosening as the endpoint, patients ≤60 years had 71.6% (95%CI: 53-82.8%) probability of implant survival, and older patients had 92.2% (95%CI: 84-96.2%) implant survival after a mean 16-year FU. The mean Harris Hip scores (HHS) and WOMAC scores were 77 and 64.5 respectively and mean NRS pain score was 1.6. This study shows acceptable survival and functional results, particularly in older patients, and supports the continuing use of GRR in complex reconstruction cases, especially those with significant bone loss.

Abstract no.: 49920

IS INCISION AND DRAINAGE ALWAYS NECESSARY FOR ACUTE POSTOPERATIVE DRAINAGE FOLLOWING THORACOLUMBAR SPINE SURGERY?

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Background: Surgical site infection (SSI) is a clinical diagnosis, with the most common presenting symptom being serosanguinous wound drainage (SWD). The low specificity of SWD leads to many patients with presumed SSI undergoing empiric surgical debridement (SD) when conservative management (CM) may have sufficed. In the present study, the authors seek to determine whether CM alone may be suitable for those patients in whom postoperative wound drainage is present in the absence of other signs of SSI. Methods: Clinical data of patients who underwent thoracolumbar spine surgery at a single center from 2012-2017 was reviewed. Patients were included if SWD was present at follow-up within 8 weeks of surgery. Patients with fevers, chills, purulent discharge, fluctuance, wound dehiscence, or erythema were treated surgically and excluded from the study. Grouping was based on whether CM alone resolved drainage. Results: Of a total 60 patients, drainage resolved in 51 following CM alone (group A) and did not resolve in 9 patients, necessitating SD (group B). Groups were similar in terms of age, BMI, smoking status, DM, revision vs. primary surgery, number of levels operated upon, EBL, surgery time, days admitted, and drainage latency. Group B showed a significantly greater preoperative ASA score than group A (2.89 ± 0.33 vs. 2.06 ± 0.61 , $p < .0001$). Conclusions: We conclude that isolated SWD after thoracolumbar spine surgery may be successfully managed conservatively in a majority of patients. Of all variables measured, only higher preoperative ASA score was predictive of treatment failure, defined as eventual need for surgical drainage.

Abstract no.: 49922

TREATMENT OF NON-INFECTED CUTANEOUS ULCERS WITH PLATELET-RICH PLASMA GEL

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Introduction: Cutaneous ulcers are commonly in patients with diabetes, renal failure, lupus and diseases that impair circulation and healing of the skin. Wounds caused by these pathologies are difficult to get closed and their treatment is a challenge. The use of platelet rich plasma (PRP)-gel is becoming a good option of treating skin ulcers. Aim: Proving effective role of PRP-gel on wound closure. Methods: During January 2015–January 2017 we treated 78 patients (45 males, 33 females) with cutaneous ulcers excluding all the infected wounds, wounds with bones or tendons exposed, pregnant women and patients with cancerous diseases. The mean age was 62y.o. (51-81). The pathologies caused the ulcerations were: diabetis, vasculitis and avascular necrosis by trauma. We prepared the PRP-gel from homologous blood donations. We measured and photographed the wounds before the treatment and once a week when the wound medication was performed. After cleaning with betadine and necrotomy when necessary a PRP-gel was applied onto the wound surface and then dressed correctly. Results: Wound granulation formed at 3rd-4th medication session and the wound closure at 15th session (12-20 sessions). One patient acquired an infection during the treatment that obliged us to exclude from the study. In a diabetic foot the toe necrotized making amputation in its base necessary. The wound was then closed after 12 sessions. All the patients had wound closure without other treatment. Conclusion: PRP-gel is a good option for treating skin ulcers. Non-infected wound treatment by this method gives satisfied outcome and the patients feel comfort of using this non-invasive medication therapy.

Abstract no.: 49925

IS A STAGED RELOADING PROTOCOL FOR THE REMOVAL OF CIRCULAR FRAMES EFFECTIVE?: A RETROSPECTIVE ANALYSIS

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INTRODUCTION:The aim was to study effectiveness of the protocol and factors associated with its failure. **METHODS AND MATERIALS:** We identified 299 patients who underwent circular frame fixation for fracture or deformity correction in our unit between 1/1/2011 to 31/6/2016. All 247 patients who followed the staged frame removal protocol were included in this study. Clinical record and radiographs of all patients were reviewed. Results underwent statistical analysis. **RESULTS:** Of the 247 patients, 49 were elective and 196 were trauma patients (56 open fractures). There were 92 Ilizarov type frames and 155 hexapods. 93 patients were smokers. The protocol failed to prevent mechanical failure after frame removal in 10 patients, of which four had refracture and six had an increase in deformity. The average increase in deformity was 7.7 in the frontal plane and 3.8 in the lateral plane. We identified risk factors for mechanical failure in eight of the ten; four were smokers, two were on steroids and two had hypophosphataemic rickets. There were six hexapods and four Ilizarov frames. Of the ten patients, four had been for elective indications, six for trauma. Two of the six trauma patients had been treated for open fractures. The type of frame and smoking was not associated with increased risk compared to rest of the cohort. Four patients went to have another frame, five were managed with plaster and one patient refused further treatment. **CONCLUSION:** This protocol may delay frame removal however it is a simple and effective way to confirm the timing of frame removal.

Abstract no.: 49928

COMPARISON BETWEEN OPEN REDUCTION/INTERNAL FIXATION AND MINIMALLY INVASIVE PLATE OSTEOSYNTHESIS USING A 3D PRINTING MODEL FOR DISPLACED CLAVICULAR FRACTURES

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Purpose: This study was performed to compare open reduction/internal fixation(ORIF) and minimally invasive plate osteosynthesis using 3D printing model for displaced clavicular fractures. **Materials and Methods:** In a retrospective study of patients who underwent open plating or minimally invasive plate osteosynthesis (MIPO) with 3D printing for clavicular shaft displaced fracture from January 2013 to December 2015, outcomes of 21 patients treated with MIPO were compared with the those of 22 patients treated with open plating. After operation, bone union was evaluated by x-ray every 4 weeks. Radiologic outcome(bone union), functional outcome (KSS, UCLA score), scar length and degree of satisfaction about scar were evaluated. **Results:** The mean time to union was 12.1 weeks in patients who underwent MIPO and 12.8 weeks in patients who underwent open plating ($p = 0.524$). There was no significant difference in the KSS score and UCLA score between two groups($p = 0.478$, $p = 0.698$). The mean length of scar was 4.9 (medial 2.6, lateral 2.3) cm in Group A and 9.7cm in Group B ($P = 0.001$) and Group A were satisfied with scar more than Group B($P = 0.001$). Nonunion developed 1 case in each group. 5 patients in Group B had skin numbness (1 in Group A, $p = 0.038$). **Conclusion:** There were no significant difference in radiologic and functional result between open reduction/internal fixation (ORIF) and minimally invasive plate osteosynthesis using 3D printing model in displaced clavicle shaft fracture. But scar satisfaction is higher in MIPO than Open plating.

Abstract no.: 49933

COMPARISON OF POSTERIOR LUMBAR INTERBODY FUSION BETWEEN CONVENTIONAL BILATERAL APPROACH AND MINI-OPEN UNILATERAL APPROACH

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The purpose of this study is to compare fusion rate between posterior lumbar interbody fusion (PLIF) via conventional bilateral approach and mini-open unilateral approach. Before 2010, we performed PLIF with conventional bilateral approach, which was our standard at that time for posterior lumbar fusion surgery, and after 2010, we usually performed PLIF with mini-open unilateral approach. We selected consecutive 25 patients (average 63.4 y.o., male 7, female 18) performed one level PLIF using bilateral approach and 34 patients (average 72.4 y.o., male 12, female 22) using unilateral approach that has more than one-year follow up. Average follow up period was 81 ± 28 months (average \pm standard deviation) in patients using bilateral approach, and 35 ± 19 months in patients using unilateral approach. We investigated bone graft rate, fusion rate, pedicle screw loosening, and lateral motion of the lesion. Bone graft rate was 45 ± 6 % in bilateral approach and 40 ± 11 % in unilateral approach. Fusion rate was 100% in bilateral approach and 97% in unilateral approach. Pedicle screw loosening was 12% in bilateral approach and 26% in unilateral approach. Lateral motion of the lesion was 2.2 ± 1.8 degree in bilateral approach and 2.6 ± 1.6 degree in unilateral approach. There was a statistical difference ($P < 0.05$) in relation to bone graft rate. PLIF via unilateral approach was thought to be at a disadvantage for bone graft compared to conventional bilateral approach. However, there were no statistical differences in relation to fusion rate, pedicle screw loosening, and local motion of the lesion.

Abstract no.: 49938

LEARNING CURVE FOR MICROENDOSCOPIC LUMBAR DISCECTOMY

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Introduction: Microendoscopic spine surgery is minimally invasive surgery, but microendoscopic discectomy (MED) has a higher learning curve than open discectomy for lumbar herniation due to the narrow surgical space. Consequently, surgeons need extensive training. This study aims to profile the learning curve for MED of eight inexperienced endoscopic spine surgeons. Material and Methods: The first 30 cases of MED for lumbar disc herniation performed by eight inexperienced endoscopic spine surgeons at Iwai hospital or Inanami Spine and Joint hospital were examined. The learning curve was assessed using surgery time, blood loss, and the incidence of dural puncture. Results: There were 240 patients (166 male, 74 female) with a mean age of 43 years. A few patients had over 50 ml of blood loss, but most patients had little blood loss. Total dural puncture occurred in 20 cases, and the number of dural punctures was more in the first 10 cases than the third 10 cases: first 10 cases 12 cases, second 10 cases 2 cases, third 10 cases 6 cases. Average operation time was shorter in the third 10 cases than first 10 cases: first 10 cases 87.1 (Standard deviation 24.7) minutes, second 10 cases 79.2 (24.1) minutes, third 10 cases 74.2 (24.3) minutes. Conclusion: Operation time was shorter in the third 10 cases than first 10 cases. Bleeding volume was generally little. Dural puncture mostly occurred during the first 10 cases. We concluded that the learning curve peaks at approximately 20 cases.

Abstract no.: 49940

NO CORRELATION BETWEEN INTERMITTENT CLAUDICATION AND QUADRICEPS STRENGTH IN PATIENTS WITH LUMBAR SPINAL STENOSIS

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Introduction: Lumbar spinal stenosis exhibits common signs such as leg pain, leg numbness, leg muscle weakness, low back pain, and intermittent claudication. But few papers focus on the relationship between intermittent claudication and quadriceps' strength. In this study, we researched the relationship among intermittent claudication, muscle strength, and imaging analysis using CT for lumbar spinal stenosis. **Material and Methods:** We examined patients who underwent laminectomy for lumbar spinal stenosis from July 2015 through December 2016. We evaluated intermittent claudication the Grip strength, the quadriceps strength, 10m walk test (time and steps), the area of total muscle and the multifidus using plain computed tomography imaging at the third lumbar level, psoas muscle index (PMI) before spine surgery. We diagnosis sarcopenia by grip strength, walking speed, and PMI of L3 multifidus. **Results:** There were 101 patients (68 male, 33 female) with a mean age of 69.8 years. We diagnosed 4 patients (4%) as sarcopenia. Quadriceps muscle significantly correlated with Grip strength ($P<0.001$, $r=0.707$), walking speed ($P=0.007$, $r=-0.265$), 10m walking test (steps) ($P<0.001$, $r=-0.369$), total muscle area at L3 level ($P<0.001$, $r=0.526$), multifidus muscle area ($P<0.001$, $r=0.399$), and PMI ($P=0.009$, $r=0.259$). There was no correlation between intermittent claudication and the quadriceps' strength. **Conclusion:** The more quadriceps strength patients with lumbar spinal stenosis have, the more grip strength, the faster walking speed, the more area of multifidus muscle, the less steps of 10m they have. However, their quadriceps' strength has no relationship to intermittent claudication.

Abstract no.: 49943

THE INFLUENCE OF AGE, WEIGHT AND ANGLE OF CORRECTION ON THE NEAREST RESULT OF OPENING WEDGE HIGH TIBIAL OSTEOTOMY

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Osteoarthritis (OA) is the leading cause of chronic pain and number 4 cause of disability. Conservative knee osteoarthritis (KOA) treatment is more successful at I and II stages of the disease. With increasing incidence and rejuvenation of KOA, high tibial osteotomy (HTO) is becoming a widely accepted procedure for KOA treatment, allowing not only to improve knee function but also to delay or avoid total knee replacement. Objective: to evaluate impact of age, body mass index (BMI) and the correction angle on short term results HTO. Materials and Methods: In overall 35 HTO procedures were produced. The male/female ratio was 2:1. Mean age $59,0 \pm 13,1$ years, BMI $29,04 \pm 3,57$ kg/m² and correction angle $12,5 \pm 2,78^\circ$. Pain intensity was measured by visual analogue scale (VAS), knee status and function was assessed with Knee Society Score (KSS) scale. Results: Significant pain reduction by VAS (from $72,27 \pm 11,79$ mm to $7,72 \pm 6,62$ mm) and functional and objective KSS score improvement (from $43,66 \pm 11,5$ and $54,39 \pm 11,77$ to $86,51 \pm 10,86$ and $81,93 \pm 6,65$, respectively) was documented in one year. The obtained results are categorized as follows: excellent (36.4%), good (57.6%) and satisfactory (6%). Negative influence on the nearest result of HTO was provided by a combination of age >60 years, a BMI < 30 kg/m² and a correction angle of <12,5°. Conclusion: The best results can be obtained in patients aged < 60 years with <30 kg/m² BMI and <12,5° correction angle.

Abstract no.: 49944

**ACETABULAR COMPONENT REVISION FOR ILIOPSOAS IMPINGEMENT
AFTER PRIMARY TOTAL HIP ARTHROPLASTY**

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Iliopsoas impingement is a potential cause for persistent groin pain after total hip arthroplasty. Patients describe pain when climbing stairs, while driving, and have groin pain with resisted hip flexion. Other causes such as aseptic loosening, infection, and fracture, should be ruled out on first. The diagnosis of iliopsoas impingement must be confirmed with an ultrasound-guided diagnostic and therapeutic injection of lidocaine into the iliopsoas sheath. Anterior acetabular component overhang increases the risk of mechanical irritation of the iliopsoas tendon, and cup component malposition such as less anteversion also increases the risk. If not improve a pain with conservative treatment, we should consider an operative treatment. Patients who report pain relief with the diagnostic and therapeutic injection are candidates for surgical treatment. An arthroscopic or open iliopsoas tendon release should be considered in patients with persistent symptoms and mild anterior component overhang, and acetabular component revision also should be considered in patients with severe acetabular component overhang or malposition. We have two cases of the patients with iliopsoas impingement after total hip arthroplasty, and not improve with a nonoperative treatment. Cup component revision led to groin pain resolution, one because of an cup component overhang, and one because of malposition, so we report the two cases.

Abstract no.: 49947

EVALUATION OF PATIENT-SPECIFIC ACETABULAR JIG FOR CUP PLACEMENT IN TOTAL HIP ARTHROPLASTY

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Introduction: Acetabular cup placement holds a significant importance in longevity of the total hip prosthesis and hence is an important modifiable factor determining complication rates. Aseptic loosening and hip dislocation are two most important complication related to faulty cup placement, which by standard method is largely dependent upon eyeballing and surgeon's judgement. We intend to evaluate a self-designed, low-cost, patient-specific acetabular jig to guide cup placement in total hip arthroplasty. **Methods:** It was a prospective randomized control study. 36 patients were categorized in to group-A & group-B through computerised randomisation. In group-A, CT based pre-operative templating was done using mimics and 3-matics software and a virtually designed acetabular jig was printed using 3D printer and used intra-operatively to guide cup placement. In group-B, standard method of cup placement was used. Angle of inclination and anteversion were calculated on post-operative x-rays and compared between two groups along with blood loss, surgical duration, acetabular offset and hip length. **Results:** In group-A, angle of inclination and anteversion were in centre of range of safe zone in which hip is maximally stable with more precision in creating hip centre as compared to group-B without any significant increase in surgical time or blood loss. **Conclusion:** Virtual pre-operative templating and cup placement using virtually designed, patient specific acetabular jig decrease chances of malpositioning of cup and recreates hip centre close to anatomical one preventing any limb length discrepancies especially in cases where anatomy has been distorted like bony ankylosis and developmental dysplasia of hip.

Abstract no.: 49949

**AUGMENTATION OF UNSTABLE INTERTROCHANTERIC FRACTURE
FIXATION WITH TROCHANTERIC WIRING**

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Introduction: Unstable intertrochanteric fractures have varied presentations and their fixation is often challenging, despite the availability of various implants. We aimed to study the outcomes of augmentation of DHS or PFN fixation for these fractures, using trochanteric wiring. **Material and methods:** Retrospective study of 50 cases of unstable intertrochanteric fracture fixation, augmented with trochanteric wiring, with a minimum follow-up of 1 year, was carried out. Of these, 30 were fixed with Dynamic Hip Screw and plate, while 20 were fixed with Proximal Femoral Nail. Clinical outcomes, radiologic union time, complications and functional outcomes using Harris Hip Score were assessed. **Results:** The study included 28 males and 22 females with mean age being 64 years. Mean time for union was 16 weeks. Harris Hip Score was excellent in 15 patients, good in 18 patients, fair in 12 patients and poor in 5 patients. Complications included superficial infection in 1 patient and screw back-out in 1 patient. **Conclusion:** Stabilization of the lateral wall along with the trochanter fragments while fixing unstable intertrochanteric fractures is of paramount importance to prevent complications. Augmentation using trochanteric wiring, which requires minimum surgical time, helps to achieve this purpose and improves the outcomes.

Abstract no.: 49950

**TOTAL KNEE ARTHROPLASTY IN THE PAST THREE DECADES:
TRENDS IN PATIENT CHARACTERISTICS AND IMPLANT
SURVIVORSHIP**

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Objective: To study trends in patient characteristics and implant survivorship for primary total knee arthroplasty (TKA) over the past three decades. Methods: A total of 635 knees underwent TKA from 1985 to 2014 in our hospital. They were divided into three groups: group A, 125 knees that underwent TKA in 1985–1994; group B, 203 knees in 1995–2004; and group C, 307 knees in 2005–2014. Age, sex, underlying disease, and implant survivorship were compared. Results: Mean age at primary TKA was 65.3±9.7 years in group A, 69.1±10.0 years in group B, and 74.6±8.4 years in group C. The proportion of patients aged ≥80 years with osteoarthritis increased; it was 7.0% in group A, 14.5% in group B, and 32.0% in group C. In contrast, the proportion of patients aged <60 years with rheumatoid arthritis decreased; it was 49.0% in group A, 35.3% in group B, and 21.2% in group C. Implant survivorship free from infection within 2 years of surgery was 100% in group A, 98.3% in group B, and 99.2% in group C. Implant survivorship free from aseptic loosening within 10 years of surgery was 87.5% in group A, and 95.2% in group B. In group C, there were total 30 knees could be followed up 10 years until March 2018, only one knee had a revision surgery due to aseptic loosening. Conclusion: The characteristics of patients undergoing primary TKA have changed dramatically. Implant survivorship free from aseptic loosening has improved.

Abstract no.: 49954

ORIF OF ACUTE INTRA-ARTICULAR DISPLACED CALCANEAL FRACTURES: A RETROSPECTIVE ANALYSIS OF SURGICAL TIMING AND INFECTION RATES

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Introduction: The choice of surgical timing in open reduction for calcaneal fractures has been proposed to be associated with soft tissue complications and infection. This study analyzed the correlation between surgical timing and infection rates. We performed a retrospective single- surgeon single-facility study between Jan 2006 and Jan 2010. 50 patients with 53 intra-articular calcaneal fractures were included. They received open reduction internal fixation via extensile lateral L-shaped approach. Methods: We assessed the duration between heel trauma and operation from the medical records and sorted our patients into early (within 3 days), intermediate (from 3 to 10 days) and delayed (over 10 days) surgical groups. The mean follow-up period was 13 months. Results: Only one of the 50 patients, a 74-year-old female with diabetes mellitus, developed deep infection requiring hardware removal and debridement. overall, we did not find a statistical difference in postoperative infection rates in the different timing groups. Conclusion: Our conclusion is that in experienced hands, surgical timing may not affect postoperative infection rates in calcaneal fracture among strictly selected patients who do not have potential risk factors for wound complication. Therefore, early operation may be helpful to this patients.

Abstract no.: 49957

CHARACTERISTICS OF THE PATIENTS WHO COULD PLAY SPORTS AFTER CR-TKA

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Introduction: Recently as the extension of healthy life expectancy, the number of patients who hope to play sports after TKA is increasing. However, it is unclear what characteristics of patients who can play sports after TKA are. The purpose of this study is to investigate physical conditions and characteristic of the patients who can play sports after CR-TKA. Methods: For the 28 patients who can play sports after CR-TKA, types of sports, the age at the surgery, pre and postoperative ROM, the follow-up period from the surgery were investigated and 10m walk test, maximum step length, grip strength test as physical tests were measured at the final follow-up and compared with 31 patients who underwent CR-TKA but do not play sports. Results: The type of sports the patients played were jogging, golf, softball, table tennis, volleyball, tennis, badminton, aerobics, dancing, hiking and so on. The mean age of the patients at the time of surgery was 69.1 years. The mean postoperative ROM of the knee joint after CR-TKA was 145.0 degrees. In some physical tests, there were significantly different between the patients with sports and the patients without sports. Moreover all the patients who can play sports after CR-TKA had kept high activity by getting painless and stable knee with good ROM, and were very satisfied with their clinical results. In the future, long term outcomes of these patients should be followed up and it would be preferable if more specific allowable level of sports activity are found out.

Abstract no.: 49966

CLASSIFICATION OF ANTERIOR-INFERIOR TIBIOFIBULAR LIGAMENT DISRUPTIONS USING INTRAOPERATIVE DIRECT VISUALISATION IN 144 ANKLE FRACTURES

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Objectives: We classified the types of anterior–inferior tibiofibular ligament (AITFL) disruptions using intraoperative direct visualization in 144 ankle fractures. **Methods:** Between January 2012 and June 2017, 144 patients with closed ankle fractures underwent surgery at our institution. According to the AO/OTA classification system, ankle fractures were classified by using preoperative plane radiography and CT. AITFL disruptions were classified into complete or partial rupture of substance of the ligament, avulsion from tibia (Chaput), and avulsion from fibula (Le Fort) by using intraoperative direct visualization. **Results:** Eight fractures were type A1, four were type A2, one was type A3, 14 were type B1, 16 were type B2, 67 were type B3, nine were type C1, 23 were type C2, and two were type C3. Thirty six complete ruptures of substance of ATIFL, 12 partial ruptures of substance of AITFL, 18 Caput, 11 Le Fort, and one Caput and Le Fort were in AO/OTA type B fractures. Seven of 97 AO/OTA type B fractures have no AITFL disruption. Fifteen complete ruptures of substance of AITFL, ten Caput, and two Le Fort were in AO/OTA type C fractures. **Conclusions:** AO/OTA type B3 fractures and complete ruptures of substance of AITFL were most frequent. It was very interesting that there were 12 partial ruptures of substance of AITFL in AO/OTA type B fractures, and seven of 97 AO/OTA type B fractures had no AITFL disruption. Intraoperative direct visualization was very useful for understanding the type of AITFL disruptions and treating them.

Abstract no.: 49967

REDUCING THE RISK OF DISLOCATION AFTER TOTAL HIP ARTHROPLASTY

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Introduction: Malposition of the acetabular component is a risk factor for post-operative dislocation after total hip replacement (THR). We have investigated the influence of the orientation of the acetabular component on the probability of dislocation. Radiological anteversion and abduction of the component of 49 hips which dislocated post-operatively were measured by Einzel-Bild-Röntgen-Analysis and compared with those in a control group of 200 patients. Observation: In the control group, the mean value of anteversion was 15° and of abduction 44°. Patients with anterior dislocation after primary THR showed significant differences in the mean angle of anteversion (17°), and abduction (48°) as did patients with posterior dislocation (anteversion 11°, abduction 42°). After revision patients with posterior dislocation showed significant differences in anteversion (12°) and abduction (40°). Results: Our results demonstrate the importance of accurate positioning of the acetabular component in order to reduce the frequency of subsequent dislocations. Radiological anteversion of 15° and abduction of 45° are the lowest at-risk values for dislocation.

Abstract no.: 49971

EARLY RESULTS OF SURGICALLY TREATED PATELLAR OSTEOCHONDRAL FRACTURE FOLLOWING PATELLAR DISLOCATION IN ADOLESCENTS: A CASE SERIES OF TEN PATIENTS

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Background: Adolescents having knee ligaments laxity are more predisposed to patellar dislocation. Associated patellar osteochondral fractures (OCFs) denote a main complication. Many surgical options have been described to treat such injury. This study aimed to assess the early results of operated patellar osteochondral fractures following traumatic patellar dislocation in adolescents. Material and Methods: Ten adolescent patients diagnosed to have patellar OCFs following traumatic patellar dislocation were surgically treated. After employing an initial arthroscopic examination, if the fragment was big enough, it was fixed by headless titanium compression screws. Else, the loose body was removed and the base was managed with microfracture. Pre- and post-operatively, patients evaluation was carried out using the VAS for pain and post-operatively via the IKDC score. Results: The mean follow-up was 24 months. Five of ten patients underwent fixation, while the other five underwent loose fragments removal with microfracture. The median of VAS for pain scores demonstrated highly significant improvement (from 8.8 preoperative to 1.55 postoperative, $P = 0.002$). The median of IKDC scores of the non-fixation and fixation group were 85.1 and 74.7 respectively ($P = 0.144$). Conclusions: According to this study, the surgical treatment for patellar osteochondral fractures following traumatic patellar dislocation in adolescents using headless titanium compression screws or excision and microfracture gave significant improvement. Studies with more patients' numbers and longer follow ups are still necessary to properly assess the profits of such management protocol.

Abstract no.: 49972

ARTHROSCOPICALLY ASSISTED FIXATION OF LOWER THIRD FEMORAL FRACTURES WITH RETROGRADE INTRAMEDULLARY NAIL: OPERATIVE TECHNIQUE

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Retrograde interlocking IMN have been used for treatment of selected lower third femoral fractures. In this study, we present a simple arthroscopically assisted technique for retrograde femoral IMN. From April 2013 to October 2016, 38 patients with distal femur fractures were treated with arthroscopically assisted retrograde interlocking intramedullary nailing. Twenty-eight were males and 10 were females with an average age of 28 years (range: 23-56). The average time from injury to surgery was 7 days (range: 1-13). All patients were followed up to a minimum of 12 months. At final follow up, all patients were evaluated according to Neer Score. The average operative time was 73.2 min (53–90 min). The mean follow up period was 24 months (range 12-30). The average time to union was 16 weeks (range: 11-24). One patient (12.5%) had delayed union (24 weeks) who was a heavy smoker and eventually went to union after dynamization, yielding a final (100.0%) union rate after. All patients regained normal knee motions within 6-8 weeks except 1 patient with knee ROM below 90° and he was uncooperative with physiotherapy exercises. At the final follow up, patients were evaluated according to Neer score (1967). Twenty nine patients (76.3%) had excellent result, 8 patients (21.1%) had satisfactory result and only 1 patient (2.6%) had unsatisfactory result. None of the patients had poor result. This method can additionally provide a less invasive step to the soft tissue and the knee joint with less operative time and blood loss.

Abstract no.: 49973

**MODIFIED REDUCTION TECHNIQUE FOR BIOLOGICAL FIXATION OF
CLOSED SEGMENTAL TIBIAL FRACTURES BY THE LESS INVASIVE
STABILISATION SYSTEM**

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This prospective case series study aimed to assess the value of the Less Invasive Stabilization System (LISS) to treat closed Segmental Tibial Fractures (STFs) using a proposed surgical technique. Between August 2010 and January 2014, 21 consecutive recent (within 1 week) closed STFs that matched the inclusion criteria were enrolled. Patients were treated with the 13-hole LISS plate using a biological reduction technique. All patients were followed up every 2 weeks for the first 2 months, then every month for the rest of the first 6 months then every 6 months after that. Patients were assessed radiologically during the follow up appointments and clinically at the final visit by the Lower Extremity Functional Scale (LEFS) to evaluate the result. The mean time to union of the proximal fracture was 15.72 ± 2.78 (range, 12–20) weeks and for the distal fracture was 20 ± 2.22 (range, 16–24) weeks, excluding delayed union in 3 patients. All patients except the 3 showed radiological observable callus in a mean duration of 4.95 (range, 3-7) weeks. The mean final follow up LEFS was 72.4 (range, 60-80). Discussion: The mean time to union of the proximal fracture was better than the distal fracture. The use of LISS to treat closed STFs using the proposed surgical technique has proved to give favorable results. Further studies using the described technique are needed to justify the achieved effects.

Abstract no.: 49974

PREOPERATIVE MULTISLICE CT EVALUATION OF SHOULDER DEFORMITIES IN OBSTETRIC BRACHIAL PLEXUS PALSY PATIENTS UNDERGOING TENDON TRANSFER

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A question was proposed about the value of preoperative CT in the assessment of resultant shoulder bony deformities and correlating these deformities with the prognosis of the tendon transfer surgery. This study included 30 patients, 15 under 4 years and 15 above 4 years old. The Modified Mallet Score was used for clinical assessment. A multislice 3D reconstruction CT scan was used as a preoperative radiological assessment of the shoulder. Fourteen patients (46.7%) had a normal glenoid version angle (normal range from -12° to 2°) and normal range of articulation with the glenoid (42.3% to 71.4%) and 16 patients (53.3%) had an abnormal glenoid version angle and abnormal range of articulation with the glenoid. According to the Modified Mallet Score, there was a statistically significant difference in the mean value of global abduction, external rotation, hand to mouth, hand to neck and hand to spine between the pre- and post-operative assessment. There was a statistically significant difference in the mean value of postoperative Modified Mallet Score between the patients under the age of 4 years and those above the age of 4 years. There was no statistically significant difference in the mean value of glenoid version angle and percentage of humeral head articulation between the patients below the age of 4 years and those above 4 years. The study concluded that there is no prognostic value of preoperative CT angles on the results of the tendon transfer around the shoulder in patients of upper brachial plexus birth injury.

Abstract no.: 49975

SINGLE RETROGRADE ELASTIC STABLE INTRAMEDULLARY NAIL FOR CLOSED SIMPLE DIAPHYSEAL HUMERAL FRACTURES IN CHILDREN: A CASE SERIES OF 46 PATIENTS

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Introduction: Almost all pediatric humeral shaft fractures can be treated successfully using closed methods. Some patients, however, require internal fixation either because of an inability to maintain an adequate reduction, significant soft tissue injury or concomitant fractures. This study aimed to evaluate the functional and radiological results managing simple closed humeral shaft fractures in children using a single retrograde elastic stable intramedullary nail (ESIN). **Materials and Methods:** Forty six pediatric patients were surgically treated using a single retrograde ESIN. Age range was 6 to 16 years (mean: 10). Among the patients, 29 with right arm fractures and 17 with left arm fractures. Two patients had associated radial nerve injury at presentation. Periodic clinical and radiographic evaluation was performed. The functional outcome was evaluated according to the system of Broberg and Morrey and the DASH score and was compared to the healthy side. **Results:** The mean follow up was 14 months (range, 12-18). Radiographically, all fractures healed in good alignment. The mean time for solid union was 8 weeks (range, 6-11). There were no intraoperative complications. There was superficial wound infection in 4 cases and nail migration occurred in 3 cases. **Conclusions:** Single ESIN fixation with the aid of a functional arm brace was an adequate technique for the treatment of humeral shaft fractures in pediatric patients when surgical stabilization was indicated. This simple minimally invasive technique provided stable fixation with minimal soft tissue stripping at the fracture site and led to bone union in all studied cases.

Abstract no.: 49976

TREATMENT OF DUPUYTREN'S FINGER CONTRACTURES USING COLLAGENASE INJECTIONS AND MANIPULATION: IS IT A PARADIGM SHIFT IN MANAGEMENT?

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Introduction: Surgery has been the mainstay for treatment of Dupuytren's contracture. In the last decade enzymatic fasciotomy with collagenase injections into cords has brought into light a new way of treating this condition with good outcomes and limited morbidities. Objectives: To evaluate the results of treatment with this technique. Patients & Methods: Retrospective analysis of 40 patients who underwent this treatment. The finger deformities were staged according to Tubiana staging. There were 49 fingers in which collagenase was injected in the cords followed by manipulation in clinic the next day with local anaesthetic. Subsequently they were given thermoplastic splints to be used, underwent physiotherapy and stretching. Results: Full correction was achieved in 31 patients. Among the others 2 required reinjection and one had surgery. Number of clinic visits ranged from 2 to 4 weeks. 6 patients had skin split after manipulation which was managed conservatively with dressings and all healed without any complications. Conclusions: It is a relatively easy technique with less complications compared to surgery reducing the morbidity, early recovery and more patient satisfaction. Proper patient selection is paramount for appropriate cost effective usage. Our results did show limitations of this technique when proximal inter phalangeal joint or multiple joints were involved. There can be potential cost savings with reduced theatre usage, avoidance of wound complications, multiple visits to clinic, dressings / nursing time. Recovery is faster and there is less loss of working time with impact on the societal costs.

Abstract no.: 49978

CIRCULATING GLIOSTATIN CORRELATES WITH SEROLOGICAL FEATURES AND RESPONDS TO IL-6 INHIBITOR THERAPY IN PATIENTS WITH RA

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Objective: Gliostatin (GLS) is thought to share identical functions with thymidine phosphorylase and platelet-derived endothelial cell growth factor. GLS is known to have angiogenic and arthritogenic activities in fibroblast-like synoviocytes derived from rheumatoid arthritis (RA-FLSs) patients. Aberrant GLS production has been observed in the synovial membranes and synovial fluids in patients with RA. We have previously reported that GLS induces the expression of matrixmetalloproteinase (MMP) -1 and -3 and GLS itself in cultured RA-FLSs. And we previously demonstrated significantly higher concentrations of GLS in the sera and synovial fluids of patients with RA compared to those with osteoarthritis or normal controls. Tocilizumab (TCZ) is a humanized monoclonal antibody against the interleukin-6 receptor. In this study, we examined serum GLS concentrations of RA patients treated with TCZ. **Patients and methods:** In this study we evaluated serum MMP-3, CRP and GLS levels, and the disease activity score 28 (DAS28) in 15 RA patients (12 females and 3 males) treated with TCZ for more than 12 weeks. The means of age and disease duration of RA were 58.4 years old and 15.6 years, respectively. GLS were measured by enzyme immunoassay. **Result:** The mean of DAS28-ESR was 4.73 at baseline, and that was improved to 2.50 after TCZ therapy for 12 weeks, the mean of MMP-3 (210.6ng/ml) improved to 90.97, the mean of GLS levels (2.94) decreased to 1.33ng/ml, respectively. **Conclusion:** Serum GLS levels were reduced by TCZ treatment, and those were correlated with clinical outcomes in RA.

Abstract no.: 49979

MUSCLE STRENGTH OF PREINJURY OF PATIENTS WITH PROXIMAL FEMORAL FRACTURE IS RELATED TO THE OUTCOME

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Introduction: In Japan there are 170 thousand patients of proximal femoral fracture (PFF) per year. We manage to do a surgery for PFF, but it doesn't always get good results. We think that the results depend on their muscle mass. The aim of this study is to examine the relationship between muscle strength, muscle mass and outcome of elderly women with PFF. Methods: We had 96 women's PFF patients. Patients who were severe dementia, palsy, facility residents were excluded. Fifty-eight women with PFF aged 65-98 years (83.6 ± 14.5 years) participated in this study. We measured the skeletal muscle mass index (SMI) as muscle mass and the grip strength as muscle strength. The SMI were calculated using Whole-body Dual-Energy X-Ray Absorptiometry (DXA) scan. The outcome was classified into three categories patient's home, a rehabilitation hospital, a nursing home. Results: For the entire study group, the average of SMI was 5.5 kg/m², the average of grip strength was 13.2 kg. The group of home's average of SMI was 5.58 kg/m², grip strength was 14.72 kg. The group of rehabilitation hospital's average of SMI was 5.42 kg/m², grip strength was 9.49 kg. The group of nursing home's average of SMI was 5.37 kg/m², grip strength was 6.6 kg. There was no significant association in muscle mass. There was significant association in muscle strength. It's difficult to suggest workout to elderly patients. Our data shows we have to educate young people that keeping movement is important to their happy later life.

Abstract no.: 49981

ENDOSCOPY-ASSISTED EXTENDED CURETTAGE AND VOID FILLING WITH ARTIFICIAL BONE GRAFT IN A RARE CASE OF ANEURYSMAL BONE CYST INVOLVING THE SECOND METATARSAL OF A CHILD: A CASE REPORT AND REVIEW OF LITERATURE ON ABCS

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Introduction: Aneurysmal bone cysts (ABCs) account for only 1% of all bone tumours and of these only 7% occur in the foot. ABCs can mimic other bone tumours on imaging studies, thus making histological diagnosis mandatory. ABCs rarely occur before the age of 5 or after 30. ABC of a metatarsal is very rare especially in children and only few cases have been reported in the literature. High recurrence rates have been reported due to inadequate curettage. **Case Report:** We report a rare case of an ABC localized to the second metatarsal in a 5-year-old boy who presented with limping, local pain, and minimal swelling in his left foot. Tissue diagnosis was confirmed on the basis of needle biopsy. Surgery was in the form of extensive curettage using an endoscope with a high speed Burr and cautery. The remnant cavity was filled up with artificial bone graft. Pathological analysis of the resected tissue was consistent with ABC. There was complete healing. **Conclusion:** We emphasize that only histological examination provides a precise diagnosis. Endoscopy assisted extended curettage appears to be an ideal treatment option as it provides a perfect visualisation of the interior of the entire cyst and use of cautery and burr more accurately under direct vision which potentially leaves only a minimal scope for recurrence. Another message to put forward is the use of artificial bone grafts instead of usual autogenous bone grafts to reduce graft site morbidity in children and stimulate local controlled foreign body reactions for healing.

Abstract no.: 49992

**METACARPOPHALANGEAL INSTABILITY OF THE SECOND FINGER:
THE USE OF LIGAMENTOPLASTY**

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Background: Metacarpal-phalangeal (MCP) instability of the second finger is an infrequent pathology. The surgical treatment of this condition is not well defined. Our objective was to evaluate the clinical result of the ligamentoplasty with flexor carpi radialis-hemitenodon (FCR). Methods: We present a clinical case of a 34-year-old woman who presented instability at the MCP joint of the second finger. Examination revealed a positive ulnar stress-test of the MCP joint. Subluxation of the joint is observed on radiographs. MRI aimed for a rupture of the radial collateral ligament. The patient was offered a FCR-hemitenodon ligamentoplasty. The objective was to reproduce the anatomy of the ligamentous complex (collateral radial and accessory ligaments). A dorsal-radial approach was performed. Two transosseous parallel tunnels were made in the metacarpal (MTC) and the proximal phalanx (PF). A V-shaped ligamentoplasty was slipped through the transosseous tunnel of the MTC obtaining two bundles, this tunnel was blocked with an interferential screw (Swive-lock). The first bundle replaced the radial collateral ligament and it was slipped through the transosseous tunnel carved into the PF and blocked with another screw. The second bundle was sutured to the palmar plate replacing the accessory ligament. The stability of the ligamentoplasty in flexion and extension was checked. Results: After 9 months, the MCP joint is stable and with full range-of-movement. The patient has resumed her work activity. Conclusions: The ligamentoplasty for the chronic rupture of the radial collateral ligament is an original technique whose design is based on reestablishing the anatomy of this ligamentous complex. The clinical results after 9 months are satisfactory, although long-term controls are necessary.

Abstract no.: 49993

CLINICAL, FUNCTIONAL AND ISOKINETIC OUTCOMES OF ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION USING DISTALLY INSERTED HAMSTRINGS: A PROSPECTIVE STUDY

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Introduction: ACL reconstruction using distally inserted hamstrings may have a mechanical and biological advantage. The purpose of this work is to report isokinetic, clinical, functional outcomes of the technique. Methods: 24 patients with a unilateral ACL rupture, no surgical history of both knees were included in this prospective study. Patients underwent ACL reconstruction with quadrupled hamstring graft preserving tibial insertion. Average time to surgery was 18,5 months. At surgery, average Lysholm score was 68,7/100, subjective IKDC score was 62,8/100. All patients had an objective IKDC score C or D. Following parameters were evaluated at follow-up of 6 and 12 months: functional outcome, clinical outcome (KT-1000, Lachman, ROM, IKDC score), isokinetic strength, complications. Results: 19 patients were reviewed with a mean follow up of 11,5±1,1 months. Mean Lysholm was 96/100±6, mean subjective IKDC was 89/100±9. Mean side-to-side difference was 1,4±1,5 mm at 6 months and 1,9±1,5mm at 12 months based on KT-1000 measurements (p=0,0049). Two patients had a positive Lachman but all patients had recovered full range of motion at 6 months. Objective IKDC score was A or B for all patients at follow-up 12 months. The mean deficit of quadriceps strength decreased from 27%±15 to 16%±12 between 6 and 12 months postoperatively (p=0,0091). Mean deficit of HG decreased from 23%±13 to 12%±12 between 6 and 12 months (p=0,0084). No complications were reported. Discussion conclusion: this technique is reliable. Clinical and functional and isokinetic outcomes are good and no complication was reported, probably also due to hamstring insertion preservation.

Abstract no.: 49994

RESULTS OF THE ANATOMIC MEDULLARY LOCKING TOTAL HIP ARTHROPLASTY: FOLLOW-UP FOR A MINIMUM 15 YEARS

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Objectives: The purpose of this study is to report the clinical and radiographic results of hip arthroplasty using anatomic medullary locking (AML®) stem at a minimum 15 years in Korean. **Methods:** Between June 1996 and December 2002, the senior author performed consecutively hip arthroplasties using the AML® stem. The mean follow-up period for the 210 patients (268 hips) is 16.9 years. The average age of these patients at the index operation was 50.9 years. We retrospectively evaluated 210 patients (268 hips) clinically and radiographically. **Results:** In clinical outcome, HHS was improved from 67.47 to 83.64 at last follow up. In radiographic evaluations, stress shielding occurred during follow up, Grade 1 in 11 hips, grade 2 in 32 hips, grade 3 in 30 hips, grade 4 in 10 hips. Osteolysis of acetabulum were found in small lesion in 11 cases, large in 2 cases, expansive in 19 cases. Polyethylene liner wear rate was 0.11mm/year \pm 0.005. Subsidence of femoral stems were more than 3mm in 6 hips. Stable bone ingrowth femoral stems were in 258 hips, fibrous stable femoral stems in 4 hips and unstable femoral stems in 6 hips. Forty-eight hips (17.91%) were required revision surgery. Kaplan-Meier survivorship at the 15-year follow-up, was 86.2%. **Conclusions:** Results of AML® hip arthroplasty shows 86.2% relatively good survivorship at minimum 15 years follow-up. Furthermore, the AML® stem shows 99.3% excellent survival ship at minimum 15 years follow-up. The bearing surface was very important factor to influence component durability and revision rate.

Abstract no.: 49996

RESULTS OF TOTAL HIP ARTHROPLASTY WITH 36-MM METALLIC FEMORAL HEAD

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Purpose: We evaluated long-term clinical and radiographic results in patients underwent primary total hip arthroplasty (THA) using 36-mm metallic femoral head and 1st generation highly cross-linked polyethylene among patients aged 40 years and less, with minimum 10 years follow-up. **Materials and Methods:** We retrospectively reviewed 20 hips underwent primary THA by one hip surgeon using 36-mm femoral head and 1st generation highly cross-linked polyethylene from 2004 to 2006. Mean follow-up was 131.55 months. Clinical follow-ups included functional measurements. And we evaluated post operative complications, prosthesis loosening, failure, and osteolysis. For radiologic evaluations, together with position of acetabular cup at 6 weeks later of postoperation, we separately calculated the penetrations of femoral heads into polyethylene liners during postoperation and one year later check-ups, and during one year later check-ups and final check-ups. Polywear pro3D 5.10 software was used to measure penetrations of femoral head.

Results: Mean acetabular cup inclination and anteversion were 49.02° and 10.19° , respectively. Mean thickness of the polyethylene liner at 45° was 6.44 mm. There were no major complications such as implant loosening or osteolysis, and one case of dislocation occurred. Average modified Harris hip score at final follow-up was 91, and Merle d'Aubigne and Postel scores 15 were or over. Average femoral head penetration of bedding wear was 0.170 ± 0.039 mm/year. Steady-state wear rates was 0.059 ± 0.006 mm/year. **Conclusion:** Results of THA with 36-mm metallic femoral heads on 1st generation highly cross linked as a bearing surface in less than 40 year-old patients were satisfactory.

Abstract no.: 50000

REIMPLANTATION OF AN EXTRUDED OSTEOARTICULAR SEGMENT OF THE FEMUR: CASE SERIES AND AN IN VITRO STUDY IN A RAT MODEL

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Background: The treatment of open femur fractures with reimplantation of large extruded segments remains one of the most difficult clinical management scenarios. The situation is even complicated when the extruded segments contains a large osteoarticular segment and no consensus exist about the efficient sterilization. We successfully managed five cases of open femur fracture by reimplantation of a large osteoarticular segment. While the outcomes were favourable, we performed an in vitro investigation in a rat model to determine whether the bone segment preparation strategy was optimal. **Methods:** After meticulous debridement and sterilization with povidone-iodine scrub/orthopaedic antibiotic solution, osteoarticular segments of the femur were reimplanted successfully in five patients with Gustilo-Anderson IIIa-IIIb fractures. Furthermore, in vitro study performed to assess the relative efficacy of various methods of sterilization employed osteoarticular segments of rat femurs. After contamination, osteoarticular segments were treated with different protocols. The osteoarticular segments were then cultured and evaluated for infection and morphological changes. **Results:** At the mean 40 months follow-up, there were no infection and the fractures achieved completed union. For the basic research, only approaches involving povidone-iodine scrub with autoclaving or antibiotic solution immersion were 100% effective in eliminating bacterial growth. Furthermore, povidone-iodine scrub with antibiotic solution immersion preserved the articular surface morphology. **Conclusion:** Our study suggests that reimplantation of extruded osteoarticular segments of long bone may represent a feasible alternative to amputation. This report demonstrated that contaminated extruded osteoarticular segments can be adequately sterilized for reimplantation by cleaning with povidone-iodine scrub followed by brief soaking in antibiotic solution.

Abstract no.: 50096

EFFECT OF CONCOMITANT INJURIES AND THEIR TREATMENT ON THE OUTCOME OF FLEXOR TENDON REPAIR

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Introduction: Flexor tendon injury often occurs with concomitant injuries, such as fracture, vascular injury, or extensor tendon injury, and each of these are repaired independently, without a comprehensive strategy. The aim of this study is to identify the effect of concomitant injuries and their treatment choice on the outcome of flexor tendon repair. **Methods:** We evaluated 118 fingers of 102 patients with zone 1-3 flexor tendon injuries who underwent primary surgery at our hospital between Apr 2009 and Dec 2017. We performed multivariate analyses, with the active range of motion (AROM) of the proximal interphalangeal (PIP) and distal interphalangeal (DIP) joints as dependent variables and age, existence of concomitant injuries and their treatment as independent variables. **Results:** The average AROM of the PIP+DIP joints was 130° at the last follow-up, and using the Strickland criteria, “excellent” or “good” function was obtained in 74 (63%) of 118 fingers. Old age, concomitant diaphyseal fractures, and specific methods of osteosynthesis, like pinning, flexor digitorum superficialis injury, and immobilization for 3 weeks significantly worsened the results. Two surgically confirmed ruptures of the repair occurred in our series, both of which underwent 4-strand Tsuge procedure. **Discussion:** We clarified the superiority of early mobilization protocols with rigid osteosynthesis procedure, other than just pinning. To minimize the occurrence of tendon adhesion or joint stiffness, hand surgeons should repair the tendon and fractured bone appropriately, to ensure early mobilization without serious complications such as re-rupture of the sutured tendon.

Abstract no.: 50104

**RIGHT VENTRICULAR AND PULMONARY TRUNK METASTASIS OF HIP
UNDIFFERENTIATED PLEOMORPHIC SARCOMA PRESENTING WITH
HEART FAILURE: A CASE REPORT**

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Undifferentiated pleomorphic sarcoma (UPS) is defined as a pleomorphic high-grade sarcoma whose line of differentiation cannot be determined and constitute less than 5% of all sarcomas in adults. From a clinical viewpoint, UPS are deeply located tumors that show progressive and rapid growth. Cardiac neoplasms are rare, and most are metastatic in origin. Cardiac metastases are found at autopsy in 6-20% of patients with malignant neoplasms. Mean survival of affected patients is 3-12 months for metastatic cardiac tumors. Symptoms of cardiac neoplasms usually appear late in the course of the disease and are often ignored because of the more severe effects of the primary malignancy. Cardiac neoplasms, especially metastatic ones, are often not discovered until autopsy or presenting with symptoms of cardiac outflow obstruction. We present a rare case of right hip UPS with symptomatic right-heart failure secondary to cardiac metastasis. Case: This is a 51-year-old Chinese man with symptomatic metastasis of a right hip UPS to the right ventricle and pulmonary trunk. He denied any related symptoms of right hip sarcoma until the cardiac metastasis. He underwent surgical excision of the cardiac mass for the reason of dyspnea and posed a high risk of sudden death, pulmonary embolism or tricuspid obstruction. Histopathological and immunohistochemical examinations of the surgical specimen established the diagnosis of UPS and confirmed that the cardiac tumor was a metastasis from UPS. Unfortunately, the cardiac sarcoma recurrent three weeks later after tumor excision and progressed rapidly. The patient expired due to heart failure.

Abstract no.: 50108

INFREQUENT ASSOCIATION: PSOAS ABSCESS WITH INFECTED TOTAL HIP ARTHROPLASTY, A CASE REPORT AND REVIEW OF THE LITERATURE.

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Introduction: Association between psoas abscesses (PA) and prosthetic hip infections has been reported only rarely in literature. Clinical presentation often causes confusion with hip pathology, representing a delay in diagnosis. Case presentation: A 78-year-old man presented fever and weight loss, associated with low back and left hip pain, with functional disability. He had a total hip arthroplasty (THA) in left side. Radiographs showed signs of THA mobilization. Thinking about an infection, we ordered an ultrasonography that showed a PA. Magnetic resonance imaging confirmed the diagnosis, showing an abscess extending to the left hip joint. First stage revision was performed and an antibiotic impregnated cement spacer was inserted. Intraoperative cultures grew *S. Lugdunensis*. Clindamycin therapy was started for 6 weeks. Serial testing computed tomography scans were carried out, which showed a resolution of the abscess. Completed antibiotic therapy, second stage revision was performed. Intraoperative cultures were negatives. After rehabilitation period, he achieved full range of motion and good functional outcomes. Discussion: Primary PA are of unknown origin and they are caused by haematogenous or lymphatic spread; and secondary abscesses by direct spread. Iliopsoas bursa is connected to hip joint in 14% of the cases which could explain this association. Two-stage revision surgery and antibiotherapy offers satisfactory results, with eradication of the infection in more than 90% of the cases. Conclusion: The knowledge of this association, a good medical history and physical examination as well as correct imaging tests, would improve the diagnosis of this missed injury; associated with a multidisciplinary treatment.

Abstract no.: 50109

SURGICAL HIP DISLOCATION ACCORDING TO GANZ FOR EXCISION OF AN ISOLATED OSTEochondroma OF THE FEMORAL NECK: A CASE REPORT AND REVIEW OF LITERATURE

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Introduction: Isolated osteochondroma arising from the femoral neck are quite rare and typically asymptomatic. Case presentation: A 29-year-old man, presented left hip pain at forced flexion and internal rotation, without previous trauma. Radiographs showed a bone lesion adjacent to the neck femoral, suggesting the diagnosis of osteochondroma. Computed tomography and magnetic resonance imaging were performed to characterize the size and location of the tumor. The surgical approach proposed by Ganz et al. was performed. Anatomic Pathology Department confirms the diagnosis. No complications were recorded. We ordered to use two crutches for one month and rehabilitation period. There were no signs of recurrence or avascular necrosis (AVN). The patient has since returned to his regular exercise regimen with full range of motion without pain. Discussion: Mechanical signs of volume increase, neurovascular injuries, as well as malignant degeneration (0,4-2%) have led to advocate the excision in some cases. Using this approach, complete dislocation gives exposure of the entire femoral neck and head, which improves resection, and allows an evaluation of the labrum. AVN remains a concern, although the deep branch of the medial femoral circumflex artery, is protected during the dislocation. Complications such as pseudoarthrosis of the osteotomy, fractures, heterotopic ossification and recurrent subluxation, have been reported. Conclusion: This surgical approach can be used to some osteochondromas of the femoral neck that are otherwise difficult to access. The procedure offers significant improvement in the quality of life, although one should be aware of the complications can arise despite the relatively safe technique.

Abstract no.: 50110

FOREARM PSEUDOARTHROSIS ASSOCIATED WITH IMPLANT RUPTURE TREATED BY RE-OSTEOSYNTHESIS WITH AUTOLOGOUS BONE GRAFT: CASE REPORT AND REVIEW OF THE LITERATURE

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Introduction: Diaphyseal forearm nonunions are rare but severely disabling as dysfunction extends to the elbow and wrist, which limits the functional ability of the hand. **Case presentation:** A 66-year-old man, suffered an accident with left forearm diaphysaire closed fracture. Open reduction and internal fixation was performed with two locking compression plates. After 5 months, he complained about pain, without any previous trauma. Inflammatory parameters were normal. Radiographs showed a rupture of de radius plate, without signs of union in both bones. It was confirmed by a computed tomography scan. We decided new surgical treatment with plate removal and re-osteosynthesis. Cancellous iliac autologous graft was inserted. An isolated posterior interosseous nerve palsy was documented in perioperative course. One month after surgery, signs of consolidation were appearing. Callus of bone formation was completed at six months. Patient achieved full range of motion after rehabilitation period, without pain and excellent functional results. **Discussion:** For diaphyseal nonunion, low complications and nonunion rates below 5% have been reported in large series. Longer plates with a high plate-span/screw ratio are preferred to achieve a more stable fixation. Risk factors include comminution, high-energy fractures and open fractures. It seems that nonunions of the ulnar and radial diaphyseal defects up to 6 cm can be treated with autologous cancellous bone grafts, but it's ongoing topic of debate. **Conclusion:** Our result shows that treatment using techniques of compression plating osteosynthesis getting good reduction and adding autologous bone grafting achieve lead to a high union rate with excellent functional outcomes.

Abstract no.: 50111

SUBTROCHANTERIC HIP PERI-IMPLANT FRACTURE TREATED BY TRANSITIONAL PLATE, INTRAMEDULLARY NAIL WITH INTERLOCKING DISTAL SCREW AND LOCKING ATTACHMENT PLATE: CASE REPORT

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Introduction: Peri-implant fracture at the proximal femur plate end is a well-known complication associated with osteoporotic bone. Case presentation: 85-years-old woman who suffered accidental fall presented on her left side: supracondylar femur fracture, ankle fracture and distal radius fracture. She had diabetes, hypertension, and atrial fibrillation treated with warfarin. We decided conservative treatment of her wrist and ankle. Surgical treatment of the femur fracture was performed using less invasive stabilization system femur plate. At 8 weeks, when she started to walk, she suffered another fall. Radiographs showed subtrochanteric hip peri-implant fracture. Surgical treatment was performed with lateral femur approach on focus fracture. Reduction was achieved using reduction pelvis clamp farabeuf and stabilization with transitional locking compression plate. Three proximal screws of previous plate were removed, using a cerclage system. Intramedullary nailing was performed with interlocking distal screw. Stabilization was completed using a locking attachment plate over previous femur distal plate. Good functional outcome was achieved. Discussion: In our case, the use of transitional locking compression plate and reduction pelvis clamp helped us to anatomic reduction. It allowed us to use an intramedullary nailing associated with less surgical time, less blood loss and infections. Transitional plate, interlocking technique and locking attachment plate increased the stabilization. Conclusion: Management of a secondary fracture with an implant in situ is always difficult because of the limited availability of implants and limited exposure. A preoperative planification is necessary in this fractures where achieve a good reduction and stabilization is one of the fundamental objectives.

Abstract no.: 50112

OUR RESULTS OF PERCUTANEOUS SUTURE PERFORMED AND ASSISTED BY ULTRASONOGRAPHY IN CHRONIC AND SUBACUTE ACHILLES TENDON RUPTURES

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Introduction: Percutaneous suture performed and assisted by ultrasonography is a minimal invasive technique, comparing with other techniques which mean more complications. Objective: Describe our clinical results and complications. Material and methods: 7 cases were included between 2015-2016. Ultrasonography study identified gap distance and sural nerve. Simple distal to proximal percutaneous suture was performed and assisted by ultrasonography. They were immobilized with Walker boot. Eight parameters were evaluated. Results: The mean age was 63,3. Five cases were subacute and two chronic ruptures. The mean diagnosis lag time was 4,6 weeks. Two cases were secondary to levofloxacin treatment and one to corticosteroid therapy. The mean gap distance was 4 centimetres. From the third week, we were removing one by one the wedges of Walker boots, until complete 6 weeks. The minimum follow-up was one year. The integrity of the repair and no entrapment of sural nerve was confirmed on MRIs at one year follow-up. No cutaneous complications were recorded. We achieved the ability to stand on tiptoe in all cases. Good functional outcomes and high rates of satisfaction were achieved. AOFAS score was 100 points. Conclusion: This technique allows intraoperative verification of the distance between the ends of the gap, tendon state, vascular bundle and sural nerve; and visualization of the thread and follow of it through the tendon. Our series becomes important because they are subacute-chronic ruptures in patients with risk factors, in which, with a less aggressive procedure, no cutaneous complications we recorded and excellent functional outcomes have been achieved.

Abstract no.: 50113

OSTEOSYNTHESIS IN CHILDREN: OUR EXPERIENCE

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Introduction: The alignment and stability of fractures in children can be problematic with non-surgical approaches, especially in older children with complex fractures. Material and methods: We included children until 16 years treated by osteosynthesis since 2016. Ten parameters were evaluated. Results: 10 patients, 4 women and 6 men. The mean age was 13,4 years. Left side was affected in 70%. Previous trauma in all cases. Lower limb was affected in 6 cases (one proximal femur and two diaphysis, one tibia plateau, one distal tibia and fibula y one lisfranc fracture-dislocation) and four in upper limb (one humerus diaphysis, two supra-intercondylar fractures and one ulna diaphysis). We performed open reduction and internal fixation in articular and extra-articular fractures, and percutaneous femoral nailing. In the immediate postoperative period, a patient treated with double supra-intercondylar plate had paresthesias and loss of function of ulnar nerve that recovered progressively. At mid-term follow up, one patient with femoral nailing had leg length discrepancy that was corrected using a shoe lift. Osteosynthesis removal because of consolidation was performed in four cases and in two cases we removed the tension band needed for the approach. Full range of motion, high satisfaction rates and complete return to previous activities were achieved in all cases. Conclusion: Osteosynthesis was performed trying to achieve anatomic reduction and early weight bearing. The devolvment of more aggressive surgery and the variety of new osteosynthesis materials, have led to more frequently surgical treatments in children fractures, in contrast to what happened years ago.

Abstract no.: 50115

THE IMPORTANCE OF A MULTIDISCIPLINARY DIAGNOSIS IN A NEONATE WITH FIBROMATOSIS COLLI: WHEN IT'S IMPORTANT TO THINK ABOUT ITS ASSOCIATION WITH WILDERVANCK SYNDROME

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Introduction: Fibromatosis Colli or Congenital Muscular Torticollis (CMT) is the third best known muscle-skeletal anomaly in the paediatric age. A percentage of cases is associated with rare syndromes, so early screening is essential. Case presentation: A 8-month-old female child with CMT was sent to our Paediatric Orthopaedic Department. She was followed-up by Ophthalmology Department because of Duane's Retraction Syndrome and Otorhinolaryngology Department because of sensorineural deafness. Physical examination revealed contracture of left sternocleidomastoid muscle, short neck and anomaly of intergluteal cleft. There was facial asymmetry with bilateral preauricular pits and low hairline. We thought that it could be a Klippel-Feil anomaly. Ultrasonography study showed a sternocleidomastoid muscle cord like mass. Lumbar and cervical spine radiographs showed congenital scoliosis associated with vertebral anomalies such as: butterfly vertebra D10-D7, hemivertebra D1-D5 and cervical spinal fusion. Multidisciplinary assessment with all departments was carried out and the diagnosis of cervico-oculo-acoustic syndrome or Wildervanck syndrome was confirmed. We ordered genetic study and sent to the Reference Hospital for treatment. Discussion: Wildervanck syndrome is characterized by Klippel-Feil anomaly, sensorineural deafness and Duane's retraction syndrome. Polygenic and X-linked inheritance have been hypothesized. It has rarely been reported in males. Although it has an incidence of $<1/100000$, if we have a neonate with CMT, ocular motility disorder and sensorineural deafness, we have to think about this syndrome. Conclusion: The importance of clinical and image correlation is highlighted in this case, along with multidisciplinary coordination of all departments, which has been decisive for differential and early diagnosis.

Abstract no.: 50116

POST-TRAUMATIC FOOT COMPARTMENT SYNDROME IN A THREE-YEAR-OLD CHILD: A RARE CASE REPORT

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Introduction: Foot compartment syndrome in children is extremely uncommon, with only few reported cases on the literature. Case presentation: 3-year-old male arrived after having been struck by a motor vehicle. His foot was run over by a car. He presented a left tibia distal closed fracture. His foot examination revealed a markedly edematous state. He showed marked distress with palpation and the capillary refill time was brisk to all the toes. At one hour the pain was aggravated by foot passive motion and it was not relieved by anything. The patient was emergently taken to the operating room, and the intracompartmental pressures (ICPs) were measured. The pressure was higher than 55 mmHg. Emergent fasciotomies and external fixation for tibia fracture were performed. Three days later, the closed of fasciotomies was performed. External fixation was maintained for six weeks with clinical reviews. After removed it, rehabilitation program was complete to achieve early mobilization. He achieved complete range of motion. At five months, complete consolidation of the fracture was observed without malalignment or skin complications. Discussion: Acute compartment syndrome in children is one of the most serious limb threatening conditions that should be anticipated and managed carefully especially in injuries associate with long bone fractures. A missed diagnosis may result in severe foot deformity, dysfunction, and chronic pain. Conclusion: Owing to the young age of the patient, communication expression skills, and pain perception, the clinical and objective ICPs findings went paramount in our diagnostic and treatment.

Abstract no.: 50117

**CHRONIC ACHILLES TENDON RUPTURE TREATED WITH ALLOGRAFT:
TWO CASE REPORTS**

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Introduction: In clinical practice, chronic Achilles tendon ruptures are uncommon. Usually, these lesions are discovered four to six weeks after injuries. Case presentation: 57-year-old male reported an episode of twisting his ankle 3 months previously, with progressive limitation in walking. Second case was a 67-year-old-woman who took oral levofloxacin pills and presented three months' later pain in the distal calf of her limb. Imaging studies showed completed Achilles tendon ruptures. On first case, rupture was 62 centimetres from distal tendon insertion with a gap of 80 centimetres; and at second case it was 34 centimetres with a gap of 62 centimetres. Posteromedial approaches were performed. Achilles tendon allograft used had approximately 3 cm of bone attached to the tendon at either end. Two anchors were used to fixate the distal portion of the Achilles tendon. Two portions of the tendon were tunneled through the distal portion of the Achilles, with Pulvertaft suture. They were immobilized with Walker boots. From the third week, we were removing one by one the wedges, until complete 6 weeks from surgery. After rehabilitation period, they were able to return to their normal activities. Outcome evaluation was completed using American Foot Ankle Orthopaedic Society score. Conclusion: Achilles tendon allograft has been used as a technique to repair tendon ruptures with excellent results. In our cases, we had chosen this technique because of the gap size, the functional limitation and the characteristics of both lesions.

Abstract no.: 50283

ADVANCED PRACTICE PHYSIOTHERAPIST ROLE IN ORTHOPAEDIC SURGERY NOT LIMITED TO EXPERIENCED SENIOR PHYSIOTHERAPISTS

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Introduction: Advanced practice physiotherapists (APP) have helped improve accessibility to orthopedic outpatient care in Canada. APPs are generally senior physiotherapists with many years of clinical experience. A practice model involving physiotherapy students (PS) and orthopedic surgeons (OS) has yet to be explored. The purpose of this study was to evaluate concordance for orthopedic diagnoses and surgical triage between PS and OSs. **Methods:** A prospective study involving a final year PS and seven OSs was conducted in a university hospital in Sherbrooke, Quebec after the PS had undergone a three-week intensive training. Eighty-six adult patients referred to OSs for gonarthrosis, coxarthrosis or shoulder problem were independently evaluated by the PS, and then re-evaluated by an OS. Both noted their diagnoses and surgical triage recommendation. These outcomes were analyzed for agreement between the PS and OSs using percentage agreement and Cohen's kappa. Patient satisfaction towards the outpatient clinic experience was noted using a modified version of the Visit-Specific Satisfaction Instrument (VSQ-9). **Results:** Our sample consisted of 86 patients (mean age = 63.4 years), where shoulder problems accounted for 36.0% of consultations, gonarthrosis for 52.3% and coxarthrosis for 11.6%. The percent agreement for diagnosis was 95.3%. The agreement for surgical triage was high ($\kappa = 0.86$, 95% CI: 0.74–0.98) with a raw agreement of 94.2%. Patient satisfaction was high. **Conclusion:** The PS and OSs made similar diagnoses and triage recommendations suggesting that a long clinical experience alone is not a prerequisite for physiotherapists to help increase accessibility to orthopedic care in Canada.

Abstract no.: 50286

PHYSICAL FUNCTION CHANGE IN SPONTANEOUS OA: A NEW ANIMAL MODEL SYSTEM ESTABLISHMENT

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Osteoarthritis (OA) is an age-related disease, and difficult to establish a spontaneous OA animal model. Recently, a histologic examination report showed that Dunkey Hartley guinea pig could develop age-related, spontaneous OA among the knees and other joints. However, it is unknown of the physical function change of knees during OA process. The aim of this proposal is to establish a spontaneous OA animal model to evaluate the relationship between the knee functions and OA process. For lifetime changes, three Dunkey Hartley guinea pigs which from two months old to eighteen months old were monitored. The guinea pigs were forced to run on the treadmill for 10 min at the speed of 25 m/min, twice per week. The altered gait in the progressive OA was assessed using gait analysis by CatWalk method. Histologic changes were examined at 18 months of age by immunohistochemistry staining. The results showed that the scores of gait analysis indices, including stands, intensity, and footprint content, in the older age stage (after nine month-olds) were lower than the younger age stage (before nine month-olds). For exploring the relationship between pathology and physiology during OA process, the histologic changes and gait analysis were examined at six lifetime points (6, 9, 12, 15, 18 and 21 month-olds). The gait analysis results were consistent with the histological changes in our spontaneous OA model of Dunkey Hartley guinea pig. This animal model is well established and can be an assay platform for testing the developing small molecule drugs for osteoarthritis therapy.

Abstract no.: 50288

INVESTIGATION FOR THE RELATIONSHIP BETWEEN LUMBOSACRAL RADICULOPATHY AND NEUROLOGICAL FINDINGS

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The purpose of this study is to investigate the sensitivity and specificity between lumbosacral radiculopathy and neurological findings. We selected 143 patients who were diagnosed as a single level, unilateral lumbar radiculopathy caused by lumbar spinal disease. There were 17 patients with L4 radiculopathy, 75 patients with L5 radiculopathy, and 51 patients with S1 radiculopathy. We investigated the sensitivity and specificity between L4 radiculopathy-Manual muscle testing (MMT) of tibialis anterior (TA), patellar tendon reflex (PTR), L5 radiculopathy-MMT of TA, extensor hallucis longus (EHL), gluteus medius, Trendelenburg's sign, and S1 radiculopathy-MMT of gastrocnemius, Achilles tendon reflex (ATR). We defined Trendelenburg's sign 2+: the pelvis drops on the side opposite to the affected side over the horizontal line during standing on one leg, and Trendelenburg's sign 1+: pelvic tilt asymmetry without pelvic drop over the horizontal line. The sensitivity and specificity were 12% and 86% between L4 radiculopathy-TA, 53% and 99% between L4 radiculopathy-PTR, 21% and 94% between L5 radiculopathy-TA, 47% and 84% between L5 radiculopathy-EHL, 48% and 85% between L5 radiculopathy-gluteus medius, 43% and 90% between L5 radiculopathy-Trendelenburg's sign 2+, 71% and 85% between L5 radiculopathy-Trendelenburg's sign 1+ with 2+, 6% and 95% between S1 radiculopathy-gastrocnemius, 48% and 98% between S1 radiculopathy-ATR, respectively. Although high specificities were detected between lumbosacral radiculopathies and neurological findings, the sensitivities were low except for between L5 radiculopathy and Trendelenburg's sign 1+ with 2+. Trendelenburg's sign 1+ with 2+ defined in this study was thought to be useful test for detecting L5 radiculopathy.

Abstract no.: 50389

ANKLE ARTHRODESIS BY MODIFIED SCRANTON'S METHOD

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Introduction: Ankle arthrodesis has been widely used with various ways of approach and fixation. However there is no absolute way of surgery. In this study we report ankle arthrodesis by modified Scranton's method. Methods: Since 2010, 46 lower limb segments in 46 patients were treated in our institution. The mean age of the patients was 63.8 years old. Modified Scranton's method includes resection of anterior two-third of medial malleolus with fibula resection, curettage of residual cartilage surface, local bone graft from resected medial malleolus, and fixation of ankle joint with T plate. We modified it in some points. First, we started using locking plate for humerus. Second, we stopped performing fibula osteotomy. Third, without fibula resection, sometimes it is difficult to compress arthrodesis site, therefore we started using one thick cannulated screw. In post-operative treatment, no plaster splint was used, ROM exercise was permitted just after the operation, and walking exercise was started basically 3 weeks after the operation with ankle brace. Evaluation includes bone union, and clinical results of Japanese society for surgery of the foot (JSSF): ankle scale. Result: Bone union was achieved in 45 ankles except one, salvaged with re-operation. Finally all patients had solid bone unions and were able to bear total weight in walking without pain. JSSF scale improved 46.6 at pre-operation to 86.5 at post-operation. Discussion and conclusion: ankle arthrodesis with our modified Scranton's method is very useful methods with early postoperative care, safe approach, solid fixation, and possible bone graft.

Abstract no.: 50505

COMPARISON OF TWO MINIMALLY INVASIVE TRANSFORAMINAL LUMBAR INTERBODY FUSION TECHNIQUES FOR DEGENERATIVE SPONDYLOLISTHESIS

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Introduction: Various studies have reported minimally invasive transforaminal lumbar interbody fusion (MI-TLIF) advantages for lumbar degenerative disease treatment. The objective of this study is to compare two MI-TLIF techniques. **Methods:** Seventy-one patients who were undergoing MI-TLIF for single-level degenerative spondylolisthesis were enrolled into our study. Forty-two patients were treated by two experienced surgeons, who simultaneously used tubular retractors (bilateral simultaneous approach, BSA group), and 29 patients were treated by a midline approach, with the cortical bone trajectory screw technique (CBT group). The mean follow-up period was 54.3 months. Evaluation parameters included operation time, blood loss, low back pain visual analog scale (VAS), Japanese Orthopedic Association (JOA) score, Oswestry Disability Index (ODI), serum creatine kinase (CK) and C-reactive protein (CRP) inflammatory markers, and radiological study. **Results:** Average operation time and blood loss of the BSA/CBP groups were 138.8/173 minutes ($P<0.0001$) and 320/220 mL (ns), respectively. Significant differences between the groups were not observed in JOA scores and ODI. The VAS at the last follow-up of the BSA group was 1.62, and that of the CBT cohort was 0.59 ($P=0.0181$). For laboratory data, the CBT group showed a significant lower CK (261.4) than the BSA group (769.3) on POD1 ($P<0.0001$). The CRP levels and radiological evaluations were similar in both groups. **Conclusions:** Although the MI-TLIF midline approach using the CBT screw technique requires a greater operation time, it can be performed by one experienced surgeon and decreases paravertebral muscle invasiveness and postoperative low back pain.

Abstract no.: 50523

DOES THE POSTERIOR CONDYLAR OFFSET INFLUENCE THE RANGE OF MOTION AFTER MOBILE-BEARING TOTAL KNEE ARTHROPLASTY?

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Background: Posterior Condylar Offset (PCO) correlates with the range of motion (ROM) after total knee arthroplasty (TKA). The purpose of this study was to investigate the influence of PCO on ROM after TKA using a cruciate-retaining mobile-bearing prosthesis. **Patients and Methods:** We reviewed 34 patients (5 men, 29 women) that underwent 42 TKAs using CR-Flex Mobile knee system I from January 2011 to March 2016. The average age was 74.3 years at time of operation, and all their diagnosis was osteoarthritis. Average follow-up duration was 36.8 months. The evaluation included the preoperative and postoperative ROM. PCO and angles of components were measured on radiographs. **Results:** Average ROM increased from 120° (105° to 135°) preoperatively to 125° (117° to 133°) at the last follow-up, an average increase of 5° (-8° to 18°). The mean α -angle was 95.7° (93.2° to 98.2°), β -angle was 88.8° (86.2° to 91.4°), γ -angle was 1.9° (-1.5° to 5.3°), and the mean δ -angle was 83.9° (82.0° to 85.8°). Average PCO changed from 29.6mm (26.6 to 32.6) preoperatively to 27.4mm (24.1 to 30.7) postoperatively, average change of 2.2mm (-0.1 to 4.5). There was a statistically correlation between PCO before and after surgery and the change in preoperative range of knee flexion and that measured at the last follow-up (correlation coefficient, $r = 0.38$). **Conclusion:** We found positive correlation between the difference in PCO and the range of knee flexion before and after operation. This suggested that PCO was one of factors influencing the range of knee flexion before and after TKA.

Abstract no.: 50524

MALGAIGNE FRACTURE DISLOCATION AND ASSOCIATED PERINEAL INJURY: EVALUATION OF RESULTS OF TREATMENT

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INTRODUCTION: Malgaigne fractures dislocations are unstable injuries of the pelvis ring. Anteriorly there may be a pubic symphysis diastasis or fracture of ipsilateral pubic rami (inferior/ superior or both) and posteriorly there may be a fracture of sacrum or iliac wing or sacroiliac joint dislocation. The aim of present study is to evaluate our results of treatment of 20 cases of Malgaigne fracture dislocation and associated perineal and visceral injuries. **MATERIAL AND METHODS:** The patients were treated by close reduction and combination of bed rest, traction and/or external fixation. Patients in shock or with associated visceral and perineal injuries were stabilized with an external fixation in emergency according to the need and repair of perineal tear done accordingly. **RESULTS:** Out of 6 female patients, 4 female patients were having perineal injury for which perineal repair was done. Road traffic accident was the commonest mode of injury in 16 patients with fall from height in 3 and fall of a wall in 1 patient. Lateral compression was the commonest mode of injury in 7 patients, anterior-posterior compression in 3. **DISCUSSION:** Pelvic fracture dislocations are complex injuries with high rates of mortality and morbidity. Genitourinary trauma is the major visceral injury associated with these fractures. Though comparatively functional results were better than the anatomical results, but the grading of the functional results was in accordance with the grading of anatomical result in individual patient. **CONCLUSION:** An adequate reduction and its maintenance by any means (skeletal traction in combination with or without external fixation) is important to avoid late complications in Malgaigne fracture dislocations.

Abstract no.: 50526

ECHONDROMA OF THE PATELLA

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Introduction: Chondromas are benign neoplasm derived from mesodermal cells that form cartilage. Seen more in young people. There is an association with Carenny's Triad (gastrointestinal stromal tumours, pulmonary chondroma and extraductal paraganglionoma). They are called enchondromas when they occur in the medullary canal of the bone and when they occur on the surface of the bone are called periosteal or juxtacortical chondromas. If it develops to the surface a cartilage to project under the periosteum of the bone it is called echondroma. Chondromas grow from areas of growth-plate cartilage which become entrapped in the medullary canal of the metaphysis or in the metaphyseal-diaphyseal junction. These proliferations persist as islands in the bone and then develop from enchondral ossification. They grow as normal cartilage and grow until adulthood or maturity. A rare tumour called enchondroma protuberans is a benign tumour of long bones. Chondromas are composed of hyaline cartilage with focal calcification and can simulate chondrosarcoma on X-rays. Positive diagnosis can only be provided by the histopathological examination. Surgical treatment is the only successful way of dealing with it. We report this unusual case of echondroma of the patella. Review of the literature and exhausted web search could not find any case of echondroma of the outer surface of patella.

Abstract no.: 50529

TENDO-ACHILLIS MODIFIED PERCUTANEUOS REPAIR

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The purpose of this study was to present the functional outcomes of percutaneous repair of the Achilles tendon with special tape used for gynecology cirulage and a follow-up of 1 year. Methods: 15 patients who underwent percutaneous surgery for acute unilateral Achilles tendon rupture between 2013 and 2016 were retrospectively reviewed. We used the tape used by gynecological team for preventing abortion. Results: A total of 13 male and 2 female patients met the inclusion criteria and were followed for one year. The average age was 39.3 years (range: 31–56 years). Patients returned to almost normal daily activities at an average of 6 months after surgery. No difference in active and passive range of motion (ROM) was recorded between the affected and the contralateral normal ankle joints. Isometric plantar flexion was near normal. Sensory impairment in the territory of the sural nerve was identified in 1 patient immediately after surgery. The sensory defect had completely resolved by 4 months postoperatively. One patient developed wound infection that made the tape visible that warrants revising the wound again. The infection subsided by antibiotic and dressing. Conclusion: Short-term outcomes of our series support the effectiveness of percutaneous repair using this method in Achilles function rehabilitation of patients with acute ruptures.

Abstract no.: 50531

BILATERAL ANTERIOR SHOULDER DISLOCATION WITH FRACTURE OF BOTH GREATER TUBEROSITIES

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Bilateral anterior dislocation of the glenohumeral (shoulder) joint is uncommon. Incidences of bilateral anterior fracture dislocation of the shoulder are relatively rare. About 16 cases are reported in the world literature. We report a case of bilateral anterior dislocation of the shoulder with bilateral avulsion fractures of the greater tuberosities of the humerus following a convulsion due to over dose of Tramadol with forceful restraint. Bilateral anterior shoulder fracture dislocation following convulsions is rarer than posterior fracture dislocation. Fortunately, clinical diagnosis is straightforward. Urgent closed reduction of the shoulders with ORIF of the displaced avulsion fractures of the greater tuberosities and appropriate physiotherapy intervention will optimise patient outcome.

Abstract no.: 50532

EARLY VERSUS LATE REMOVAL OF INTERNALLY FIXED KIRSCHNER-WIRES FOR DISPLACED LATERAL CONDYLE FRACTURE OF THE HUMERUS IN CHILDREN

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Introduction: Lateral condyle fracture of the distal humerus is the second most common paediatric elbow fracture. Unstable, rotated and displaced ($>2\text{mm}$) fractures are managed with open reduction and internal fixation with K wires or screws. Debate persists as for how long the K wires should be placed in situ after ORIF. We aimed to compare the functional and radiological outcome after early versus late removal of K wires. **Methods:** Retrospective comparison of early (3-4weeks) versus late (5-7weeks) removal of K wires was done. Radiological union, carrying angle, arc of motion was reviewed and compared between early and late group using the Dhillon scoring system. **Results:** We report the outcome of 40 cases (20 cases in each early and late group). Radiological union was achieved in all the cases of both group at 12 weeks follow up. The mean loss of carrying angle was statistically insignificant ($p = 0.394$) between the early and late group. There was no significant difference between the early and late group in relation to arc of motion at 12 weeks ($p=0.724$) and 6 months ($p=0.638$) follow up. Using the Dhillon score, there was 100% excellent results in early group, 80% excellent and 20% good results in late group. Functional outcome was statistically insignificant between the two groups ($p = 0.106$). **Conclusion:** Early removal of K wires showed similar radiological and functional outcome to late removal and has the advantage of early movement of elbow, wrist and less loss of school days for school going children.

Abstract no.: 50533

COMPLEX BICONDYLAR FRACTURES WITH REVERSED TIBIAL SLOPE: PATIENT-SPECIFIC CORRECTION STRATEGY

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Purpose: Sagittal malalignment consequent to reversal of the posterior tibial slope is an important factor that affects the outcome of tibial plateau fractures. We describe the surgical steps to restore the posterior tibial slope using a fixed angle locking plate. **Materials and methods:** Retrospective review of case-sheets of four patients with sustained closed bicondylar tibial plateau fractures (AO/OTA 41-C3) with reversed sagittal slope of the posterior column fragment and prospective follow up. All patients were operated through a posterior approach in prone position. Fixation was done with a fixed angle locking plate. **Results:** The average time taken for bony union was 12 weeks. The posterior tibial slope was restored in all the four patients (mean PPTA=8.5°, mean MPTA=88°). All patients attained excellent Knee Society Score at 1 year follow up (mean KSS=93). **Conclusion:** The posterior approach in the prone position gives direct access to the fracture apex which eases the fracture reduction and fixation to correct the sagittal malalignment in tibial condyle fracture involving the posterior column fragment. **Key words:** tibial plateau fracture, posterior column fracture, coronal plane fracture, tibial slope, sagittal alignment.

Abstract no.: 50534

ROAD TRAFFIC ACCIDENTS IN LIBYA

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According to the latest WHO data published in may 2014 Road Traffic Accidents Deaths in Libya reached 1,970 or 8.53% of total deaths. The age adjusted Death Rate is 38.61 per 100,000 of population ranks Libya #5 in the world. Review other causes of death by clicking the links below or choose the full health profile. This saddening statistic captures the mood of political and personal recklessness and abandon which prevails in today's Libya it gives Libya a road traffic fatality rate of 60.1 fatalities per 100,000 population (on a population of six million), the highest figure of any country in the world. Libya's rate now the third most dangerous place on earth to drive. A driving license in Libya is not issued on the basis of how much you know. Therefore the majority of drivers know little or nothing about the law. Wearing seat belts is not compulsory in most parts of Libya. Most of the accidents in Libya occur at school times but unfortunately no measures are taken by the traffic police to help young children to cross roads safely. Most of the road traffic accidents happen at the same areas but these are never identified as "black spots" to warn drivers of the possible dangers. A national policy for injury prevention and control in Libya should be formed thorough the coordination between different ministries, departments and the various agencies concerned.

Abstract no.: 50535

EFFECT OF DIFFERENT GROWTH PROMOTERS ON FRACTURE HEALING OF NONUNION IN A RAT MODEL: A COMPARATIVE STUDY

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Purpose - To compare effect of Bone Marrow stem cells with Bone Morphogenetic Protein (BMP) and Granulocyte Colony Stimulating Factor (G-CSF) on fracture healing in non-union rat model. Materials (or Patients) and Methods – Six to 8 weeks old Wistar rats (n=35) of both genders weighing between 170-260 gm were procured from the institute central animal house. 35 rats were randomly divided in 7 groups, 6 groups underwent surgery to create fracture out of which 5 groups had their periosteum cauterized to create non-union. One group served as non-union control, remaining 4 groups were treated with bone marrow stem cells alone and in combination with BMP or G-CSF or BMP+G-CSF. Bone marrow stem cells were harvested from 5 rats of 7th group. Various study parameters were noted at beginning, 8 weeks and 16 weeks of study period. Results – At 8 weeks all rats developed non-union except normal controls with intact periosteum. At 16 weeks all nonunion intervention groups showed both radiological and histopathological evidence of union. Non-union control group without supplementary intervention failed to unite. Only bone marrow stem cell group showed lower fracture healing grade than other groups with combinations. Conclusions – In rat non-union model, bone marrow stem cells with or without BMP and/or G-CSF in various combination is effective in treating non-union. Best response was recorded in bone marrow + BMP group +/- G-CSF as assessed by radiological and histopathological union grades. Bone marrow + G-CSF group showed intermediate fracture healing grades.

Abstract no.: 50536

DIRECT INTRAOPERATIVE ARTHROGRAPHY: A METHOD TO ACHIEVE RELIABLE INTRAOPERATIVE IMAGING DURING ARTHROSCOPIC TIBIOTALAR FUSION IN OSTEOPENIC PATIENTS

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Introduction: Osteopaenia is a condition in which bone mineral density (BMD) is diminished, associated with inactivity, renal dysfunction and oestrogen imbalances. Low BMD decreases the radio-opacity of bone on fluoroscopy, lessening the efficacy of this intra-operative imaging modality, having a detrimental effect upon arthrodesis procedures within the ankle. Direct intra-operative arthrography is a technique that, through the injection of contrast material directly within a joint during surgery, one can determine greater detail than fluoroscopy alone, particularly in cases of severe osteopaenia. Method: Through case review we evaluated the introduction of intra-operative arthrography, with the contrast agent (Omnipaque 300) being utilized to improve visualisation of bony anatomy and aid arthroscopic tibio-talar fusion. Results: This technique was successfully utilised during arthroscopic tibio-talar fusion in a case of severe disuse osteopenia, during an arthroscopic ankle fusion. Specifically, the technique was vital in aiding screw placement to gain correct compression at the fusion site after joint preparation. Discussion: The technique described through this study demonstrates how the use of direct intra-operative arthroscopy can form an adjunct to arthroscopic tibio-talar fusion in patients with pre-existing osteopaenia. There are other potential imaging techniques available, however, they can pose greater cost, require specialist equipment or expose patients and surgeons to high radiation doses. Overall, intra-operative direct arthrography has been shown to be a safe and effective technique to aid ankle arthrodesis, and offers a potential technique that could aid many operative procedures where patients present with low BMD.

Abstract no.: 50537

DIAPHYSEAL TUBERCULOSIS: A RARE MANIFESTATION

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We present here a case of 2 year old child presenting to us with a three month old left leg swelling. Child had occasional low-grade evening rise of temperature with a diffuse, tender, firm swelling over the medial aspect left tibia. Skin showed pitting edema over the swelling, but no draining sinus was present. Matted inguinal lymph nodes were present. Radiograph of the left tibia revealed mild thickening of the medial cortex of midshaft, with a lytic intramedullary bone lesion extending into the endosteal surface of medial cortex. The diagnosis of tuberculosis infection was confirmed by histopathological examination. The metaphyseal site and the age of patient opened the case for a various differentials, which needed to be ruled out. Bone tuberculosis in children usually presents as cystic disease in radiographs, unlike in this case. We could find only one such case in literature in an adult patient. Our purpose of reporting this case is to bring forward an atypical presentation of bone tuberculosis in child age group, so that it should be added to the differential diagnosis with chronic pyogenic osteomyelitis, Brodie's abscess, cystic lesions, tumours or granulomatous lesions, either fungal or bacterial.

Abstract no.: 50538

CASE SERIES: SIMULTANEOUS BILATERAL TIBIAL TUBEROSITY AVULSION IN THE ABSENCE OF TRAUMA - A RARE PAEDIATRIC PRESENTATION NOT TO BE MISSED

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Introduction: Paediatric presentation with knee pain is common; however, bilateral pain without trauma is less common and hence warrants further assessment. We present a case series of simultaneous bilateral tibial tuberosity avulsion fractures, in the absence of trauma - an extremely rare, but important diagnosis not to miss. Method: We conducted a scoping review of the literature to establish the pre-existing published reports of simultaneous bilateral tibial tuberosity avulsions. Through a case series of independent bilateral atraumatic avulsions we describe a management option for this rare condition, resulting in good clinical outcomes. Results: Since 1950 there have been just over 20 reported bilateral avulsion cases within the literature. Most cases are in adolescents and result from a high-impact traumatic mechanism, such as a hyper-flexion injury during sport. However, in the cases we describe these avulsion fractures occurred without such mechanism, and no report of trauma. Through clinical examination and radiographic assessment, demonstrating a significant avulsion distance, each case was deemed appropriate for surgical fixation with partially-threaded cancellous screws. Discussion: There are proposed links between Osgood-Schlatters disease as well as other bone pathologies, and metabolic pathologies, such as vitamin D deficiency. Surgical fixation results in good clinical and functional outcome in the presence of significant displacement of the tuberosity, however the evidence is still limited. The avulsion of the tibial tuberosity is an important diagnosis to consider in cases of bilateral knee pain. This case series highlights that even in the absence of trauma it is important to consider this diagnosis.

Abstract no.: 50539

ISOLATED CHRONIC TRAUMATIC RADIAL HEAD DISLOCATION: NEW ANATOMIC RECONSTRUCTION OF ANNULAR LIGAMENT - A CASE PRESENTATION AND REVIEW OF THE LITERATURE.

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Introduction: Isolated chronic traumatic radial head dislocation without associated fractures in children is a rare and easily missed. It's evident by the lack of their description in the literature. Case presentation: 7-year-old male child who presented pain and range of motion limitation in his right elbow after a fall four weeks before. Radiographs showed anterior dislocation of the radial head without associated fractures. Open reduction was not achieved so osteotomy of the ulna and reconstruction of annular ligament by using the fascia of triceps tendon (Bell Tawse technique) was performed and completed with transcondylar K-wire fixation. After, K-wire was removed, radiographs showed a dislocation of the radial head. To achieve maximal stability, we performed new osteotomies of the ulna and radius shortening osteotomy. Annular ligament reconstruction by using allograft anterior tibialis tendon by two drill holes in the proximal ulna placed at the sites of the original attachments of the annular ligament was performed to secure the proximal radius in its anatomic position. After immobilization and rehabilitation period, he achieved 100 degrees of flexion motion, -30 degrees of extension and 70% of pronosupination. Discussion: Bell Tawse reconstruction may be satisfactory if the dislocation is anteromedial. However, if it is anterior, anterolateral, lateral, or posterolateral, this reconstruction may be suboptimal. These new techniques are based on anatomic reconstruction of the annular ligament associated or not with osteotomies. Successful functional outcomes have been described. Conclusion: In children, isolated irreducible chronic post-traumatic radial head dislocation requires reduction and reconstruction of the annular ligament.

Abstract no.: 50540

OUTCOMES OF ARTHROSCOPIC ANKLE FUSION: DOES USING HEADED SCREWS FOR FIXATION REALLY REDUCE THE TIME TO FUSION?

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Background: Ankle osteoarthritis (OA) is a common debilitating condition which does not allow normal weight bearing. Arthrodesis has proven to be the most reliable end stage procedure. Traditional open techniques although are good, are associated with complications like pain, delayed/non-union, wound problems and prolonged hospital stay. Also, it has been suggested that headless screws reduce the time to fusion. Aim: To evaluate the results of arthroscopic ankle arthrodesis for advanced ankle OA and ascertain whether using headed screws reduces the time to fusion. Method: Between April 2014 to October 2017, 27 patients with advanced ankle OA underwent arthroscopic ankle fusion. Patients were assessed for wound healing, union and other complications at regular follow-ups. Outcomes were assessed by pre-op and post-op AOFAS scoring. Patients were followed-up until clinical/radiological union plus 3 months before discharge. Results: 88% of the patients had a day care procedure. The average pre-op AOFAS score increased from 25.78 (minimum being 9) to 83.06 (maximum being 94). Average time to union was 10.5 weeks. One patient had non-union, attributable to the general health and presence of multiple co-morbidities. Sub-talar arthritis developed in one patient. Other complications like wound healing problems, DVT/PE and infection were not encountered in our series. Conclusion: Arthroscopic ankle arthrodesis provides excellent fusion rates with lesser time to fusion as compared to open techniques. The complication rates are lesser with higher patient satisfaction and reduced hospital stay. In our study the time to fusion was faster as compared to the literature published using headless screws.

Abstract no.: 50543

FUNCTIONAL OUTCOME FOLLOWING OPEN REDUCTION AND INTERNAL FIXATION OF DOMINANT FOREARMS' BOTH BONES FRACTURES

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Introduction: Both bone fractures of forearm is a common injury following trauma and usually treated with open reduction and internal fixation (ORIF). Our aim was to assess the functional recovery of the dominant forearm following ORIF and the follow up by occupational therapist (OT). Methods: We assessed 31 patients (23 males and 8 females) with a mean age of 24.8 years, in whom dominant forearm radius and ulna fractures managed with ORIF. The mean follow up period was 13.2 months. They were assessed using Disability of the Arm, Shoulder and Hand (DASH) questionnaire. The number of follow up visits to the OT also counted. Results: DASH score ranges from 12 to 78 (out of possible 100- the worst function) with the mean of 24. The follow up visits to OT ranges from 0-5 with the mean of 2.3 visits. Nine patients (29%) started their follow up visits to OT from following day of surgery. Remaining 71% of them started following their first orthopaedic clinic visits (14 days). It was noted that all of 9 patients who started early, were able to visit all their expected visits and their DASH score mean was 14 which is below than the total mean value. Discussion and conclusion: Patients underwent ORIF for both forearm bone fractures, reported moderate to good function. The OT follow up was good in patients who reported excellent to good functions. Early mobilization and early referral to OT will improve the functional recovery in these patients.

Abstract no.: 50544

A PILOT RANDOMISED CONTROLLED TRIAL OF A HYBRID WEB-BASED AND IN-PERSON SELF-MANAGEMENT INTERVENTION AIMED AT PREVENTING ACUTE TO CHRONIC PAIN TRANSITION AFTER MAJOR LOWER EXTREMITY TRAUMA (IPACT-E-TRAUMA)

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Objective: To assess the research methods associated with the testing of a self-management intervention aimed at preventing chronic pain in patients with major lower extremity trauma, and evaluate its potential effects at 3 and 6 months post-injury. **Design:** A pilot randomized controlled trial with two parallel groups. **Setting:** A supra-regional level-1 trauma center. **Methods:** Fifty-six adult patients were randomized to an experimental or a control group. Participants received the intervention or an educational pamphlet. The potential efficacy of iPACT-E-Trauma was evaluated through questionnaires measuring pain intensity and pain interference with activities, as well as risk and protective factors for chronic pain. **Results:** The research methods were found to be feasible regarding several parameters including: the high percentage of eligible patients who accepted to participate (85%), and the low attrition rate at the end of the study ($\leq 18\%$). Some challenges were also identified, such as the low rate of eligible screened patients (37%). Mean scores of mild pain intensity and pain interference with daily living activities ($< 4/10$) were observed in both groups at 3 and 6 months post-injury. The experimental group perceived greater positive changes in their condition at 3 months post-injury. Injury-related and psychological risk factors of pain chronicity did not reach clinically relevant scores suggesting that participants were at low risk for chronic pain. **Conclusions:** This study provided support for the feasibility of the research methods. Further research involving patients with more serious injuries and psychological vulnerability is needed to assess the efficacy of the intervention.

Abstract no.: 50545

CAN CALCITONIN DOSE BE CALCULATED CLINICALLY TO TREAT WEAKNESS OF THE SKELETON DUE TO METASTASIS WITHOUT NEUROLOGICAL DEFICIENCY?

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In metastatic bone disease and multiple myeloma when massive skeletal involvement. There is massive osteolysis, skeletal becomes weak even without neurological deficit patient capacity to walk decreases. This may vary from mild as mild difficulty in walking to such extreme that patient confined to bed and unable to do his basic needs like going to toilet like grade four paraplegia without bladder bowel involvement. As per my classification four grade of weakness grade one patient can walk independently can go outside home infrequently, grade two patient walk but feels difficulty and is confined to home, grade three patient confined to wheel chair or needs support even for daily activities, grade four patient confined to bed. These patients have massive osteoporosis due to relentless osteolysis by tumor. Degree of osteolysis can be measured by twenty four hour calcium excretion in urine, PTH level etc .in grade one calcitonin given twice a week 100i.u s/c or i/m, grade two twice to thrice weekly, grade three three to four times and grade four daily and as patient improves doses can be made alternate day. Dose adjustment can be by clinical improvement along with laboratory parameters like fall in serum cal, increase PTH, DECREASE 24 hr urinary calcium. This supplemented with Vit.d, steroid along with bisphosphonates but CCT primary drug. Calcitonin controls metastasis keeps skeletal strong by preventing calcium depletion, patient becomes comfortable. Many cases even independent in grade four.it can be concluded that calitonin definitely improves patient life by increasing skeletal strength. the basis prognosis remains that of primary malignancy this grading system is in name khariwal grading.

Abstract no.: 50546

RELIABILITY OF CLASSIFICATION SYSTEMS FOR DISTAL FEMORAL PERIPROSTHETIC FRACTURES

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Introduction: There is no universally accepted classification system for distal femoral periprosthetic fractures. The aim of this study was to determine the inter-observer and intra-observer error of the most commonly used distal femoral periprosthetic fracture classifications. **Methods:** The most commonly used distal femoral periprosthetic fracture classifications were determined following a literature search. These were the Su, Lewis and Rorabeck, Kim and the Unified Classification system. X-rays were identified from a database of distal femoral periprosthetic fractures presenting to a single institution 3 Orthopaedic Consultants completed the questionnaire independently. The intraobserver error was calculated from one reviewer repeating the classifications 6 weeks following the initial review. Cohens kappa coefficient was used to determine inter and intra-observer error. **Results:** There were 58 distal femoral periprosthetic fractures that the 3 surgeons reviewed. A moderate inter-observer reliability was found for the Su classification (0.441) and the Unified classification system (0.425). A fair agreement was found for the Kim classification (0.329) and the Lewis and Rorabeck (0.362). The intraobserver error was 0.628 for the Su classification (substantial agreement), and moderate agreement for the Unified classification systems (0.568), Lewis and Rorabeck (0.462) and for the Kim classification (0.413). The Unified classification system was the most accurate at predicting the surgical treatment. **Conclusions:** There are no perfect classifications for distal femoral periprosthetic fractures, but currently the Unified classification system has moderate inter- and intra-observer error and is good at predicting what kind of surgical treatment would be appropriate.

Abstract no.: 50553

EFFECT OF CAM BOOT IMMOBILISATION ON WEIGHT-BEARING STABILITY IN SYNDESMOTIC INJURIES: A CADAVERIC STUDY

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Introduction: Adequate management of syndesmotic injuries is crucial to avoid complications. Controversies exist about the management of a two-ligaments ruptured injury. Our objectives were to evaluate the syndesmosis stability and the effect of the controlled ankle motion (CAM) boot at different levels of ligament injury and with simulated weight-bearing. Methods: 10 cadaveric specimens were dissected to expose the syndesmosis and create progressive iatrogenic ligament ruptures. Uninjured syndesmoses were compared to isolated AiTFL and combined AiTFL/IOL ruptures. The specimens were fitted in a custom-made device to allow stabilization and apply a reproducible axial load (AL). For each specimen and injury pattern, CT-scans were obtained with and without AL, as well as with a CAM boot under AL. Distal tibio-fibular relationship was evaluated using a previously validated measurement system. Results: When comparing ankles with isolated AiTFL and combined AiTFL/IOL rupture with and without AL, the only significant difference was an increase in internal rotation. Even with minimal statistical differences, it appears that AL doesn't impact syndesmotic stability apart from a slight increase in internal rotation. Secondly, with the CAM boot, no significant widening of the syndesmosis happened when either one or both ligaments were sectioned in an AL state. Only a slight increase in external rotation was statistically significant. Conclusion: AL without any rotational force doesn't affect the syndesmosis stability. Incomplete syndesmotic injuries can likely be treated with conservative treatment in a CAM boot and weight-bearing as tolerated. Further clinical studies are needed to confirm our findings.

Abstract no.: 50555

CLINICAL OUTCOMES OF SIMULTANEOUS BILATERAL TOTAL KNEE ARTHROPLASTY

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Introduction: Simultaneous bilateral total knee arthroplasty (TKA) has been performed on patients with knee osteoarthritis in our hospital. Several studies have suggested that staged bilateral TKA is associated with better clinical outcomes, while others claim that there are no differences between simultaneous and staged bilateral TKAs. Here, we compare clinical outcomes between simultaneous and staged bilateral TKAs. Methods: Thirty-five simultaneous bilateral TKAs were compared with 33 staged bilateral TKAs; the minimum follow-up period was 6 months. The Japanese Orthopaedic Association (JOA) score was examined as a clinical outcome measure. There were no significant differences between the two groups in sex, age, and JOA scores before surgery. The preoperative pain scores were worse for patients who underwent simultaneous bilateral TKA than for those who underwent staged bilateral TKA. Results: While there were no significant differences between groups in the postoperative pain scores, the mean JOA score for staged bilateral TKAs was slightly better than that for simultaneous bilateral TKAs at the final follow-up (simultaneous: 85.7, staged: 88.4). There were no cases of surgical site infection or revision surgery in either group. Conclusions: There were no significant differences between the simultaneous and staged bilateral TKA groups with respect to clinical outcomes. With appropriate patient selection, simultaneous bilateral TKA can be expected to save treatment costs and reduce hospitalization duration.

Abstract no.: 50556

'IMPLANT-LESS PATELLAR FIXATION' OF GRAFT IN MEDIAL PATELLOFEMORAL LIGAMENT RECONSTRUCTION – CLINICAL OUTCOME OF A PROSPECTIVE STUDY

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Various methods are described for medial patellofemoral ligament reconstruction (MPFL) in patellar instability. We describe a technique modification which avoids any implants for fixation at patellar end of ligament thus preventing any implant related complications and decreasing additional cost that's important in a developing country. 25 patients (16 female, 9 males) with lateral patellar instability were treated by MPFL reconstruction. Mean age 21 years (17-34 years). Mean followup period 25 months (range 22-32 months). Prior diagnostic arthroscopy with chondroplasty, meniscus debridement, lateral retinacular release was performed in three patients. MPFL reconstruction was performed using semitendinoses autograft whipstitched at both ends. It was routed through two parallel oblique tunnels, constructed in the proximal half of patella with a 4.5 mm reamer, both tunnels starting from medial surface of patella at least 5 mm apart, taking an oblique anterior course and exiting out on anterior patellar surface. Both sutured free ends of tendon, after routing through the patella, were tunnelled through layer 2 and 3 and fixed with a biodegradable interference screw in femoral tunnel at isometric position aided by image intensifier. All patients gained full arc of motion with no recurrence of instability of patella over follow up time & with no complications related to procedure. Mean Kujala score improved significantly from 62.66 to 96.33, while VAS scores changed from mean 5.53 to 0.4 at 2 years follow up. Modification in MPFL reconstruction technique gives results comparable with literature. In addition it decreases implant related complications in patella and is more cost-effective.

Abstract no.: 50560

PAIN PERCEPTION IN HIP OSTEOARTHRITIS

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For more than half century clinicians have noted pain reported by patients not always consistent with clinical measures of arthritis. Study aim was to test whether differences in sensory transmission from periphery to brain may account for observations. Somatosensory evoked potential (SSEP) testing was used to test whether somatosensory transmission remained reliable in subjects with no disruption in pathway to brain, and determine evidence peripheral sensitization. 30 patients were scheduled for total hip replacement and 10 controls were recruited for the study. Using visual analogue scale, patients graded their pain based on average over previous 4 weeks. Using this information patients were divided into groups low pain (1-4) and high pain (6-9). SSEP testing was done by stimulating the posterior tibial nerve. No significant difference in the stimulation current between patients with low pain and high pain, no delays in latencies measured between the control and arthritic group to the lumbar spinal cord. Statistically significant difference between the lumbar electrode and union C5-C6 nerve root between patients with high pain vs low pain ($p < 0.05$). Statistical difference between brainstem thalamus and cortex in patients in high pain group ($p < 0.05$). Results show no differences in latencies the nerves are conducting at normal speed to lumbar spine, ruling out inflammatory neuritis no evidence for peripheral sensitisation. Statistically significant difference in relative amplitudes in patients in high pain between spinal cord and erb's point between brainstem, thalamus and cortex. Findings suggest a central sensitization process for sensory information in osteoarthritis.

Abstract no.: 50561

THE INCIDENCE OF VENOUS THROMBOEMBOLISM ASSOCIATED WITH A PORTABLE INTERMITTENT PNEUMATIC COMPRESSION DEVICE-BASED PREVENTIVE MEASURE, AND THE SAFETY AND EFFECTIVENESS OF THE DEVICE IN PATIENTS WITH HIGH RISKS OF THROMBOSIS AND HAEMORRHAGE

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Purpose: We aimed to examine the incidence of asymptomatic and symptomatic deep venous thrombosis (DVT) and pulmonary thromboembolism (PTE) associated with the use of a portable intermittent pneumatic compression device (P-IPCD)-based preventive measure and the device compliance of patients with the highest risks of venous thrombosis and hemorrhagic adverse events in Japan. **Methods:** This study was case series study. Of 1256 patients who underwent lower limb orthopedic surgery at our institutions between January 1, 2015, and August 31, 2017, and had the highest risks for venous thrombosis and hemorrhage estimated using “the DVT/PTE prevention questions” of the institutions, 38 for whom a P-IPCD was used for venous thromboembolism (VTE) prevention, were enrolled. We examined the incidence of asymptomatic and symptomatic VTE via ultrasonography to assess the effectiveness of the P-IPCD and its safety based on the presence of hemorrhagic adverse events, and patient compliance based on the wearing rate during hospitalization. **Results:** The incidence of asymptomatic and symptomatic DVT were 5.3% and 2.6%, respectively. The incidence of hemorrhagic adverse events was 21.1% in patients who received anticoagulants simultaneously. The wearing rate was 89.5%. **Discussion and Conclusion:** In the patients with the highest risks of venous thrombosis and hemorrhagic adverse events, physicians hesitate to use anticoagulants as preventive therapy. Reports showed the safety of P-IPCD for hemorrhage, with similar effectiveness as anticoagulants. However, its effectiveness and safety for such cases have not been examined in clinical settings in Japan. The present study shows its safety for these patients with high compliance.

Abstract no.: 50562

KINETIC ANALYSIS OF THE HIP JOINT OF HEALTHY PEOPLE DURING PATRICK TEST USING OPEN MAGNETIC RESONANCE IMAGING

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Introduction: The Patrick (flexion, abduction, and external rotation [FABER]) test is used for the evaluation of hip osteoarthritis or sacroiliac joint dysfunction. However, though without hip osteoarthritis, some patients have pain in the Patrick test. Other possible but unconfirmed causes of hip pain include subluxation, impingement of the posterior acetabular labrum and femur, or ligament elongation pain. Therefore, this study aimed to clarify the hip joint kinematics during the Patrick test by using open magnetic resonance imaging (Open-MRI). **Methods:** The study subjects were 9 hips of men with hip pain (positive-hip group) and 19 hips of men and 12 hips of women without hip pain (negative-hip group) during the Patrick test. Vertical distance from the knee to the examination table was measured during the Patrick test (FABER distance test [FDT]). Radial sequence MRI was performed in the supine and right- and left-side Patrick test positions. The distance from the femoral head center to the tip of the acetabular labrum was measured. The Student t test was used for the statistical analysis. **Results:** Posterior impingement was not confirmed in all the subjects. FDT was significantly higher in the positive-hip group than in the negative-hip group. Furthermore, forward movement of the femoral head was observed during the Patrick test. And the amount of movement was significantly larger in the positive-hip group. **Conclusion:** This study suggests that the cause of pain during the Patrick test was elongation pain or tenderness by ligament subluxation.

Abstract no.: 50567

A RARE PRESENTATION OF LIGAMENTUM FLAVUM CYST WITH LUMBAR FORAMINAL STENOSIS

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Introduction: Degenerative changes in spine can rarely result in Juxta-facetal cyst formation. Segmental instability has been postulated to be contributory to formation of these cysts. Ligamentum flavum cysts are considered to be the rarest among the juxta-facetal cysts with few report describing their incidence. **Case:** An 88 years Asian male presented with progressive increase in left leg pain. Pain was non-dermatomal limiting patient to walk more than 100 meters. There was no sensory or motor deficit & no rest pain. MRI of lumbar spine revealed hyper-intense lesion in left facetar region on T2-weighted images at L4-L5 vertebral level indenting the thecae sac and compromising left L4 neural foramina. Due to debilitating symptoms, patients was offered surgical removal of the cyst. Midline preserving bilateral L4-L5 lamino-foraminotomy was done and cyst was found arising from the ventral aspect of ligamentum flavum. Specimen was sent for histopathological examination which suggested myxomatous degeneration with cystic changes without synovial tissue. Patient had complete relief in leg symptoms in his post-operative period. **Discussion:** Juxta-facetal cysts may arise from facetar synovial lining, posterior longitudinal ligament or rarely, ligamentum flavum. They can present with neural element compression leading to sciatica or claudicant leg pain. Early recognition & treatment of these rarer entities may provide immediate relief in symptoms. **Conclusion:** Ligamentum flavum cysts, albeit rare, should be considered in differential diagnosis of juxta-facetal cystic lesions causing neurogenic leg pain.

Abstract no.: 50570

EARLY RESULTS OF SURGICAL MANGMENT OF DDH USING OPEN REDUCTION, PELVIC AND FEMORAL OSTEOTOMY AND EXTRA-ARTICULAR K-WIRE FIXATION

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Neglected developmental dysplasia of the hip (DDH) treatment in children after the walking age has been a challenge to the orthopedic surgeons. It is usually surgical at this age group. Material: 24 dislocated hips were treated in 20 children at an average of 22 months (ranged from 17.5 – 34 month), neuro- muscular dislocations were not included in this study. They were 12 girls and 8 boys. The left side was dislocated in 10 right in 7 and bilateral in 3 patients. Open reduction through the anterior approach, salter's osteotomy, and derotation shortening femoral osteotomy were done in addition to k.wire fixation form greater trochanter to the supratrochanteric area. Post- operative immobilization was done in one and half hip spica in flexion 45° and abduction 35° with good stability for 3 months average. C.T scan for confirmation of concentric reduction was done only in doubt cases. The average follows up was 18 months. Results: The final results show 84% of hips had satisfactory radiographic results according to sovereign's criteria and 86.5% of hips show satisfactory clinical results (excellent and good) according to modified Mckay's criteria. Avascular necrosis developed in one hip. Conclusion: Triple attack (Open reduction – Derotation shortening Osteotomy- Salter innominate osteotomy with the use of extra-articular k.wire helps to maintain the reduction during the femoral osteotomy and changing of the cast) is a good surgical option with excellent results and minimal complications.

Abstract no.: 50574

LUMBAR INSTABILITY: OUTCOME OF POSTEROLATERAL FUSION USING LOCAL GRAFT

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Introduction: Lumbar fusion is one of the most commonly performed surgeries in Egypt. Posterolateral fusion is still the simplest technique that yields good results. Iliac crest is the most popular source for bone graft, but donor site morbidity is a common cause of patient dissatisfaction. We used bone harvested from decompression plus or minus tips of the nearest two or three spinous processes as a local graft. Material and Methods: Between 2010 and 2015, one hundred patients suffering lumbar instability underwent instrumented posterolateral fusion using local graft from decompression plus or minus tips of the nearest two or three spinous processes over the well-prepared transverse processes of the slipped vertebra(e) and those of the next one. Seventy patients were females while the other 30 were males, the mean age was, 52 years (40 - 64), fifty-six cases were degenerative and 44 were lytic lithesis. Clinical outcome was evaluated using VAS, ODI same while radiological evaluation for fusion achievement and hardware status. 3 cases were infected, one of the them needed surgical debridement. Results: functional outcomes and patient satisfaction improved significantly ($p<0.05$). Radiological solid fusion where achieved within 6 months in 74 cases while and within one year in 20 cases. 6 cases were complicated by pseudoarthrosis and underwent revision surgery using interbody fusion. Conclusion: PLF is a simple, easy and effective method for management lumber instability. The use of local graft is a good alternative that avoid the graft donor site morbidity.

Abstract no.: 50575

BONE BLOCK DISTRACTION AND SINGLE SCREW ARTHRODESIS FOR POST-TRAUMATIC SUBTALAR ARTHROSIS

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Subtalar arthrosis is a common sequela of os calcis fracture, for which subtalar fusion is the available option. Subfibular pain with deformity is the predominant findings due to loss of longitudinal arch and calcaneal height with anterior ankle impingement. Between 2013 and 2016 a total of 27 patients (23 men, 4 women) underwent unilateral subtalar fusion using iliac bone-block distraction and single compression screw fixation for post traumatic subtalar arthritis. Their age ranged from 22 - 56 years. The mean follow-up duration was 22 months (range 13 – 32). The causative trauma was falling from height in 25 patients and motor car accident in 2 patients. The duration of symptoms average between 4 months and 16 months and not responding to conservative treatment. Pain was the main indication for the operation. Results: Based on the modified scoring system for pain and function of the hind foot, the results were excellent in 17 feet (62.9 %), good in 6 (22.2%), fair in 3 (11.1%) and poor in only 1 foot (3.7%) and overall 27 patients were satisfied with the operation. Oentogenographic evidence of union was encountered in 10-16 weeks in all but 1 (3.7%) of the the operated patients . No foot had progressive degenerative arthritic changes in the ipsilateral talonavicular or calcaneocuboid joints. Conclusion: Iliac bone block distraction with single screw fixation is a satisfactory approach in treating subtalar arthrosis as it restores the anatomy between the hind and midfoot, restores heel height and increases the Achilles tendon fulcrum.

Abstract no.: 50577

FUNCTIONAL OUTCOME OF TIBIAL CONDYLAR FRACTURES

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Fractures of the proximal tibia, particularly those that extend into the knee joint are serious injuries that frequently result in functional impairment. In recent years, with improvements in surgical technique and implants, there has been an unmistakable trend towards surgical management of these injuries. Nevertheless, proximal tibial fractures remain challenging because of their number, variety and complexity. Tibial condyle fractures cover a broad spectrum of injuries with differing degrees of articular depression and displacement. The spectrum of injuries to the tibial condyle is so great that no single method of treatment has proven uniformly, successful. Satisfactory results can be obtained using both non-operative and surgical methods of treatment for low- energy tibial condyle fractures. On the other hand, tibial condyle fractures that occur as a result of intermediate and high energy trauma in physiologically young patients generally preclude non-operative treatment. Here we have conducted a study to evaluate functional outcome of different modalities of treatment provided to tibial condylar fractures in terms of articular congruity, joint stability.

Abstract no.: 50579

ADVERSE EFFECTS OF OBESITY ON PAIN AND FUNCTIONAL RECOVERY FOLLOWING TOTAL KNEE ARTHROPLASTY

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A well known factor i.e obesity may be a risk factor for complications following total knee arthroplasty, data remain sparse on the impact of the degree of obesity on patient-reported outcomes following this procedure. Our objective was to determine the extent to which obesity level affects the trajectory of recovery as well as patient-reported pain, function, and satisfaction with surgery following total knee arthroplasty. Methods: Patients were ± 40 years of age with a primary diagnosis of osteoarthritis. We stratified patients into 5 groups. We assessed the association between BMI group and pain and function over the time intervals of 0 to 3, 3 to 6, and 6 to 24 months using a piecewise linear model. Multivariable models adjusted for age, sex, race, diabetes, musculoskeletal functional limitations index, pain medication use, and study site. Results: Of the 633 participants included in our analysis, 19% were normal weight (BMI of <25 kg/m²), 32% were overweight (BMI of 25 to 29.9 kg/m²), 27% were class-I obese (BMI of 30 to 34.9 kg/m²), 12% were class-II obese (BMI of 35 to 39.9 kg/m²), and 9% were class-III obese (BMI of ≥ 40 kg/m²). Study participants with a higher BMI had worse preoperative WOMAC pain and function scores and had greater improvement from baseline to 3 months. The mean change in pain and function from 3 to 6 and from 6 to 24 months was similar across all BMI groups. At 24 months, participants in all BMI groups had similar levels of pain, function, and satisfaction.

Abstract no.: 50581

FUNCTIONAL OUTCOME IN CLAVICLE FRACTURES TREATED WITH PRIMARY OPEN REDUCTION AND PLATE fixation

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Introduction - Clavicle fractures account for 2% to 5% of all fractures in adults. Although these fractures are traditionally managed conservatively, there is a growing trend to treat these fractures with primary open reduction and plate fixation. The aim of this case series was to evaluate clinical profile, functional outcome and complications of displaced midshaft clavicle fractures that were treated with primary open reduction and plate fixation. Materials and method - Between January 2009 and August 2017, 198 patients of displaced mid shaft clavicle fractures were treated with primary open reduction and internal fixation with plating. These patients were followed up at monthly intervals to see for evidence of radiological union and to look for complications. Constant and Murley score was used to evaluate the functional outcome at 6 weeks, 3 months and 6 months. Results – Mean time to union was 9.2 weeks. Mean Constant score was 65.7 (54.6 to 74.3), 76 (71.2 to 81.5) and 88.3 (84.4 to 92.6) at 6 weeks, 3 months and 6 months. 5 (2.52%) cases developed non-union. 16 cases underwent implant removal subsequently. There was infection in 1 cases requiring implant removal. Conclusion – Treatment of clavicle fractures with primary open reduction and plate fixation is associated with good to excellent functional outcomes. This study supports primary plate fixation of displaced midshaft clavicle fractures.

Abstract no.: 50584

CAN DEFINITIVE INDICATIONS BE MADE FOR FRACTURE OF THE CLAVICLE?

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Fracture clavicle is the most common fracture seen in orthopedics, till now its conservative treatment with simple sling or figure of 8 bandage good results are seen. Malunion as angulations, overlap in all remodel with time. By and large cosmetic indication is not acceptable as scar after surgery is more ugly than malunion. In this study 50 cases were operated, definitive indication which turned out to be are floating shoulder, associated chest trauma where because of pain patient not able to do deep breathing exercises, associated fractures of upper limb. In multiple fractures for good nursing care, neurovascular compression, fracture lateral end of clavicle, pathological fracture, fracture were fixed with 3.5 dcp, recon. Plate or one third tubular plate or locking plate or special clavicle plates all can be used with good results. All the fractures healed in 6 to 8 weeks time, dose of analgesics decreased, patient could do his daily activities comfortably and can go to work early where heavy activity not required. Patient treated conservatively keep on complaining pain and difficulty in daily activities, these people pass initial six weeks very miserably, many do not have family support to look after. Besides this, advantage is this very cheap, no operative complication, no second surgery. Patient treated surgically besides cost, danger of surgery as very vital structures nearby, ugly scar, second surgery etc. At the end of three months result of both are equal. So fracture clavicle open reduction must be done in judicial way as conservative treatment equally good except initial period of discomfort.

Abstract no.: 50585

MSK ULTRASOUND - GRADING OF CHONDROMALACIA KNEE

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Chondromalacia patellae usually presents with anterior knee pain, on walking down or upstairs, when kneeling, squatting, or sitting for long. Knee stiffness, crepitus and effusion may be seen. It occurs in isolation or secondary to traumatic chondral damage, patellar dislocation, subluxation or instability and quadriceps imbalance. Tight lateral retinaculum with patellar tilt, patella alta or baja and synovial plicae contribute. Grading of chondromalacia is important for quantifying damage and deciphering treatment. MRI with cartilage mapping is the modality of choice for assessment, but expensive and time consuming for routine use. Hence, an inexpensive modality which instantly interprets and helps initiate treatment is recommended. A Single Window and Single Frame Ultrasound of the 90 degrees flexed patellofemoral joint fairly estimates cartilage health in office. 200 patients were assessed for (a:) cartilage thickness and color intensity, (b:) fibrillated hyperintense streaks of varying thickness and fissuring, (c:) fraying and focal defects suggestive of cartilage ulcers, (d:) subchondral erosions either single, multiple or confluent forming bone-on-bone image. Grading criteria applied were Chondromalacia Grade I: focal areas of hyper-intensity seen as thin white streaks with normal contour. Grade II: multiple hyperintense thick streaks parallel to intact bone surface suggesting fragmentation and fissuring. Grade III.a. partial thickness cartilage loss (< 50%) with focal ulceration and fragmented fibrillated hyperintense streaks in <50% of visible surface. Grade III.b >50%. Grade IV: a. full thickness cartilage loss, erosions and bone on bone in <50% surface areas with underlying bone reactive changes. Grade IV.b.>50%. Ultrasound grading of chondromalacia quantifies damage and guides treatment.

Abstract no.: 50586

**AUGMENTED REALITY TECHNOLOGY HELPS IN THE PLANNING OF
FIXATION STRATEGY AND SURGICAL APPROACH IN THE TREATMENT
OF DISTAL TIBIA FRACTURES**

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Introduction: The level of wound complications and quality of reductions remain an issue in distal tibia fractures. Correct placement of surgical incision directly over the fracture is important to minimize additional insult to vulnerable soft tissues. Augmented reality (AR) technology allows the placement of holographic image of the fractured bone "within" the leg of the patient, and may promote correct planning of surgical approach(-es) and fixation. **Objectives:** prove the efficacy of AR-technology in the surgical treatment of patients with distal tibia fractures. **Methods:** 24 patients with distal tibia fractures (43C) were included. Standard treatment (10 patients) consisted in initial application of external fixator with subsequent definitive internal fixation after resolution of soft-tissue swelling (av. 10.6 days after the injury). Planning of definitive fixation was performed according to CT-data, obtained after ExFix application. The CT-data of 14 patients (AR-group) were additionally analyzed with the Microsoft HoloLens. The holographic model of given fracture was initially analyzed more thoroughly with the device and then placed "within" the limb of the patient for definitive planning and marking the surgical approach(-es) immediately in operating room. **Results:** The general length of definitive surgery comprised 118 min in the main group and 124 min in the AR-group. There were any intraoperative complications. One superficial infection occurred in AR-group and two in standard group. The quality of reduction was slightly better in AR-group (78.6% vs. 70% of good reductions). **Conclusions:** AR-technology provided better assessment of fracture morphology and improved planning of surgical approaches with respect to soft-tissue condition.

Abstract no.: 50593

AN ANALYSIS OF REASONS FOR ORTHOPAEDIC WALKOUTS FROM THE EMERGENCY DEPARTMENT AT A PRIVATE TERTIARY HOSPITAL

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Introduction: A small proportion of patients presenting to the Emergency department (ED) of any hospital tend to take discharge against medical advice (DAMA) due to several patient related or hospital/service related reasons. Amongst these, orthopaedic patients are a special group due to their inability to mobilize independently due to injuries and have treatment needs which involve higher costs. The aim of the current study was to ascertain and analyze the reasons for orthopaedic walkouts at a tertiary care private startup hospital. **Method:** This retrospective telephonic interview-based study was carried out on all orthopaedic patients taking DAMA during a one year period from July 2016 to June 2017. They were telephonically interviewed with a structured questionnaire. Hospital and ED records were analyzed for demographic as well as temporal characteristics. **Results:** A total of 68 orthopaedic patients walked out of casualty against medical advice out of a total 775 (8.77%) orthopaedic patients presenting during the period as against 6.4% overall rate of DAMA for all faculties. The main reasons for DAMA were financial unaffordability of treatment (36.7%), preference for another known orthopaedic surgeon (22%) and advice by a General Practitioner (16.1%). **Conclusion:** Unaffordability of treatment is a significant cause for walkouts amongst orthopaedic patients. Private hospitals need to recognize and implement processes by which these patients can be treated at affordable costs and with coverage by robust charity programs. Patient education and awareness programs are important to encourage them to have insurance coverage.

Abstract no.: 50596

HIP JOINT PROTECTION AND FALLING NUMBERS OF TOTAL HIP ARTHROPLASTIES IN CASES OF RHEUMATOID ARTHRITIS

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Background: Some recent reports indicate that the number of total hip arthroplasty (THA) procedures for rheumatoid arthritis (RA) patients has been decreasing in recent years. Bone destruction inhibition by use of biological drugs has been suggested as a possible reason. However, few studies have investigated whether hip joint destruction in RA patients was altered by treatment with such new drugs. Objectives: The purpose of this study was to examine whether the number of RA cases requiring THA has shown a decreasing trend, and to identify any reason for a change. Methods: We investigated the records of all patients with RA who underwent a THA procedure at our hospital from 2000 through 2017. We noted the number of THA cases each year, age at surgery, duration of RA, and medications administered. In addition, we evaluated pre-operative X-ray findings using the Larsen classification. Results: In the 18 year period there were 982 primary THA cases, of which 76 (7.7%) were RA cases. The rate of THA for RA showed a decreasing tendency, as 15.3% occurred in the first 6 years and 5.1% in the final 6 years. Cases classified as Larsen grade 5 (severe joint destruction) by X-ray evaluation decreased. Conclusions: The number of patients who underwent THA for RA was decreased and the patient medications administered were also changed. Preoperative X-ray evaluations showed that cases of severe joint destruction (Larsen grade 5) were remarkably decreased. We consider that bone destruction of hip joint can be inhibited by use of biological drugs.

Abstract no.: 50601

DIFFERENCE OF PLATELET-RICH PLASMA FORMATION BY VARIOUS CENTRIFUGATION SPEED AND TIME IN RABBITS

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Purpose: To examine the platelet concentration and the recovery ratio of platelet-rich plasma (PRP) by centrifugation time and gravitational force (g) in rabbit. **Methods:** 6 New Zealand white rabbit were divided into three groups. 39 blood samples of 9ml each were collected. Each groups were divided into three groups by centrifugation time and gravitational force. A group was tested at step 1: 150g for 20min, step 2: 450g for 10min, B group was tested at step 1: 900g for 5min, step 2: 1500g for 15min and C group was tested at step 1: 2000g for 3min, step 2: 5000g for 5min. **Results:** After step 1 centrifugation, A group noted $254.2 \pm 36.7 \times 10^3/\mu\text{l}$ and $65.7 \pm 14.3 \%$ in concentration and recovery ratio and came out the lowest. B group noted $578.9 \pm 116.9 \times 10^3/\mu\text{l}$ and $91.2 \pm 13.1\%$ in concentration and recovery ratio and came out the highest. C group noted $247.1 \pm 37.4 \times 10^3/\mu\text{l}$ and $72.4 \pm 6.5\%$ in concentration and recovery ratio. The total platelet counts were 1047, 2316, 1811 respectively and B group was statistically significant ($p < 0.05$). After step 2 centrifugation, platelet counts were $1014.9 \pm 168.5 \times 10^3/\mu\text{l}$, $1486.0 \pm 266.4 \times 10^3/\mu\text{l}$ and $1067.5 \pm 259.6 \times 10^3/\mu\text{l}$ and recovery ratios were $62.1 \pm 9.3\%$, $65.2 \pm 10.7\%$ and $59.0 \pm 11.9\%$. B group shows highest value but no statistical significance ($p > 0.05$). **Conclusions:** During the formation of PRP, the step 1 centrifugation with 900g for 5 minutes and it shows the highest platelet concentration. After the step 2 centrifugation, although each group shows no significant difference, the recovery ratio came out the highest at centrifugation with 1500g for 15 minutes.

Abstract no.: 50605

TITLE COMPARISON OF ANTEROPOSTERIOR STABILITY BETWEEN TWO DIFFERENT DESIGNS OF TIBIA INSERTS IN CRUCIATE-RETAINING TOTAL KNEE ARTHROPLASTY

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One of problems remained in total knee arthroplasty (TKA) is abnormal kinematics, including anterior sliding of the femur during flexion which may cause the mid-flexion instability. To resolve the problem, several design concepts of inserts including Medial Congruent (MC) insert (Zimmer Biomet Holdings, inc, Warsaw, Indiana) have been developed. The subject has higher antero-posterior (AP) insert lip in medial side, which is expected to increase the AP stability at mid-flexion. The purpose in this study is to compare the intraoperative mid-flexion AP stability between MC insert and cruciate-retaining (CR) insert in navigated CR TKA. We enrolled 30 consecutive patients with varus osteoarthritis undergoing CR TKA using image-free navigation system (Stryker 4.0 image-free computer navigation system; Stryker). The center of proximal tibia and distal femur was determined during registration and the femoral AP position to proximal tibia was used for evaluation. Same observer applied manual maximum AP stress to the knee joint at 45° of flexion and the AP positions were statistically compared between MC (MC group) and CR (CR group) inserts. The results found that the tibial AP position in MC insert group was significantly more anterior than in CR insert group at 45° of flexion ($p < 0.05$). The amount of AP translation in MC group was significantly smaller than in CR group ($p < 0.05$). Although clinical subjective outcomes or postoperative kinematic study are needed to reveal the true contribution of the results, the series of results suggested that mid-flexion AP stability was achieved in MC inserts than in CR inserts.

Abstract no.: 50606

POLYTRAUMA MANAGEMENT

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The polytrauma is a very dangerous life-threatening injury that represents the third cause of death after cardiovascular disease and tumours. Recently, great importance has been given to treat poly trauma patient quickly as possible in order to reduce mortality and morbidity. Damage control orthopedics is a staged approach for the management of multiple injured patients. It is ideal for trauma patients presenting in an unstable or extremis physiological state. It focuses on the rapid resuscitation of these patients by providing definitive and or temporary stabilization of fractures while at the same time reducing the biological load of surgery. Fractures initially stabilized by external or internal temporary options can consecutively be treated safely by secondary conversion osteosynthesis later. Strategy of damage control orthopedics is growing in acceptance because of the potential danger to life functions due to pro and anti-inflammatory response induced additional trauma caused by following surgery. Early results support its usefulness in controlling the hemorrhage to prevent the lethal triad of hypothermia, acidosis and coagulopathy. Early definitive stabilization in multiple trauma patients was associated with shorter hospital stay, intensive care unit stay, and ventilator days. So it is associated with acceptably low rate of complications compared to delayed stabilization and is safe in most patients with multiple injuries. Individually adjusted surgical damage control orthopedics is important interactive concept in polytrauma management and in severely injured patient; it should be considered and recommended.

Abstract no.: 50612

KNEE RESURFACING: REVOLUTIONISING KNEE ARTHROPLASTY - AN ASIAN EXPERIENCE WITH FIVE YEARS FOLLOW-UP

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Background: The objective of the present study was to evaluate the short to medium term clinical outcome of Orthoglide Knee Resurfacing in Indian patients. Methods: Eleven Knees of Orthoglide Knee Resurfacing performed between March 2012 to March 2014 (6 males and 5 females studied). The mean age of patient was 57.8 years (Range 50 to 70) mean follow up period was minimum 60 months. The Preoperative Diagnosis was medial unicompartamental Osteoarthritis in 11 patients. Results: The mean improvement in Oxford Knee score was from 15 (range from 10 to 16) to 40 (range from 35 to 46) and mean WOMAC score improved from 30 (range 20 to 36) to 84 (range from 80 to 92) at mean follow up of 60 months. Good to excellent results obtained in all of the knees with one case of persistent anterior knee pain. Conclusions: Newer designed; minimally invasive knee resurfacing implant like Orthoglide appears to be safe and reliable treatment option. It can be effective, economic surgical option in trained hands especially with optimal pre-operative and ongoing post-op. patient education. The jury is still not out regarding hype vs. reality as it may need larger pool of cases in different demographics for long term follow up. Refinement in implant design and materials, technique and indications is on the horizon which can revolutionize future treatment.

Abstract no.: 50613

DYSPHAGIA CAUSING HYPEROSMOLAR HYPERGLYCEMIC STATE AFTER COMBINED ANTERIOR AND POSTERIOR CERVICAL SPINE FUSION SURGERIES

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Introduction: Diabetes mellitus (DM) is a common comorbidity of the patients with cervical spondylosis and known to greatly influent the surgical outcome. Dysphagia is also a common complication of cervical spine surgery. However, dysphagia with subsequent hyperosmolar hyperglycemic state (HHS) in patients with diabetes was rarely discussed and published on current literature. Case report: A 65-year-old man with hypertension and diabetes mellitus underwent C2-5 anterior cervical discectomy and fusion and C2-7 posterior instrumented fusion. Postoperative sore throat was tolerable before discharge from the hospital. However, progressive dysphagia and choking episodes were noted for 1 week before follow-up. He was then readmitted for severe dysphagia combined with diagnosis of HHS. The patient received intravenous corticosteroids, nasopharyngeal (NG) tube placement for feeding, and insulin pump administration with blood sugar level monitoring. Hoarseness and throat pain gradually improved in following 2 weeks. NG tube was removed smoothly after swallowing training for 3 weeks. He recovered well without further aggravation during at least postoperative 1 year follow-up. Discussion: The previous study suggests the patient may be prone to complicate dysphagia after anterior cervical surgery. Intensive sugar control and aggressive dysphagia prevention may require for patients with diabetes after cervical spine surgeries. Preventive education may discuss in detail with the patients and family. Shorter interval follow-up should be arranged. According to literature, dysphagia could be reduced or avoided by intraoperative retropharyngeal steroid and preoperative tracheal traction exercise.

Abstract no.: 50616

PREOPERATIVE RECURVATUM DEFORMITY WITH KNEE OSTEOARTHRITIS: A REGISTRY RETROSPECTIVE OUTCOME STUDY USING CONVENTIONAL POSTERIOR STABILISING TOTAL KNEE ARTHROPLASTY

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The aims of the study are to assess if a conventional posterior stabilizing total knee arthroplasty (TKA) can effectively correct pre-operative hyperextension and prevent recurvatum at 2 years, and to assess the functional outcome of those patients. This retrospective study with prospectively collected data involved 405 patients (study population), with pre-operative recurvatum graded as grade 1 (mild, 1-4°), grade 2 (moderate, 5°-10°) and grade 3 (severe, >10°). Objective functional outcomes (patients' knee range of motion, Oxford knee scores (OKS), knee function scores (KFS), knee society scores (KSS) and SF-36 scores) were collected at 0 (pre-operative), 6 months post-operative and 2 years post-operative. At 2 years, mean extension of the study population was -0.88 degrees (SD 4.89) degrees, significantly better than pre-operative value ($p < 0.01$). There was a significant difference ($p < 0.01$) in the mean recurvatum postoperatively between grade 1 (mean -0.55°, 3.99° SD) and grade 2 recurvatum (mean -1.31°, SD 6.3°) and grade 3 recurvatum (mean -1.50°, 3.38° SD). There was no statistical difference in functional outcome between patients with different grades of pre-operative recurvatum at 2 years.

Abstract no.: 50617

RELIABILITY OF OPTIC MARKER 3D ANALYSIS SYSTEM IN THE SCAPULAR MOTION ANALYSIS

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Purpose: Scapular dyskinesis means alteration in the normal position or motion of the scapula during coupled scapulohumeral movements. At the past, the tape, inclinometer or plain radiographs were used to check the scapular motion. However, those could calculate the 2D position and distances. We used a optical system detecting the skin surface marker (Optic blue color marker 3D analysis system DSS-110; MZEN, Seoul, Korea) to check the scapular 3D motion. **Material & Methods:** Twenty male volunteers (21-39 years old; average 27) undertook the scapular motion analysis. They had no history of shoulder pain. The skin markers were attached on the lateral end of acromion, medial of scapular spine, inferior edge of scapula, spinous process of C7 and T12. We checked the scapular position when: 1) relaxed at the sides, 2) abducted 90 degree along scapular plane, 3) forward flexed 90 degree. One examiner checked the data twice at 1 week interval to verify the reliability. We used the SPSS 10.1K for statistical analysis. **Results:** The Intraclass Correlation Coefficient (ICC) between the parameters at 1 week interval was greater than 0.8. **Conclusion:** Optic blue color marker 3D analysis system can provide the reliable information about the scapular position, and help to diagnosis and choose the specific rehabilitation programs.

Abstract no.: 50619

HISTOLOGICAL CHANGES OF THE BICEPS AFTER TENOTOMISING THE BICEPS LONG HEAD IN A RAT MODEL

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Purpose: Popeye deformity is common after rupture of biceps long head tendon. We report histological changes of biceps brachii muscles throughout rat experiment by tenotomy of the long head of biceps tendon. **Materials:** Twelve Sprague-Dawley rats, 12-week-old, were underwent to tenotomy of the long head biceps tendon at the right shoulder. At the time of post-operative 4,7 and 10 weeks, the operative shoulders were harvested left with attaching the biceps brachii muscle to glenoid and humerus while the opposite shoulders were harvested by same manner to use as control group. After that, Hematoxylin-Eosin (H & E) stain was performed to know the histological changes of myocytes. Oil red O stain was performed to know the fatty infiltration. And finally Myostatin antibody immunohistochemistry stain was performed to know changes of myostatin which is expressed by skeletal muscle cells during myogenesis. **Results:** In H & E stain, there was no changes in nucleus. There was no adipocyte can be found. Comparing with the opposite control group, the proportion of muscles of cross sectional area of the long head biceps was significantly decreased ($p=0.00$). The statistical changes of total extent of the 100 muscle cells were significant ($p=0.00$). In Oil red O stain, there was no fatty infiltration can be found. The changes after the myostatin antibody immunohistochemical stain were none between two groups. **Conclusion:** The muscular changes after tenotomy of the long head biceps tendon was decrease of the size of individual muscle cells and relative muscle mass.

Abstract no.: 50620

PROBING USING A NEEDLE AFTER ULTRASOUND-GUIDED SUBACROMIAL INJECTION

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Purpose: Accuracy of the ultrasound is good for the diagnosis of full-thickness tear of supraspinatus tendon. However, it is difficult to diagnose the degree of the bursal side partial-thickness tear on the ultrasound images. The purpose was to analyze the changes of the diagnosis of the tear extent after probing. **Materials:** Among cases undertook an ultrasonography at our hospital, total 53 cases were enrolled in which the supraspinatus has been examined using needle after ultrasound-guided subacromial injection. For 46 cases who were followed clinically, the change of symptoms were analyzed. Injection into the subacromial space under the ultrasound-guide was followed by probing and elevating the bursal side of supraspinatus tendon using the needle. Initial and probing ultrasound image videos were analyzed. Blind interpretation was carried out using each video and the extent of tear was diagnosed. **Results:** Probing using the needle changed the diagnosis in 53%. There was no change of diagnosis in 5 cases of group I (45%), 5 cases of group II (31%), 12 cases of group III (75%), 6 cases of group IV (67%), and none of group V. **Conclusion:** In 53% cases, diagnosis were changed on the ultrasound studies by probing using needle after ultrasound-guided subacromial injection. Probing using needle was helpful in diagnosis about tear extent for the cases who were suspected as a bursal side, partial-thickness tear of supraspinatus tendon.

Abstract no.: 50623

COMPARISON OF THE ANATOMICAL CLAVICULAR PLATE USING A 3D PRINTER

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Purpose: Pre-contoured plate can be used for the clavicle fractures to avoid bending or twisting the plate during operation. Due to individual variances of the length, angulation, torsion of the clavicle, the discordance of the clavicle and pre-contoured plate happens sometimes. We wanted to analyze the discordance of the pre-contoured plates and clavicle models. **Materials and Methods:** We enrolled the 30 cases undertaken shoulder 3D-CT. The cases having clavicle fractures or any history of operation for the clavicle, were excluded. Using the ITK-SNAP software (version 3.4.0) and Meshmixer software (version 3.0), DICOM files were transformed to the 3D model files having an extension, stl. Those files were printed by the fused deposition modeling type 3D printer. Three pre-contoured plates for the distal clavicle fracture (Acumed; Synthes; Arthrex) were used. After placing the plate on the printed 3D model, the gap and discordance were evaluated using a digital caliper. **Results:** There was no difference of age between male and female groups. The average length of clavicles were 156.1mm (range, 138.3-167.9mm) in male and 138.4mm (range, 129.3-145.5mm). The distance between the lateral end of plate and clavicle, the gap of clavicle surface and plate showed no difference between 3 plates. However, overhang of the medial end of plate showed significant difference between male and female groups. **Conclusion:** Shorter clavicle had more severe discordance of pre-contoured plates and 3D clavicle models. In the 61% of the models, the medial end of the plate were overhung more than 3mm from the clavicle.

Abstract no.: 50624

**INTERFRAGMENTARY WIRING TO MINIMISE PERIOSTEAL STRIPPING
OF THE CLAVICLE FRACTURE**

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For the comminuted clavicle shaft fractures, a cerclage wiring is used frequently. However, the wiring would be the cause of nonunion because of periosteal stripping. Our purpose was to report a technique of cerclage wiring without periosteal stripping. The indications for the cerclage wiring were a comminuted fracture, loss of cortical contact. A longitudinal incision was done along the dorsal surface of the clavicle. Only dorsal periosteum was minimally stripped to preserve the inferior periosteum of the shaft. After reduction of the comminuted fragments, a bone tunnel was made vertically to the fracture line using a K-wire. Tightening of wiring was followed by dynamic compression plate fixation on the dorsal surface of the shaft. By this technique of cerclage wiring, the inferior periosteum could be preserved. Accurate reduction of the comminuted fragments were reduced firmly. Although small number of cases, we could obtain the fracture healing without nonunion. Because of preserving the inferior periosteum, this cerclage wiring technique could afford the reduction and fixation of the comminuted fragments.

Abstract no.: 50625

OUTCOMES FOLLOWING FIXATION OF VANCOUVER B2/B3 PERIPROSTHETIC FEMORAL FRACTURES AT A SINGLE ORTHOPAEDIC CENTRE

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Background: Periprosthetic femoral fractures are sustained by increasingly elderly patients with multiple co-morbidities. Traditionally the accepted management for Vancouver B2 and B3 fractures is revision arthroplasty. However, there is increasing recognition of the role for open reduction and internal fixation (ORIF), particularly in patients who may not tolerate extensive revision surgery. This study aimed to evaluate outcomes in patients sustaining these fracture patterns. Methods: A retrospective analysis of patients who underwent operative management for a periprosthetic fracture in a single institution was performed from May 2009 to October 2017. Theatre records, as well as a search of all radiology reports with the search terms 'prosthesis' and 'periprosthetic' were interrogated. Demographic information as well as clinical outcome (evidence of fracture union, and need for revision surgery) was recorded for this cohort. Results: Of a total of 1165 patients, 33 patients (n=20 Females, with a median age= 79.5yrs (53-93yrs)) sustained B2/3 fractures which were surgically managed in the specified time period. There were on average 2.4 (0-6) significant comorbidities per patient. There was evidence of radiological union at an average of 28.3 weeks (4-76) from injury in n=17 patients; giving a union rate of 51.5%. Revision surgery was necessary in 3 patients (10%; two for metalwork failure and the other for infection). Conclusion: The results of this small cohort suggest a significant proportion of these fractures progress to radiological union with a low revision rate. There is relative merit in continued consideration of ORIF for Vancouver B2/3 fractures in this population.

Abstract no.: 50627

**A CASE OF A THREE-MONTH-OLD NEGLECTED ELBOW DISLOCATION
MANAGED BY OPEN REDUCTION AND CRUCIATE LIGAMENT
RECONSTRUCTION USING TENDON GRAFT**

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A 42 year old male patient presented with complaint of pain and swelling over left elbow joint with deformity and inability to move left elbow. No neurovascular deficit. History fall 3 month back followed by massage and manipulation by local bone setter.

Abstract no.: 50629

EVALUATION OF DORSOLUMBAR SPINAL COMPRESSION AND BURST FRACTURES WITH INCOMPLETE NEUROLOGICAL DEFICIT AND THEIR MANAGEMENT WITH LIGAMENTOTAXIS

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Introduction: The purpose of current study is to evaluate dorsolumbar compression and burst fractures having incomplete neurological deficit. It aims to assess their management with short-segment pedicle screw instrumentation and indirect reduction by ligamentotaxis. **Methods:** Twenty-five consecutive patients with wedge compression and burst fractures from D12-L3 vertebra were included. Pedicle screw fixation was done one-level above and below the fractured level. Lordotic distraction was utilized using contoured rods. Post-operative brace support was given for 8-10 weeks with restricted mobilization. Demographic parameters and clinical-radiological outcomes were assessed: change in vertebral height, correction of local kyphosis, reduction of retropulsed fragment and neurological improvement. Complications if any were recorded. **Results:** Mean age was 32 years. There were 22 burst fractures and three compression injuries. Vertebral height improved from 58% preoperatively to 92% postoperatively. Local kyphosis improved from 28.8° preoperatively to 3.6° postoperatively. All patients improved by at least Frankel grade-1. Average Frankel grade improvement was 1.8. There was no neurological deterioration in any case. There were two implant breakages in patients with more than one year of follow-up related to sudden jerk or heavy activity. Implants were removed in one patient and the other patient chose for further observation. **Conclusion:** We conclude that dorsolumbar burst and compression fractures with incomplete neurological deficit can be managed effectively with short segment stabilization with pedicle screws and indirect reduction with ligamentotaxis. Gradual postoperative mobilization helps in fractured vertebra healing. There is good neurological recovery, bony consolidation and motion segment preservation.

Abstract no.: 50631

THE USE OF CRYOTHERAPY IN THE EARLY POSTOPERATIVE PERIOD AFTER TOTAL HIP ARTHROPLASTY

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Background: Recent evidence suggests the cryotherapy may be beneficial in reducing postoperative pain and blood loss in joint arthroplasty. The objective of this study was to review the use of cryotherapy in the early postoperative phase after total hip arthroplasty in terms of pain relief and reduction in postoperative blood loss. **Methods:** A prospective cohort study using a cryotherapy device (HiloTherm) was performed in patients following total hip arthroplasty. The primary outcome measures were visual analogue score (VAS) for pain (at 24 and 48 hours postoperatively), and amount of postoperative blood loss, measured by change in haemoglobin (g/L). Secondary outcome measures were length of stay (days), and duration of post-operative patient controlled analgesia (PCA, hours). **Results:** 28 patients were recruited (n=13 HiloTherm; n= 15 non-HiloTherm). HiloTherm application reduced pain in the first 24 hours (3.50 ± 2.41 vs 4.90 ± 2.95 ; $p=0.185$). This effect was not carried through at 48 hours postoperatively (5.68 ± 1.94 vs 3.72 ± 2.46 ; $p=0.029$). HiloTherm application significantly reduced postoperative blood loss (22.38 ± 5.71 g/L vs 29.13 ± 10.22 g/L; $p=0.045$) with reduced length of stay by almost 1 day, although not statistically significant (4.46 ± 2.33 vs 5.20 ± 3.55 ; $p=0.528$). There was no difference in length of time PCA was administered (22.30 ± 0.75 vs 22.02 ± 3.26 ; $p=0.763$). **Discussion:** Cryotherapy has no significant effect on reduction of pain postoperatively. The reduction in postoperative blood loss indicates a role for its continued use in the early period of rehabilitation following total hip arthroplasty.

Abstract no.: 50633

DO TRAMPOLINE INJURIES IN CHILDREN RESULT IN MORE HOSPITAL INTERVENTION COMPARED WITH OTHER MECHANISMS OF INJURY?

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Background: A significant proportion of emergency department (ED) presentations are related to trampoline injuries. The aims of this study were to assess whether presentations to the ED as a result of a trampoline injury have an increased incidence of requiring intervention as opposed to other mechanisms of injury in children under 9 years old. Methods: Retrospective observational assessment of ED presentations of children under 9 years old recorded in the European Injuries Database (EU IDB) in 2014. Results: Of a total of 28135 ED presentations, 4.4% (n=1257) were as a direct result of trampoline injuries. 38.6% (n=486) of these patients required further intervention (inpatient treatment/outpatient treatment/transfer to another facility) compared to other injury mechanisms such sport (43.8%; 992/2263), falls from a height (28.3%; 5756/20363), park injuries (42.5%; 641/1507) and road traffic accidents (RTAs) (40.9%; 1124/2745). There was no statistically significant difference between trampoline injuries (38.6%) and road traffic accidents (40.9%), in terms of requiring further intervention (Fisher's exact test p=0.18). Conclusions: Injuries from trampolines, although a small proportion of all injuries recorded, have a similar incidence of requiring intervention when compared to other, major, modes of injury such as RTAs in this age group. This information has implications for current public health policy and parental approval of this activity.

Abstract no.: 50634

POSTERIOR REFERENCE POSITION AFFECTS EARLY CLINICAL OUTCOMES IN NAVIGATED POSTERIOR STABILISED TOTAL KNEE ARTHROPLASTY

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The aim in this study is to compare the early clinical outcomes between posterior medial reference and posterior center reference measured resection technique in posterior-stabilized (PS) total knee arthroplasty (TKA). We enrolled consecutive 57 patients with varus osteoarthritis undergoing PS TKA using image-free navigation system. The patients were divided into two groups according to the surgical plan. Center reference group: bone resection thickness between posterior medial and posterior lateral condyles was adjusted to implant thickness, medial reference group: posterior medial bone resection thickness was adjusted to implant thickness. The surgical details were recorded and the postoperative early clinical outcomes including knee extension strength (KES), numeric rating scale (NRS) for pain, and timed up-and-go test (TUG) were statistically compared between the groups. The results found that the posterior medial and posterior lateral bone resection thickness were significantly thicker in center reference group than in medial reference group ($p < 0.05$). Postoperative recovery of KES was comparable between the groups. Although preoperative NRS were comparable between the groups, NRS during stair climbing was significantly worse in medial reference group than in center reference group ($p < 0.05$). Although the results with TUG in center reference group were significantly improved post-operatively, the results in medial reference group were comparable between pre- and post-operation. Previous study found that posterior reference position affects intraoperative soft tissue balance and kinematics in PS TKA. The results suggested that posterior reference position also affects early postoperative clinical outcomes in PS TKA.

Abstract no.: 50635

DISTAL FEMORAL HEMIEPIPHYSIODESIS WITH TENSION BAND PLATING IN THE MANAGEMENT OF IDIOPATHIC GENU VALGUM

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Background: For correction of angular deformity, tension band plating has been proposed as a safe and minimally invasive technique. The purpose of this study was to assess the results and the degree of correction obtained with this procedure in patients with idiopathic genu valgum before skeletal maturity. Methods: This study was a prospective study of 19 valgus deformities of the knee in eleven patients treated with medial distal femoral hemiepiphyodesis using one tension band plate. The tibiofemoral angle (TFA) and the anatomic lateral distal femoral angle (aLDFA) were assessed on anteroposterior (AP) radiographs of the lower extremity taken at multiple time intervals. The average time of follow-up from index surgery was 14.9 months. Results: The mean correction time was 11.2 months. The TFA was corrected from a mean 12.2o preoperatively to 4.6o postoperatively. The aLDFA was also corrected from a mean of 79.8o preoperative to a mean 84.1o postoperative. There were no instrumentation breakages. Conclusion: Distal femoral hemiepiphyodesis with tension band plating provides an effective and predictable correction of idiopathic genu valgum before skeletal maturity.

Abstract no.: 50637

SHOULD WE PAY ATTENTION TO THE FIBULAR SEGMENTAL FRACTURE IN THE MANAGEMENT OF LEG FRACTURES?

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Background: Fibular fractures are the most common associated fractures with tibia injuries. The current study aimed at collecting data on segmental fibular fractures in the patients and investigating the prognostic and functional significance of this injury pattern in outcomes. Methods: Since 2013 to 2016 patients with segmental fibular fractures were assessed. The patients were also assessed for union status, infection, limb shortening, and complications. Fractures were defined as segmental when the bone was disrupted in 2 points and a segment of bone with circumferential cortices was apart from the main bone proximally and distally. Results: During the 3-year period of the current study, out of 212 patients with tibiofibular fracture 17 patients (8%) had segmental fibular fractures. In the observed fibular fractures, the number of fracture fragments was between 3 and 6 segments. After 6 months, the rate of union was 70% in the tibia and 88% in the fibula. Overall, 6 patients needed re-operation, 1 of them had below knee amputation, and 5 other had surgeries because of tibial nonunion. Conclusions: The current study results showed that presence of a segmental fibular fracture may be associated with higher rates of complications. Fixation of the fibula in this situation can lead to nonunion.

Abstract no.: 50640

BONE GRAFTING AND BONE MARROW CONCENTRATE IN THE TREATMENT OF AVASCULAR NECROSIS OF THE FEMORAL HEAD: THREE YEARS OF LONG-TERM RESULTS

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Among the low-traumatic methods of surgical treatment of avascular necrosis of the femoral head (AVN) are known techniques of «core» decompression. They are differed by surgical approaches, the number and diameter of drilled channels, methods of bone replacement. The aim: To study the results of our minimally invasive surgical treatment of AVN. Methods: From 2014 to 2017 we performed 40 «core» decompressions at ARCO stage I (6 cases), stage II B (14 cases), stage II C (16 cases), stage III (4 cases). The focus of necrosis was drilled through 2 cm skin incision with 9–12 mm burs. Then microfracturing of necrotic zone with a spoke from the inside of the bone was made. In 70% of cases the AVN zone was replaced by autologous spongy bone. In 30% of cases a concentrate of bone marrow cells from the wing of the ilium was introduced into the focus of necrosis. Results: Results of treatment were studied in all patients in terms of 1 to 3 years. Reduction of pain syndrome according to VAS from 5 to 3 points was observed in 60% of cases. Stabilization of AVN on X-ray and MRI were noted in 22 cases (55%), improvement of the AVN focus condition due to reduction of edema – in 4 cases (10%), progression of collapse in 14 cases (35%). THR performed in 5 cases. Conclusions: The best results of the «core» decompression were obtained in the early stages of AVN and with the additional use of bone marrow cell concentrate.

Abstract no.: 50642

MID-TERM RESULTS OF A MOBILE BEARING ULTRA CONGRUENT KNEE ARTHROPLASTY

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Background: the complexity of the anatomy of femoral condyle leads to complex knee arthroplasty designs. To obtain a maximum of flexion, you can just turn a wheel around a single axis, this axis must be near the bi-epicondyle line; a singular solution to maintain the arthroplasty on this fixed axis is to use a specific ultra-congruent mobile bearing insert. Purpose: our objective was to analyze and evaluate the mid-term clinical and radiological results of 50 consecutive total knee replacements using this device. Methods: a single senior surgeon performed all procedures. The patient's data included 36 females and 14 males with a mean age of 72.2 years, the mean body mass index in our cohort (BMI) was 29. Indications for surgery included primary osteoarthritis, rheumatoid arthritis and idiopathic necrosis. The mean hospital stay was 5,8 days. The knees were evaluated using the Knee Society Score (KSS) and radiographs. Results: Before discharge, 98% of patients had full weight bearing. KSS increased from a preoperative average of 68 to a postoperative average of 190 at 3 years. Postoperative radiographic analysis revealed centered mechanical axis in 16 patients (who had 3 years follow-up), no loosening, no seen wear. Conclusions: The use of this design achieve results at least as good as comparable ones reported; demonstrates at the end follow-up no revision rate, restore biomechanical axis, resulted in improved KSS with maximum flexion.

Abstract no.: 50650

PEDICLE SUBTRACTION OSTEOTOMY OVER FIFTH LUMBAR SPINE AS A SOLUTION FOR DISTAL JUNCTIONAL FAILURE OF LONG INSTRUMENTED THORACOLUMBAR FUSION

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Introduction: There is recently rare article discussing the pedicle subtraction osteotomy in the lower lumbar spine to correct and stabilize the distal junctional kyphotic (DJK) deformity after thoracolumbar long instrumented fusion, which poses many challenges with regard to treatment options and outcomes. A pedicle subtraction osteotomy is a reconstructive procedure that addresses fixed sagittal imbalance by increasing lumbar lordosis through posterior spinal column shortening. The goals of treatment are to stabilize the affected spinal levels and to decompress the neural elements. Case report: The authors report a 46-year-old patient with chronic, progressively worsening back and leg radiculopathy accompanied by sagittal plane malalignment and for which a pedicle subtraction osteotomy was performed. The procedure was yielded to stabilize the patient's lumbar spondylolisthesis and correct the sagittal plane alignment. At 3 months postoperatively, the patient's pain had fully resolved and her motor and neurologic examination exhibited no deficits to date. Discussion: This report indicates that certain patient populations may be amenable to pedicle subtraction osteotomy as a treatment option for distal junctional kyphotic (DJK) deformity pathology from long instrumented fusion.

Abstract no.: 50654

CLINICAL OUTCOME OF MINIMALLY INVASIVE DISCECTOMY USING TUBULAR DILATORS AND RETRACTOR IN AN INDIAN POPULATION: A STUDY OF 73 PATIENTS

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Introduction: Surgical treatment of lumbar disc herniation is the most common spinal procedure performed. Minimally invasive discectomy is considered desirable by most patients and surgeons. The outcome of minimally invasive lumbar discectomy using tubular dilators and retractor was studied in terms of clinical and functional outcomes. **Methods:** It was a prospective observational study from Aug 2015 to Aug 2017 on 73 Patients (M:F 50:23) aged 20 to 65 years. Clinically patients with backache and a positive straight leg raising (SLR) test with or without motor & sensory disturbances were included. Functional evaluation was by using visual analogue scale (VAS) and Oswestry Disability Index (ODI). We selected a single level paracentral disc prolapse for minimally invasive discectomy. **Results:** Median skin incision was 2cm, blood loss was 60ml and median duration was 60 min. Follow up was at 3, 6 and 12 months. SLR, VAS and ODI improved significantly ($p < 0.001$ by Friedman's test) by 12 months. We had 7 dural punctures, 1 pseudomeningocele, 2 meralgia paraesthetica and 1 persistent radicular pain as complications. **Discussion:** Minimally invasive principle was to remove the sequestered or extruded part of intervertebral disc and free the nerve root. **Conclusion:** Minimally invasive discectomy using tubular dilators and retractors is an effective method to treat lumbar intervertebral disc prolapse. There was significant improvement in the VAS and ODI scores, suggestive of good clinical outcome and early return to work.

Abstract no.: 50659

TOTAL KNEE REPLACEMENT IN THIRD WORLD COUNTRIES: AN EXPERIENCE FROM AFGHANISTAN

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Introduction: Knee replacement is one of the most rewarding surgeries in 21st century, and available every where around the globe for the needed patients, we present our experience of 10 years and almost 800 cases done almost single handed in our center in Kabul. Method: For the cases medial parapatellar approach was used single company instrumentation were used. Results: Over all 95% had good results, 1% got infected, 3% were fixed in mal positions, and 1% were revised for other causes. Since 2008 we are doing total knee replacement in our center and till date we have no case for revision so far. In our study we concluded that it doesn't matter which implant from which company you use, it's the surgical expertise and method which determines the survivorship.

Abstract no.: 50663

REVERSE FLOW SURAL FASCIOCUTANEOS FLAP: HOW CAN WE AVOID THE COMPLICATIONS?

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Introduction: Soft-tissue defects of the distal lower extremity present significant challenges to the orthopaedic surgeon. The reverse flow sural fasciocutaneous (RFSF) flap is a popular option for these difficult wounds. A growing consensus is that impaired venous drainage of the RFSF flap is one of the important factors that contribute to flap necrosis after surgery. Due to a high rate of venous congestion after this surgery ended in flap failure, we have modified our operative technique to produce a more reliable flap. **Methods:** We share our clinical experience and modified surgical technique with the RFSF flap for coverage of tissue defects around the ankle as done in 4 cases. The technical aspects are emphasized. A key modification to the flap was an increase in pedicle width to 4 cm including the nerve and the vessels. The pivot point of the flap is 7 cm above the lateral malleolus, proximal to the distal perforators from the peroneal artery. The skin island was elevated with the deep fascia. **Results:** Well-tolerated procedure with survival of all flaps, no plastic surgery or reoperation was need for any of the four patients. There were no venous engorgement or other complications. **Conclusions:** RSFS flap is a good choice for reconstruction of soft tissue defects around the ankle. A pedicle width of 4 cm and pivot point of the flap at 7 cm are recommended to maintain venous drainage and preserve flap viability. The procedure is easy, quicker and orthopaedic surgeons can easily perform this procedure.

Abstract no.: 50665

DEMOGRAPHIC AND INJURY PATTERNS OF UNITED STATES MOTORCYCLISTS

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Purpose: Motorcyclist road traffic accidents are common in the US and have demonstrated high injury rates. The purpose of this study was to identify demographic and clinical features of this population and compare them to the rest of the trauma population. **Methods:** Prospectively collected 2008-2014 NTDB data were accessed. Three distinct populations were identified: motorcyclists (MCC), motor vehicle occupants (MVO), and non-motorcyclists (NM). Demographic factors, clinical factors, and the most common orthopaedic and non-orthopaedic injuries were identified and compared. **Results:** 245,645 NTDB incident records involving motorcyclists were identified. The MCC group had bimodal age distribution with peak ages of 22 and 50 years, whereas the MVO group had a peak age in the 20s and the NM group had trimodal distribution. MCC had a significantly higher percentage of males (87%) compared to MVO (56%) and NM (63%). Average ISS score in MCC was 13.3, compared to 11.3 in MVO and 9.5 in NM. MCC median ICU stay (6.5d) was longer than both MVO (3d) and NM (3d). MCC in-hospital mortality (3.36%) was found to be minimally different from that of MVO (3.10%) and NM (3.21%). The most common injuries MCC group were skin abrasion (5.6%), closed lung contusion (2.9%), and traumatic pneumothorax (2.3%), comprising a total of 10.8% of all injuries. The most common orthopaedic injuries were one or more closed rib fractures (13.5%), thoracic (5.3%) and lumbar (4.6%) vertebral fractures, comprising 22.4% of all orthopaedic injuries. **Conclusion:** US motorcyclists comprise a demographically and clinically distinct trauma group.

Abstract no.: 50666

PATIENT-REPORTED OUTCOMES IN HIP RESURFACING VERSUS CONVENTIONAL TOTAL HIP ARTHROPLASTY: AN ARTHROPLASTY REGISTER MATCHED CASE-CONTROL STUDY WITH SEVEN YEARS FOLLOW-UP

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Introduction: The theoretical biomechanical advantages of metal-on-metal hip resurfacing (MoM-HR) compared to conventional total hip arthroplasty (THA) have been questioned. Studies including patient-reported function, physical activity or health-related quality of life been sparse. In this study we aim to investigate patient-reported outcomes in MoM-HR patients compared to a matched group of patients with conventional THA. **Methods:** Patient data were retrieved from the Swedish Hip Arthroplasty Register. The case group, consisting of patients operated on with MoM-HR, was matched 1:1 with a control group, consisting of patients with a conventional THA. In total 726 patients (363 MoM-HRs, 363 conventional THAs) were included. Patients were sent a postal patient-reported outcome measures (PROM) questionnaire including the Hip Disability and Osteoarthritis Outcome Score (HOOS) and the EQ-5D. We used multivariable linear regression analyses to investigate the influence of prosthesis type. **Results:** 569 patients (78 %) returned the questionnaire with complete responses (299 MoM-HRs and 270 conventional THAs). The adjusted linear regression models showed that MoM-HR was associated with better scores in HOOS function of daily living and HOOS function in sport and recreation subscales. Type of prosthesis did not influence HOOS quality of life, HOOS pain, HOOS symptoms, EQ-5D index, hip pain or satisfaction as measured with visual analogue scales. **Conclusion:** At median 7 years post-surgery, patients operated with hip resurfacing had better self-reported hip function than patients with conventional hip arthroplasty. The largest difference between groups was seen in the presumed most demanding subscale, i.e. function in sport and recreation.

Abstract no.: 50668

NOVEL TECHNIQUE: REVISION OF A FRACTURED REVITAN® FEMORAL STEM USING A CUSTOM MADE CEMENTED CYLINDRICAL COMPONENT

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Introduction: revision of a fractured long femoral stem can be a challenging surgical problem specially in presence of limited bone stock. We are describing a new surgical technique and early outcome of revision of broken Revitan® revision hip Stem – Zimmer using a custom made cemented cylindrical component. Method: 71 year old gentleman presented to us with one year history of a gradual onset left thigh pain. The index revision operation was performed 8 years before. Radiographs demonstrated a fracture of his Revitan® femoral Stem at the junction of proximal and distal components of the modular stem. Surgical technique: due to the limited bone stock distally, we decided to leave the well-fixed distal component in place. A custom made cylinder component (K-Implant; Germany) was cemented at the site of the break and used as a junction to link the distal component with a new proximal conical component of the revitan system. Result: Patient pre-operative Harris-Hip-Score was improved from 42,8 to 96,4 at one year follow up. His pain scale was improved from 7/10 pre-operatively to 0/10. The extracted broken prosthesis was analysed at the Institute of material science from the Leibniz University of Hanover. The oscillating break was initiated by an indentation caused during the initial implantation of the stem. Conclusion: this new novel technique can be used as a salvage option for broken modular prosthesis in presence of limited bone stock and it delivered an excellent outcome as well as helped to avoid the use of mega endoprosthesis.

Abstract no.: 50697

NEW POSITION AND LANDMARK FOR DELTOPECTORAL APPROACH

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Deltopectoral is the most common approach in shoulder surgeries. One important step in this approach is to find cephalic vein as the indicator of deltopectoral interval. Although, several landmarks has been explained, "finding the vein" is a matter of difficulty, stress and time exercise(1) if the position of the arm and skin incision is not appropriate, especially in junior surgeons and residents. In this situation extra and unnecessary dissection must be done to find the interval. We find new position and skin landmark that seriously helps the surgeon in finding the vein. We use this method in 50 consecutive patients and there was no problem in finding the deltopectoral interval. Majority of references suggest palpating deltopectoral groove but this is so hard in obese and non-muscularized patients. Since we start using this position and landmark finding the vein was an easier work specially in obese and non-muscularized patients as mentioned before. The ideal position is 20 degrees of abduction and about 20 degrees of external rotation in this point often a fold appear in the axilla. In some obese patients to forming this fold more external rotation is needed. After appearing this fold the line of incision is from coracoid process to lateral border of the fold and the vein will be find in this line.

Abstract no.: 50699

A NEW CLASSIFICATION AND CORRESPONDING TREATMENT OF ATLAS FRACTURE AND ITS PRELIMINARY CLINICAL STUDY

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Objective: To propose a new classification and corresponding treatment of atlas fracture and to investigate it's preliminary clinical application. Methods: The new classification and corresponding treatment of atlas fracture was proposed by us. According to the new classification and corresponding treatment of atlas fracture, we had completed and analyzed the perspective treatment of 30 cases of atlas fracture in our hospital from Jan. 2013 to Dec. 2016. Results: 1. Among the 30 cases, there were 2 cases of the atlas stable fracture treated by neck collar, 2 cases of the atlanto-occipital unstable fracture treated by atlanto-occipital fusion, 5 cases of the A type fracture performed by atlantoaxial internal fixation, 8 cases of the B type fracture performed merely by atlas internal fixation, 6 cases of the C type fracture and 7 cases of the D type fracture that were performed by atlantoaxial internal fixation combined with transverse rod. 2. The internal fixation were good, the fracture reduction were good, the spinal cord and nerve re-injury were not occurred, there were 3 cases suffered from vertebral artery injury, but they were dealt with hemostasis during the operation and had not adverse reaction after the operation. 3. All of patients were followed up from 3 months to 24 months, the spinal cord and nerve recover were good, and there were not failure of the internal fixation. Conclusion: The new classification and corresponding treatment of atlas fracture is an ideal classification and has important clinical significance for atlas fracture.

Abstract no.: 50700

THE ZYGAPOPHYSEAL JOINT FUSION AFTER POSTERIOR INTERNAL FIXATION FOR THORACOLUMBAR FRACTURE

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Objective: To study the operative method and fusion rate and stability of the zygapophyseal joint fusion after posterior internal fixation for thoracolumbar fracture. **Methods:** 25 cases of thoracolumbar fracture with intact vertebral pedicle were recruited and treated by posterior total lamina decompression/zygapophyseal joint fusion/internal fixation and analyzed by DR/CT/MRI in our hospital from Jan. 2013 to Dec. 2017. **Results:** 1. There were 16 men and 9 women aging 23 to 56 year-old, with the average age of 36.7 years old. 18 cases were suffered from spinal cord and nerve injury with various Frank's degrees, all cases of thoracolumbar fracture with intact vertebral pedicle were need to perform posterior total lamina decompression/zygapophyseal joint fusion/internal fixation for the fracture fragment were burst mostly into the spinal canal. 2. The average operative time was 64.3min, the operative bleeding volume was 200-1000ml, the internal fixation were good, the fracture reduction were good, the spinal cord and nerve re-injury were not occurred. 3. All of patients were followed up from 3months to 24 months, the spinal cord and nerve recover were good, there were not failure of the internal fixation and not lost of the vertebral height, all the cases of bone graft fusion were good with 96.3% of fusion rate in 6 months post-operation. **Conclusion:** The zygapophyseal joint fusion after posterior internal fixation is a new and ideal and effective method of spinal fusion for thoracolumbar fracture.

Abstract no.: 50703

LIQUID NITROGEN-TREATED TUMOUR BEARING BONE WILL BE REVITALISED AFTER CLINICAL IMPLANTATION

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Purpose: We examined the histology of retrieved frozen autograft after having been implanted for limb reconstruction. **Materials and Methods:** Frozen tumor-bearing autograft specimens treated with liquid nitrogen were obtained from six patients with a mean age of 33.7 years. These specimens were retrieved at the time of revision surgery for local tumor recurrence or complications at a mean of 30.1 months postoperatively and were studied histologically. **Results:** Tumor cells were completely eradicated from the frozen bone in all cases. In a specimen retrieved 5 months after implantation, a small area of the bone showed active osteoblasts and osteocytes. In three cases retrieved greater than 1 year after implantation, active osteoblasts and osteocytes were observed widely throughout the frozen bone implant indicating the onset of osteogenesis commencing soon after implantation. Osseous incorporation was noted along the cortical host-graft junction as indicated by the continuity of bone trabeculae. Notably, in the specimen which was retrieved 8 years after implantation, excellent bone revitalization and incorporation was observed. **Discussion and conclusion:** Even at less than 6 months after implantation, bone revitalization was initializing and noted histologically; this progressed to continued graft-host osteointegration over time. It has been reported that MMP-7, which is important in bone metabolism, was better preserved in liquid nitrogen-treated bone compared with heat-treated bone. This supports the possibility that liquid nitrogen treatment might preserve other proteins important in bone metabolism. Liquid nitrogen-treated bone appears to be a good biological material for use as a reconstruction material in limb salvage surgery.

Abstract no.: 50705

**A LARGE KNEE OSTEOCHONDRAL LESION TREATED USING A
COMBINATION OF OSTEOCHONDRAL AUTOGRAFT TRANSFER AND
SECOND-GENERATION AUTOLOGOUS CHONDROCYTE
IMPLANTATION**

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Background: Full-thickness knee cartilage defects greater than 4 cm² are best treated with autologous chondrocyte implantation (ACI). Since the articular cartilage surrounding the site of implantation does not always have the normal thickness desirable for successful engraftment, there may be benefit in combining ACI with osteochondral autograft transfer, which provides immediate restoration of condylar contour and mechanical function. Case presentation: A 19 year-old male who sustained a traumatic anterolateral femoral condyle osteochondral fracture underwent arthroscopic knee surgery three months after injury to harvest healthy cartilage to be sent to the Japan Tissue Engineering Co., Ltd. (J-TEC) for cartilage culture. The patient was re-admitted after four weeks to undergo a procedure using the Osteochondral Autograft Transfer System (OATS) and the J-TEC autologous cultured cartilage (JACC) system. Three 4.7-mm osteochondral cylindrical cores were harvested from non-weight-bearing areas of the knee and were transplanted to the lateral periphery of the lateral femoral condyle defect. The cultured cartilage was implanted to the remaining defect with a periosteal cover harvested from the anterolateral ridge of the lateral femoral condyle. Continuous passive range of motion exercises and gait retraining were immediately initiated, with strict non-weight-bearing precaution on the operated limb. Partial weight-bearing was allowed four weeks after surgery, which was progressed to full weight-bearing after another two weeks. Conclusion: ACI must be viewed as a complementary procedure to osteochondral transplantation and this hybrid technique appears to be a promising surgical approach and treatment option for large cartilage lesions, especially in the younger population.

Abstract no.: 50710

ARTHROSCOPIC TREATMENT OF ANKLE OCD: TECHNIQUE AND RESULTS

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Osteochondral lesions of the ankle are a major cause of disability following ankle sprain. The exact cause is not yet identified, though osteonecrosis, trauma, endocrine and metabolic factors have been proposed. A definite algorithm for the treatment of OCDs of the ankle is still lacking. Methods: A retrospective review of all patients undergoing surgery for OCD of the ankle during a 3-year period with at least 1 year follow up was performed. Age, size of the lesion, surgical procedure, pain and range of motion at the last visit were recorded. Results: A total of 32 patients with OCD with a minimum of one year follow up were treated by arthroscopy during the study period. Mean age of the patients was 24.3. 23 patients had medial talus OCD (71%), and 9 had lateral talus OCD (19%). At a mean follow-up of 18 months, 28 patients had excellent results (87%), 3 had good results (10%), and 1 patient had fair result (3%). All patients were treated by arthroscopic debridement and drilling of the lesion. Conclusion: This study demonstrates that arthroscopic treatment of ankle OCDs with debridement and drilling of the lesion is a safe and effective procedure with reliable results. Technical difficulties, steep learning curve, and failure to recognize occult ankle instability are the major sources of unsatisfactory results.

Abstract no.: 50712

**CHRONIC PATELLAR INSTABILITY WITH PATELLOFEMORAL JOINT
ARTICULAR CARTILAGE DEFECTS TREATED WITH MEDIAL
PATELLOFEMORAL LIGAMENT RECONSTRUCTION AND SECOND-
GENERATION AUTOLOGOUS CHONDROCYTE IMPLANTATION: A
CASE REPORT**

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Background: Chronic patellar instability can cause progressive cartilage degeneration in the patellofemoral joint. Management of the cartilage defect needs to include addressing the patellar instability in order to have better long-term outcomes. Case presentation: We report a case of a 52 year-old female who presented with a one-year history of left knee pain aggravated by stair-climbing. She had episodes of patellar dislocation when she was 17 and 27 years old. Physical examination showed apprehension when the patella is manually translated laterally. MRI showed medial patellofemoral ligament disruption and advanced chondral degeneration in the patellofemoral joint. The patient underwent second-generation autologous chondrocyte implantation using the J-TEC Autologous Cultured Cartilage (JACC) system for the chondral defects of her patellofemoral joint. Medial patellofemoral ligament reconstruction was subsequently performed using a Leeds-Keio artificial ligament to address the chronic patellar instability. Second-look arthroscopic surgery after six months revealed good engraftment and hardness. The symptoms of pain and instability were no longer present one year after surgery. At this point, the Kujala Score improved to 94 from 46 points preoperatively. The Knee Injury and Osteoarthritis Outcome Score (KOOS) also improved to 95 from 45 points preoperatively. MRI showed that the patella was in a reduced position, with the lateral facet having an integrated regenerative cartilage layer. Conclusion: Medial patellofemoral ligament reconstruction done with autologous chondrocyte implantation can be an effective and holistic treatment strategy for advanced patellofemoral joint chondral degeneration caused by chronic patellar instability.

Abstract no.: 50719

SEVER RIGID SCHEUERMANN KYPHOSIS IN ADULT PATIENTS: CORRECTION WITH POSTERIOR ONLY APPROACH

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Introduction: Scheuermann kyphosis (SK) is the most common structural kyphosis among adolescence and young people. To our knowledge, there is no definite guideline regarding the choice of surgical approach for severe rigid SK. Method: From 2013 to 2016 all patients who had been undergone surgical treatment due to severe rigid SK, were evaluated. Result: 15 patients were enrolled in the study. There were 4 females and 11 males. Mean age of the patients was 22.4 year (range 17 to 38). Mean kyphosis angle before surgery was 87.2° (range 76 to 105), that reduced to mean 47.4° (range: 45-55) after the surgery. Mean curve size in hyperextension view was 73.8°. Mean postoperative Cobb angle was 50 to 55 percent of preoperative curves. Mean hospital admission duration was 3.5 days after the index surgery (range: 3-5). Mean blood loss during the surgery was 250 ml which was measured by our anesthesiologist. Mean surgical duration time was 150 minutes (rang: 140 -200 minutes). Mean follow up period was 9 months (range 8 to 48 months). No complication was found among the patients. Conclusion: Posterior only approach with using advanced osteotomy technique and posterior release is safe and reliable approach for treatment of severe rigid scheuermann kyphosis.

Abstract no.: 50724

COMPARATIVE ANALYSIS OF SERUM MELATONIN LEVELS IN ADOLESCENT SCOLIOSIS, CONGENITAL SCOLIOSIS AND CONTROLS

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Objective: To compare and analyse serum levels of melatonin in patients with adolescent scoliosis, congenital scoliosis and healthy controls. **Materials and methods:** In an observational study conducted at All India Institute of Medical Sciences, serum melatonin levels between patients between age of 4-18 years with congenital scoliosis (n=31), adolescent scoliosis (n=25) and healthy controls (n=13) were compared. Samples were taken within the OPD between 1100-1200 hrs, centrifuged and serum stored at -40 degrees. Samples were tested using enzyme linked immunosorbent assay kit for serum melatonin (cloud-clone corp.). Analysis was done using one way ANOVA test with Bon Ferroni modification. **Results:** The mean age of patients was 13.4 years. The mean serum melatonin level among patients with adolescent scoliosis was significantly lower than control group (118.3+41.05 vs 184.28+ 64.86; p <0.05). There was no significant difference in serum melatonin levels between patients with congenital scoliosis and adolescent scoliosis (142.27+34.68 vs 118.3+41.05). Patients with congenital scoliosis had significantly lesser serum melatonin levels than healthy controls (p<0.05) **Conclusion:** Serum melatonin level was significantly lesser in adolescent scoliosis compared to control group. The cause and the effect relationship is not clear. Whether low melatonin is the cause for adolescent scoliosis or vice versa needs to be answered.

Abstract no.: 50727

MRI: A DIAGNOSTIC TOOL TO LIMIT AMPUTATION IN DIABETIC FEET

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Objective: The aim of the study is to assess the diagnostic accuracy and surgical utility of MRI in diabetic foot. Material and Method: 34 diabetic foot (male: 22, female: 12 with mean age 52.3 ± 8.8 years) were evaluated prospectively. T1W, T2W and FSat sequences of the affected foot and ankle was carried out. The soft tissue, tendons and osseous apparatus were evaluated and subsequently compared with surgical results followed by histopathological examination. Previously operated cases with persistent ulcer of affected foot were excluded from the study. Result: The sensitivity of MRI for tenosynovitis and osteomyelitis was 88% and 100% respectively. The specificity for the same was 100% and 90%. Of all 34 cases, MRI enable us to diagnosed deep seated abscess in 5 cases and improvement in overall surgical planning in 23.5% cases (8 patients). The difference between MRI and surgical findings was evaluated statistically using Fisher Z test and the proportion of difference between these two groups is non significant as values for tenosynovitis is $Z=0.50$ (p value >0.05) and for osteomyelitis $Z= 0.54$ (p value >0.05). Conclusion: The result indicates that MRI is a sensitive and accurate imaging modality for evaluation of diabetic foot and for planning proper treatment and the MRI correlates significantly with the surgical finding.

Abstract no.: 50734

REASONS FOR IMPLANT REMOVAL AFTER OPERATIVE FIXATION OF DISTAL RADIUS FRACTURES

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Introduction: The usefulness of locking plate fixation for distal radius fractures has been widely reported. In this study, we retrospectively reviewed the reasons and rate for implant removal. **Methods:** We reviewed the hospital operative records of patients who underwent operative fixation of distal radius fracture from April 2011 to December 2016, total of 235 patients (66 male, 169 female) received surgery. Mean age was 62 (15-89) when they were injured. We recorded the number of patients who removed implant, period from osteosynthesis to implant removal, the type of implants used, reasons for removal. **Results:** Ninety two patients (39%) had had implants finally removed, they tended to be younger (mean age of 51 years compared to 70 years in those who did not remove implants). Mean period from osteosynthesis to implant removal was 348 days (65-646). Type of implants used (number of patients) were VA-TCP(184), Acu-Loc(49), VA-TCP Volar Rim DRP(1), VariAx(1). Reasons for implant removal were disfunction of flexor pollicis longus tendon (20), inappropriate screw length or direction (11), carpal tunnel syndrome (1), patients who did not have a clinical reason (60). **Conclusions:** The age was significantly young in patients who removed implant. Removal rate of implants was 39% in this study, which was higher than overseas removal rate. This may suggest involvement of some psychosocial factors; cultural attitudes toward presence of implants inside of body. Although surgery for cases that has postoperative complications are necessary, considering the current aging society and increase of healthcare costs, we must find out the cases which really need surgery for implants removal.

Abstract no.: 50738

PAEDIATRIC MUSCULOSKELETAL DISEASE IN KUMI DISTRICT, UGANDA: A CROSS-SECTIONAL SURVEY

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To estimate the burden of musculoskeletal disease among children treated in Kumi District, Uganda to inform training, capacity building efforts and resource allocation. We conducted a retrospective cohort study by reviewing the musculoskeletal clinic and community outreach logs for children (age <18 yrs) seen at Kumi Hospital in Uganda between January 2013 and December 2015. For each patient, we recorded the age, sex, diagnosis and treatment recommendation. Of the 4,852 children, the most common diagnoses were gluteal and quadriceps contractures (29.4% (95% CI 28.1 – 30.7%)), 96% of which were gluteal fibrosis), post-injection paralysis (12.7% (95% CI 11.8 – 13.6%)), infection (10.5% (95% CI 9.7 – 11.4%)), trauma (6.9% (95% CI 6.2 – 7.6%)), cerebral palsy (6.9% (95% CI 6.2 – 7.7%)) and clubfoot (4.3% (95% CI 3.8 – 4.9%)). Gluteal fibrosis, musculoskeletal infections and angular knee deformities create a large surgical burden with 88.1%, 59.1%, 54.1% of patients seen with these diagnoses referred for surgery respectively. Post-injection paralysis, clubfoot, and cerebral palsy were treated nonoperatively in over 75% of cases. While population-based estimates of disease burden and resource utilization are needed, this data offers insight into burden of musculoskeletal disease for this region. We estimate that 50% of the surgical conditions could be prevented with policy changes and education regarding injection practices and early care for traumatic injuries, clubfeet, and infection. This study highlights a need to increase capacity to care for specific musculoskeletal conditions including gluteal fibrosis, post-injection paralysis, infection and trauma in the pediatric population of Uganda.

Abstract no.: 50751

LONG-TERM-CURATIVE-EFFECT ANALYSIS OF TOTAL HIP ARTHROPLASTY OF TREATMENT OF CROWE TYPE III-IV DEVELOPMENTAL DYSPLASIA OF HIP WITH DISLOCATION IN ADULTS

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Objective: To estimate the long term result of Total Hip Arthroplasty treatment of Crowe Type Iii-Iv Developmental Dysplasia of Hip with Dislocation in adults. **Methods:** 29 patients (32 hips) were treated between March, 2007 and December, 2011. Aged between 22 to 57 years old (average age is 43 years old). The Harris score of involved cases is 41.5 ± 5.3 . The shortened length of involved extremity was 2-6 cm (mean 4.2 cm). X-ray, CT films indicate complete dislocation in all cases. All operations were performed by the same doctor. All cases are followed around 5 to 9 years (mean 6.5 years). **Result:** All incisions were healed during the first intention. No thrombosis, infection, pneumonia, hip dislocation events and sciatic nerve injury during the follow-up research. All patients were followed around 5-9 years (mean, 6.5 years). Pain relief of the hip was achieved. claudication status was improved. Research at the last post-surgery follow-up research showed the mean length difference was 0.4 cm (range, 0.3-1.0 cm) between affected and contralateral extremities; The Harris scale was 88.14 ± 1.26 after 3 years of surgery, after 4 years of surgery and significantly improved to (88.4 ± 1.1) after 5 years of surgery. The result has statistical significance ($t=6.845$, $P<0.001$). The X-ray showed stable interface between acetabular prosthesis and bone, no infection and dislocation. **Conclusion:** Total Hip Arthroplasty is an effective and reliable treating method in the treatment of Crowe Type III-IV Developmental Dysplasia of Hip with Dislocation In adults.

Abstract no.: 50754

DIFFERENT TREATMENT OPTIONS FOR UNICAMERAL BONE CYST IN CHILDREN

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To evaluate the outcome of different treatment options for unicameral bone cyst (UBC) in children, three treatment modalities were implemented in 37 patients with UBC. Treatment choices included aspiration of fluid followed by injection of minimally invasive injectable graft X3 (MIIG X3) (Group A, 10), combined elastic stable intramedullary nails (ESIN) with MIIG X3 followed by aspiration of fluid (Group B, 21), and total resection of the lesion followed by allograft reconstruction (Group C, 6). Recurrence occurred in 3 cases in group A, 4 in group B, and 0 in group C. It took the shortest operating time in group A. Patients in group C had the longest healing time. A risk of growth plate injury was also shown in one patient who was treated with group C. It is also found that age, gender, location, and pathologic fracture history has no association with healing time. However, active or latent was a predictor of treatment outcome. Although recurrence was not uncommon in group B, elastic stable intramedullary nailing decreased the risk of pathological fracture.

Abstract no.: 50755

HIGH GRADE SPONDYLOLISTHESIS IN ADOLESCENCE: SURGICAL OUTCOME FOLLOWING SINGLE-STAGE POSTERIOR APPROACH

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INTRODUCTION: Literature evidence of outcome of reduction, spinal fusion through single stage posterior approach in adolescence patients of high grade spondylolisthesis L5-S1 patients is lacking. We have retrospectively analysed adolescent patients of high grade spondylolisthesis, who have undergone reduction and spinal fusion in our institute for the past 5 years with a follow-up of two years. Distraction, Posterior translation of L5, sacral dome osteotomy, compression with L5-S1 peek cage were done. **METHODS:** 27 Adolescent patients, who have undergone surgery in the period between 2010 to 2015, were evaluated with preop radiograph for slip angle, L5 incidence angle, lumbar lordosis, pelvic incidence, Oswestry disability index for low back pain, neurological examination, sf-36 health survey questionnaire. The patients who had undergone the surgery were followed up for 2 years and evaluated with radiographs for all the above parameters and assessment of spinal fusion by Bridwell criteria. **RESULTS:** Mean age of the patients was 13.3 years. Mean slip angle, L5 incidence angle, Lumbar lordosis, pelvic incidence changed from 32.57 to 4.10 [$p=0.0031$], 78.57 to 47.50 [$p=0.047$], 81.40 to 55.5 [$p=0.145$], 72.27 to 47.63 degree [$p=0.173$] respectively. Mean percentage correction of slip angle, L5 incidence angle, Lumbar lordosis, pelvic incidence was 87.41, 39.54, 18.31, 34.48 percentage respectively. Oswestry disability index improved from 7.1 to 1.7. Sf-36 health survey questionnaire showed superior results postoperatively. All the patients showed excellent fusion [Bridwell grade 1] at two years. Postural scoliosis secondary to spondylolisthesis in 3 patients, disappeared and no significant neurological complications encountered at two years follow-up. **CONCLUSION:** Surgical outcome of high grade spondylolisthesis patients, produces superior results at two years of follow-up.

Abstract no.: 50756

HOFFA'S FRACTURE: A SURGICAL MENACE! A NOVEL CLASSIFICATION AND SURGICAL TREATMENT CONSIDERATIONS

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BACKGROUND: Hoffa's fracture is surgically demanding to treat. 22 patients with Hoffa's fracture were operated in our hospital between 2004-2017. We retrospectively assessed the fracture patterns, fixation done and final surgical outcome. **MATERIALS & METHOD:** All the injuries resulted from direct trauma to the knee out of which 18 were due to road traffic accidents. 19 were closed injuries and the rest open. 17 involved lateral condyle, 4 involved medial condyle and one was bicondylar type. All underwent open anatomical reduction with fixation planned based on preoperative radiograph, CT scan and intra-op observation. Post-operative rehabilitation consisted of early passive motion exercises, isometric exercises with non-weight bearing for 6-8 weeks. The mean follow up period was five years. Outcome measurement were done using Neer's scoring system and International Knee Society Documentation Functional Score. **RESULTS:** 13 patients had excellent outcomes, 7 had satisfactory results and 2 had unsatisfactory outcome which corresponded with the specified fracture severity pattern. Open anatomical reduction & stable fixation had uniformly excellent results in all isolated simple pattern fractures. Whereas other fracture patterns were more challenging to treat and had variable outcomes. **CONCLUSION:** In our observational study we found out certain specific patterns of fractures that dictated the treatment plan & the prognosis. Subsequently we grouped the fractures and proposed a classification system that could specify the type of fixation. We conclude that therapeutic outcome is significantly affected by the amount of articular surface comminution, posterior cortex comminution & attainment of anatomical reduction.

Abstract no.: 50764

THE ROLE OF SOCIAL MEDIA AND THE FUTURE OF SURGICAL EDUCATION: DO TRAINEES VALUE THIS ALTERNATIVE TO TRADITIONAL TEACHING?

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Introduction: There is growing pressure on service provision within orthopaedics, at the expense of education. Alternate methods of education need to be considered. Social media is evolving, and has established a foothold within mainstream education. Medical education however, has been slow in evaluating this tool, particularly within orthopaedic education. Through this study, we aim to establish the trainee's perspective of the role and value of social media within training. **Methods:** We conducted a two-phased data collection, consisting of a structured questionnaire and subsequent semi-structured interviews. This method increased the validity of results through triangulation of data collection and analysis. The results were analysed using statistical frequency analysis and thematic analysis. **Results:** A representative response of 70% was achieved during the questionnaire phase, with five participants for the semi-structured interviews. Analysis established that trainees value the social media as an educational tool. Two predominant roles were established; audio-visual learning and discursive learning. Social media was deemed to proving a valuable supplement to traditional training, although under-utilized. **Discussion:** Social media demonstrated a role in supplementing surgical education, providing a greater breadth of interaction between trainees and trainers. The convenience and ease social media was highlighted as a key factor to its educational value. The interactive nature of the learning environment provides near-peer learning. Social media's role with surgical education is an area for development, providing interactive teaching, without the need to travel between hospitals, optimising training time. This study provides training body's evidence to base development of educational programmes.

Abstract no.: 50765

PROSPECTIVE RANDOMISED CONTROL STUDY OF THE AGC TOTAL KNEE SYSTEM VERSUS VANGUARD® KNEE SYSTEM: THREE- TO FIVE-YEAR RESULTS

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Introduction: The AGC Total Knee System introduced in 1983, has demonstrated excellent long-term survivorship rates of 95.88% at 15 years and 92.4% at 30 years. Based on the proven heritage of AGC platform, the Vanguard Knee System was introduced incorporating additional features including greater modularity. We report three to five-year comparative results of patients who underwent TKR using either system. **Materials and Methods:** A randomised control study was designed recruiting 300 patients from November 2011 to July 2014. Patients were followed up post operatively at 6 weeks, 6 months, 1 year and yearly thereafter. Clinical and functional assessments including range of movement, HSS Knee Score, Oxford Knee Score (OKS), AKSS and the Noble & Weiss scores were recorded and statistically analysed. **Results:** As of September 2017, 230 patients were reviewed at the 3 years and 124 patients at the 5-year follow-up. At the 3-year follow-up, there was no significant difference noted in the Range of movement (Average 0.57°-118.56°(AGC), 0.77°-121.54°(Vanguard)), HSS score (Mean 88.3 vs 86.20, $p = 0.30$), OKS (Mean 37.14 vs 38.81, $p = 0.25$) and Cumulative AKSS (Mean 162.95 vs 168.11, $p = 0.32$). Similarly, no significant functional difference was identified between the two groups at the 5 year follow-up. **Conclusion:** The Vanguard system continues to reproduce the excellent functional outcomes of the successful AGC system at the 3-5 year follow-up. The more sensitive Noble & Weiss score analysis is being evaluated to ascertain any potential advantages.

Abstract no.: 50767

ESOPHAGEAL PERFORATION FOLLOWING ANTERIOR CERVICAL SPINE SURGERY: A CASE SERIES COHORT STUDY

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Introduction: Esophageal perforation is a potentially fatal complication of cervical spine surgery. Prompt recognition of these injuries is critical, as perforations can lead to the formation of fistulae, abscesses, osteomyelitis, mediastinitis, sepsis, and death. The purpose of this study is to present the clinical strategy to manage the complication and consequential fatal infection by case series presentation and review of articles. **Methods:** 4 cases of esophageal rupture after cervical spine fusion from three different hospitals were included. Postoperative leakage of the diet scraps from the wound or drainage tube was the common first finding. Laryngoscope, panendoscopy, and computed tomography were applied to evaluate the perforation. Primary suture with drainage was performed and followed with debridement and negative pressure wound therapy (NPWT) if infection complicated. Flap-buttress technique was applied to repair massive or erosive rupture. **Discussion:** Delay extubation with laryngeal edema may found under laryngoscope, while the esophageal perforation may not be located with ease under panendoscopy. Emphysematous abscess with pneumomediastinum may indicate peri-esophageal infection and mediastinitis. Further repair with covering flap, such as sternocleidomastoid muscle flap, pleural flaps, omental flaps, or intercostal muscle flaps is often need for massive perforation. Esophageal stenting using fully-covered expandable stents was considered for lesion from 2-3 cm beyond Killian's dehiscence to the gastroesophageal junction. **Conclusion:** Esophagus rupture following cervical spine surgery is a rare but fatal complication. Carefully evaluation with aggressive management step by step with closely monitoring is required for the surgeons to get the patients to recover from this terrible condition successfully.

Abstract no.: 50773

MODIFIED SCOLIOSIS ASIAN SCORE

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INTRODUCTION: We need to have a simple, lucid Scoring system for assessing scoliosis children. **MATERIALS AND METHODS:** We have come with simplified version of scoring system for scoliosis patients and have found it quite useful. **RESULTS:** There are 5 categories in the proposed score, viz. Physical health[pain], Mental health, Social health, Activities of daily living/functional activity, Satisfied with the surgery. Each category has been divided into three divisions, poor, fair, good with score zero being awarded to poor division, score one awarded to fair division, score two awarded to good division. In physical health [pain] category, severe pain in poor [score zero]division, moderate pain in fair [score one] division, minimal or no pain in good [score two] division. Category mental health is divided with depressed awarded poor division [score zero], feeling happy in good division [score two]. Social health category, if each of the person, whom the child or adolescent comes across, points to the deformity awarded poor division[score zero], only a few points the deformity awarded fair division[score one], if no one points to the deformity awarded good division[score two]. If the activities of daily living is severely restricted, awarded poor division[score zero], minimally restricted awarded fair division[score one], no restriction being awarded good division[score two].The category satisfied with surgery is just divided into two divisions either yes[S] or no[N]. The child or adolescent is being graded as Good,Fair,or poor based on the score. Score of 9 to 12[S/N]: Good, Score around 5 to 8 [S/N]: Fair, Score 1to 4[S/N] Poor. **Conclusion:** The scoring system can be used as an alternative to the SRS score.

Abstract no.: 50774

DELAYED ESOPHAGEAL PERFORATION WITH DIFFICULT EXTUBATION FOLLOWING ANTERIOR CERVICAL SPINE SURGERY: A CASE REPORT AND LITERATURE REVIEW

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Introduction: Anterior cervical discectomy and fusion (ACDF) is a commonly indicated for cervical spine disease. Esophagus rupture following cervical spine surgery is rare (incidence of 0.02 to 1.52%) but very serious and may complicate with further fatal infection including deep neck infection, mediastinitis and sepsis that results in significant morbidity and mortality. Case-report: A 54-y/o female without underlying, complained progressing axial neck pain with unsteady gait. Local kyphosis with cord stenosis indicated posterior instrumentation with ACDFs. The procedure yielded smoothly to decompress the cord and correct kyphosis. However, delayed extubation due to laryngeal edema followed with esophagus perforation were noted. CT revealed emphysematous abscess with pneumomediastinum. Emergency explore debridement was done and a 1 cm muscular erosive rupture over C5 level was found. Negative Pressure Wound Therapy was applied to the esophageal perforation with mediastinitis. The perforation was then buttressed and repaired by sternocleidomastoid muscle flap. Nasogastric intubation was removed after swallowing training for 4 weeks. The follow-up images showed stable fusion construct and the patients had no recurrent esophageal rupture symptom at postoperative 6 months follow up. Conclusion: Esophageal rupture may be a complication to C-spine surgery, and the appropriate management is still controversial. Small well-defined tears and minimal extraesophageal involvement may be better managed by nonoperative treatment. While, primary repair with simple drainage were suggested for poor healing cases. Flap- buttress technique with sternocleidomastoid muscle flap, Pleural flaps, omental flaps, intercostal muscle flaps were also mentioned in current literature.

Abstract no.: 50776

MEASUREMENT OF WEAR RATES FOR THIRD CERAMIC-ON-CERAMIC BEARING SURFACES IN TOTAL HIP IMPLANTS WITH A OUR DEVELOPING METHOD

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INTRODUCTION: We developed a novel roentgengraphic method using a metallic filter and image reconstruction, which for the first time has identified femoral head margin clearly in ceramic on ceramic total hip arthroplasty (COC THA), and reported the reliability of the method in European Congress of Radiology 2017. The aim of our study was to measure ceramic wear in third COC THA using our developing technique. **METHODS:** Data of patients was collected at a related hospital prospectively from April to December 2016. Clinical notes and radiographs were reviewed retrospectively. Excluded were: Patients unwilling to give approval, patients impossible to identify the line between insert and femoral head, and patients different in reading interpretation. Radiographic evaluations with images were performed using SYNAPSE Enterprise-PACS. The order of interpretation of radiogram was randomized by computer. Ceramic wear was measured by Dorr and Wan method. **RESULTS:** Seventy-three patients (60 women and 13 men; mean age at time of surgery, 58 years) at a minimum of 5-year follow-up (mean, 8.2 years) were included. Twenty hips were excluded in this study. The reasons for exclusion were unwilling to give approval in 4 patients, impossible to identify the line in 13 patients, and different in reading interpretation in 3 patients. In total, 53 hips (75 %) were examined in this study. Mean steady state wear rate was 0.021 (95%CI : 0.014 - 0.027) mm/y. **CONCLUSION:** Over a moderate-length follow-up of 5-15 years, this hard bearing articulation functioned well in vivo with remarkably low wear.

Abstract no.: 50778

**COMPARATIVE ANALYSIS BETWEEN PEDICLE SCREWS AND
SUBLAMINAR WIRES AT CONCAVE APICAL SITES OF SEVERE
ADOLESCENT IDIOPATHIC SCOLIOSIS CURVES.**

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INTRODUCTION: An analysis between pedicle screws, and sublaminar wires is needed, to proclaim which is significant at the most important concave apical sites in severe AIS curves. **MATERIALS AND METHODS:** We have analysed retrospectively severe AIS scoliotic curves[more than 75 degrees] operated with posterior instrumentation, from the period to June 2014 to June 2016. All the patients were operated with intraoperative traction, under neuromonitoring in Roger Jackson table. **RESULTS:** There were 12 treated with pedicle screw [Group 1], and 8 patients with sublaminar wires [Group 2] at concave apical implant sites. The mean Cobb angle, mean apical vertebral rotation, mean apical vertebral translation, reduced from 84.41 to 14.58, 2.91 to 1.16, 29.3 to 4.55 and from 84.10 to 28.55, 3 to 2.25, 34.2 to 13.375 in Group 1 and 2 respectively. The mean apical implant density was 1.283 in Group 1 and 1.0 in Group 2. The Mean correction Cobb angle index, Mean correction apical vertebral rotation index, Mean correction apical vertebral translation index were being 82.72,60.13,84.48 respectively in Group 1 and were 66.07,25.0,60.66 percentage respectively in Group 2. The mean correction in apical vertebral rotation was high in Group 1 cohort than Group 2 cohort. Mean change in Cobb angle in both groups were statistical significant. [p < 0.01]. Both groups had comparable functional outcome score with SRS 30 questionnaire. **CONCLUSION:** Pedicle screws play a great role in correcting the apical vertebral rotation at the concave apical sites, then sublaminar wires in severe AIS curves. Correction of hump is more with use of pedicle screws at concave apical sites than with sublaminar wires.

Abstract no.: 50782

TOTAL KNEE ARTHROPLASTY IN PATIENTS WITH SEVERE VARUS DEFORMITY USING ROTATING PLATFORM SYSTEM INSERTS

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Introduction: Operations of knee arthroplasty have been successfully performed for more than 30 years. According to the AHRQ 9 out of 10 patients who underwent surgery experienced pain relief, improved knee functioning. Total knee arthroplasty in patients with severe deformity conceals many difficulties. We want to introduce our experience in total knee arthroplasty in patients with varus deformities from 15 - 25° in frontal plane. **Objectives:** Analyze the results of TKA in patients with varus deformities from 15 - 25° in frontal plane. Show the peculiarities of rotating platform system in total knee arthroplasty. **Methods:** We followed up 62 patients with deformities from 10° to 35° of varus. The mean follow-up was 36 months. In 29 patients we used rotating platform system and 33 patients were operated using implants with fixed liner. To evaluate the results, we applied KOOS scale, WOMAC scale and the mean operation time. **Results:** Outcome over KOOS and WOMAC scale before operation were 25.6(+8,8) and 195,2(+5,3) in the RPS group and 22.6(+7,8) and 194(+4,2) in the group with fixed liner. In year after operation KOOS and WOMAC scale results were 79,3(+5,1) and 65,1(+30,7) in the RPS group and 69,1(+6,2) and 77,4(+5,7) the group with fixed liner. **Conclusions:** 1. We have better functional results using implant with rotating platform system in patients with severe varus deformity. 2. Easier to achieve rotation balance in patients with severe angular deformities. 3. There was no reliable difference in mean operation time.

Abstract no.: 50783

UPPER LIMB PAEDIATRIC FRACTURES AT BIRMINGHAM HEARTLANDS HOSPITAL: SIMPLE BUT NOT SO SIMPLE

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Retrospective study of 346 skeletally immature patients (aged 2 to 16 years) treated and followed up at Birmingham Heartlands Hospital in years 2015 and 2016 who presented with one of the four common upper limb paediatric fractures (supra-condylar humerus fractures - 72, radius / ulna diaphyseal fractures - 129, distal radius metaphyseal fractures - 86 and distal radius physeal fractures - 59). The surgical treatment provided and follow-up given were extracted from radiological evidences, op-notes and follow-up clinical letters. Fracture X-rays at presentation and in cast were studied to evaluate the complexity (angulation and displacement) of each fracture and quality of casting in each case. The two-year data collected at BHH suggests that while the treatment of complex upper limb paediatric fractures by complex means yielded excellent results, the simplest fractures requiring simplest means of treatment (casting without anaesthesia in OPD setting) leave something to be desired (and thus the title of the study). Although the overall success rates of primary surgical interventions are excellent compared to other studies found in the literature, room of improvement is still available and can be easily achieved by re-visiting the (less exciting but) extremely important techniques of adequate casting of fractures. Moreover, the lopsided correlation of mean age of patients managed with casts in OPD vs those in theatres may also hint to a lower threshold of casting under anaesthesia or treatment with metalwork for older paediatric age groups even in simple fracture patterns.

Abstract no.: 50787

RADIOLOGICAL ANALYSIS OF POSTERIOR TIBIAL SLOPE IN A TURKISH POPULATION

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Introduction: The posterior tibial slope (PTS) has a great importance on balance and stability of the knee. Also PTS has to be considered during the surgical treatments of knee such as osteotomies and arthroplasty. However anthropometric measurements are not universal and show population based variations. Purpose of this study is to find features of PTS in Turkish population in regards to medial and lateral compartment, gender and age. **Methods:** Magnetic resonance images (MRIs) were retrieved from Picture Archiving and Communication System (PACS). Subjects with an age of 25 to 45 years old were included from MRIs taken from July 2015 to July 2017. Totally, 520 knee MRIs were reviewed. Any MRI with radiological signs of osteoarthritis, chondral and meniscus (>grade II) lesions, deformity in lower extremity, patients with a history of fracture and/or knee surgery were excluded. PTS measurements are made with using MRI of knee in T1-weighted coronal and sagittal planes with a slice thickness of 3 and 4 mm. PTS of the medial, lateral plateau and gender and age of subjects were recorded. Non-parametric Spearman's Correlation tests and Mann-Whitney tests were used to calculate relationship between medial-lateral PTS and ages and also to evaluate PTS differences between genders. **Results:** Two-hundred thirtytwo subjects (122 female, 110 male) were found eligible for the study. The mean medial and lateral PTS were $7.7^{\circ} \pm 1.3^{\circ}$ and $7.5^{\circ} \pm 1.3^{\circ}$ respectively, and there was a significant correlation in same subjects ($p < 0.001$). However no significant difference was found in the mean medial PTS ($p = 0.45$) and lateral PTS ($p = 0.73$) between genders and matched age groups. **Conclusions:** Our results showed that there is no gender based variation in Turkish population. Therefore a gender specific prosthesis system is not useful for Turkish population.

Abstract no.: 50788

EXTENSOR MECHANISM RECONSTRUCTION IN TOTAL KNEE ARTHROPLASTY USING ACHILLES TENDON ALLOGRAFT: A MODIFIED SURGICAL TECHNIQUE

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Introduction: Patellar tendon disruption following total knee arthroplasty (TKA) is one of the most devastating complications. We reported a modified patellar tendon reconstruction technique using fresh-frozen Achilles tendon allograft with an attached calcaneal bone graft. **Case Presentation:** A 74-year-old female sustained a fall at the Community Hospital three weeks after her left TKA surgery. Intraoperatively, the tear occurred in the mid-substance of the patellar tendon and the tendon remnant was unrepairable. Calcaneal bone of the Achilles tendon allograft was fashioned and press-fitted into the proximal tibial osteotomised trapezoidal cavity. The tendinous end of the allograft was split into 2 bundles. One bundle was laid over the anterior surface of the patella and fixed to the four corners through drilled holes made on the patella using non-absorbable suture. The tendon graft then continued proximally and was sutured to the quadriceps tendon. The other bundle was then passed through transverse slits in the quadriceps tendon at the patellar attachment, looped back, and sutured to the lower portion of the tendon graft. **Results:** At three months after surgery, knee extension lag was 0 degrees and flexion was 90 degrees and the patient was able to walk without brace or aids. **Discussion:** The allograft should be tightly tensioned in knee kept in full extension throughout the surgery to prevent extension lag. Careful attention to graft preparation and handling, tensioning of the allograft, stable graft fixation, and postoperative rehabilitation result in clinical success.

Abstract no.: 50791

COMPARATIVE ANALYSIS OF FUNCTIONAL RESULTS OF TKA USING IMPLANTS WITH ROTATING LINER AND FIXATED LINER

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Introduction: Number of TKA in Russia increases every year by 5-10%. The number of younger and active patients treated with TKA continues to increase, accordingly implants with better functional results are required. Objectives: We decided to analyze functional results of TKA using implants with rotating liner and fixated liner of LPS type. Methods: We operated on 176 patients. The mean follow-up was 48 months. In 87 patients we used implants with rotating liner and 89 patients were operated using implants with fixated liner. To evaluate the results, we applied KOOS scale and WOMAC scale. Results: Outcome over KOOS and WOMAC scale before operation were 29.7(+/-7,8) and 190,2(+/-4,3) in the rotating liner group. In the group with fixed liner were 28.9(+/-6,7) and 192(+/-3,1). A year after operation KOOS and WOMAC scale results were 80,4(+/-6,1) and 63,2(+/-25,1) in the rotating liner group. In the group with fixed liner were 70,2(+/-4,2) and 71,4(+/-4,6). In group with rotating liner was one case of deep periprosthetic infection that required a two-stage revision replacement. Nine patients had pain in the area of tibia component in group with fixated liner. They were examined for periprosthetic infection which was not confirmed. There is no solid data on the tibia component loosening. Conclusions: 1. We have better functional results using implant with rotating platform system. 2. There is a better rotational relationship in rotating liner knee.

Abstract no.: 50792

PREVALENCE, CLINICAL AND RADIOLOGICAL ASSESSMENT OF PATIENTS WITH OSSIFICATION OF POSTERIOR LONGITUDINAL LIGAMENT IN LUMBAR SPINE

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Introduction: Only a few reports regarding postoperative patients with ossification of posterior longitudinal ligament (OPLL) in lumbar spine can be seen. Materials and methods: The radiological incidence rate of OPLL were investigated in 531 patients who had undergone whole CT scan for the general examination in our institution in December 2017. And from Aug 2008 to July 2017, 3014 spine surgeries were performed and 2020 patients with degenerative lumbar disease were treated surgically in our institution. Only six patients with OPLL in lumbar spine were found in the record. Clinical and radiological assessments were performed in those patients. Results: Only 29 patients (5.5%) with OPLL in lumbar spine, 86 (16.2%) in cervical spine and 34 (6.4%) in thoracic spine were detected in the general examination group. There were 127 cases concerned with OPLL or yellow ligament in the operative record. 93 cases underwent surgery due to OPLL in cervical spine, 7 due to OPLL in thoracic spine, and 6 due to lumbar spine. Quite a small rate (6/127: 4.7%) of OPLL in lumbar spine was treated surgically. Average age at the surgery was 63.8±7.3 years. Four of the 6 cases underwent posterior decompression and 2 underwent posterior spinal fusion. The recovery rate of JOA score at the latest follow up was 14.2% in average. Conclusion: Our result revealed that those patients with OPLL in lumbar spine were rare but their clinical course were serious due to multiple OPLL in their spine. Especially careful follow-up should be taken for those patients.

Abstract no.: 50796

RESULTS OF SUBMUSCULAR PLATING FOR LENGTH UNSTABLE PROXIMAL FEMORAL FRACTURES IN CHILDREN

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Introduction: Among all pediatric fractures, femur diaphyseal fracture account for 1.7% and the overall incidence has been reported to be 19 per 100,000 annually. Traditionally, length unstable fractures have been defined as comminuted or spiral fractures with > 2 cm of shortenings. We report our experience with use of submuscular plate in 19 children with proximal third femoral fracture using 3.5mm and 4.5mm Dynamic Compression Plate (DCP). Aim: To study the outcome in children having proximal third of femoral fracture and who were treated with submuscular sliding plate. Methods: We did a retrospective observational study in 19 patients who were identified with length unstable proximal femoral fractures and treated with submuscular plate. Fourteen were treated with 4.5 mm Dynamic Compression Plate and 5 with 3.5mm DCP. A retrospective review of radiographs and clinical follow-up was done to determine bony alignment, union, and complications. Results: The average age of patients in our study was 11 years (range 7 - 13 years). Average length of follow up was 2.6 years (range 1.8-5 years). All fractures healed uneventfully. Mild loss of reduction occurred in one patient. Stable union was achieved by 12 weeks in all patients. Discussion: There are many surgical options available including external fixator with TENS, submuscular plating using locking or dynamic compression plates. Preservation of soft tissue envelope, periosteal blood supply, small incision and early rehabilitation has made submuscular plating technique suitable in length unstable proximal third femur fracture in skeletally immature patients > 6 years of age.

Abstract no.: 50798

PERIARTICULAR ROPIVACAINE IN PRIMARY TOTAL KNEE ARTHROPLASTY: A SINGAPORE EXPERIENCE

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Introduction: Multimodal analgesia is currently the standard practice in total knee arthroplasty (TKA). The aim of this study was to evaluate the outcomes of intra-operative periarticular injection of plain Ropivacaine. Methods: A prospective cohort study of 38 patients undergoing primary TKA for osteoarthritis from June to July 2017. All patients were given weight adjusted, plain Ropivacaine injection into the posterior knee capsule and periarticular tissues prior to capsule closure. In addition, they received intra-operative as well as post-operative intravenous and oral analgesia. Pain Visual Analogue Score (VAS) were recorded immediately after surgery and on Day 2 after surgery. The other recorded outcomes were; distance of ambulation on Post-Operative Day (POD) 1 and 2, length of hospital stay, and the need for rescue peripheral nerve blocks (PNB). Results: The mean pain VAS immediately after surgery was 2.4 (0-7) and on POD 2, it was 2 (0-5). All patients walked on POD 1, with a mean distance of 13.2 metres (3m -80m). On POD 2, the average distance increased to 19.7m (5-80m). The mean length of stay was 3 days (2-5 days). 4 patients required rescue PNBs post-operatively. Conclusion: Patients who received periarticular Ropivacaine supplemented with multimodal analgesia achieved adequate pain control after primary TKA with short hospital stay. Early rehabilitation was possible, without quadriceps weakness, common in PNBs. There is a need for a prospective randomised control study to compare this method with other methods, such as peripheral nerve blocks.

Abstract no.: 50799

CLINICAL OUTCOME AFTER SURGERY ON SCHWANNOMAS IN THE EXTREMITIES

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Introduction: Schwannoma is a benign, encapsulated and slowly growing tumor originating from the Schwann cells and is rarely seen in the peripheral nerve system. Typical symptoms are soreness, radiating pain and sensation loss combined with a soft tissue mass. Aim of study: To evaluate the pre- and postoperative symptoms in patients treated for benign schwannomas in the extremities and investigate the rate of malignant transformation. Methods: A retrospective study was conducted with data from the institutional pathology database and patient files. Results: We identified 858 cases from the institutional pathology register. We excluded cases with doublets (n=407), pathology not including Schwannoma (n=149), surgery in the torso, spine and neck (n=150) leaving 152 patients for further analysis. A total of 110 patients had surgery and five complications to surgery were observed: 2 infections (cured with antibiotics) and 3 nerve palsies (2 n.radialis and 1 n.medianus) which remitted spontaneously. At end of follow-up a post-operative decrease in percentage of following symptoms were registered: paresthesia 18% (41/50), local pain 81% (6/36), radiating pain 90% (6/61), swelling 38% (8/13) and uncharacteristic complaints 50% (10/20). One patient with a schwannoma diagnosed by needle biopsy had malignant transformation verified after final surgery. No local recurrences were reported. Mean follow-up was 4 months (0 – 62) Conclusion: This study shows that operation of schwannomas can be conducted with low risk of complications and with acceptable clinical results. The remission rate of symptoms is high and risk for malignant transformation is low.

Abstract no.: 50806

DOES A RELATIONSHIP EXIST BETWEEN PAEDIATRIC FLEXIBLE FLATFOOT, BMI AND IDIOPATHIC GENU VALGUM?: AN OBSERVATIONAL STUDY ON YOUNG SOCCER PLAYERS

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Pediatric flexible flatfoot (FFF) and idiopathic genu valgum (IGV) are frequent diseases during childhood. Their association with overweight/obesity had been studied in the general population, with discordant results. This study aims to analyze whether a relationship between these diseases exists, in a group of young soccer players. Ninety-two males (mean age 8.8 years \pm 1.7, range 6-12), playing soccer for two non-professional Italian Societies, were included. For each child, Body Mass Index (BMI), Foot Posture Index (FPI) to evaluate FFF and intermalleolar distance to assess IGV in orthostatism were registered. Exclusion criteria: rigid flatfoot, secondary genu valgum, neuropsychomotor or systemic diseases. The mean body weight was 32.3 \pm 7.4(18-54)kg, the mean height was 135.4 \pm 12.2(108-169)cm, the mean BMI was 17.4 \pm 1.9 (12.9-23.4). Thirty-four patients had BMI \geq 85^opercentile (overweight/obese). Fifty-four patients had bilateral IGV, 24 bilateral FFF, 8 monolateral FFF. Shapiro-Wilk and Kolmogorov-Smirnov tests showed a normal distribution of all the variables analyzed, BMI excepted. An association was found between FFF and IGV (Fisher's exact test, p=0,037) and between IGV and BMI \geq 85^opercentile (chi-square test, p=0.05). BMI and intermalleolar distance (Spearman, p<0.006) and FPI and intermalleolar distance (Pearson, p<0.01) showed a positive correlation. This study shows that young soccer players with IGV frequently have BMI \geq 85^opercentile and FFF. On the other hand, overweight does not seem to be related to FFF. Nevertheless, these results may be affected by the IGV assessment in orthostatism, as well as by the limited sample of patients and the type of sport played. Future studies should assess the role of these factors.

Abstract no.: 50807

DOES PAEDIATRIC FLEXIBLE FLATFOOT AFFECT THE SPORT LEVEL DURING THE PAEDIATRIC AGE?: AN OBSERVATIONAL STUDY

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The influence of pediatric flexible flatfoot (FFF) on sport activities in children and adolescents is not clear. This study aims to analyze FFF impact on the athletic performance. The participants, recruited from two public schools, underwent Oxford Foot and Ankle Questionnaire compilation. Each participant was asked about the presence of limitations in everyday life, as well as the type and frequency of sport activities. FFF was assessed using the Foot Posture Index. Exclusion criteria were: rigid flatfoot, neuro-psychomotor or chronic systemic disorders. 229 participants were included (125 females, 104 males, mean age 9.2 ± 1.7 years (5-14), mean body weight 33 ± 8.4 kg (20-69) and mean height 138 ± 11.5 cm (110-166). The participants played sports 1-4 times/week (mean 2.5 ± 0.6), for a total of 4 ± 1.7 hours/week (range 1-9). 132 participants played sports requiring weight-bearing and running or jumping, 72 sports requiring weight-bearing without continuous feet loading stress as running/jumping and 25 sports performed without weight-bearing. 123 had bilateral FFF, 33 monolateral FFF. 83 participants reported mild functional limitations in everyday life: most of them had at least one foot affected (Fisher's test $p < 0.00001$). The Oxford questionnaire, in both children (Student's T-test $p < 0.0001$) and parental ($p = 0.01$) versions, showed on average worse results for the affected participants. Nevertheless, no differences were found either in the sports type (Fisher's test) or weekly attendance (Student's T-test). Although the participants with FFF showed worse functional results, FFF does not seem to affect the athletic performance. Future studies should confirm these results in larger cohorts, and analyzing every single sport type.

Abstract no.: 50808

A PROSPECTIVE STUDY: CORTICOSTEROIDS VERSUS NSAIDS, COMPARATIVE TREATMENTS FOR POSTOPERATIVE ANALGESIA FOR DISTAL RADIUS FRACTURES

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Objective: The aim of our study was to compare two protocols of postoperative analgesia (non-steroidal anti-inflammatory drugs VS corticosteroids) with the intention of unifying a protocol for all patients and correcting admission times. **Methods:** A comparative randomized prospective study is designed. All patients operated with blocked plate due to distal radius fracture between April and October 2017 were included. **Exclusion criteria:** postoperative analgesia infusion pump, polyfractured, re-osteosynthesis, diabetes, allergy to drugs of the protocol and kidney failure. 54 patients, who were randomly assigned to two groups, were included: NSAIDs (n=25) using dexketoprofen 50mg/8hours and Corticosteroids (n=29) using methylprednisolone 40mg/8hours. The following variables were collected: age (average 60.2), sex (79.6% women, n=43), work activity, AO classification, time until surgery (average 15.3 days), type of anesthesia (96.3% plexus block anesthesia, n=52), type of plate and ischemia time (average 71.35 minutes). The patient was evaluated at 24 and 48 hours collecting: pain, need for morphic, type of morphic, need for bandage opening. Patients were asked if they would be discharged. A statistical analysis was carried out considering $p < 0.05$ as significant. **Results:** No significant differences were found between the two groups for demographic variables. There were no differences in the time until surgery, type of plate, type of anesthesia, AO classification or ischemia time. Postoperative pain was similar in both groups. No differences were observed in the rescues required ($p = 0.164$). The need for bandage opening was statistically higher for patients in the NSAIDs group at 48 hours ($p = 0.04$). The 64.81% of patients (n=35) would agree to be discharged after 24 hours. **Conclusions:** The use of both protocols had similar efficacy, which could increase the analgesic armament in those patients who can not be administered NSAIDs. Most patients answered.

Abstract no.: 50810

ACROMIOCLAVICULAR JOINT DISC INJURY: CLINICAL OUTCOMES FROM ARTHROSCOPIC RESECTION OF THE DISTAL CLAVICLE AND JOINT

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Introduction: Most common causes of acromioclavicular joint (ACJ) pain remain osteoarthritis, dislocation and distal clavicle osteolysis which are evident on radiographic imaging. We present a case series of patients with ACJ pain and normal radiographs that underwent arthroscopic excision of the ACJ with hypothesis of cartilaginous disc tear. **Methods:** Five patients over a 3-year period presented with ACJ pain. Each had positive clinical signs for isolated ACJ pathology but no radiographic evidence of osteoarthritis, dislocation or distal clavicle osteolysis. Following successful diagnostic injection, each patient proceeded to surgery with arthroscopic ACJ excision. Preoperative scores were recorded for ASES Score and Nottingham AC Joint Score. Postoperative radiographs were taken to assess the suitability of ACJ excision. **Results:** The mean age of the patients was 39 years (range 27 to 56). The mean follow-up time was 22 months (range 15 to 30). ASES score improved from 18.3 (range 11.6 to 21.6) pre-op to 97.6 (93.3 to 99.9) post-op and Nottingham score 42.8 pre-op to 94.8 post-op. At the time of surgery, the intra-articular ACJ disc was identified and damaged. It was excised along with the distal clavicle and satisfactory post-op excision seen on radiograph. **Conclusions:** We have not previously seen in the literature the description of a tear of the cartilaginous disc of the ACJ. These patients that were symptomatic for this with no evidence of previously described ACJ pathologies, improved following surgical intervention at the ACJ. We suggest this diagnosis should be considered in such patients.

Abstract no.: 50811

INCIDENCE OF ATYPICAL FEMORAL FRACTURE IN AN ORTHOPAEDIC SETTING

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Introduction: Atypical femur fractures (AFFs) are reported mostly in patients taking anti-resorptive osteoporosis therapy (ART). The reported absolute risk of AFFs in this population ranges from 3.2 to 50 cases per 100,000 person- years and increases to 100 per 100,000 person- years with long term exposure to ART. The goal of the study was to determine the incidence of AFF in all femoral fragility fractures seen our orthopaedic surgery department. Method: Five hundred seventy-six hip and femoral fragility fractures were admitted between October 2011 and August 2015 in our institution. X-rays were reviewed to identify femoral and/or subtrochanteric AFFs. Results: Mean age was 82.9 ±10.2 and 76.5% of the patients were women. We identified 11 AFFs (2% overall incidence) and all were sustained by women. Only 3/11 (27%) were initially identified as AFF by the treating orthopaedic surgeon. All were treated by long intramedullary locking nailing. At the time of the fracture, 8 out of 135 patients taking ART (5.9%) and 3 out of 441 patients not taking ART (0.7%) sustained an AFF. Patients under ART had a significantly higher incidence of AFF compared to patients that were not (p<0.001). Conclusion: The overall incidence of AFF in all hip and femoral fragility fractures seen in our orthopaedic surgery department is 2% and sustained only by women. Not recognizing an AFF has major implications such as delay in healing, missed bilateral AFF and failure to discontinue ART.

Abstract no.: 50814

THE NANOPARTICLE OF CHITOSAN-DEAE-SIRNA/ANTI-RANKL BLOCK FORMATION OF OSTEOCLAST AND BONE RESORPTION IN VITRO AND IN VIVO

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Background: Receptor activator of nuclear factor- κ B ligand (RANKL) is a pivotal component of the cytokine network linked to bone resorption disease such as osteoporosis. Small interfering RNA (siRNA) anti-RANKL can be considered as an option for blocking RANKL protein. Our work used chitosan modified with diethylaminoethyl (DEAE) as a siRNA delivery vector. Methodologies: Nanoparticle size and zeta potential were verified by dynamic light scattering. In vitro, the effect of nanoparticles of Chitosan-DEAE-siRNA anti-RANKL on osteoclast formation and bone-resorptive activity were examined using osteoclasts derived from monocytes isolated from human peripheral blood or the co-culture of human osteoblast and monocyte. In vivo, we used a model of osteoporosis by bilateral ovariectomy in female mice. Histology and microcomputed tomography analysis were performed. Serum was analysed for bone biochemical markers and pro-inflammatory cytokines. Results: At 3 N/P the size of particles was around 200 nm with a charge of +10 mV. Viability test showed that these complexes were no toxic. Particles did not induce the production of LDH, DNA fragmentation and cytokine TNF- α . Moreover, they were shown to inhibit RANKL mRNA expression with 79% gene silencing effect ($P < 0.001$ compared with non-treated cells) in primary human osteoblast cells. Chitosan-DEAE-siRNA significant decreases 60% ($p < 0.001$) in numbers of multinuclear cells (osteoclasts) and resulted in 50% ($p < 0.001$) decreased in resorption surface. Intraperitoneal injection of nanoparticles for 3 months to ovariectomized mice ameliorates bone and cortical bone mass. Conclusion: These results suggest that our nanoparticles may represent an alternative osteoporosis therapeutic strategy.

Abstract no.: 50815

RECONVERSION OF CMC ARTHRODESIS INTO A PROSTHESES: A CASE REPORT

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Objectives: Carpometacarpal prostheses are becoming relevant due to the reported favorable results. The objective of this study was to assess the clinical and radiological results in a case-report of a young woman who was treated with an arthrodesis that was not tolerated. **Methods:** We present a case of a 43-year-old woman, who works as butcher, with 1stCMC osteoarthritis. **Physical examination:** deformity at the base of the left thumb, without metacarpal-phalangeal instability. Kapandji9/10 and positive griding-test. In radiographs, degenerative 1stCMC osteoarthritis(Eaton-Littler III) is diagnosed. 1stCMC arthrodesis was proposed, which was carried out in February 2016 using 2K-wires and tension band(Lister's technique). Radiological consolidation was observed at 2 months and the patient reported pain improvement(VAS 2/10) with grip-strength of 22 kilograms(kg) and pinch 4kg(30/8 kg in the contralateral hand). The thumb was fixated in 45° of radial abduction and 10° of palmar abduction. However, the patient reported being unable to hold thick pieces of meat, affecting her work. It was decided to reconvert the arthrodesis in an ISIS□trapeziometacarpal prostheses in July 2016(semiconstrained with threaded-uncemented cup,uncemented metacarpal-stem). **Results:** Clinical result was satisfactory with 45° of radial abduction and 45° of palmar abduction. She does not report pain. Grip-strength is 20 kg and pinch 4 kg. Radiological results showed no signs of loosening or luxation. **Conclusions:** Reconversion of 1stCMC arthrodesis into an arthroplasty could be an option in selected cases of manual workers in which the restriction of mobility of the 1stCMC affects their job. Clinical and radiological results of our case-report have been satisfactory.

Abstract no.: 50822

THE IMPORTANCE OF ACHIEVING ON-TABLE EXTERNAL ROTATION IN IMPROVING OVERALL RESULTS IN SHOULDER ARTHROPLASTIES

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Introduction: Arm abduction, and shoulder rotation is considered to be related. The humeral axis is tilted forward on the glenoid, and glenohumeral joint rotates naturally by abduction. External-rotation during elevation would compensate for the gap between the dependent and maximum abduction positions. External-rotation prevents impingement of greater-tuberosity under acromion achieving full abduction. This study highlights a surgical technique found to improve range-of-movement in any shoulder arthroplasty from early post-op period. Method: Standard beech-chair position, routine delto-pectoral approach. Pectoralis major pie crusting, or partial laminae release is performed. capsule is released, and subscapularis Z lengthening done to increase external-rotation. Circumferential release of osteophytes on glenoid and humeral side. Circumferential capsular release and excision of glenoid labrum. With prosthesis in its final position, Z plasty of subscapularis is repaired wherever the tissues lie with the shoulder externally-rotated at 50 degrees. Results: 83 patients have under-gone this procedure with 26 total shoulder-replacement, 20 reverse shoulder-replacement, 34 Copeland shoulder-resurfacing, and 3 shoulder hemiarthroplasties. Average gain in range-of-movement is: Forward-Elevation:67.97° Abduction:66.98° External-rotation:26.85° Internal-rotation:31.16 degrees. American Shoulder and Elbow Surgeons score increased from 38.28 to 82.15. 76 patients gained their range within 6-8 weeks. Discussion: To achieve full abduction in shoulder arthroplasty 2 key factors must be addressed; bony and soft tissues. The bony factors are self-explanatory. The soft tissues, chiefly lengthening subscapularis, changes the vectors acting on the shoulder from horizontal to oblique, the new pulley mechanism eases abduction in a patient achieving 45-50 degrees of external-rotation on table and early post op period.

Abstract no.: 50825

THE POSTEROANTERIOR-FLEXED VIEW IS BETTER THAN THE ANTEROPOSTERIOR VIEW TO ASSESS OSTEOARTHRITIS OF THE KNEE

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Introduction: The aim of this study is to determine whether the posterior-anterior (PA)-flexed view improves the radiographic assessment of patients with knee pain compared to the standard standing anterior-posterior radiograph. **Methods:** 274 patients with knee pain underwent 356 anterior-posterior (AP), PA-flexed, lateral and merchant radiographs of the knee. Knees were grouped as mild (Kellgren and Lawrence (K-L) 1-2) or severe (K-L 3-4) OA and either varus (medial compartment)-, valgus (lateral compartment)-, or patellofemoral OA. **Results:** In knees with mild valgus OA on AP view (K-L 1-2), the PA-flexed view was more sensitive than the AP view. The measured lateral minimal joint space width (minJSW) decreased more than 2mm in 68 % of the patients resulting in an increase in K-L grade (3 or 4). In patients with severe valgus OA and in all patient with varus and patellofemoral OA, there was no difference between AP and PA flexed view in radiographic measurements or KL grade. Based on medicare reimbursement rate using the PA-flexed view alone instead of both views reduced imaging cost by 47%. **Conclusion:** The PA-flexion-view better classifies the severity of lateral compartment disease in patients with mild valgus OA and provides comparable diagnostic sensitivity for joint space narrowing in varus- and patellofemoral OA. Using the PA flexed view alone was more cost effective than using the combination of AP and PA-flexed imaging.

Abstract no.: 50831

**EVALUATING COMPLICATIONS OF INTRAMEDULLARY NAILING
FIXATION IN FEMORAL AND TIBIAL SHAFT FRACTURES: SIX MONTHS
FOLLOW-UP OF 105 CASES**

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Introduction: As intramedullary nailing fixation in long bones of lower extremities fractures has advanced continuously over the past 70 years, it is considered as the most popular method of treatment of these fractures. We evaluated the complications of our patients with these fractures which treated by this method. Methods: Complications of surgery in 105 cases (46 femoral and 59 tibial shaft fracture) admitted in two different university trauma centers of Tehran and Mashhad which were fixed by IM nailing evaluated in 6 months of post-op follow up. Results: The most common complication was anterior knee pain (10.17%) followed by joint stiffness (8.57%) . Also nonunion were observed in 3(2.85%) and deep infection in 2 (1.9%) cases. Conclusion: intramedullary nailing fixation in femoral and tibial shaft fractures had low rate of complications in our study and was a safe and effective method to treat these types of fractures.

Abstract no.: 50834

ISIS CARPOMETACARPAL PROSTHESES: A PROSPECTIVE STUDY

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Objectives: Degenerative carpometacarpal(CMC) osteoarthritis is one of the most prevalent joint conditions in the hand. Treatment with CMC-implants is rising as an attractive alternative due to its reported favorable short-term outcomes. The objective of this prospective-study involving the ISIS-prosthesis is to assess its functional and radiographical results and its complications. **Methods:** Between April 2014-June 2017, 28 ISIS-prosthesis (semiconstrained threaded-uncemented cup, uncemented metacarpal stem) were implanted in 27 patients. We prospectively followed-up our patients. Pain measured with visual-analog-scale (VAS), range-of-motion, strength and overall hand function assessed with Henck/Van-Capelle test done pre/postoperatively. Radiographical parameters included: pre/postsurgical Eaton-stage, presence of periprosthetic-radiolucent areas and distance from trapezium base to apex of the 1st metacarpal(MTC) head. Complications were recorded. **Results:** 27 patients were included (21 female). Mean age was 59. Mean follow-up was 2 years (1-4). Mean preoperative Van-Capelle test-score was 19 and 36 postoperatively (excellent 36–40 points). VAS improved a mean of 6.5 points. Grip-strength values improved a mean of 5Kg. Pinch-strength values improved a mean of 2Kg. Radiographically, there was a mean increase in the trapezium base to apex of the 1st MTC head distance of 3mm. None exhibited radiolucencies or loosening signs. The Eaton-stage did not progress. Mean satisfaction was 9.5/10. All patients went back to their previous activities within 3-6 months after surgery except for one. No dislocations or infections were recorded. We registered 3 cases of De Quervain's Tenosynovitis, and 1 of epicondylitis; all resolved with medical treatment. **Conclusions:** ISIS-prosthesis has shown to have satisfactory short-term results. With a 100% survival-rate at 2 years. If technical errors are avoided, complications appear to be minimal. Nonetheless, long-term survival studies are recommendable.

Abstract no.: 50836

A COMPARATIVE STUDY ON THE CLINICAL RESULTS OF ARTHROSCOPIC ROTATOR CUFF REPAIR AND OPEN REPAIR SURGERY

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Introduction: Despite the obvious advantages of arthroscopic rotator cuff repair, there are no definitive evidences regarding the superiority of this method over open surgery. The aim of this study is to compare the results of arthroscopic rotator cuff repair and open repair surgery. **Methods:** 52 patients referring to a general university hospital were included in the study and assigned to two groups of arthroscopic repair and open repair. The pain score of the patients was measured three times, before, 48 h after surgery and 6-month follow-up, using the VAS system. To evaluate the clinical performance of patients, UCLA scoring system (only 6 months after the surgery) and Constant (before and 6 months after surgery) were utilized. **Results:** 32 patients were assigned to the open repair surgery and 20 to the arthroscopic repair group. The two groups were not significantly different in terms of pain variable 48 hours after operation ($p = 0.054$) and 6 months after operation ($p = 0.638$), constant score 6 months after operation ($p = 0.157$) and UCLA shoulder rating scale 6 months after surgery ($P = 0.167$). Moreover, there was not any significant difference between the two groups with regard to these variables before surgery. **Conclusion:** Also, reduced postoperative pain was one of the advantages of arthroscopic method noted in the present study, although the long-term severity of pain in this method was not significantly different from the pain of patients undergoing open surgery.

Abstract no.: 50839

ORIF VERSUS MIPO IN TIBIAL PILON FRACTURES 43 AO/OTA C1 AND C2: OUR EXPERIENCE

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Objectives: Tibial pilon fractures continue to be a challenge. The objective of this study is to evaluate the clinical-radiological differences in AO/OTA C1 and C2 tibial pilon fractures treated by open surgery (ORIF) and by minimally invasive plate osteosynthesis (MIPO). **Methods:** A descriptive-retrospective-comparative study of pilon fractures type C1 and C2 of the AO/OTA classification treated surgically between January 2008 and February 2016 was performed. **Exclusion criteria:** age <18 years, types A,B or C3 of the AO/OTA, open fractures type C3 of the Gustilo classification, lost of follow-up and not have answered the AOFAS questionnaire. 64 fractures with an average age of 49.05 ± 13.354 years were included and two groups were compared: 23 intervened through ORIF: 5 C1 and 18 C2 (11 men and 12 women), 41 through MIPO: 17 C1 and 24 C2 (22 men and 19 women). The results obtained were analyzed with the SPSS program considering $p < 0.05$ as statistically significant. **Results:** Statistically significant differences are found depending on the type of surgery performed. The functional results (AOFAS) were significantly worse in the ORIF group ($p < 0.001$). There was a lower number of complications ($p = 0.007$), lower infection rate ($p = 0.004$) and shorter time for the resumption of work activity ($p = 0.001$) in the MIPO group. The misalignment of the ankle ($p < 0.001$) and the time of consolidation ($p < 0.001$) were significantly better in those patients undergoing MIPO. **Conclusions:** Minimally invasive technique in tibial pilon fractures C1 and C2 presents better functional results, shorter consolidation time, lower rates of complications and infections and shorter recovery time than the open technique in our series.

Abstract no.: 50844

OUTCOMES OF THUMB METACARPOPHALANGEAL JOINT ARTHRODESIS USING ACUMED PLATE: A CASE SERIES

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Introduction: Thumb MCPJ osteoarthritis is a common condition causing considerable pain and loss of function, affecting individuals of potentially working age. A number of management options exist including joint fusion, which can be achieved using K -wires, plate fixation and intramedullary devices. Acumed provide a specifically designed anatomical low profile fusion plate which may allow better anatomical fixation and therefore less irritation to soft tissues. Aims: To present our experience with fusion of thumb MCPJ using Acumed plate, with regards to patient satisfaction, pain score, re-operation rate and radiological fusion. Methods: Retrospective case series including 28 patients identified using clinical coding and clinical letters, having thumb MCPJ arthrodesis using Acumed plates. Outcomes assessed using post-operative VAS pain score. Radiological evidence of fusion assessed using PACS and recorded as non-union, partial union or complete union. Patient satisfaction assessed via standardised phone questionnaire. Any revision procedure noted. Results: 28 joints were fused in 26 patients (2 bilateral). Operations were performed between 22/2/2013 and 28/9/2017. 1 patient died during follow up. None lost to follow up. Radiologically there were no non- unions. Three (11%) patients underwent a second procedure, all to remove palpable metalwork. VAS scores showed post-operative pain was well controlled and patients and patients reported good satisfaction with the procedure. Conclusions: Our data suggest patients undergoing fusion with Acumed MCPJ plates have excellent radiological outcomes, good pain control and are satisfied with the procedure. They are a good alternative to other methods of MCPJ fusion.

Abstract no.: 50845

**ACCURATE INTRAOPERATIVE CUP POSITIONING UTILISING
COMPUTER-ASSISTED NAVIGATION (INTELLIJoint HIP®) IN DIRECT
ANTERIOR TOTAL HIP ARTHROPLASTY**

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Background: Accurate component positioning in total hip arthroplasty (THA) is imperative to the survivability and longevity of the prosthetic hip joint. Inaccuracies relating to acetabular component position can increase risk for accelerated wear, instability, metallosis, dislocation, and the likelihood of readmission and revision surgery. Computer-assisted navigation provides surgeons with measurements for cup position intraoperatively and may diminish the risk of component malpositioning. The purpose of the present study was to evaluate the accuracy of an imageless, computer-assisted mini-navigation tool in measuring cup anteversion and inclination values intraoperatively. Methods: We retrospectively reviewed 44 cases of primary THA performed via the direct anterior approach between October 2016 and November 2017. Anteversion and inclination measurements were obtained intraoperatively by the navigation system and compared with measurements obtained from standard, postoperative anteroposterior radiographs. Statistical comparison was made using the Bland-Altman technique, which determines the level of agreement between two methods of measurement when neither is considered the "gold standard". Results: The mean difference between device and radiographic measurements was 4.8° (standard deviation [SD]: 3.9°; absolute mean difference [ABS]: 5.2°) for anteversion and 3.3° (SD: 5.6°; ABS: 5.0°) for inclination. In turn, Bland-Altman analysis demonstrated excellent agreement between device and radiographic measurements. Conclusions: Measurements for cup position obtained intraoperatively by the mini-navigation tool are agreeable with the current clinical standard. The availability of accurate intraoperative measurements for cup position may be an important factor in risk mitigation for component malposition and subsequent adverse patient outcomes.

Abstract no.: 50848

DO OCCUPATIONAL FACTORS INFLUENCE RETURN TO ACTIVITY AFTER ROTATOR CUFF SURGERY?

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Rotator cuff problems are closely related to a professional context. The objective of our study was to investigate the factors influencing the recovery of activity after rotator cuff surgery. We performed a retrospective study of 58 patients operated during 12 consecutive months by the same operator. The average age was 49.1 years. The occupational disease was recognized in 28 cases, and it was a work accident in 9 cases. The procedure was performed under arthroscopy. In 17 cases, a suture procedure was performed. 14 patients did not resume their activities after surgery, the average time for the others was 8.28 months. 2 had an adapted position and 9 resumed part time. Recovery time was longer for heavy manual (11 months) vs light manual (8 months) vs non manual (6 months) patients ($p<0.05$). There was no significant difference in recovery time in case of associated cuff tear repair. The recovery time was significantly longer in the recognized occupational disease group (10 months) vs occupational accident (6 months) vs neither occupational disease or accident (6 months) ($p<0.05$). The return to work after rotator cuff surgery is long and appears to be influenced by the socio-professional category (heavy manual) and the occupational disease recognition context.

Abstract no.: 50853

DISTAL RECONSTRUCTION OF THE ACHILLES TENDON WITH A BONE TENDON GRAFT HARVESTED FROM THE PATELLAR TENDON

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Introduction: A surgical technique of Achilles tendon reconstruction is here described, using bone tendon plasty from the patellar tendon for rare chronic ruptures of the Achilles tendon flush with its calcaneal insertion with distal loss of substance, requiring bone fixation. Methods: The step operation was carried out first in ventral decubitus. Then by a short anterior approach, a strip of patellar tendon (10mm wide) is harvested with a piece of tibial tuberosity, in cases with a greater loss of substance. Achilles tendon reconstruction: following resection of fibrous tissue, and drilling of a blind calcaneous tunnel, the bone plasty is fitted into the calcaneus with interference screw, with precise directions to fight the pulling forces. The two tendon ends are superposed and sutured. The patient is placed in a cast for two months. Results: Three patients are treated with a good morphological and functional outcome.

Abstract no.: 50854

ULTRASOUND-GUIDED ACHILLES SUTURES: AN OPTION FOR ATHLETES

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Introduction: The Achilles tendon is the most often tendon that suffers a rupture. The popularization of sports practice is increasing its incidence. There is no consensus on the best option to treat it, it takes long recovery time, and many times the patient can not reincorporate to his previous activity level. Methods: We present 5 patients (4 men, 1 woman soccer players in regional category) treated by the same surgeon after Achilles rupture. Ultrasound-guided percutaneous suture under local anesthesia was performed, without ischemia, as ambulatory surgery. After the intervention, they were immobilized using a walker-type orthosis with wedges, allowing weight-bearing from the beginning. The immobilization is maintained for 6 weeks, starting from the third week a rehabilitation program with gentle active mobilization and, at the same time, wedges are removed, one per week. Results: Average of rehabilitation sessions 21.6 (15;29), reincorporation to work 3.4 months (2;5), sport activity 4.4 months (3;6), no cutaneous complications, neither infection, new rupture, or neuralgia of the sural nerve. Conclusions Achilles tendon rupture carries a high functional and economic cost due to the recovery time. Treating this pathology using ultrasound-guided percutaneous suture, allows a minimally invasive approach, minimizing the risk of skin complications and postoperative pain, early weight-bearing and rehabilitation. In addition, this minimally invasive technique is performed under local anesthesia, without ischemia and as ambulatory surgery, without requiring hospitalization. All of this translates into a significant decrease in economic spending as well as higher quality of life for the patient, and quick reincorporation to their usual work and sports activities.

Abstract no.: 50856

SERUM LEVELS OF INFLAMMATORY BIOMARKERS AFTER PRIMARY TOTAL HIP ARTHROPLASTY: INFLUENCE BY SURGICAL APPROACH

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Background: This study investigated the kinetics of C-reactive protein (CRP), neutrophils, and procalcitonin (PCT) in patients undergoing uncomplicated elective total hip arthroplasty (THA), to obtain a better understanding of their levels in noninfectious inflammatory reactions. **Methods:** Of 131 patients in the study, 79 underwent surgery with a direct lateral (Bauer) approach and 72 with an anterolateral (modified Watson Jones) approach. Serum CRP, neutrophil subsets, and PCT were examined on the 1st, 3rd, and 7th postoperative days. **Results:** CRP and neutrophil subsets increased after surgery. Serum CRP was markedly increased on the 3rd postoperative day while the serum neutrophil subsets peaked earlier. PCT mean values never exceeded levels typically associated with bacterial infections. Ten cases on the 1st day and 8 cases on the 3rd day had markedly higher PCT values (>0.5 ng/ml) without infection. PCT values were positively correlated with age. CRP and neutrophil subset values were lower with an anterolateral approach than with a direct lateral approach on the 3rd postoperative day. **Conclusion:** Postoperative CRP and neutrophil values were increased by inflammation and influenced by the surgical approach in THA. PCT did not exceed standard values in almost all cases, though it was likely to be higher value in elderly patients.

Abstract no.: 50858

EVALUATION OF GRAFT VERSUS ANATOMICAL POSITION IN THE RECONSTRUCTION OF THE ANTERIOR CRUCIATE LIGAMENT USING 3D MAGNETIC RESONANCE IMAGING

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Background: Anatomical reconstruction of the anterior cruciate ligament (ACL) is believed to provide the best outcome for the patient. However, identifying the native anatomic femoral footprint in surgery can be challenging. Purpose: To use vector analysis to determine the accuracy, precision and quantify the direction of error of graft positioning on the femoral condyle with 3-dimensional magnetic resonance imaging obtained pre- and post-ACL reconstruction. Study Design: Cohort study; Level of evidence 3. Methods: Forty-one patients with unilateral ACL tears were recruited in the study. Results: The position of the reconstructed graft was significantly different than the native ACL position which was both proximal (mean 1.2 ± 3 mm; $P = .02$) and posterior (mean 1.0 ± 2.9 mm; $P = .01$). Surgeons using an independent drilling method positioned 76.2% posteriorly relative to the native location, with a mean 1.0 ± 2.8 mm proximal and 1.8 ± 3.0 mm posterior. Surgeons using a transtibial method positioned 75% proximal relative to the native location, with a mean 2.2 ± 3.0 mm proximal and 0.2 ± 2.6 mm posterior. These two techniques showed a significant difference only in the distal-proximal axis ($P = .03$). Comparing the error distribution among the 4 surgeons demonstrated no significant difference in both magnitude ($P = .10$) and direction ($P = .26$). Conclusion: Despite contemporary techniques, the position of the femoral footprint differed between the native and reconstructed ACLs. Furthermore, the results indicate that the surgeons might not be performing “true” anatomic reconstruction, but instead are biased toward the isometric position.

Abstract no.: 50859

BIOMECHANICAL EFFECT OF GEOMETRIC SHAPE OF TUMOURS WINDOW

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introduction: in order to make a hole on bone cortex especially in tumor of long bone for biopsy and cutterage. In routinely we do a circular or oval window. in evaluating resources and reference for obtaining for documentation; no positive evidence was observed for this purpose. We did working two method for evaluation for this technique; software and animal model biomechanic test. Material and methods: the software analysis by biomechanic department by ANSYS system and different holes geometric shape in rabbit of femur; circular/trapezoid/oval/triangular shape then these bone with hole tested by three point bending and tortional forces. Result: the results of ANSYS software analysis and biomechanic test reveals to opposite conventional idea we found; trapezoid pattern shape is most resistance to other shapes and circular shape or oval is most early in working in surgery. Conclusion: the resultsof the software test and latest is new knowledge in orthopeadic surgery.

Abstract no.: 50862

**BIODEGRADABLE ANTIBIOTICS IN TREATMENT OF OSTEOMYELITIS
ANIMAL LAB TEST**

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Background: in classical technique to management of bone infection debridement and irrigation (I&D)+antibiotic impregnated bone cement this procedure has many disadvantage. Thermal necrosis and necessary for remove of bone cement or antibiotic beads and heat sensitive antibiotic. Material and method: in this study we done iatrogenic osteomyelitis we choose chitosan (biodegradable material) for antibiotic carrier in treatment program. Results: we observed radiographic and biopsies in treatment process is suitable and we hope is new effective way for frequent surgery. Conclusion: in clinic and X-ray and histopathology is more advantage to antibiotic bone cement.

Abstract no.: 50864

PRIMARY BONE MARROW INJECTION IN FRESH FRACTURES

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Background: delay and nonunion of long bone is a challenging problem in orthopaedic. Material and method: in our study in include criteria for non operative treatment of humeral fractures with (U-Slab) and (hanging cast). We tried sequence randomized case (37 cases) divided in two groups with or without bone marrow injection from homolateral illiac crest and obtained X-ray in 2, 4 and 8 weeks. Result: by observation by 2 orthopedic and radiologist filled questioner. Different meaning result in time of union at lest mean time 10 16 day delay union time in humeral fractures.

Abstract no.: 50865

ANTERIOR APPROACH FOR CORONOID PROCESS FRACTURE OF THE ULNA OPEN REDUCTION AND INTERNAL PLATE FIXATION: A RETROSPECTIVE CASE SERIES

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Coronoid process fractures of the ulna are difficult to treat, they are associated with stiffness, recurrent instability, pain, treatment of coronoid process fracture is challenging for surgeon. The purpose of this study was to report the clinical outcomes of an anterior surgical approach for Regan and Morrey type II or type III fractures of the coronoid process of the ulna. We evaluated 12 consecutive patients who underwent surgical treatment for fracture of the coronoid process of the ulna through an anterior approach from June 2013 until January 2016. All patients underwent surgical treatment for fracture of the coronoid process of the ulna through an anterior approach. With neurovascular structure was under protection, with applied all fractures with buttress plate fixation with the gap between brachial artery and median nerve. All patients maintained concentric reduction of both the ulnotrochlear and the radiocapitellar articulations, without any evidence of elbow instability. Results: At the final follow-up, solid osseous union was confirmed for all coronoid fractures. The average time to radiologic union was 16.4 weeks. The mean flexion–extension arc was $125.3^{\circ} \pm 12.8^{\circ}$, The mean pronation arc was $84.1^{\circ} \pm 6.3^{\circ}$, the mean supination arc was $83.8^{\circ} \pm 6.1^{\circ}$. 11 patients achieved functional arc of motion. The mean MEPS was 92.1 points, with nine excellent cases and three good cases. Coronoid process fractures of the ulna can be treated successfully with an anterior surgical approach. This approach allows for accurate and rigid internal fixation and early functional exercise, resulting in a reasonable outcome.

Abstract no.: 50866

**IPSILATERAL CLAVICULAR HOOK PLATE : AN VALUABLE OPTION
FOR STERNOCLAVICULAR DISLOCATIONS**

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Background: Sternoclavicular joint (SCJ) dislocation is relatively rare, treatment of sternoclavicular joint dislocation is challenging. The purpose of this study was to describe ipsilateral clavicular hook plate technique and retrospectively evaluate its safety and effectiveness for treating sternoclavicular joint dislocation. Materials and methods: We present our experience of using a locking ipsilateral clavicular hook plate for the treatment of nine consecutive patients with sternoclavicular dislocation. The inclusion criteria was cases who had a failure conservative treatment before the final intervention. 6 cases were anterior sternoclavicular joint dislocations, 2 cases were posterior sternoclavicular joint dislocations, and one case was anteriorly displaced physeal fractures of the medial clavicle. Open reduction and internal fixation combined with an ipsilateral clavicular hook plate was applied for each case, with the hook was inserted under the sternum, and the plate was fixed on the surface of the clavicle. Results: At the final follow-up, each case got the reasonable reduction, and had no further instability. There were no intraoperative complications. There were no wound complications, plates displacement or implantation failure. The mean DASH scores was 21.5, the mean PROMIS scores were 52.7. All patients have returned to work, and was satisfied with the treatment. Conclusions: The results of our study indicate that an ipsilateral clavicular hook plate for SCJ dislocation is safe with results comparable to previously described surgical stabilization techniques. This technique provides a surgical treatment option for symptomatic SCJ dislocation and instability.

Abstract no.: 50876

**A USEFUL METHOD FOR USING A STRAIGHT INTRAMEDULLARY NAIL
INSERTED FROM AROUND THE TIP OF THE GREATER TROCHANTER
FOR AN ATYPICAL FEMORAL SHAFT FRACTURE**

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The first choice for the treatment of an atypical femoral shaft fracture (AFSF) is the intramedullary (IM) nail. The most frequent complication with IM nailing in AFSF cases is the intraoperative femoral shaft comminution during the nail insertion. It causes a mismatch between the femoral curvature and the implant. However, we are not always able to insert a recently curved nail, and in cases where we did, we lost the patient's anatomical femoral shape. Although we built a medial gap at the fracture site in those situations, it caused delayed union and nonunion. The plate fixation is useful for the case but it is impractical for the IM nail. But we consider about plate failure and need for revision surgery. We have experienced three cases where we have used a straight IM nail, inserted around the tip of the greater trochanter (TGT), and have had good clinical outcomes. In each case the patient was a female in her 80s, who had been taking alendronate for a few years. They sustained AFSF after slip down. Due to the strong curvature of their femur it was difficult to insert a curved IM nail, we choose the straight one and inserted it from around the TGT as opposed to the piriformis fossa, which ultimately restored their anatomical alignment. In this method, we aim the tip of nail towards either condyles and not the bone center. Thus, it is important that we make a detailed plan on how far from the center we aim on a each case.

Abstract no.: 50882

HANSSON PINLOC FIXATION IN FEMORAL NECK FRACTURES WITH NEW SIMPLE TRACTION TECHNIQUE: A FOLLOW-UP STUDY OF 47 CASES

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Background: Until recently, because of bone defects after reduction of femoral neck fractures, it was difficult to keep a good reduced position with the use of 2 pins, but, we found Hansson Pinloc with 3 pins can keep the good reduced position. Methods: From January 2015 to March 2017, 47 consecutive patients underwent ORIF with Hansson Pinlock. Outcome assessments were measured with a minimum follow-up of 6 months. The average follow-up was 11 months (range, 6 to 26 months). The mean patient age was 76 (47-96). There were 36-Garden classification stage 1, 6-stage 2 , and 5-stage 3 patients. The first half of 20 patients were treated with simple traction. The latter half of 27 patients were treated with traction and pushing the femoral shaft outward by putting a pillow between the legs. The latter had an almost perfect reduced position. The prevalence of complications were prospectively assessed at the final follow-up month. Results: There was no "Cut-out" of the pin at the sight of the femoral head. We confirmed bone union in 46 cases and one case had no union, and 5 patients had major complications. Among those, 4 cases had avascular necrosis (AVN) of the femoral head, 1 case had a fracture at the level of inferior pin. In those 4-AVN cases, 3 cases underwent surgery treated with simple traction and remained a valgus deformity. Conclusions: Hansson Pinloc fixation in femoral neck fractures with new simple traction technique might reduce the postoperative complications.

Abstract no.: 50884

DANGER ZONE FOR PERCUTANEOUS SCREW FIXATION IN MINIMALLY INVASIVE PLATE OSTEOSYNTHESIS OF DIAPHYSEAL FRACTURES OF THE FOREARM: A CADAVERIC STUDY

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Introduction: The minimally invasive plate osteosynthesis (MIPO) technique in the treatment of comminuted fractures of forearm has been reported. However, there has been no previous study about the danger zone of percutaneous screw fixation in this MIPO technique. The purpose of this study is evaluation of danger zone of using percutaneous screw during MIPO of forearm fractures. **Method :** Sixteen forearms of fresh cadavers were fixed with 14-hole locking compression plate by MIPO technique using volar approach for radius and subcutaneous approach for ulna. Two locking screws on each end were fixed by open technique and the rest of locking screws were inserted percutaneously. The length of radius and ulna were measured with superficial anatomical landmarks from radial styloid to radial head and ulnar styloid to tip of olecranon. The MIPO tunnel was explored to measure the distance between the screws and the neurovascular structures. **Result:** On the volar aspect of radius, the danger zones of radial artery (RA) and superficial radial nerve (SRN) were entire length of fixation zone. The danger zone of posterior interosseous nerve (PIN) of the dorsal approach averaged 41.45 % to 81.24 % of radius length from radial styloid. The danger zone of dorsal cutaneous branch of ulnar nerve (DCBUN) averaged 12.21% to 27.23% of ulnar length from ulnar styloid. **Conclusion :** It seems that the percutaneous screw fixation in MIPO of forearm fracture is quite dangerous procedure especially in the volar approach of entire radius, dorsal approach of proximal radius and distal ulna.

Abstract no.: 50887

WILL THE ELECTIVE REMOVAL OF IMPLANTS FOR ANKLE FRACTURES IMPROVE CLINICAL OUTCOMES?

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The aim of this study was to assess the effect of removal of surgical implants after union on clinical outcomes. Methods: All patients of ankle fractures at our hospital undergoing ORIF were offered enrollment into the study and had clinical outcomes recorded at follow-up (AOFAS, LEFS, SF-36 PCS, SF-36 MCS, and VAS). Furthermore, the ROM and joint circumference were also recorded during the follow-up. Whether or not to undergo the removal of surgical implants divided the patients into two cohorts: those who had undergone elective removal of surgical implants and those who had not. Outcome scores and physical examinations were compared before and after implants removal as well as between the two study populations at final follow-up. Results: Seventy-three patients were included in the final analysis: 37 (50.68%) had retained implants; 36 (49.32%) had implants removed. AOFAS, LEFS, SF-36 MCS, and the ankle ROM improved significantly after implant removal ($p < 0.05$), meanwhile, VAS and the joint circumference were significant decreased ($p < 0.01$). When compared between the two study groups, only VAS were significantly lower in patients who had implants removed ($p < 0.01$), while no statistical difference were found in other clinical outcomes for these two groups. Conclusions: Patients who had undergone ORIF of ankle fractures showed improved clinical outcomes after implant removal, especially in pain relief. Patients who are unsatisfied with their clinical outcome, especially who complain of pain should be counseled that removal of the implants may improve their function and pain.

Abstract no.: 50888

EARLY OPERATION FOR THE OSTEOPOROTIC THORACOLUMBAR FRACTURE BY USING THE LOAD SHARING CLASSIFICATION

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Japanese orthopaedic association reported that 30% of the patients with osteoporotic thoracolumbar fractures showed delayed bone union in 3 months by conservative treatment. Meanwhile, early operation for recent osteoporotic vertebral fracture is still controversial. This study was conducted to evaluate the results of the early operation of the osteoporotic thoracolumbar fracture by using the Load Sharing Classification (LSC). We excluded the high energy trauma cases and delayed non-union cases. Fourteen patients were female and three patients were male and average age was 77 years. We performed vertebroplasty with calcium phosphate cement and spinal fixation by using pedicle screws. The mean waiting period to the operation was 14 days and mean follow-up period was 13 months. The mean operation time was 118 minutes and the mean blood loss was 97 ml. LSC score was from 5 to 9 points and 9 cases were over seven which means comminution of vertebral body is severe. Local crushing rate of fractured vertebral body at pre op., post op. and final follow up. were 55.9, 65.6, 55.3%, respectively. Local kyphotic angle was 17.5, 8.1, and 17.8 degrees, respectively. Bone unions were achieved in all cases within 6 months after operations. We found two cases with pedicle screws loosening and seven cases with pedicle screws migration. There was a case which the pedicle screw and rod were removed due to a local infection. In osteoporotic thoracolumbar injury, LSC is useful for determining the operative indication in early stage.

Abstract no.: 50891

PREVERTEBRAL HAEMATOMA IN SENIOR PATIENTS WITH CERVICAL SPINE INJURY

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The number of senior patients with cervical spine injury (CSI) has increased. Most of them caused by low energy trauma but there is a large variation in clinical findings. In this study, we evaluated the prevertebral hematoma (PVH) in CSI by radiographic evaluation, CT and MRI. This study included 43 patients with CSI (30 males and 13 females) with a mean age of 77 years. We assessed radiologic prevertebral spaces at C2, C4 and C6 levels by 3-dimensional image analyzer in X-Ray and CT. PVH and bone injury were evaluated in MRI. Thirty-one out of 43 cases had PVH (72 %). There was no case of upper airway stenosis due to PVH. Average of radiologic prevertebral space with PVH at C2, C4 and C6 was 6.3 mm, 11.6 mm and 16.5 mm, respectively. The space at C2 with PVH was significantly larger than without it. Space at C2 without PVH was 2.0 mm-6.1 mm therefore we consider PVH when C2 space is over 6.1 mm. There were no differences about the rate of PVH in spite of paraplegia's type. From 13 patients with bone injury, 12 had PVH and 30 patients with no bone injury, 19 had PVH. Eleven patients took antithrombotic drugs and from them, 9 had PVH. PVH was not related with type of paraplegia, bone injury and use of antithrombotic drug directly. We need to ensure not only X-Ray and CT but also MRI to detect all PVH in senior patients with cervical spine injury.

Abstract no.: 50892

SHOULD FULL FACE HELMETS BE WORN BY SKIERS?

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We review the use of helmets and full face helmets in skiers. The international ski federation's general advice to skiers seems to be that the use of full face helmets in skiers is dangerous, increasing the risk of injury to the Cervical spine and possibly increasing diffuse axonal injury. We believe that there is no evidence to suggest that this is the case and that skiers are being put at risk of facial trauma unnecessarily. There have been reports of devastating facial trauma. We are reviewing the literature to date comparing the safety of full face helmets versus open helmets. We believe full face helmets are likely to provide more protection to the face with no increase to c spine or rotational brain injury particularly in high level skiers. We present the evidence to date.

Abstract no.: 50895

THE 'FLOATING KNEE' EPIDEMIOLOGY: CLINICAL FINDINGS AND TREATMENT EXPERIENCE AT DAKAR PRINCIPAL HOSPITAL IN SENEGAL

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Introduction: The floating knee results from ipsilateral fractures of femur and tibia. This complex injury happens in a polytraumatic context, with severe sequelae leading disabling conditions. Purpose of the study: Report the epidemiology, clinical features and treatment based on our experience in Senegal. Methods: This is a retrospective study of thirty nine (39) patients over 16 years, treated from January 2008 to December 2015. Results: The mean age: 39 years predominantly male (sex ratio: 3.9). The incidence tripled within 6 years involving traffic road accidents in 84.6% of cases. Only 38.6% were properly managed in emergency within 6 hours. 23% of the in-patients extended their stay to more than 17 days average. Surgical reduction and internal fixation were performed in 30.8% patients, external fixation in 38.5% and both procedures in 23%. Although tibial injuries were more complex, the femur presented more complications 23% than the tibia 7.7%. According to Karlstrom and Olerud, scoring the outcome was poor in 33% of our cases; 87% presented joint stiffness ; resulting from 88.9% of knee bypass, 100% of fractures of the both epiphysis, and 71.42% of fractures of the tibial plateau. Conclusion: The prevalence of the floating knee is increasing. Knee bypass and articular fractures lead to important stiffness. The improvement of health facilities and better orthopedic management would reduce such dramatic complications.

Abstract no.: 50897

CALCANEAL FRACTURE MANAGEMENT: OBSERVED CONTRIBUTORS TO FAILURE?

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Increasing critique toward calcaneal fracture fixation is published in the last decade. Some recent articles do not recommend open reduction and internal fixation of these fractures. Non-surgical treatment of displaced calcaneal fractures however is known to have poor outcome as well. We believe that properly done surgical reduction and internal fixation is the only hope to help victims. Problems and limitations related to surgery need to be addressed and meticulously handled. We hope with this paper to present some contributors to surgical failure. By working on these issues we hope to improve overall surgical outcome.

Abstract no.: 50898

SHOCK WAVE-BASED FOOT MAPPING AS A RESEARCH TOOL

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Foot mapping plays an important role in reflexology. The term is also used to describe pressure mapping used to prepare foot orthotics. Sonic shock wave machines are increasingly used in the treatment of painful foot and ankle conditions. Some shock wave machines cause localized pain when applied to the sole of the foot. This localized pain was found variable among patients and among variable foot pathologies. We are working on the development on shock wave based foot maps. Shock wave based foot mapping might contribute to better understanding of foot pathology and their treatment. We suggest this technique to be used as a research tool.

Abstract no.: 50899

DIAGNOSTIC VALUE OF PATELLAR-PATELLAR TENDON ANGLE IN DISEASES CAUSING ANTERIOR KNEE PAIN

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Background: Anterior knee pain is common symptoms but it is not easy to diagnose. Among the diseases to be distinguished, infrapatellar fat pad impingement syndrome (IFPIS) and medial plica syndrome (MPS) are common causes. Objectives: The purpose of this study was to evaluate the efficacy of the patellar-patellar tendon angle (PPTA) and the volume of the infrapatellar fat pad (IFP) on MRI as diagnostic criteria for IFPIS and MPS. Methods: 37 patients with IFPIS who underwent arthroscopic resection (group A), 84 patients with MPS who had underwent arthroscopic resection (group B), and 39 patients (group C) as a control group without any specific findings on MRI were enrolled. The PPTA was defined as the angle between the line connecting the patella superior pole to patella inferior pole and the line connecting the superior of the tibial tuberosity to patella inferior pole on mid-sagittal MRI. The volume of the IFP was calculated in the PACS system. Results: There were no significant differences for number, age, sex, and side between each groups. The PPTA were 137.5 degrees in group A, 137.9 degrees in group B, and 141.4 degrees in group C. Groups A and B were significantly smaller than those of group C ($p = 0.01$). There was no statistically difference of the volume of the IFP between each groups. Conclusions: The PPTA on the IFPIS and MPS were statistically smaller than the control group. So this value can be used as a diagnostic criteria.

Abstract no.: 50902

**COMPUTER-AIDED DIAGNOSIS OF THORACOLUMBAR FRACTURE
USING TEXTURE FEATURES**

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Background: Thoracolumbar fractures are the most commonly observed spine injuries which may cause deformity, neurological deficit and disability. Computed tomography (CT) provides an appropriate bony structure which may help orthopedists to assess spinal stability. Diagnosis of these fractures using naked eye is tedious, time consuming and prone to human errors. Hence, the computer aided diagnosis (CAD) system is used to overcome these limitations. **Methodology:** This paper proposes a novel CAD system using texture features (fractal-Hu moments) extracted from CT images to classify into normal and fractured classes. In this work, we have used total 1120 CT images obtained from 160 subjects to develop the CAD model. The extracted features are ranked using t-value and then fed to the classifiers namely k-Nearest Neighbor (k-NN), probabilistic neural network (PNN) and support vector machine (SVM) to choose the highest performing classifier. **Results:** Our CAD system is able to discriminate the two classes automatically (normal and fracture) with an accuracy of 87.35%, sensitivity of 89.93% and specificity of 82.85% using k-NN classifier. Our developed prototype is ready to be tested with huge database and can aid the orthopedists in their routine screening to validate their diagnosis.

Abstract no.: 50906

SAGITTAL ALIGNMENT OF SPINE AND PELVIS IN YOUNG ADULTS EOS ANALYSIS IN A KOREAN POPULATION

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We investigated the spinal and pelvic sagittal values of adults in their early 20s when standing and sitting. The researcher recruited students in their early 20s, explained the EOS and the research, and voluntarily participated only after the explanation. A total of 150 patients were enrolled in the study. The mean age was 22.3 years, with 26 women and 11 men. The average height and weight of the women were 160.8cm and 54.1kg and the average height and weight of the men were 175cm and 73.5kg. The average Pelvic incidence was 47.35 degrees when sitting, 45.38 degrees when standing, and the sacral slope was 33.54 degrees when sitting at 12.35 degrees. Pelvic tilt was 34.79 ° at sitting, 11.76 ° at standing, and SVA was at 44.92 ° sitting and -6.81 ° standing. SSA was 98.49 standing at 126.41 degrees while sitting, Kyphosis T1 / T12 at sitting was 27.14 degrees and standing 36.27 degrees. Lordosis was sitting at 14.68 and standing at 47.73 degrees. Pelvic incidence was only P-value 0.283, and there was no difference in the size of the two groups. The other values were different by p <0.001. It is important to measure the spinal and pelvic sagittal values of a healthy adult in the 20s. We showed that spinopelvic parameters obtained from a large database in young adults in Korean populations. The normative values could help to estimate pre-operatively the lumbar lordosis restoration and could be also used as guidelines for spinopelvic sagittal balance.

Abstract no.: 50907

HIGH PREVALENCE OF OSTEOPOROTIC VERTEBRAL FRACTURE IN PATIENTS WITH PROXIMAL FEMORAL FRACTURE

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The aim of this study was to determine whether the presence of vertebral fracture predicts subsequent proximal femoral fracture in matched case-control study. This study was conducted with 1220 patients consecutively, aged fifty years and older who admitted with proximal femoral fracture and underwent lumbar spine radiographs at our hospital from 2009 to 2017. Two hundred ninety three patients were male, and 927 were female. The mean age was 81 years (50-104 years), and the mean body mass index was 20.5 ± 3.6 kg/m². As for the types of hip fracture, 683 patients had femoral neck fractures, and 537 patients had trochanteric fractures. We evaluated the prevalence of vertebral fracture in lateral lumbar spine radiographs (Th11-L5), and the total number of fractures were calculated. In addition, these findings were compared with data randomly selected from the same number of age and sex- matched control patients almost all of who had low back pain but no previous history of proximal femoral fracture. Results: One or more osteoporotic vertebral fractures were detected in 568 patients with proximal femoral fracture (46.6%; mean age, 84 years), which were more frequent in females (92 males; 31.4%, 476 females; 51.3%). The prevalence of vertebral fracture increased with age in both genders. The incidence of vertebral fracture was significantly higher in the patients with proximal femoral fracture than in the control group (46.6% vs. 33.9%). The mean number of vertebral fractures in the group with proximal femoral fracture (2.02 ± 1.3) was also higher than the value recorded for the control group (1.67 ± 1.0).

Abstract no.: 50909

RHEUMATOID ARTHRITIS PRESENTING AS ONLY UNILATERAL SHOULDER PAIN

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Introduction: Rheumatoid arthritis (RA) presenting as only unilateral shoulder pain is uncommon. Purpose: To investigate the proportion and clinical characteristics of patients with RA that present with unilateral shoulder pain. Methods: Our study included 115 patients (36 males, mean age 63.3 years) whom we newly diagnosed with RA based on the 2010 ACR/EULAR classification criteria from 2012 to 2016. We retrospectively investigated cases with onset of only unilateral shoulder pain based on medical record review. Specifically, we examined their physical findings (joint tenderness and swelling); levels of serum C-reactive protein (CRP), rheumatoid factor (RF), and anti-cyclic citrullinated peptide antibodies (ACPA); radiographic findings; magnetic resonance imaging (MRI) findings; and duration from the initial visit to diagnosis. Results: Three patients (2.6%) presented with only unilateral shoulder pain. One patient was male and the mean age was 65.3 years. CRP was positive in all cases. In two patients, both RF and ACPA were positive, but in the third patient both were negative. On MRI, two patients had rotator cuff tears with synovial proliferation, and the other patient had severe synovial proliferation suspected as a tumor in the shoulder. In two patients, biopsy of the synovium in the shoulder was required for the diagnosis of RA. Patients with rotator cuff tears had delayed diagnosis, which took about 3 months from the initial visit. Conclusion: It is difficult to diagnosis as RA with onset of only unilateral shoulder pain at soon. However, RA should be suspected if MRI shows synovial proliferation of the shoulder joint.

Abstract no.: 50911

**POSSIBLE REASONS FOR IMPLANT BREAKAGE AFTER
OSTEOSYNTHESIS OF LONG LIMB BONES**

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Introduction: Current approach to the treatment of fractures implies an extension of indications for surgical treatment. Number of implant failure are increasing in proportion to number of osteosynthesis. There are very different reports in paper of frequency of this complication - from 0,7% in case with simple fracture of clavicle to 64.7% in case of severe open fracture of proximal femur. Methods: There were 36 men and 15 women aged from 22 to 85 years. Middle age of patients is 46.6 years. Implant breakage after osteosynthesis of tibial fractures was most often - 15 cases, than femur - 12 cases, brachial - 9 cases, radial - 3 cases, ulnaris - 4, clavicle - 5 cases, fibula – 3 cases. We analyzed these cases using clinical methods, and some implants using spectrography and fractography. Results: Our analysis of this cases of breakage show that the main reason of this complication is incorrect implant placing and violation of technology (for example, incorrect distal blocking in intramedullary nailing). The second most frequent cause is the diversity of the alloy composition of the implants. We used very different implants in our practice, some of them manufactured in Russia, China and other. Especially titanium alloys is diverse. Third, some of our patient violated the recommendations - they gave an early load on the operated limb.

Abstract no.: 50912

MORPHOMETRIC STUDY OF GIANT CELLS IN GIANT CELL TUMOUR OF THE BONE

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Giant cell tumor (GCT) of bone consists of 3 different cellular types: stromal fibroblast-like cells, mononucleated-macrophage cells and multinucleated giant cells. Only stromal fibroblast-like cells are truly tumor cells in the heterogeneous cell mass of GCT. Although multinucleated giant cells are not truly tumor cells, they play a certain role in the bone destruction and the aggressiveness in the clinical course of GCT. The morphometric studies to determine the distribution and size of giant multinucleated cells find that these cells are irregularly distributed in the tumor cell mass. The size of giant multinucleated cells is variable from less than 20 μm to 200 and more μm . The number of nuclei in them is also very variable. Their number varies from two to more than 200 pieces. We determined that a direct correlation relationship exists between the size of giant multinucleated cells and the quantity of their nuclei. We distinguished three types of multinucleated giant cells in GCT by the criteria of the cell size: small-giant cells; medium-giant cells; and large-giant cells. Small-giant multinucleated cells have sizes from 20 μm to 50 μm . The medium-giant multinucleated cells have diameters from 51 to 100 μm . And large-giant multinucleated cells have a cell diameter of more than 101 μm . In the future, it is necessary to clarify the significance and role of these three types of giant cells in the biological behavior and malignant potential of different GCTs.

Abstract no.: 50915

MORPHOLOGY OF THE NEWLY FORMED PERIPROSTHETIC TISSUE IN TOTAL HIP ARTHROPLASTY

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The purpose of morphological study was to determine the relationship between the structure of periprosthetic granulation-fibrous tissue and the clinical-radiological type of migration of the acetabular component of the hip endoprosthesis. Histologically in the periprosthetic revision tissue of the acetabular region, it is noted that the space between the cortical bone and the endoprosthesis in the contact zone is filled by granulation-fibrous tissue. This tissue contains lymphohistiocyte infiltration with a variable number of multinucleated foreign body giant cells. In the bone tissue around the acetabular component there is an osteolytic process with osteoclastic resorption of compact and spongy bone. The histological structure of the newly formed periprosthetic granulation-fibrous tissue is heterogeneous and in different cases has a different structure. We identified three groups of periprosthetic tissue, given the degree of maturation of fibroblastic tissue and the nature of lymphohistiocytic infiltration: 1. Periprosthetic tissue with granulation-tissue structure (there is diffuse severe lymphohistiocytic and severe giant cell infiltration); 2. Periprosthetic tissue with gentle-fibrotic structure (there is diffuse moderate lymphohistiocytic and moderate giant cell infiltration); and 3. Periprosthetic tissue with coarse-fibrotic structure (there is stromal hyalinosis, focal mild lymphohistiocytic and mild giant cell infiltration). The comparison of clinical, radiological and morphological data shows that the thickness and maturity of the periprosthetic tissue around the acetabular component correlate with the loosening severity of the unstable endoprosthesis. It is necessary to take into account the structure of the periprosthetic tissue for optimal performance of revision operations in endoprosthesis instability.

Abstract no.: 50916

A STUDY ON DVT PROPHYLAXIS IN FOOT AND ANKLE SURGERY IN 403 PATIENTS: IS IT PROCEDURE SPECIFIC OR PATIENT SPECIFIC?

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Deep venous thrombosis (DVT) is widely considered to be a precursor of pulmonary embolus and a risk factor for post-thrombotic syndrome and pulmonary hypertension. Risk factors are procedure specific and patient specific. Main controversy in Foot and ankle surgery is with the former. Current evidence is poor or non existent for majority of procedures. Aims: Full Audit Cycle looking for incidence of DVT in Foot&Ankle procedures and implementing the recommendations. Method: Retrospective study of all Foot and ankle procedures with 403 patients in first and second audit. BOFAS guidelines were taken as standard. Results: In first audit 42/47 ankle ORIF received chemical prophylaxis until removal of cast. Achilles tendon repairs, ankle arthrodesis and calcaneal ORIF received 100% chemical prophylaxis. Minor procedures did not receive any prophylaxis. One patient died of PE following wound debridement procedure. Pre-op assessment was recommended to look into patient specific risk factors and implemented. Second Audit – One patient developed DVT and PE bilaterally following Morton's neuroma excision. This patient received mechanical prophylaxis for two weeks post op and allowed to fully weight bear. Patient was a smoker and strong family history of Factor v Leiden deficiency and postpartum clot. Discussion: Foot and ankle procedures are low risk procedures. Strong importance should be given to patient specific risk factors and consider family history. Thorough pre op assessment should be done for patient specific risk factors and DVT prophylaxis may be considered for those groups irrespective of the type of procedure performed.

Abstract no.: 50917

THE ROLE OF WEAR PRODUCTS IN THE DEVELOPMENT OF THE HIP ENDOPROSTHESIS INSTABILITY

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The contact surfaces of the endoprosthesis permanent undergo mechanical impact of tissue leading to accumulation of wear products in the tissue. Wear products contribute to aseptic instability of the endoprosthesis. In our study, the wear products were detected practically in all studied cases in the periprosthetic granulation-fibrous tissue to varying degrees. In the morphometric study, the wear products particle size of the implant components varied from less than 1 µm to more than 100 µm. Depending on the size of the detected wear particle in periprosthetic tissue, we divided them into three groups: wear nanoparticles (less than 1 µm); wear submicroparticles (from 1 to 10 µm); wear microparticles (from 11 to 100 µm). These wear particles can be detected intracellularly, as well as extracellularly in the stroma of periprosthetic tissue. The degree of severity, spreading and size of wear particles correlates with the Paprosky type classification of acetabular defect. The accumulation of wear particles in periprosthetic tissue is accompanied by inflammation and increased density of macrophages. Aseptic productive inflammation arising around the wear particles of the endoprosthesis forces the osteolytic process. Osteolysis is the main factor leading to instability of the endoprosthesis. Thus, the formation of wear products of implant components, including polyethylene, is a major factor in the instability of the endoprosthesis. Histological studies show that the severity of productive inflammation, osteolysis and endoprosthesis instability are directly dependent not only on the severity of the wear products, but also on size of the wear particles.

Abstract no.: 50919

NEUROPHYSIOLOGICAL SUBSTANTIATION OF DIFFERENTIATED REHABILITATION IN INJURY OF THE LUMBAR SPINE

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The purpose is to determine the criteria for assessing the regression of spinal cord function disorders (SC) in the dynamics of rehabilitation. Materials: 38 patients with comminuted fracture L1 were examined on time: before and after surgical treatment (2 weeks, 6 and 12 months). Depending on the degree of SC disorders on the ASIA scale, three groups were distinguished: I (n=23) –type E; II – ASIA C and D (n=8); III – ASIA A and B (n=7). Electromyography (EMG) techniques were used to record M-responses, H-reflex and F-wave muscles with electrical stimulation, as well as record motor responses (MEP) in transcranial magnetic stimulation. Results: In group I a decrease in the reflex and motor excitability of the muscles of the lower limbs with signs of motor deficiency of the lumbosacral roots was revealed. Positive dynamics after 6 months indicated the completion of rehabilitation. In II and III groups the diagnostics allowed to differentiate complete and incomplete block functions of the SC. A characteristic feature of motor deficiency SC was a decrease in the amplitude of MEP (50%) in combination with an increase in latent time (25%). Among the patients of group III, a complete (n = 4) and significant partial block of SC function (n = 3) was isolated. The obtained data determined the different post-traumatic neuropsychological SC. EMG-control allowed to determine the scope and terms of completion of rehabilitation.

Abstract no.: 50920

**BLOOD FLOW FEATURES OF THE PELVIS AND LOWER EXTREMITIES
IN PATIENTS AFTER HIP REPLACEMENT SURGERY**

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A connection between change of arterial blood flow, microcirculation and disorder of hip joint function is noted in literature. The aim of the conducted research was to assess the blood supply of the pelvis and lower extremities in patients after hip replacement surgery. 45 patients aged 40-75 with significant instability of components of the hip joint endoprosthesis were examined. Color duplex sonography of lower extremities and pelvic vessels was performed using the ultrasound scanner EnVisor C HD (Philips, USA). The analysis of ultrasound studies showed the presence of functional spasms of the pelvic and femoral arteries in the preoperative period. Vmax of a. iliaca communis, a. iliaca externa, a. iliaca interna, a. femoralis of sick limbs was increased to 134 ± 20 cm/s from the norm of 90 ± 15 cm/s. Seven days after hip replacement surgery, Vmax was increased at the pelvic and femoral arteries of the affected limbs by 5% to 20% from the preoperative level, while PI was reduced by 17% to 60%. Vasospasm of the arteries remained for three months after the surgeries. Vmax reached preoperative levels within one year of the surgeries. Thrombosis of the lower extremities in the early postoperative period was detected in 2 patients out of the 45 that were examined. Recanalization of blood clots occurred in three months after hip replacement surgeries. The risk level of phlebothrombosis was 4.4%. The obtained data indicate the functional spasm of the pelvic and femoral main arteries in the pre-, early and late postoperative period.

Abstract no.: 50925

EPIPHYSEAL ARREST IN PATIENTS WITH BENIGN BONE NEOPLASMS AND ITS TREATMENT

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Clarify the influence of benign bone neoplasms on contiguous growth plate. We observed 57 children with benign bone neoplasms, who had different deformities of bone axis and its length. We have studied the details of clinic and X-ray manifestations, operative management and methods of deformations correction. The growth plate disturbances were mostly often in giant cell tumor, aneurismal bone cyst (ABC), multiple exostoses and Ollier disease. In 41 cases the deformations were exist before the beginning of treatment (primal), so were not iatrogenic. The prevalence of post-op deformations was registered only in patients with ABC and fibrous dysplasia. The combined deformity (shortening and angular) was observed in 34 cases. In 29 patients with primal deformations correction was performed in one time with tumor excision (correcting osteotomy – CO, Ilizarov method – IM or growth plate stapling – GPS). Operative treatment of secondary (post-op, iatrogenic) deformations was performed in 4 cases in 1.5-3 years after tumor excision (IM or GPS). The good results were obtained in all cases. The alteration of the adjacent growth plate by benign bone neoplasms is one of the common complications – registered in 14.9% of patients with such primary tumors. The primary growth plate alteration appears in 71.9%, secondary (iatrogenic) – in 28.1%. Importantly: The GPS is indicated in cases of angular deformation dominance and considerable growth potential (not less than 1 year); the CO – in patients without growth potential. The IM is indicated in cases of extremity shortening more than 1.5-2 cm.

Abstract no.: 50929

SHOULD WE CHANGE THE ELECTROCAUTERY TIPS DURING TOTAL HIP AND KNEE ARTHROPLASTY?

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Contamination of the surgical field and equipment during arthroplasty procedures has been observed in several studies. However, there is a lack of data analyzing the contamination rate of electrocautery tips during primary and revision TKA/THA. A total of 150 electrocautery tips were randomly collected between April and July 2017. We defined 3 study groups: 1) primary; 2) aseptic and 3) septic revisions. In each group, a total of 50 electrocautery tips were collected. A monopolar electrocautery with a reusable stainless-steel blade tip was used in all cases. The rate of bacterial contamination was determined for all groups and correlation of exposure time and type of surgery were analysed. The overall bacterial contamination rate was 14.7% (95%-CI; 9.4% to 21.4%). The highest contamination rate was in the septic revision group with 30.0% (95%-CI; 17.9% to 44.6%). Interestingly, in 12 out of 15 (80%) contaminations identified from the septic group, we found the causative microorganism of the prosthetic joint infection on the electrocautery tip. Exposure time did not affect the bacterial contamination rate. The bacterial contamination of the electrocautery tips is relatively high, especially during septic hip revision arthroplasty. Electrocautery tips should be changed before re-implantation.

Abstract no.: 50931

SEPTIC ARTHRITIS IN THE AFTERMATH OF SLIPPED CAPITAL FEMORAL EPIPHYSIS: A TWO- STAGE APPROACH TO PRIMARY TOTAL HIP ARTHROPLASTY IN A 13-YEAR-OLD GIRL

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Introduction: Slipped capital femoral epiphysis (SCFE) is a common acquired disorder of the adolescent or pre-adolescent hip. In patients affected by SCFE, surgical treatment is imperative to prevent further slippage and thereby maintain or possibly restore function, alleviate pain and reduce the risk of early secondary osteoarthritis. With regard to typical surgery-associated short-term complications avascular necrosis (AVN) of the femoral head and chondrolysis need to be anticipated. In a mid-term perspective, premature removal of fixating implants is likely to abet further morbidity and may therefore constitute medical malpractice. **Case:** We report on a 12-year old girl who presented with severe pain and malfunction of the right hip at our institution 30 months after surgical treatment for right-sided acute SCFE elsewhere. She further reported she had already undergone implant removal and further non-operative extension therapy. Radiographic imaging showed progressed AVN of the right femoral head and no conspicuous features of the left hip joint. Laboratory tests revealed elevated infection parameters. **Outcome:** The patient was diagnosed with osteonecrosis of the femoral head and septic arthritis of the right hip joint. After thorough counseling a two-stage septic procedure was performed, with eventual primary total hip arthroplasty at age 13. At 5-year follow-up the patient presented with excellent functional outcome and reported entirely satisfactory health-related quality of life. **Discussion:** We aim at discussing total hip arthroplasty as a valid therapeutic option in painful and debilitating disorders of the adolescent hip.

Abstract no.: 50932

SURGICAL TREATMENT OF BENIGN GIANT CELL TUMOUR OF LONG BONES IN CHILDREN

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The most effective method of treatment of giant cell tumor (GCT) of bones is surgical. During the period from 1982 to 2015 we operated 33 patients (aged 7-18 years) with this kind of neoplasm. In 12 cases the details of GCT manifestations, surgical tactics and technique, results of treatment were studied. In 3 cases GCT had no any manifestations, and was "X-ray finding". Pre-op the GCT was diagnosed in 5 cases, in 2 it was suspected, and in 5 the false diagnosis of bone cyst was established. We used 3 types of bone resection: segment (4 patients), sector (3) and intra-lesion (or extended excochleation, 5 cases). Segment resections were performed in cases of subtotal bone involvement; sector - in cases of excentric small nodule, and intra-lesion - in others. After resection we used chemical and thermal ablation of bone margins. Bone defects were filled with massive (segment and sector) or shredded (intra-lesion) bone grafts. Osteosynthesis was performed in 5 cases according the AO standards. We have studied the results in 1.5-6 years after surgery: excellent were obtained in 8 cases, good - in 2, and satisfactory - also in 2. Different tactic and technique mistakes were registered in 4 cases: late diagnosis, inadequate bone resection, inadequate osteosynthesis and incorrect alignment of bone axis. So, the best results of surgical treatment of GCT of long bones in children may be obtained in cases of proper and early diagnosis, good surgery technique and tactics planning and its meticulous realization.

Abstract no.: 50934

TRANSFER TIME TO THEATRE: DELAYS AND IMPROVEMENT SUGGESTIONS

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Efficient and timely transfer of patients to theatre is of paramount importance in the smooth running of operating lists. At present there is no standard set as to what is deemed an appropriate transfer time. Our aim was to look at the transfer times to theatre (defined as the time from theatre calling the ward to send for the patient, and the patient arriving in theatre), and identify reasons for delay in transfer. We looked at both elective and trauma patients transferred to main theatre over a 3 day period. We excluded data where no transfer time were recorded and patients who were cancelled. 50 patients were transferred to main theatres over that period. Our results showed transfer time ranging from 5 minutes to 46 minutes. Average transfer time was 19 minutes 53 seconds. 34/50 patients were delayed due to various reasons . This led to patient cancellations and inability to fully utilise the theatre. Wards which are far away from theatre, high turnover of surgical patients, lack of adequate number of staff to prepare the patients, patients requiring bed or chair to be transferred, bloods not done, incomplete drug charts, last minute trauma list changes to accommodate urgent patients all contributed to delay. We propose that effective timely communication, planning and coordination between various staff levels including theatres, junior & senior doctors, ward nurses, patients and anaesthetists might help in reducing the transfer time.

Abstract no.: 50936

THE KELLGREN-LAWRENCE SCORE: ALWAYS A SLAM-DUNK?

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The Kellgren-Lawrence Score helps the orthopaedic surgeon to classify the severity of knee osteoarthritis (OA) prior to total knee arthroplasty (TKA). There might be a discrepancy between subjective complaints of the patients and radiologically visible changes of the knee joint in many cases. Therefore, we conducted a prospective clinical study to analyze the preoperative extent of bone and cartilage damage using the Kellgren-Lawrence score. The findings were compared with the intraoperative extent of bone and cartilage damage. A total of 251 patients, who underwent a TKA at our institution between November 2016 and March 2017 were included in the prospective study. In all knees, preoperative Kellgren-Lawrence score was determined using standardized preoperative anteroposterior and lateral plain radiographs of the knee and the axial view of the patella by senior radiologists. In all patients, photographic documentations of the medial, lateral, and retropatellar joint compartments were taken. The degree of chondromalacia was assessed according to the International Cartilage Repair Society (ICRS). Correlation analysis was performed using Pearson-Clopper 95-CI in compartments with the highest Kellgren-Lawrence score. The patient collective consists of 251 patients (n=163 female, n=88 male) with a mean age of 66.8 years (range from 41 to 88 years; SD=9.2). In 160 cases, intraoperatively determined score was greater than the preoperative finding (63.7% of 251, 95% confidence interval [CI] = 57.5% to 69.7%). A mismatch of two score grade points was found in 8.4 % (95% CI=5.3% to 12.5%). The highest mismatch was noted in patients with preoperative Kellgren-Lawrence score of 3 and intraoperative score of 4 in 48.2% (95% CI=41.9% to 54.6%). Based on our study results, there was a mismatch in favour for an underestimating of preoperative radiological and true intraoperative findings in determining the severity.

Abstract no.: 50937

PIRIFORMIS PYOMYOSITIS MASQUERADING AS A MIGRATORY HIP AND PELVIC PAIN TO THE POSTERIOR KNEE DUE TO SCIATIC NERVE SHEATH INVOLVEMENT

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Piriformis pyomyositis is the development of an abscess in the piriformis muscle which typically presents with fever and hip pain. The authors report a rare case of spontaneous piriformis pyomyositis in a teenage female patient who initially presented with persistent fever and worsening left hip and pelvic pain leading to an inability to walk for one week. Her pain spontaneously migrated to the ipsilateral knee with a near complete resolution of hip pain. On admission, she was found to be septic with Methicillin Sensitive Staphylococcus Aureus (MSSA) bacteraemia and was started on intravenous (IV) cefazolin. Subsequent imaging revealed an abscess in the left piriformis muscle with pus tracking inferiorly via the sciatic nerve sheath to the level of the knee. There was a concurrent left internal iliac vein thrombosis and a septic embolus to the left lung. The patient subsequently underwent open drainage of the piriformis abscess with sciatic nerve exploration. Post surgical drainage, the patient was given an outpatient course of IV cloxacillin and oral warfarin with a full resolution of symptoms and normalisation of inflammatory markers. Conclusion: Piriformis Pyomyositis may spontaneously drain with the pus tracking along deep anatomical planes. The adjacent sciatic nerve and nerve sheath represent an unusual and gravity dependent anatomical plane connecting the pelvis to the knee. This accounts for the migration of superior hip and pelvic symptoms to the inferior and posterior knee.

Abstract no.: 50938

BILATERAL ELASTOFIBROMA DORSI: TWO CASE REPORT

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INTRODUCTION: Elastofibroma dorsi (ED) is an infrequent benign soft tissue tumor, slowly growing and typically located in the infrascapular region (deep to the serratus anterior muscle) of elderly people, especially in female. Although it is generally unilateral, it may be bilateral in 10% of cases. Many patients generally remain asymptomatic, but ED can be responsible of back and shoulder pain that increases with movement. Magnetic resonance imaging (MRI) is the most useful tool for detect it and the pathological study ensures the diagnosis after surgical excision. **PRESENTATION OF CASES:** We report two cases of a 71-years-old woman and a 65-years-old man with bilateral and painful ED, especially with shoulder movement and with a size increase. The diagnosis was confirmed with MRI findings that revealed bilateral tumors compatible with ED. All masses were totally excised with posterolateral subscapular incision and histopathological study of biopsy confirmed the diagnosis of ED. There were no complications and the symptoms were totally controlled. **CONCLUSIONS:** ED is a benign soft tissue tumor mostly observed in the subscapular region of elderly female patients. The etiology is still in discussion and must be considered in the differential diagnosis of shoulder masses. Bilateral involvement occurs only in 10% to 66% of cases and is usually asynchronous. MRI is the gold standard examination for diagnosis. Surgery is indicated in symptomatic cases and pathological study confirms the diagnosis after surgery. The prognosis is excellent with low recurrences and no malignant degeneration.

Abstract no.: 50943

ANALYSIS OF SEGMENTAL TIBIAL FRACTURES, THEIR DIFFERENT MODES OF TREATMENT AND OUTCOMES: A RETROSPECTIVE STUDY

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Introduction: Segmental tibial fractures are considered difficult fractures to treat owing to superficiality of tibial bone with minimal soft tissue covering and occult severe soft tissue damage. These are usually managed with intramedullary nailing or plating. However, it is unclear whether healing of these fractures truly differs based on the implant used and from that of non-segmental fractures. This study was carried out to analyse difference in union rate, alignment, complications and recovery time between intramedullary nailing and plating in such cases. **Methods:** We retrospectively studied fifteen patients with segmental tibial fractures treated at Level-I trauma center from June 2016 to May 2017. We determined time to union, complications, alignment and recovery time and compared fractures treated with intramedullary nailing and plating. **Result:** Median time to union was 33 weeks. Segmental fractures treated with plating (median, 36 weeks; range, 16-56 weeks) took longer to heal than treated with intramedullary nailing (median, 30 weeks; range, 12-48 weeks). Overall rate of complications was higher in segmental fractures treated with plating. Malalignment was more with plating than with nailing in segmental fractures. Recovery time was less in nailing (median, 36 weeks) compared to plating (median, 40 weeks). **Conclusion:** Segmental tibial fractures treated with intramedullary nailing had better outcomes when compared to plating in terms of union time, complications, malalignment and recovery time. Based on the limited data, it can be concluded that intramedullary nailing is preferred implant in segmental tibia fractures.

Abstract no.: 50945

MID-TERM RESULTS OF LARGE-DIAMETER CERAMIC-ON-CERAMIC BEARING TOTAL HIP ARTHROPLASTIES WITH MONOBLOCK ACETABULAR COMPONENTS

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Introduction: Ceramic on ceramic (CoC) bearings in total hip arthroplasty (THA) are renowned for their superior tribological properties. Current manufacturing advancements allow the use of larger femoral head diameters (LDH, ≥ 36 mm) to achieve more stable prosthetic hip joints. Methods: We report the radiographic and clinical follow-up of our first 276 consecutive primary THAs performed using the Maxera Cup (Zimmer). Along with the patient-reported-outcome scores at five years, noise generation was systematically questioned. Results: The 276 components were implanted in 216 patients (135 women, 81 men) with a mean age of 53.5 years. There were five non-displaced peri-acetabular fractures during acetabular component impaction, all had excellent evolution without specific treatment. At a mean of 68 months (min 60, max 78), three hips (1.1 %) had a re-operation: one early infection, one sciatic neuropathy and one acetabular component revision for early mobilisation. No hip dislocation was reported. The mean UCLA activity, WOMAC and Forgotten Joint scores at final follow-up were respectively 6.6 ± 1.9 , 7.2 ± 10.4 and 88.7 ± 13.9 . All patients except one (99.5 %) were satisfied with their hip replacement. Inconsequential clicking or squeaking noises were reported for 6.5 % and 22.9 % of THAs respectively. Conclusion: This prospective study shows excellent midterm results with 99.6 % implant survivorship after five years of this new LDH CoC THA in a very active group of patients. With no post-operative movement restrictions, no dislocations occurred. When assessed systematically, benign prosthetic noise generation was reported frequently by the patients.

Abstract no.: 50948

EARLY RESULTS OF DUAL MOBILITY TOTAL HIP ARTHROPLASTY IN ACUTE TROCHANTERIC FRACTURES

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Background: hip arthroplasty has been suggested as an alternative to internal fixation for treatment of comminuted trochanteric fractures in elderly population. However, there is usually a fear of postoperative instability when arthroplasty is performed for hip fractures. Early Egyptian experience with the Dual Mobility (DM) THA in highly unstable trochanteric fractures is reported. Material and methods: Twenty one patients with an average age of 72 years (range 65 to 84) had DM THA and been prospectively evaluated. Patients were evaluated according to the American Society of Anesthesiology (ASA) scoring system and the AO classification for trochanteric fractures was employed. All patients received cemented DM cup (Novae stick, SERF, France) and standard or long polished cemented stem. Trochanteric re-attachment was performed using Wroblewski's cross-over double wiring technique. Results: 21 patients with an average follow up of 16 months (range 12 to 30) were evaluated with no loss to follow up. Two patients died 6 and 18 months after surgery from causes not related to the surgical intervention. 17 patients were classified as ASA III and 4 patients as ASA IV. At the latest follow up all patients were independently mobile. 8 patients were community ambulatory and 11 were mobile indoors. No dislocation was recorded and stable greater trochanter was observed in all patients. The average HHS at a minimum of one year was 79 +/- 6 (mean +/- STD). Conclusion: DM THA is an attractive option that allows early postoperative mobilization with minimal risk of dislocation.

Abstract no.: 50949

MID-TERM RESULTS OF LUMIC(R) ENDOPROSTHETIC RECONSTRUCTION AFTER PERIACETABULAR MALIGNANT BONE TUMOUR RESECTION

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Introduction: Reconstruction of periacetabular defects after pelvic tumor resection ranks among the most challenging procedures in orthopaedic oncology. **Methods:** We retrospectively analyzed 11 patients [mean age 47 (38-64) years] with primary bone sarcoma (8) or carcinoma metastasis (3), who underwent pelvic reconstruction by a LUMIC(R) endoprosthesis [Implantcast, Buxtehude, Germany] for a periacetabular defect after internal hemipelvectomy. Internal hemipelvectomy included type II resection in seven, type II+III in two, and type I+II/I+II+III (proximal osteotomy line was extended to mid-portion of ilium) in two patients. Trivera tube [Implantcast, Buxtehude, Germany] was used in nine patients to augment reconstruction and prevent dislocation. Follow-up periods ranged from one to four years (mean=two years). **Results:** Oncological outcomes were died of disease=DOD in four cases, no evidence of disease=NED in five, and alive with disease=AWD in two. Implant survival rate was 91%; one patient with implant loosening required revision of LUMIC(R) prosthesis at 18 months follow-up. In remaining patients, endoprosthesis preserved its original adequate position radiologically. The mean Musculoskeletal Tumor Society (MSTS) functional score was 60% (50%-80%). The overall complication rate was 45.5% (five patients) and 36.3% required re-operation [early mechanical debridement for deep infection (one); open reduction under general anesthesia for dislocation (one); wound revision (one); endoprosthesis revision (one)]. One patient with pelvic obliquity was followed conservatively. **Conclusion:** At short-term follow-up, LUMIC(R) prosthesis demonstrated a low rate of mechanical complications and failure. Even though the overall complication rate was high, this endoprosthetic reconstruction provided a stable pelvis with good functional and radiological outcomes in the management of periacetabular malignant tumors.

Abstract no.: 50954

PELVIC RING RECONSTRUCTION WITH A DOUBLE-BARRELED FREE VASCULARISED FIBULA GRAFT AFTER RESECTION OF PAEDIATRIC PELVIC BONE SARCOMAS

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Introduction: In patients undergoing limb-salvage internal hemipelvectomy, pelvic ring reconstruction is mandatory to maintain stability of the pelvis and spinal column, which finally expected to achieve a good functional outcome. We aimed to analyze retrospectively the outcome of pelvic ring reconstruction using a free vascularized fibula graft (VFG) combined with internal fixation after internal hemipelvectomy in children. **Methods:** Eleven children [mean age 14 (11-19) years] with primary bone sarcomas underwent biological reconstruction after type I (7) or type I+IV (4) internal hemipelvectomy. The fibular graft was placed in an intercalary double-barreled fashion and stability of the remaining pelvis and spinal column was provided by single or double columns of transpedicular screws and spinal rods. The average follow-up was 32 (18-75) months. **Results:** Ten patients were alive at the time of study [no evidence of disease=NED (7), alive with disease=AWD (3)]. One patient was died of disease=DOD at two years follow-up. Graft union and hypertrophy were observed in all patients at 12 months. Average final follow-up Musculoskeletal Tumor Society (MSTS) score was 80% (60-95%). A persistent mild to moderate limping was observed throughout follow-up in eight (72.7%) children. There was a slight limb length discrepancy (< 2 cm) in three (27.2%) and mild spinal asymmetry in two (18%) patients. There were two complications [deep infection (1), wound problem (1)] requiring re-operation. Except for one transient nerve palsy, no donor site complication was observed. **Conclusion:** This reconstruction method can achieve good radiological and functional outcomes following resection of pediatric pelvic bone sarcomas. Even though complication rate is high, majority of these problems can be managed conservatively.

Abstract no.: 50956

**SYSTEMIC EFFECTS OF METAL WEAR AND CORROSION PRODUCTS:
AN OVERVIEW**

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An in-depth understanding of the biomaterials used in orthopedic surgery is of utmost importance to prevent implant-related problems. Byproducts of metal-on-metal pairings have been shown to be associated with multiple unfavourable local effects, including periprosthetic osteolysis and pseudotumor Formation, and poor implant survival. Lately, major public concern has been raised with regard to potential organ toxicity linked to wear and corrosion products of metals used in arthroplasty. This talk provides a comprehensive overview of the current knowledge on systemic effects (e.g. neurotoxicity) of metals released by hip and knee endoprostheses.

Abstract no.: 50957

RESULTS OF A HYDROXYAPATITE THREADED CUP IN HIP ARTHROPLASTY WITH A FIVE TO 16 YEAR FOLLOW-UP

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Fixation in total hip arthroplasty is an ever controversial issue, with several methods being used throughout its history. We present our experience with a hydroxyapatite coated threaded cup. Methods: The study included a cohort of 58 total hip replacements with hydroxyapatite coated threaded cups with UHMWPE implanted in 47 patients from 1999 to 2008 and reviewed retrospectively. 11 implants in 7 patients had less than 5 years follow up due to several causes (2 patients died of unrelated causes, 2 moved home and 3 could not be reached for follow-up) and were not considered for analysis. Clinical records were reviewed including clinical and radiological data, and analyzed using Excel and SPSS software with the Kaplan-Meier survivorship method. The results of 47 implants in 40 patients (24 female and 16 male) were finally analyzed. All bilateral cases were in females. Results: In the mean follow-up period of 11.13 ± 3.2 years (range 5.05-16.8 years) five patients were censored because of death for unrelated reasons, and 5 revisions were performed at a mean follow-up of 9.82 ± 5.13 years (range 3.02-16.33) due to painful polyethylene wear in 3 cases and aseptic loosening in 2 (one of them associated to stem loosening). The 5-16 year survival rate with revision surgery of the cup for any reason as the endpoint was 89.3%. Conclusion: The threaded HA cup offers a stable and durable primary and secondary fixation. Polyethylene wear continues to be a troubling issue for the survival of total hip replacements.

Abstract no.: 50958

CEMENTED DISTAL FEMORAL PROSTHESIS WITH ARC-SHAPED STEM RECONSTRUCTION FOR EXTREMELY LARGE BONE DEFECT AFTER BONE TUMOUR RESECTION: THE FINITE ELEMENT ANALYSIS AND MEDIUM-TERM OUTCOMES

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Objectives: To present and evaluate the finite element analysis and the medium-term outcomes of cemented distal femoral prosthesis with arc-shaped stem reconstruction for extremely large bone defect after bone tumor resection. **Methods:** The arc-shaped stem design depended on the shape characteristics of normal adult proximal femur. The finite element analysis was to confirm the feasibility of the stem design. Four patients who underwent cemented distal femoral prosthesis with arc-shaped stem reconstruction, were evaluated at an average followup of 42.0 months (36.0-48.0 months). Clinical records, radiographs, MSTS score, HSS score and complications were evaluated. **Results:** The finite element analysis showed that the femoral stress distribution after reconstruction was consistent with the biomechanics of normal proximal femur, and the possibility of bone cement and prosthesis breaking was low. The average resection length and residual length of proximal femur were 349.0 mm (320.0-360.0mm) and 83.0 mm (78.0-120.0mm). The average length and offset of the arc-shaped stem were 114.6 mm (110.0-117.0 mm) and 28.6 mm (27.0-29.0 mm). The average diameter of the stem base and end were 12 mm (11-14mm) and 8.5 mm (8-9mm). At the last followup, there was no recurrence, lung metastasis, infection, periprosthetic fracture and aseptic loosening. The average MSTS and HHS score was 24.5 points (23-26) and 74.0 points (70-80 points). **Conclusions:** To preserving proximal femur, cemented distal femoral prosthesis with arc-shaped stem reconstruction is a good choice for extremely large bone defect after bone tumor resection. However, careful preoperative design of the prosthesis and excellent surgical skills are needed.

Abstract no.: 50959

PERIOPERATIVE MORTALITY AFTER HIP REPLACEMENT SURGERY IN A DISTRICT HOSPITAL IN OUAGADOUGOU, BURKINA FASO

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Total hip replacement is increasingly performed in developing countries in Africa. Literature describing results and feasibility is still limited. We measured peri-operative mortality of elective hip replacement in a district hospital in Ouagadougou, Burkina Faso. This is a retrospective analysis of a prospectively collected database comprising of 352 hip replacement surgeries from December 2004 until December 2017: 325 primary hip replacements and 27 revisions. Mean age was 48,9 years (20 to 80). 218 (61,9%) interventions were performed in men, 134 (38,1%) in women. Peri-operative mortality was defined as mortality from intra-operatively up to six weeks postoperatively. Five patients died resulting in a peri-operative mortality of 1,42%. Mean age was 58,6 years (46 to 75). Three patients were ASA two, two patients ASA three. Two patients died of complications of sickle cell disease with massive haemolysis in one patient and pulmonary embolism in another. One 75 year old patient suffered a hypovolaemic shock from intra-operative bleeding. He didn't recover and died in the evening after the operation. Mortality was due to a postoperatively developed peritonitis in one patient and a sudden adverse cardiac event five days postoperatively in one patient. Mortality is higher than reported rates in many developed countries. Both sickle cell related mortalities in the current study were in our early experience. Specific restrictions regarding preoperative health and specifically sickle cell patients were developed, matching the medical treatment abilities of the district hospital. We recommend thorough preoperative assessment and selection criteria related to available medical infrastructure and treatment capabilities.

Abstract no.: 50966

**THE EFFECTIVENESS OF SYNTHETIC BONE GRAFT SUBSTITUTE IN
OSTEOPOROTIC UNSTABLE INTERTROCHANTERIC FRACTURES OF
THE FEMUR TREATED WITH GAMMA NAIL**

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Introduction: Compare gamma nail with bone substitute and only gamma nail to evaluate the effectiveness of synthetic bone graft substitute in osteoporotic unstable intertrochanteric fractures treated with gamma nail. Methods: All of the 80 patients admitted to the hospital between June 2012 and June 2016 who underwent gamma nail for unstable intertrochanteric fractures were evaluated. The mean age was 72(65-80), there were evaluated BMD and diagnosed osteoporosis, Radiologic comparison was done between eighty patients of unstable intertrochanteric fracture (AO type A2) during 1 year. The patients were divided into two groups, a group treated with gamma nail with synthetic bone graft substitute (calcium sulfate/tricalcium phosphate) group (40 patients) and another group treated only with gamma nail (40 patients). Postoperative Tip-apex distance, lag screw slippage and femoral neck-shaft angle change were measured between two groups. complications during the follow-up period was compared by VAS score and HHS(Harris hip score). Results: In two groups, VAS score and HSS were improved better than pre-operation state. No significant difference of Tip-apex distance, lag screw slippage and femoral neck-shaft angle was found. Treated only gamma nail group was 2 case of cutting-out of the lag screw, but also there was a significant difference. Conclusion: As there are lesser lag screw slippage and neck-shaft angle change, synthetic bone graft substitute applied in osteoporotic unstable intertrochanteric fractures seems to be useful in maintaining reduction and preventing failure of internal fixation when proper reduction and screw insertion is performed.

Abstract no.: 50968

EFFECTS OF BONE MODIFYING AGENTS BASED ON CT VALUE OVER TIME IN METASTATIC SPINAL TUMOUR AND LIFE PROGNOSIS

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Introduction: The current analysis focuses on the transition of the CT value (Hounsfield unit: HU) of spinal metastatic lesion and life prognosis. Methods: 105 patients who diagnosed with metastatic spinal tumor by CT or MRI were enrolled between July 2012 and July 2017. The primary organs were lung 38 cases, breast 29 cases, prostate 12 cases, colon 6 cases, multiple myeloma 5 cases, and others. 57 cases of zoledronic acid and 44 cases of denosumab were used as bone modifying agents (BMA). Based on the CT value of the metastatic lesion before the administration of BMA, the CT value was measured over time even after the start of BMA, and the prognosis of the CT value elevating group and the non-elevating group was analyzed. Results: The CT value was elevated in 89 cases (84.8%) in 105 patients, but remained flat or decreased in 16 cases (15.2%). The primary organs in non-elevating group were lung 7 cases, breast 4 cases, colon 2 cases, and others. The life prognosis after the administration of BMA was significantly longer in the elevating group (median; 669 days) compared with the non-elevating group (median; 166 days). On the other hand, no significant difference was observed between zoledronic acid and denosumab in the CT value. Conclusion: Survival analysis suggested that the non-elevation of the CT value of spinal metastatic lesion after the administration of BMA were correlated with poor prognosis.

Abstract no.: 50970

COULD SUBTUBERCLE TIBIAL OSTEOTOMY COMBINED WITH FIXATOR-ASSISTED NAILING BE AN ANSWER TO PATELLA HEIGHT AND TIBIAL SLOPE PROBLEMS?

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Introduction: Our technique involves lower level, sub-tubercle tibial osteotomy (STO) combined fixator-assisted nailing (FAN) technique with its additional biomechanical advantages. The purpose of this study was to assess and analyse whether could be an answer patella height and tibial slope problems. **Methods:** 16 patients had the combined procedure for varus deformity of the proximal part of the tibia. Radiographic and clinical measurements were assessed pre- and post-operatively. Minimum follow-up period was twelve months and outcome scores were obtained from the patients' last follow-up. **Results:** The mean age for 16 patients (8 males, 8 females) at the time of operation was 51.1 (36-62) and the hospital stay was a mean of 3.5 (2-6). Minimum follow-up period was 12 months and mean was 22.3 (12-38). Tibial slope reduced a mean of 1.2 degree on oppose to an increase in open-up osteotomy approach. Install-Salvati ratio showed a negligible difference between pre-op and post-op measures 0.077 cm (SD:0.056). Outcome scores were also improved significantly postoperatively (p<0.001). **Conclusion:** Potential benefits of the current technique are having no negative effect on patella tendon (i.e. patella baja) as the osteotomy for this approach performed just under the tibial tuberosity (thereby, no negative effect on future knee arthroplasty), minimal effect on tibial slope, and no loss of bone stock. This technique could be a promising alternative to the other techniques for high tibial osteotomy fixations.

Abstract no.: 50972

IMMUNOHISTOCHEMISTRY OF GIANT CELL TUMOUR OF THE BONE

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We used immunohistochemistry (IHC) for differential diagnosis of various forms of giant cell tumor (GCT) and identification of cell specificity in GCT. Given the GCT morphogenesis, consisting of 3 cell elements, we used various antibodies that detect common mesenchymal, osteoblastic, endothelial, B- and T-cells, and monocytic-macrophage cells. Vimentin showed an immunopositive reaction in almost all tumor cells. CD68 shows immunopositive coloration with macrophages and giant cells. In this case, uneven jagged cytoplasmic membranes of giant multi-nucleated cells are noted, which indicates similarity with osteoclasts. Proliferative activity of stromal tumor cells with Ki-67 showed more intense nuclear staining in malignant cases of GCT as compared to benign GCT. In the tumor, foci with increased proliferative activity of tumor cells are determined - "hotspots". We also observed that in the GCT with infiltrating growth in the "invasive fronts" of the tumor, i.e. in areas of the tumor with an extra-bone extension into the periosteum or the surrounding soft tissue, tumor cells have more pronounced proliferative activity. IHC studies with CD5, CD20 and CD79a, CD45 and CD138 showed a weak immune response. The distribution of lymphocyte cells in the tumor is uneven. GCT has high osteoblastic and osteoclastic activity. The processes of osteogenesis and osteolysis synchronously and permanently occur in the GCT. The quantification of osteoblasts with osteonectin, together with proliferative activity index with Ki-67, can provide useful information in the differential diagnosis between benign and malignant forms of GCT.

Abstract no.: 50974

3D-MULTIMODALITY IMAGE-BASED PRECISE EXCISION AND RECONSTRUCTION FOR MALIGNANT PELVIC TUMOUR

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Objective: To assess the clinical significance of 3D-multimodality image based excision and reconstruction for malignant giant pelvic tumor. **Methods:** We performed a retrospective analysis about 26 patients with malignant pelvic tumor treated in our center from January, 2015 to May, 2017. CT/MRI fusion based 3D-multimodality reconstruction image revealing tumor edema, nerves, blood vessels, ureters and other important organs, was conducted in 13 patient (Fusion group) and these image based computerized surgery simulation, in vitro simulated surgery with 3D-printed model and custom-made guide templates for intraoperative assistance were further performed. The other 13 patients underwent traditional surgery. Surgical margins, duration of the surgery, blood loss, complications, functional scores were analyzed. **Results:** In the fusion group, all surgeries were performed as planned. 10 achieved wide surgical resection and 3 marginal resection. In the Traditional group, one surgery was aborted due to the intraoperative finding of contaminated sacral nerves. 8 achieved wide surgical resection and the other 4 marginal resection. The mean duration of surgery was 5.7 hours in Fusion group and 6.8 hours in Traditional group. The average intraoperative blood loss was 1246 mL in Fusion group and 3076 ml in Traditional group. For complications, Fusion group had only 1 infection, while Traditional group had 2 infections, 1 dislocation, 1 leakage of cerebrospinal fluid and 1 incontinence. The MSTS functional score for Fusion and Traditional Group at final follow-up was 23.5 and 22.3 respectively. **Conclusion:** 3D-multimodality image based technology is helpful for precise excision and reconstruction for malignant pelvic tumor.

Abstract no.: 50980

SURGICAL STRATEGY FOR BENIGN LESIONS IN THE PROXIMAL FEMUR: INTERNAL FIXATION OR ENDOPROSTHETIC REPLACEMENT

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Purpose: The purpose of this study was to explore the indications of two most frequently applied surgical procedures for benign lesions in proximal femur. **Methods:** We retrospectively reviewed 142 patients with benign lesions in proximal femur from January 2010 to January 2015. Internal fixation (IF) was adopted in 110 patients while endoprosthetic replacement (EPR) was applied in 32 patients. Clinical data including operation time, blood loss, hospitalization time and hospitalization expenses were compared in two groups. Limbs mobilizations were evaluated by Musculoskeletal Tumor Society Score-93 (MSTS-93) and Harris Hip Scores (HHS) while local recurrences and complications were statistically compared. **Results:** The average follow-up was 66 months (range, 32-84). The operation durations and hospitalization time were statistically less in EPR group ($p<0.05$, $p<0.05$) while blood loss and hospitalization expenses were significantly higher in EPR group ($p<0.05$, $p<0.05$). Functional outcomes of MSTS-93 and HHS were higher at the 3-week follow-ups in EPR group ($p<0.001$, $p<0.001$), while lower at 6-month follow-ups ($p=0.031$, $p=0.042$). No significance were observed at 3-months follow-ups in two scores ($p=0.261$, $p=0.134$). Local recurrence and complications of two groups had no significant difference ($p=0.895$, $p=0.942$). **Conclusion:** The strategy for proximal femur benign lesion should be dependent on site, size, initial diagnosis of lesion and thinning degree of cortical bone. IF and EPR both have satisfied local control, functional and radiological results, while EPR is more suitable for aggressive and recurrent lesion, acting as an effective measure for failure of IF.

Abstract no.: 50983

AETIOLOGY OF PAEDIATRIC SUPRACONDYLAR HUMERUS FRACTURE: A FIVE-YEAR REVIEW

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Introduction: Fracture during childhood following trauma has been the main cause of mortality, morbidity, disability and socio-economic burden. Supracondylar humeral fractures make up to 18% of all paediatric fractures and as far as 60% of paediatric elbow fractures. Aim of this study is to determine specific etiology in which this injury may occur. Methods: Retrospective study was conducted at our center from January 2013 to December 2017 where 93 cases were recorded. Results: Boys accounted for 71% of the fractures. The average age of the injured children was 6 years old where the youngest child was 1 year old and oldest was 12 years old. 81 cases were found among school going age children which is 4 years and above while the other 12 were toddlers. They were falls at playground (36%), falls from bicycle (23%), falls that occurred at school (15%) and falls from tree (12%). Discussion: Our results show that this type of fracture occurred more often in boys compared to girls. We also noticed that our population had accepted the practice to take a child as pillion rider while riding a motorcycle as a norm contributing to the 4 motor vehicle accident cases from our data. Unique to our semi-rural location, 8 cases were due to falls from trees which is a common outdoor activity amongst children here. Conclusion: This injury occurred most commonly in school going boys who are active outdoors and had sustained falls on an out-stretched hand.

Abstract no.: 50984

**INDIRECT REDUCTION TECHNIQUE USING A DISTRACTION SUPPORT
IN MINIMALLY INVASIVE PERCUTANEOUS PLATE OSTEOSYNTHESIS
OF DISTAL FEMUR FRACTURES**

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To describe an indirect reduction technique during minimally invasive percutaneous plate osteosynthesis (MIPPO) of distal femur fractures. Between March 2014 and October 2016, 26 patients sustaining distal femur fractures were included. 19 patients were type A and 7 patients were type C according to AO classification. Operations were performed on an average of 5.6 days (range, 2-14 days) after the trauma. All the patients underwent MIPPO for the fractures using a distraction support prior to insertion of the plate. Fracture angular deformity was assessed by goniometer measurement on preoperative and postoperative images. Functional outcome was evaluated using the Schatzker's and Lambert criteria. Preoperative radiographs revealed a mean of 8° (0-16°) angulation in coronal plane and a mean of 16.8° (5°-38.6°) angulation in sagittal plane. Postoperative anteroposterior and lateral radiographs showed a mean of 1.8° (0-3.2°) and 2.5° (0-3.8°) of varus/valgus and apex anterior/posterior angulation, respectively. No intraoperative or postoperative complications were noted. Twenty-five patients were followed up for 12 to 28 months (average, 18 months). There were one delayed union and one non-union. Radiographic evidence of bridging callous was present at 3 to 6 months (average, 4 months) for the other patients. 22 patients were excellent and 3 patients were good according to Schatzker's and Lambert criteria. This study suggests that using distraction support during MIPPO of distal femur fractures is an effective and safe method with no associated complications.

Abstract no.: 50989

**MELIOIDOSIS: A SIX-YEAR REVIEW OF ORTHOPAEDIC
MANIFESTATION AND MANAGEMENT**

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Introduction: Melioidosis is a tropical infectious disease with a high mortality rate that is caused by the gram negative bacillus *Burkholderia Pseudomallei*. It is a soil saprophyte and is endemic in South Asia, South East Asia and tropical Australia. This disease involves multiple organs such as liver, lung, spleen and other visceral organs, however involvement of the musculoskeletal system is rare and usually follows dissemination from an infection elsewhere in the body. Methods: We performed a retrospective analysis of all confirmed cases of melioidosis obtained from medical records over a 6 year period from January 2012 to December 2017 at our institution. Results: Thirty nine patients with culture- positive for *Burkholderia pseudomallei* were identified. The median age of the patients was X (range of 9 to 75 years old). There were more male patients (n=29) than females (n=10). The presentations were septic arthritis (12 patients), limb abscesses (16 patients), osteomyelitis (2 patients), necrotising fasciitis (2 patients), and infected diabetic foot ulcers (2 patients). Discussion: Melioidosis is common in the state of Pahang with a high annual incidence and mortality rate. This is possibly due to higher exposure to soil or contaminated water while engaging in agricultural activities or occupational demands. A high proportion of our patients are diabetics (80%), which is a known risk factor for developing melioidosis. Conclusion: Melioidosis is an uncommon condition in orthopaedics that presents with challenges in management and thus requires a high index of suspicion, and aggressive management to decrease morbidity and mortality especially in endemic countries.

Abstract no.: 50990

MRSA NASAL COLONISATION RATES AMONG OPERATING ROOM PERSONNEL

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Introduction: Methicillin- resistant *Staphylococcus aureus* (MRSA) is a major hospital acquired pathogen that is often difficult to manage resulting in severe morbidity and mortality worldwide. Colonized healthcare workers remain an important source of MRSA. Nasal carriage of this pathogen amongst operating room healthcare workers is a common cause of surgical site infection. The purpose of our study was to assess the prevalence of MRSA colonization amongst operating room healthcare workers during an outbreak at our institution. Methods: Nasal swab cultures were performed in 598 operating room staff, screening for methicillin-resistant *Staphylococcus aureus* and were cultured on blood and mannitol salt agar. Those screened comprised of doctors and healthcare workers from orthopaedics, general surgery, obstetrics and gynaecologists, dentists, ORL and anaesthesiology unit. Results: A total of 598 operating room staff and doctors were screened. Of those screened, 45 (7.5%) were nasal carriers of MRSA. Highest MRSA nasal carriage rate of 78% (35/ 45) were seen in doctors. Discussion: Although *staphylococcus aureus* are normal commensals of our skin, methicillin resistant strain continues to cause increasing mortality and morbidity in clinical setting and is associated with life threatening infection and increase in surgical site infection. Conclusion: This study revealed that the prevalence of nasal carriage of MRSA was highest among doctors and had most likely been the contributing factor in the MRSA surgical site infection outbreak. The high rate of nasal MRSA colonization among doctors is alarming and highlights the need for improved infection control measures at our institution.

Abstract no.: 50992

PELVIC INCIDENCE IN AN ASIAN POPULATION

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Background: Pelvic incidence is a measure formed by the upper end plate of sacrum with that of midpoint of line connecting the centre of femoral heads in standing position. It has been attributed as an important risk factor causing slippage of vertebrae at L5-S1 level. Its value has been documented in Caucasian population. Literature evidence of its value in Asian population especially in Indian population has not been documented. To find correlation between the three variables pelvic incidence, pelvic tilt and sacral slope. Materials and methods: 77 patients with spinal complaints coming to Orthopaedic OPD were included in the study. All patients underwent standing AP AND LAT view of Lumbosacral spine, underwent analysis of Pelvic Incidence, Pelvic tilt, Sacral slope using image works CR 10.20 Mach 7 Technologies Software System [IWCR Rockey 10.20 DICOM Workstation]. Results: Mean +/- 2 S.D Pelvic incidence, Pelvic tilt, and Sacral slope were 29* to 73*, 1* to 29*, 25* to 57* respectively. There was no correlation between pelvic tilt and Pelvic incidence or Sacral slope and Pelvic incidence, whereas there was positive correlation between Pelvic incidence and summation of pelvic tilt and sacral slope. Conclusion: The above parameters range may be used as a measure of Pelvic incidence, Pelvic tilt, and Sacral slope in Indian population. However, the above parameters need to be analysed in asymptomatic healthy volunteers too.

Abstract no.: 50994

PROXIMAL HUMERAL FRACTURE DISLOCATIONS MANAGED WITH LOCKED PLATES: A RETROSPECTIVE STUDY

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Fracture-dislocation is the extreme variant of injury to the proximal humerus which occurs more commonly in young adults due to high velocity trauma. The aim of this study was to evaluate the outcome and clinical results of fixation of proximal humerus fracture-dislocations with locked plates. 37 proximal humerus fracture-dislocations in 35 patients (29 men and 6 women) with a mean age of 35 years (range 19-55 years) treated by ORIF with locked plates between January 2010 and January 2016 were retrospectively reviewed. 85% the cases were the result of high energy trauma resulting in 3 or 4 part fracture-dislocation. 29 cases had an anterior while 8 had a posterior fracture dislocation. 16 of the 37 fracture-dislocations were on left and 21 on the right side. The average time from injury to surgery was 7 days (range 1-35 days) and all the cases were followed up for a mean of 36 months (range 24-60 months). At the final follow-up, the mean forward flexion was 129 degrees (range 100-160 degrees), mean abduction 128 degrees (range 100-150 degrees). Mean Constant score at final followup was 78 points (range 68-88 points). 1 case of complete osteonecrosis of humeral head (ONHH) was noted at 18 months follow-up in a 55 year old female with an anterior fracture dislocation. Majority of patients with 3 and 4 part proximal humerus fracture dislocation can achieve good function and get back to their normal pre injury work and activities after ORIF with locked plates.

Abstract no.: 50995

IMPROVISED COMPUTER-ASSISTED WOUND AREA ASSESSMENT

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Introduction: Wound healing is a complex process that depends on several variables. Objective assessment has not been standardized and several methods have been proposed. We propose a new and accurate method to measure wound area. Aims: To accurately measure area of wounds; compare the new method to already existing methods. Material & Methods: Fifty three wounds (mostly of traumatic origin) were selected for the study. Wounds were debrided and the dimensions were calculated from the digital photographs taken. A scale was placed near the wound that acted as a reference point. Using Adobe® Photoshop® CS6 digital mapping and overlapping, the area was calculated by the software. A mean of 3 readings was used for analysis. This was compared to a quad paper area analysis by tracing the wound edges on a transparent film. Serial photos and quad paper markings were taken over time to assess the wound's progress. Results: The analysis showed a $100\pm 5\%$ of the standard measurement for all the wounds except two large wounds ($80\pm 10\%$). Conclusion: This new method was not only fast and accurate but was easy and more comfortable to the patient as no physical contact was actually made with the wound, so no pain. We recommend the usage of this technique for assessment of wound healing.

Abstract no.: 50996

MANAGEMENT OF MOREL LAVALLEE LESION ASSOCIATED WITH PELVI-ACETABULAR FRACTURES

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Morel-Lavallee (ML) lesion is a common but uncommonly diagnosed soft tissue injury associated with pelvic and acetabular fractures. This study was undertaken to analyse the outcome of ML lesions associated with pelvi acetabular fractures managed by a protocol based intervention in a level one trauma centre of a developing country. All patients with pelvi-acetabular fractures from Jan 2012-Dec 2017 were evaluated for soft tissue condition on arrival. On the diagnosis of ML lesion irrespective of the time lag from the injury, the lesions were treated initially by the same protocol of percutaneous drainage and suction drainage followed by evaluation of the skin and soft tissue damage. Cases developing skin necrosis or areas of eschar formation due to the high severity of the soft tissue injury were taken up for formal debridement and removal of the eschar and the debridement of the involved area. Out of the total 37 patients, 16 patients had acetabular fracture while 21 patients had pelvic fracture. The formal procedure of percutaneous drainage was successful in nearly all cases except those cases which had deep abrasions which lead to eschar formation and required formal debridement with negative pressure wound therapy followed by Spilt skin grafting. Management of ML lesions presents a challenging situation especially so in countries with limited resources. We recommend that all cases should undergo percutaneous drainage irrespective of the duration of injury. Only exceptions are cases with deep soft tissue abrasion on presentation.

Abstract no.: 50998

COMPARISON OF THE SCHATZKER AND REVISED DUPARC CLASSIFICATION SYSTEMS AND THE ROLE OF COMPUTERISED TOMOGRAPHY IN TIBIAL PLATEAU FRACTURES: A HOSPITAL-BASED PROSPECTIVE STUDY

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Background: Tibial plateau fractures are common among the young, following direct trauma to the knee and are often difficult to treat because of its subcutaneous location. Classification of the fractures, extent of displacement and degree of comminution must be accurately defined before treatment. We conducted this study to compare X-ray based Schatzker and CT based revised Duparc classification in pre-operative assessment of tibial plateau fractures and its management. **Methods:** We recruited 67 patients from Orthopaedic OPD/ Emergency Department between Aug 2014 and May 2016 after obtaining informed consent. X-rays and CT scan were reported by a trained radiologist. A trained orthopaedic surgeon reassessed, classified and formulated a management protocol based on X-ray first, followed by CT scan. **Results:** We observed fractures among men (91%) with median age of 40 years. 79.1% (53/67) sustained a closed fracture and 55.2% (37/67) were left sided. Detection rate of fracture on X-ray was 95.5% (64/67) while those classified with Schatzker were 76.1% (51/67) and CT based Duparc classification were 89.6% (60/67). 12 out of 20 patients planned for conservative management based on Schatzker classification were taken up for surgery after Duparc assessment and 19.2% patients required additional bone grafting after CT assessment both of which were statistically significant ($p < 0.001$). **Conclusion:** CT based Duparc classification improved both detection and classification rate as compared to X-ray (Schatzker Classification) and lead to significant change in pre-operative plan, indicating surgical intervention in a larger population, also influencing surgical modality.

Abstract no.: 50999

SURGICAL MANAGEMENT OF METASTATIC LESIONS OF THE PROXIMAL FEMUR WITH PATHOLOGICAL FRACTURES USING INTRAMEDULLARY NAILING OR ENDOPROSTHETIC REPLACEMENT

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Introduction: The aim of the present study was to evaluate the clinical, functional and oncological outcomes of patients who underwent EPR compared to IMN for the treatment of proximal femur metastases to investigate the surgical indication for patients. **Methods:** The records of patients (n=88) with pathological fractures secondary to metastatic tumors of the proximal femur admitted between January 2005 and December 2014 to West China Hospital, Sichuan University (Chengdu, China) were retrospectively studied. **Results:** The median follow-up period was 12.9 (range, 3-98) months. The median survival time in EPR was 10.0 months and 7.5 months in IMN. The surgery time was 142.6 ± 22.7 min in the EPR group and 98.7 ± 19.5 min in the IMN group ($P=0.001$). Significantly less blood loss was observed in the IMN group (345.2 ± 66.4 ml) than in the EPR group (631.5 ± 103.6 ml; $P=0.001$). The median hospital stay in the EPR group was 8 (quartile range, 7-9) days and 5 (quartile range, 5-6) days in the IMN group ($P=0.001$). Local recurrence rate was 10.5% (6/57) in the EPR group. EPR is recommended for patients with relatively good general condition and prognosis. **Conclusion:** EPR has the advantage of better functional outcomes and higher life quality in the long term, with lower complication rates in treating metastatic lesions of the proximal femur with pathological fractures. EPR is recommended for patients with relatively good general condition and prognosis. IMN is best indicated when the patient's life expectancy is extremely limited.

Abstract no.: 51000

A FIVE-YEAR RETROSPECTIVE AUDIT OF POSTERIOR MALLEOLAR FRACTURES

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Background: posterior malleolar fractures are associated with poor outcome and there has been recent debate about when to fix them. The present study reviewed the current practice in the Cardiff and Vale region. Method: a retrospective audit of all patients who had an open reduction and internal fixation (ORIF) in the Cardiff and Vale University Health Board (CAVUHB) between August 2012 and January 2018 was performed. The British Orthopaedic Association Standards for Trauma (BOAST) 12 was used as a guideline. The electronic clinical records and radiographs were reviewed and the patients fracture pattern, type of fixation and follow up was recorded. Results: a total of 837 ankle ORIFs were performed, of which 282 (33.7%) had a posterior malleolar fracture (PMF). Of the PMF, 175 (62.0%) were tri-malleolar fractures, 91 (32.7%) were bi-malleolar and 16 (5.7%) were isolated posterior fractures. 82 (29.1%) PMF were fixed (51 with a plate and 31 with screws). Of the 200 PMF that were not primarily fixed, 68 received a syndesmosis screw. Only 39 (13.8%) received a pre-operative CT scan, of which 18 (46.15%) occurred after the introduction of BOAST 12. The average time to theatre was 5.55 days and 270 (95.7%) patients were followed up within 6 weeks. Conclusion: there is currently no guideline to determine when PMFs should be fixed and the decision varies between surgeons. Recent publications have called for the routine use of pre-operative CT scanning. Long term outcome data is needed to further evaluate the merits of fixation.

Abstract no.: 51002

IS PARKINSON'S DISEASE ASSOCIATED WITH WORSE OUTCOMES FOLLOWING HIP REPLACEMENT AFTER HIP FRACTURE?

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Introduction: The prevalence of Parkinson's disease (PD) is increasing across the globe. This condition imparts a significantly increased risk of hip fracture. A retrospective cohort analysis was performed to establish whether patients with PD had worse outcomes following hip replacement surgery (HR) for treatment of acute fractures by evaluation of revision rates along with indications for revision and mortality rates. Methods: Patients who underwent HR surgery following acute hip fracture between 2005 - 2012 with PD were identified using datasets available through the Swedish Hip Arthroplasty Register (SHAR). A control group was generated, with 1:3 matching for sex and age. Risks of revision and mortality were compared at points over the 7-year study period, using Kaplan-Meier and Log-rank testing; p-values <0.05 were considered statistically significant. Results: Risk of mortality did differ at 30 days (p=0.034), at 1 year (p=0.002) and at 7 years (p<0.001) with increased mortality for PD patients (p<0.001). Risk of revision did not differ at 30 days (p=0.16). At 1 and 7 years, revision was higher for PD patients (p=0.007). Overall, indications for revision observed in the PD group were predominantly for dislocation/instability. Conclusion: Patients with PD had worse outcomes following total or hemiarthroplasty following hip fracture, with increased risks of revision and long-term mortality. In order to improve outcomes in this patient population further investigations are needed to analyse the reason for increased revision. As increased incidence of hip fracture sustained by PD patients is predicted, a true multidisciplinary approach must be considered to improve outcomes.

Abstract no.: 51006

FUNCTIONAL OUTCOME FOLLOWING BIPOLAR PROCEDURE FOR RECURRENT DISLOCATION OF SHOULDER: INCLUDING ULTRASOUND AND STRENGTH ASSESSMENT OF THE INFRASPINATUS

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Background: In comparison to isolated Bankart repair, bipolar procedure is a better option for recurrent shoulder instability with large Hill-Sach lesion. Infrapinatus strength and capsulotenodesis may influence functional outcomes. Since both could be affected after remplissage, it is necessary to document their strength and healing. **Methods:** In a cross sectional study done between January 2013 to December 2016, patients of traumatic anterior shoulder instability treated by a single surgeon with arthroscopic Bankart repair and Hill-sachs remplissage were assessed. The primary outcome measures were Infrapinatus isometric strength as assessed by a dynamometer and infrapinatus tenodesis with posterior capsulodesis healing documented by dynamic ultrasound. Secondary outcomes include active range of motion and clinical scores (Walch-Duplay, Constant- Murley, Oxford and shoulder subjective value). **Results:** The mean follow-up was 28.4 months (minimum 6 and maximum 48 months). Mean Infrapinatus strength (SD) compared between operated and the non-operated side was 8.25 (1.25); 9.97 (1.65), $p < 0.001$ respectively. A good capsulotenodesis and filling of the Hill-Sach defect was confirmed by dynamic ultrasound imaging. Mean difference in external rotation and internal rotation between operated and non-operated side were -18.53, $p < 0.001$ and -13.66, $p < 0.001$ but with good functional range. The mean clinical scores showed good improvement as compared to preoperative status ($p < 0.0001$). **Conclusion:** Bipolar repair with Bankart & Remplissage is a reliable approach to treat recurrent instability. Though infrapinatus strength, internal and external rotation difference is statistically significant, it does not affect the functional outcomes and there was significant improvement in post-operative clinical scores.

Abstract no.: 51012

**IN VITRO EFFECT OF STRESS ON BASIC FIBROBLAST GROWTH
FACTOR: POLY(LACTIC-CO-GLYCOLIC-ACID)MICROSPHERE
DEGRADATION AND DRUG RELEASE**

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Objective: To study the effects on basic fibroblast growth factor - poly(lactic-co-glycolic-acid) microsphere (bFGF-PLGA MS) degradation and bFGF release under stress in vitro. Method: BFGF-PLGA MSs were carried out into two instruments respectively to perform degradation and drug release experiments. In static pressure loading experiment, normal (atmospheric), 0.35MPa, 4.0MPa pressure loading and shaking flask oscillation groups were designed to perform bFGF-PLGA MS degradation and bFGF release. In shearing force loading experiment, experimental group with 1000ml/min output of pulsating pump and control group with 10ml/min were performed to carry out degradation and drug release experiments. Changes of bFGF-PLGA MSs, including microsphere morphology, microsphere quality, weight-average molecular weight of polymer and microsphere degradation and bFGF release, were analyzed respectively. Result: 1) In static pressure loading experiment, microsphere degradation and drug release in 4.0MPa pressure loading group were quicker than these' in normal and 0.35MPa pressure loading groups, with significant differences ($P<0.05$). Especially microsphere degradation and drug release were fastest of all in shaking flask group. 2) In shearing force loading experiment, there were no distinctive difference in the rates of microsphere degradation and drug release between experimental and control group ($P>0.05$), which by shaking flask oscillation were obviously faster than those by shearing force only ($P<0.05$). Conclusion: Static pressure has a conspicuous influence on bFGF-PLGA MS degradation and release, especially in pressure of 4.0 MPa. The shearing force has minor effect on bFGF-PLGA MS degradation and drug release. On the contrary, shaking flask oscillation is a distinctive facilitation effect.

Abstract no.: 51015

IS THERE A DIFFERENCE IN IMMEDIATE COMPLICATIONS AND RECOVERY FOLLOWING BILATERAL SIMULTANEOUS TOTAL KNEE REPLACEMENTS PERFORMED USING EITHER NAVIGATION OR CONVENTIONAL METHODS?: A COMPARATIVE STUDY

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Introduction: The management of bilateral knee osteoarthritis is challenging. Surgeons are sceptical about BSTKR due to recent literature suggesting risk of cardiac/embolic complications, need for blood transfusions, rehabilitation and early mortality. Navigation assistance by avoiding breach of femoral medullary canal could reduce these issues.

Methods: This retrospective study compared data in patient groups (navigation or conventional). Data included age, body mass index (BMI), ASA grade, tourniquet times, blood transfusions, day mobilised, length of stay (LOS), cardiac/embolic complications, reoperations and mortality.

Results: Out of 60 patients, 21 had navigation assistance and 39 conventional methods. Though average age was less in navigation group (65 vs 69.5 years), their ASA was high (2 vs 1, p value 0.068). The average tourniquet time was less in navigation group (66.71 vs 81.61 minutes, p value 0.001), contrary to literature findings. This could be due to more posterior stabilised components and patellae resurfaced in conventional group. No cardiac/embolic complications or mortality were reported in either groups, prior to discharge. 3 patients (7.7%) in conventional group needed blood transfusions whilst none (0%) needed in navigation group. The LOS and BMI were comparable but navigation group mobilised marginally earlier (1.47 vs 1.59 days). One patient in each group needed manipulation under anaesthesia. All patients were discharged home. 38.33% of patients in both groups were above 70 years of age.

Discussion: Navigation assistance has shown to reduce the need for blood transfusions and allow early mobilisation. Even elderly patients with high ASA could safely be considered for BSTKR.

Abstract no.: 51016

ROLE OF STAGED APPROACH IN FUNCTIONAL AND RADIOLOGICAL OUTCOME OF HIGH ENERGY TIBIAL PLATEAU FRACTURES: A RETROSPECTIVE STUDY

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With rapid increase in incidence of high velocity trauma, high energy tibial plateau fracture is also on rise. The impact of trauma is not only on bony component but also on the soft tissue components. We intended to study the functional and radiological outcome in high energy tibial plateau fractures managed in a staged manner. All patients operated from Jan 2010-Jan 2015 for high energy tibial plateau fractures (Schatzker's type V and VI) in a staged procedure were reviewed and included in the study[n=44]. All patients underwent knee spanning external fixator initially and definitive fixation was performed after improvement in soft tissue conditions with either through single (anterolateral approach) or dual incision (anterolateral and anteromedial or posteromedial approach) based on fracture pattern. At periodical intervals follow-up was done to assess knee function, lowa clinical scores and radiographic scores. The average age was 40.85 years. The average time from injury to definitive surgical fixation was 7.8 days. Mean duration of follow-up was 25 months. Most of the patients underwent anterolateral approach and anterolateral plate fixation [n=44], additional posteromedial or medial buttress plating used in 20 patients. Mean Range Of Motion was 120.9 degrees. Mean IOWA knee score at the last follow up was 89.2 with good radiological outcome. Complications noted in this series were two superficial infection, one deep infection and one varus collapse. In High velocity injuries like Schatzker's type V & type VI tibial fractures , staged fixation provides excellent outcome with good knee function, radiological appearance and less complications.

Abstract no.: 51017

SAFE USAGE OF MINIMALLY INVASIVE CERCLAGE WIRE PASSERS IN THE FEMUR: A TECHNICAL REPORT

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Minimally-invasive (MI) cerclage wiring allows smaller incisions and less tissue dissection compared to the conventional wire passer. We identified 3 common sites of cerclaging: lesser trochanter (LT), mid-femur (MF) and adductor tubercle (AT) and studied their safe zones when using conventional and MI cerclage passers. 50 limbs from 43 subjects who underwent computed-tomographic angiography were studied. The shortest distance from the superficial femoral artery (D-SFA) and proximal femoral artery (D-PFA) to the femur at the LT, MF and AT was recorded. There were 27 left-sided and 23 right-sided limbs. Mean D-SFA at the LT, MF and AT was 41.7mm (28.8-53.1mm), 30.6mm (18-42.1mm) and 10.8mm (3.7mm-19.7mm) respectively. Mean D-PFA at the LT and MF was 26.1mm (14.4-33.7mm) and 3.6mm (1.1-7.9mm). At the LT, the SFA and PFA were consistently at 1 to 2 o'clock (anteromedial). At the MF, the PFA was consistently at 5 to 7 o'clock (posterior) and SFA at 2 to 4 o'clock (medial). During assembly of the MI cerclage passer, the jaw of one forceps extends forward and may catch on the vessel. We propose a safe technique that takes into consideration the position of the extending forceps-jaw and angle at which this forceps-couple is inserted to minimize the risk of vascular injury. In addition, the locations of the SFA and PFA are consistent despite variability of their distances to the femur.

Abstract no.: 51022

IDEAL IMPLANT FOR STABLE OLECRANON FRACTURES?: AN ECONOMIC EVALUATION

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Introduction: Olecranon fractures are common and are usually treated surgically with tension band wiring (TBW) or plating. Plating has gained popularity from its purported biomechanical superiority, lower implant removal and failure rate albeit at significantly higher cost. Recent evidence suggesting similar clinical outcomes between plating and TBW has questioned the cost-effectiveness of plating particularly in stable olecranon fractures. An economic evaluation was performed to investigate this. Methods: Retrospective cohort study of surgically treated Mayo 2A olecranon fractures in a tertiary hospital from 2005 to 2016. Treatment status (Plate or TBW), range of motions (ROM), complications and demographics were collected from case notes. Inpatient and outpatient healthcare utilisation costs 1-year post-surgery was extracted from an administrative database. Costs across the study period was adjusted to 2014 levels using locally published inflation rates. Results: 147 patients were included (53 plate, 94 TBW). No differences in ROM at 1-year follow-up were found between plating and TBW. Complication wise, plating had more wound infections while the TBW had higher occurrences of symptomatic hardware, implant failures and implant removals. Plating was associated with higher index surgery costs (\$SGD10,313.64 vs \$SGD5,896.36) and 1-year healthcare utilisation costs (\$SGD15,383.25 vs \$SGD9,746.82). Conclusion: Olecranon plating is associated with higher index surgery costs driven by implant costs. Despite TBW being associated with more complications in particular implant removal, 1-year healthcare utilisation costs for plating patients remained significantly higher. Without clear differences in clinical efficacy between TBW and plating, TBW appears the ideal cost-effective implant for Mayo 2A olecranon fractures.

Abstract no.: 51023

ARTHROSCOPIC TREATMENT OF CHRONIC MASSIVE RUPTURES OF THE ROTATOR CUFF

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INTRODUCTION: A complete rupture of the rotator cuff is noted in 20% of the population. About 25% of total ruptures are massive – two or more tendons. A sign of massive damage is pseudoparalysis of the shoulder, which occurs in 20% of patients. **METHODS:** From 2015 to 2016 in our Clinic were operated on 147 patients with rotator cuff tears the prescription from 2 weeks to 24 years. The age of the patients ranged from 22 to 80 years ($57,8 \pm 8,1$). The inclusion criteria were long-standing ruptures of the rotator cuff 3 to 18 months after injury (106 patients) aged 50 to 78 years (60.7 ± 5.1). Of the 106 patients with chronic rotator cuff tears, postoperative results were studied in 34 patients (15 men and 19 women), mean age of 59.3 ± 6.2 years. Patients were operated with the use of fixators Crossfit, Healix, Magnum 2 and SpeedScrew. **RESULTS:** After arthroscopy in patients there was an improvement in the amplitude of flexion, extension and withdrawal by 58%, 28% and 57%. Recovery of shoulder function on the Constant Care scale was $85 \pm 6.3\%$. Patient satisfaction with treatment on a scale SRQ was 74.9 ± 13.4 points. **CONCLUSION:** Arthroscopic reconstruction of chronic massive rotator cuff injuries can be considered the method of choice.

Abstract no.: 51025

LONG-TERM FUNCTIONAL RESULTS OF DRAINAGE WITH PRIMARY TOTAL HIP ARTHROPLASTY

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Introduction: The use of closed suction drains with primary total hip arthroplasty is still an open question, especially in the study of large groups of patients. **Methods:** We conducted a prospective, randomized, controlled trial at our university clinic in group of 1889 patients who underwent primary total hip replacement from 2012 to 2015. Patients were randomized into two groups, in the drainage group 970 and in the group without drainage 919 patients, difference in groups some extent indicated the habit of many surgeons to use drains routinely. The men were 809 (42.83%), and women 1080 (57.17%), middle age was 61 years (50% of patients were between 52 and 68 years old). With a minimum postoperative follow-up period of 3 years. Primary outcomes were hemoglobin loss and number of patients transfused, hematoma formation and wound complications. Secondary outcomes included functional outcome evaluated with Harris hip score (HHS), pain evaluated with visual analogue scale (VAS), and length of hospital stay. **Results:** In the wound drainage group, there were significantly more patients who required blood transfusions (80/970 compared with 24/919, $p = 0.05$). In terms of the number of complications, the length of stay in the clinic, and the long-term results in HHS or pain of VAS, there was no statistically significant difference between the groups. Thus, we can conclude that the routine use of drainage with total hip replacement is not important.

Abstract no.: 51029

THE EVOLUTION OF OLECRANON FRACTURES AND THE FIXATION STRATEGIES

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Introduction: Olecranon fractures are common upper extremity fractures. The primary objective was describing the evolution of olecranon fractures and its fixation options. The secondary objective was clinical outcomes of tension band wiring (TBW) vs plate fixation. Methods: Retrospective study of surgically treated olecranon fractures in TTSH from 2005 to 2016. Demographic data, fracture configuration, surgery details, range of motions (ROM) and complications were collected. Results were grouped into 2 groups (Group 1 2005-2010, Group 2 2011-2016) and compared against each other. Results: 266 patients were identified (Group 1 113, Group 2 153). Demographics wise, Group 2 had more patients with a higher American Society of Anaesthesiologist (ASA) score and higher mean age. Fracture configuration wise, there was a shift in both Mayo and Schatzker classifications towards more comminuted subtypes from Group 1 to Group 2. Implant wise, there was very significant increase in plating from Group 1 (34.5%) to Group 2 (74.5%). Clinical outcome wise, equal ROMs were achieved between TBW and plating but TBW had higher failures, symptomatic hardware and implant removal rates. Conclusion: Our study shows a clear trend of older, sicker patients presenting with more unstable olecranon fracture patterns suggesting it's recognition as a "fragility fracture". This prompts clinicians to manage both the fracture and underlying osteoporosis appropriately. However, this trend cannot fully explain the drastic increase of plating over the same period. Our data and current literature have suggested possible superiority of plating, however with its higher cost, cost effectiveness of plating is currently uncertain.

Abstract no.: 51035

RESULTS OF HIP REPLACEMENT IN PATIENTS LESS THAN 30 YEARS OF AGE

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Total hip replacement is commonly performed for secondary osteoarthritis in young patients in the Indian population. The aim of this study was to assess the results of hip replacement in young patients of age less than 30 years. 60 hips in 40 patients with mean age of 26 years (range, 16 to 30 years) that underwent hip arthroplasties between 2007 and 2015 were evaluated. Mean follow-up was 7 years (range, 2 to 10 years). Most common diagnoses were Avascular Necrosis of Femoral Head (30.7%), Ankylosing Spondylitis (27.3%), Rheumatoid Arthritis (9.1%), Post-traumatic secondary osteoarthritis (8%), Tubercular arthritis (5.7%) and others. Ceramic on Ceramic bearing surface was used in 35 hips, Metal on Metal in 10 hips, Metal on Poly in 5 hips and Ceramic on Poly in 10 hips. Standard size femoral stem was used in 40 hips while short stem was used in 20 hips. There was marked improvement in Modified Harris Hip score and Oxford Hip score from the pre-operative period to the latest follow-up. Modified Harris Hip score improved from 30.45 (range, 5 to 76) to 82.28 (range, 52 to 91) while Oxford Hip score improved from 15.9(range, 2 to 40) to 42.2 (range, 21 to 48). 84.11% of the acetabular components were osseointegrated and 82.24% of the femoral stem had stable bony growth at the latest follow-up. There was one case of dislocation and another case of superficial infection. No patient underwent revision. Total hip arthroplasty in young patients restores mobility and has good results at intermediate follow up.

Abstract no.: 51036

MULTIPLE LEVEL SPONDYLOLISTHESIS: INSTRUMENTED POSTEROLATERAL FUSION AND LOCAL GRAFTING

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Introduction: Lumbar spondylolisthesis is a major cause of back pain and it occurs most commonly at only one spinal level. In this series we report 11 cases of spondylolisthesis at multiple levels. **Material and Methods:** Eleven patients with multiple level lumbar spondylolisthesis were operated up on between 2010 and 2015 (6 males, 5 females) at Qena university hospital, south valley university. The mean patient age was 40 years (20-60). The mean duration of low-back pain was one year. All patients underwent pedicle screw fixation, posterolateral fusion using local graft from decompression plus or minus tips of the nearest two or three spinous processes over the well-prepared transverse processes of the slipped vertebrae and those of the next one. Clinical outcome was evaluated using VAS, ODI scores same while radiological evaluation for fusion achievement. **Results:** The mean follow-up time was 25 months (range 14–36). The functional outcomes using VAS and ODI scores improved significantly ($P<0.05$), from the preoperative status with no significant difference in relation to patient gender or age group. Radiologically, Solid fusion where achieved within 6 months. One screw breakage, no dislodging, or loosening of the pedicle screw hardware was observed for any patient one case was infected and managed conservatively. **Conclusion:** Multiple-level spondylolisthesis in lumbar spine can be treated efficiently as single level spondylolisthesis using posterolateral fusion and local graft which is a simple, rapid and easy method that avoid the graft donor site morbidity.

Abstract no.: 51037

THE USE OF 3D-PRINTED CUSTOM-MADE ACETABULAR IMPLANTS IN PRIMARY HIP ARTHROPLASTY

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Introduction: the main application area of individual acetabular implants is the revision hip surgery. But, in some primary cases, we can see severe acetabular defects with indications for the use of such implants. It can be severe hip dysplasia, posttraumatic hip arthritis, protrusion hip arthritis etc. We have analysed our experience of the use of 3D-printed acetabular implants in primary hip arthroplasty. Methods: since August 2017 we have used custom-made acetabular implants in 12 primary cases. Among our patients were ten women and two men. Mean age was 55,7 yrs (from 35 to 79 yrs). Indications for the THA were: dysplastic hip arthritis in 7 cases (58,3 %) (Crowe 2 - 2 cases, Crowe 3 - 5 cases), posttraumatic hip arthritis in 3 cases (25 %) and protrusion hip arthritis due to rheumatoid arthritis in 2 cases (16,7 %). In 5 cases we used 3D-printed augments with standard acetabular components (with bone cement between augment and acetabular component), in 7 cases we used 3D-printed acetabular components. Before surgery, we did CT-scans of the hip with slice 0,5 mm. Custom acetabular components and augments were created from the titanium alloy (Rematitan CL) on the Concept Laser M2 Printer. In all cases, we used uncemented femoral components. Results: among these patients, there were no any cases of the hip periprosthetic infection or the loosening of the components. There was one case of the endoprosthesis dislocation, which was treated conservatively.

Abstract no.: 51040

**PRELIMINARY RESULTS OF THE NOVEL ENDO-SPACER TECHNIQUE
IN THE MANAGEMENT OF SEPTIC REVISION HIP ARTHROPLASTY**

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We have developed a novel custom made spacer in the setting of two-stage septic revision hip arthroplasty and present our preliminary results of this spacer technique. Between May 2015 and November 2017 30 patients underwent hip revision using the ENDO spacer technique in the setting of a two-stage septic exchange arthroplasty. The primary outcome measure was the overall spacer complication rate with special focus on spacer dislocation. Furthermore, functional outcome using the Harris Hip Score (HHS) before spacer implantation and prior re-implantation was evaluated. All patients were recruited for final analysis. The mean age of the patients was 69.8 years (range from 45 to 85; SD=9.9 years). No microorganism were preoperatively found in 24 (77.4 %) cases. Successful re-implantation was performed in all patients after a mean spacer duration time of 53.6 days (range, 14 to 288 days; SD=48.2). The overall complication rate in our study cohort was 16.7 %, while the spacer related complication rate was 6.7%. The HHS significantly improved from 34.0 (range, 3 to 62; SD=15.1) to 48.1 (range, 11 to 73; SD=15.7). The ENDO Spacer surgical technique is a option in the treatment of PJI, with a low dislocation rate. Furthermore, it allows early mobilisation with possible full-weight bearing and is cost-effective.

Abstract no.: 51043

SYMPTOMATIC OS PARACUNEIFORME: A RARE CAUSE OF FOOT PAIN IN A CHILD

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Accessory ossicles around the foot ankle are accepted as normal anatomic variations and they usually do not produce any discomfort or symptom. More than forty accessory ossicles or sesamoid bones around foot and ankle have been described up to date. Os paracuneiforme is one of an extremely rare accessory ossicle located on the medial side of the first (medial) cuneiform bone. This rare ossicle has not been even detected and reported in studies aiming to determine the frequency of accessory ossicles on large number of adult subjects. We describe one more adolescent patient with symptomatic os paracuneiforme treated with surgical excision.

Abstract no.: 51044

BLOOD LOSS AND ALLOGENIC TRANSFUSION FOR SURGICAL TREATMENT OF PERIPROSTHETIC JOINT INFECTION: A COMPARISON OF ONE- VERSUS TWO-STAGE EXCHANGE TOTAL HIP ARTHROPLASTY

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The amount of blood loss and the consecutive need for allogeneic transfusion can increase the risk of postoperative complications after revision total hip arthroplasty (THA). Considering the lack of studies, the purpose of the current study was to compare the blood loss and the need for allogeneic transfusion after one- and two- stage exchange arthroplasty for periprosthetic joint infection (PJI) of THA. We performed a retrospective review of all patients undergoing either one stage or two stage septic exchange arthroplasty at two high-volume infection referral centers. The study cohort consists of 90 patients undergoing the two-stage and 184 patients the one-stage exchange arthroplasty. The difference between pre- and post-operative Hemoglobin (Hb) and total blood loss as well as the allogeneic transfusion rate were compared between both groups. The mean intra-operative blood loss and allogeneic blood transfusion rate in the one- stage group were lower than in the two-stage group, counting the mean of the first and second procedures. However, among the patients of the two-stage group, there were more smokers and had worse physical status (ASA) and higher mortality risk (CCI) than patients in the onestage group. Two-stage septic revision of total hip arthroplasty has higher rates of blood loss and transfusion rates than one-stage revision. Therefore, the authors believe that blood loss rate, including its complications, should be considered when decision for the type of staged septic exchange is made.

Abstract no.: 51045

POSTOPERATIVE DIGITAL TEMPLATING IN TOTAL HIP ARTHROPLASTY: AN OBJECTIVE ANALYSIS OF PRACTICE

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Pre-operative digital imaging is being widely used for operative planning for total hip arthroplasty. However, analysis of post-operative radiographs remains empirical and prone to inter observer error. Our aim was to undertake digital evaluation of postoperative radiographs to assess the accuracy of implant position. A review of radiographs of 136 consecutive total hip replacements performed by two arthroplasty surgeons in our unit from January to December 2017 was undertaken. There were 41 males and 95 female patients. Mean age was 68.4 years (Range 50 to 84 years). Trauma CAD and Orthoview software on PACS (Fuji Technologies) was used for analysis. Parameters reviewed were limb length, position and offset of femoral stem and acetabular cup theta angle and was undertaken by two observers to eliminate bias. Mean postoperative femoral offset was 42.9 mm (Range: 23.5 to 68.5 mm). In comparison, the opposite side femoral offset was 41.7 mm (Range: 20 to 72.5 mm). Mean acetabular cup theta angle was 42.4 degrees (Range: 26-53 degrees). Mean femoral stem alignment was a varus of 0.70 degrees (Range: varus 6 to valgus 7 degrees). Mean preoperative limb length discrepancy was shortening of 3.1 mm (Range: minus 20 to plus 14 mm) and postoperative lengthening of 1.4 mm (Range: minus 15 to plus 21 mm). Post-operative digital templating is a useful analytical method for objective evaluation of total hip arthroplasty. It helps to review trends and modify practice accordingly. It can also be used as an appraisal, revalidation, research and teaching tool.

Abstract no.: 51047

NO SIGNIFICANT DIFFERENCES BETWEEN MINIMALLY INVASIVE AND CONVENTIONAL APPROACH IN HIP HEMIARTHROPLASTY REGARDING HETEROTOPIC OSSIFICATION RATES

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Literature states that heterotopic ossification (HO) occurs in up to 61% following total hip arthroplasty. However, little is known regarding HO after hemiarthroplasty (HA). The aim of the study was to compare the grade of HOs in two common approaches in hip HA. The sample included all consecutive hip HAs performed at out level-I trauma centre between March 2016 and March 2018. Either a conventional lateral or anterolateral approach (CA) or an anterior minimally invasive approach (AMIS) was performed. In concordance with patients' comorbidities, the prostheses were cemented. Hip and pelvic X-rays were evaluated concerning HOs with regard to the Brooker Classification. Of the 54 patients in the sample, 37 were female (69%) and 17 male (31%). In 26 cases (48%) the AMIS and in 28 cases (52%) a CA was performed. Thirty-seven patients (69%) received cement augmentation. The AMIS subgroup had an HO-rate of 42% and the CA sample of 50%. The occurrence of an HO was 1.6 times higher in the CA group when compared to the AMIS group ($p = .425$). The AMIS collective had a mean Brooker Scale of 1.3 and the CA group of 1.4 without statistically significant difference ($p = .515$). Further, the Odds-Ratio (OR) regarding occurrence of an HO was 1.16 times higher in patients without cemented HA in comparison to the subgroup with cemented HA ($p = 1$). No significant differences concerning occurrence and grade of HO could be found between the AMIS and CA subgroups in our sample.

Abstract no.: 51048

MULTIFOCAL OSTEOFIBROUS DYSPLASIA MIMICKING TIBIA OSTEIOD OSTEOMA: A CASE REPORT

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The purpose of this case report is to discuss the possibility of multifocal osteofibrous dysplasia with tibial diaphysis resembling osteoid osteoma clinically and radiologically. Although osteoid osteoma and osteofibrous dysplasia are two common benign bone lesions, it is not common to have a single long bone and multifocal lesions. In this case, the clinical findings and the radiologic evaluation of the tibial multifocal osteoid osteoma as a preliminary diagnosis were considered to be compatible with osteofibrous dysplasia. A 24 - year - old female patient was admitted to our clinic with a crural pain. The patient had no morbidity. The pain increased especially after physical activity and at night. No pathological findings were found in the examination. X rays of the patient, multifocal masses were found, one of which was double and the other three were single core lesions, which were placed in the cortex along a 10 cm segment, eccentrically located immediately before the tuberosity tibia on the anterior of the right tibia body. A surgical resection was performed on the proximal lesion upper limit and the lesion on the distal lesion reached below the lower limit and the lesion was covered in the vertical plane with a length of 12 cm and a width of 3 cm and extending to medullary. Prophylactic intramedullary fixation and grafting with autograft were also performed. The patient's pathology was reported as osteofibrous dysplasia.

Abstract no.: 51052

THE PRELIMINARY EXPERIENCE OF PRONE POSITIONING FOR INTRAMEDULLARY NAILING OF SUBTROCHANTERIC FRACTURES

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Introduction: We have already described a prone position for intramedullary nailing of subtrochanteric femoral fractures. It shows the potential advantages including: 1) easy approach to reduce and maintain the reduction of fracture, 2) perfect intraoperation fluoroscopic imaging on both anteroposterior and lateral view, and 3) an easy approach to establish an appropriate entry point. The aim of this study is to establish the availability of the new procedure. **Methods:** Four patients (2 males and 2 females, average 63 years of age) with subtrochanteric fractures between August 2016 to August 2017 were treated surgically with intramedullary nail undergo the procedure in the prone position. The indicators were counted including: setup time, reduction time, surgical time, fluoroscopic exposure time for insert the guide pin, reduction and in total, and modified Baumgaetner criteria for radiologic. **Results:** all the four patients were treated entirely with close reduction and intramedullary nail fixation (one InterTan, three with Trigen), 1) the average setup time was 25.5 mins, the reduction time was 4 minutes and 54 seconds, the surgical time was 207 mins, 2) the Fluoroscopic exposure time for insert the guide pin was 48 times (from 96 times in the first patient reduced to 14 times in the last), for reduction was 17 times, in total was 324 times, 3) good reduction was achieved in 3 patients, and acceptable reduction in the other one, according to the modified Baumgaetner criteria for radiologic. **Conclusions:** The prone position is practical for intramedullary nailing procedure of subtrochanteric fractures.

Abstract no.: 51055

EVALUATION OF CLINICAL OUTCOME OF AUTOGENOUS GROWTH FACTOR RICH PLASMA INJECTION VIS-A-VIS SALINE KNEE LAVAGE IN OSTEOARTHRITIS KNEE

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Introduction: Osteoarthritis or degenerative joint disease is a progressive disorder of the joints caused by gradual loss of cartilage resulting in the development of bony spurs and cysts at the margins of the joints. **Aims and Objectives:** Evaluation of clinical outcome of autogenous growth factor rich plasma injection vis-a-vis saline knee lavage in osteoarthritis knee. **Materials and Methods:** This was a prospective study conducted in Dr. D.Y. Patil Medical College Pune on 100 patients of osteo-arthritis knee admitted to the department of orthopaedics. Patients were divided in two respective groups having same amount of patients in each and were administered gprp to one group whereas the other group was treated with saline knee lavage. **Results:** All the patients were evaluated on VAS scale and of 50 patients of Group A 43 patients had excellent pain relief, 5 patients had good results and 2 patients had minimal relief. In Group B 41 patients had excellent pain relief, 5 patients had good results and 4 patients had minimal pain relief. **Discussion:** A prospective study conducted by Spakova´ T et al in 2012 a total of 120 patients with Grade 1, 2, or 3 osteoarthritis were treated. One group of patients was treated using three intra-articular applications of PRP and the second group of patients was given three injections of hyaluronic acid. **Conclusion:** On the basis of our study we concluded that there is no major difference in results of both the treatments but given a choice GFRP will be better.

Abstract no.: 51056

CASE REPORT: LISFRANC FRACTURE-DISCOLATION IN A 13 YEAR-OLD GIRL

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Background: Lisfranc fracture-dislocation is a serious and infrequent lesion in the pediatric population, although the principles of anatomical-fixation and reduction as well as maximum soft-tissue care are similar to those applied for adults. The objective of this case is to evaluate the clinical and radiological evolution of a Lisfranc fracture-dislocation in a 13-year-old girl. Methods: We present a case-report of a 13-year-old girl who suffers a fall from a wall that collapses on her left foot. Upon its arrival, the foot presented erosions, swelling and plantar edema. In radiographs and CT, fractures of the bases of 2nd and 3rd metatarsals(MTT), 3rd wedge and cuboid, as well as dislocation of the Lisfranc-joint type B2 (Myerson classification) are evidenced. The foot was immobilized. We had to wait for 14 days until the condition of soft-tissues allowed a surgical intervention that consisted of an approach between the 1st and 2nd MTT; 2nd MTT was internally fixated with a compression-screw. Subsequently, we proceeded to perform the arthrodesis with screws of the 1st,2nd and 3rd MTT with their respective wedges. Immobilization lasted for 5 weeks and then mobilization-exercises began. At the ninth week partial-load was allowed and after 3 months full-load. Results: 10 months later, the patient is able to walk without pain and her foot is plantigrade. She returned to practise sports. In control radiographs, proper reduction as well as consolidation of all fractures is observed. Conclusions: Our clinical and radiographic mid-term results are satisfactory, nonetheless we do not rule out further surgeries of sequelae in the future.

Abstract no.: 51057

ROLE OF DOME'S OSTEOTOMY FOR CORRECTION OF CUBITUS VARUS DEFORMITY IN MALUNITED SUPRACONDYLAR FRACTURE OF THE HUMERUS

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Introduction: The Supracondylar fracture of the humerus is the most frequently seen fracture in children. The metaphyseal area of the distal humerus is the weakest area around elbow. **Aims and Objectives:** Role of Dome's osteotomy for correction of cubitus varus deformity in malunited supracondylar fracture of humerus. **Materials and Methods:** It was a prospective study conducted in Dr. D.Y. Patil Medical College Pune on 25 patients malunited supracondylar fracture of humerus (cubitus varus deformity) admitted in the Department of Orthopaedics and pre-operative and post-operative angles were taken in to account along with range of motion. **Results:** Results were analyzed on the basis of on the basis of Mitchell and Adamms criteria we found 22 excellent results and 3 good results and no poor results in our study. **Discussion:** Sandegaard in his study treated 79 cases of supracondylar fractures of humerus by open reduction and internal fixation. On follow up, he found limitation of extension in 16.4% cases and varus deformity in 57% cases **Conclusion:** We concluded that closed dome osteotomy for the correction of cubitus varus deformity is safe and effective meathod which gives near normal elbow and no post-operative scar, cosmetically more acceptable.

Abstract no.: 51061

ABOUT 24 CHONDROSARCOMAS: TREATMENT AND RESULTS

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Introduction: chondrosarcomas are primary tumors of the bone producing cartilage 2nd position after osteosarcoma: 12 to 25% of malignant bones tumor primary or secondary (10%) age:> 30 years sex male ++ 2/3 1st description 1855 by volkman; Lichtenstein. Jaffe 1943 defines 5 types: central chondrosarcomas; peripheral chondrosarcomas; periosteal juxta cortical chondrosarcomas; dedifferentiated chondrosarcomas; mesenchymatous chondrosarcomas; clear cell chondrosarcomas; with surgical treatment possibility of healing and late metastases prognostic depends on 2 factors surgical excision and the histological degree; Chondrosarcomas has slow growth: the local recurrence and the metastases occurs 5 to 10 years after the excision of the primary tumor. Materials and methods: from 2010 to 2015 we have supported 24 chondrosarcomas on a series of 256 malignant bone tumors 54% is males 46% of females age between 21/40 years for half of the series; seat: pelvic 6; tibia 4; scapula 3; femur 2; fibula 2; calcaneus 2; humerus 1; distal femur 1; clavicle 1; patella 1; radius 1; treatment resection extra tumoral only for: scapula 3 fibula 2 clavicle 1 patella 1; Resection intra tumoral for the pelvic 03 cases after embolisation Resection extra tumoral 3 cases ; 1 amputation 1 disarticulation of the hip 1 calcaneus resection and 1 curettage; Resection reconstruction by cement for 3 tibia, 1 humerus; 1 radius; for distal femur 1 juvara operation. Results: contaminated pelvic resection lost 3; alive 21; dead 0; recurrence 2. Conclusion: chondrosarcomas has good prognosis the treatment is surgical.

Abstract no.: 51064

PROXIMAL FEMORAL LOCKING PLATE VERSUS PROXIMAL FEMORAL NAIL ANTIROTATION IN TREATMENT OF SUB-TROCHANTERIC FEMUR FRACTURE AMONG AN ELDERLY POPULATION

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Objectives: To compare proximal femoral locking plate and proximal femoral nail in treatment of sub trochanteric femur fracture in elderly in terms of blood loss and duration of surgery. **Methods:** A randomized control trial was conducted from March 2016 to February 2018, in Rawalpindi and Islamabad. A total of 60 patients were selected using purposive sampling which were later allocated to two groups by using sealed envelope method. Both males and females patients aged 60 and above with subtrochanteric femur fracture was included in the study. The duration of surgery and blood loss between two groups was compared. **Results:** The results were calculated using SPSS version 21. Thirty one patients 51.6 % (20 females and 11 males) were treated with proximal femoral locking plate while 29 patients 48.3 % (19 females and 10 males) were treated with proximal femoral nail antirotation. The blood loss in proximal femoral nail group (236.72 ± 41.38)ml was found significantly less as compared to proximal femoral locking plate group (341.94 ± 46.43) ($P < 0.001$). There was also a marked difference regarding duration of surgery in proximal femoral nail group (58.28 ± 7.45) min as compare to proximal femoral locking plate group (74.84 ± 11.10) min ($P < 0.001$). **Conclusion:** It was concluded from the study that proximal femoral nail is a superior intervention than proximal femoral locking plate in terms of blood loss and duration of surgery among elderly.

Abstract no.: 51065

THE SPACER'S APPLICATION ALGORITHM IN THE FIRST STAGE OF HIP PJI TREATMENT

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Background: According to science literature, PJI after THA can occur in 1%, can be the reason for the revision surgery in 1-3% [[J.Meehan, 2009,J.Parvizi, 2012). The period between the second stage is very important for further functional results and the patient's quality of life. Material and methods: We researched 38 patients who underwent two stage hip revision replacement because of PJI. During the first stage the components were removed, and the different spacers were established. The preformed spacers – 11 (28,9%); the femoral components and bone cement in acetabular cavity (39,5%); spacers made of bone cement in special silicone molds – 4 (10,4%); the individual spacers prepared by 3D technologies – 2 (5,2%); the complex spacers developed for Paprosky III a and III B with pelvic discontinuity deficit – 6 (15,9%). We evaluated the functional results before and after the first stage revision surgery. Results: The mean HHS before the first stage was 30.3. Before the second stage the mean HHS was 51,2 балла (27 - 80). According VAS pain before the first stage was 6,64 (2-10), before the second stage -4,08 (0 - 7). WOMAC scale before the first stage was 59,21 (25 -88), before the second stage the mean was 35,5 (7-68). We analyzed 8 patients with spacers complications (dislocations, fractures, migrations). And we found the worst HHS, VAS WOMAC scales data. Conclusion: We proposed the algorithm for spacers appliance according to Paprosky classification and identified the best functional results in patients with 3D spacers and complex spacers.

Abstract no.: 51066

PROXIMAL FEMORAL COMMUNITED FRACTURES TREATMENT STRATEGY: A PROSPECTIVE REVIEW IN VIEW OF RADIOLOGICAL AND FUNCTIONAL OUTCOME

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Introduction: There are various methods and implants used for subtrochanteric fractures of femur with various intramedullary and extramedullary implants with reasonable success. These require precise placement under image intensifier guidance. We proposed and designed study to identify if contralateral reversed distal femoral locking plate can be used successfully without the use of image intensifier. **Methods:** Forty consecutive patients (30 men:10 women) with a mean age of 29 years (range, 19-50 years) suffering from subtrochanteric fractures of femur were managed with open reduction and internal fixation by using reversed contralateral distal femoral locking plate. The functional and radiological outcome was assessed at the mean follow-up period of 3 years (range 2-4.6 years) using the Harris hip score. **Results:** Thirty-five fractures united primarily with a mean time of consolidation being 12 weeks (range, 9 to 16 weeks). Two patient developed superficial suture line infection, which resolved with antibiotics and dressing. One patient had a fall 3 weeks after surgery with broken implant in situ, which managed with reversed distal femoral locking compression plate along with bone grafting and the fracture united. Two cases had nonunion, which further managed with bone grafting for union. The mean Harris hip score at the time of final follow-up was 90.65 (range 80-98). **Conclusion:** The reversed contralateral distal femoral plate is a biomechanically sound implant, which when used for fixation of the subtrochanteric fractures with minimal soft tissue stripping shows results comparable to those achieved by using other implants as well as its usability without image intensifier.

Abstract no.: 51067

A DIFFERENTIATED APPROACH IN THE TREATMENT OF BENIGN TUMOURS AND TUMOUR-LIKE DISEASES OF LIMB BONES

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Different countries authors recommend using of auto and allotransplants or replacement of bone with scattered materials and rinse with various medications. During the period 2015-2017, we treated 35 patients with various benign limb bones formations at the age from 14 to 60 years. Men and women 1:2. With diagnoses of enchondroma -15 cases, echondroma-5 cases, bone cyst - 4 cases, osteoblasto clastoma - 2 cases, fibrous dysplasia - 3 cases, hemangioma 3 cases, synovioma in 3 cases. All patients underwent surgical removal of the tumor with bone defect plastic. Plastic of the defect was not performed in 5 cases. In 17 cases plastic was performed with the biocomposite material "Collapan", in 9 cases was using auto bone graft, in 4 cases was performed combined bone plastic. The application of a differentiated approach to bone plastic, depending on the location and size of the formation, gives positive results in 89.3 cases.

Abstract no.: 51068

CASE REPORT: PROXIMAL FEMUR EPIPHYSEAL CHONDROBLASTOMA IN A TEN-YEAR-OLD BOY

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Background: Chondroblastoma is a rare, usually benign, tumor of bone that accounts for 1% of all bone tumors, which mainly affects the growing-skeleton. The objective was to evaluate the clinical and radiological evolution of an epiphyseal chondroblastoma in a 10-year-old boy. Methods: We present a case-report of a ten-year-old boy who was referred for pain and limp in his left hip of 8 months of evolution. Physical examination revealed pain to ambulation, limited rotations, clinical dissymmetry of 3 centimeters as well as asymmetry in thigh volume of 4 centimeters and muscular hipotrophy. In radiographs, a hypodense lesion with alteration of the intraarticular space was observed. An urgent MRI was requested, confirming the existence of an hypointense, rounded-morphology, 15x15x16mm of volumetric lesion with bone edema and synovitis. These findings were suggestive of epiphyseal chondroblastoma. A surgical procedure, that consisted of a Ganz-approach by performing a controlled-hip-dislocation through trochanteric osteotomy, was done. The lesion was resected and allograft was embedded into the bone defect; afterwards, it was fixated with 2 resorbable-pins. Trochanteric osteotomy was fixated with 2 cannulated-screws. Results: The anatomic-pathological study confirmed the chondroblastoma. Good postoperative clinical evolution. After 9 months, dysmetria has been corrected, the muscle-tone is symmetrical and range-of-movement is complete. The patient does not present pain. Conclusions: Coxalgia is a common cause of consultation and a tumor may be suspected when an atypical pain-pattern is observed. Controlled-hip-dislocation allows us to treat intraarticular pathology while respecting the vascularization of the femoral head. Although the patient is without signs of recurrence, clinical and radiological follow-up is necessary.

Abstract no.: 51069

EARLY DIAGNOSIS OF INFECTIOUS COMPLICATIONS IN PATIENTS SUFFERING FROM POLYTRAUMA AS A RESULT OF ROAD TRAFFIC ACCIDENTS

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Diagnosis of injuries in patients suffering from polytrauma is quite a labor-intensive process, as it is carried out against the backdrop of a difficult condition, when the growing threats to the vital functions of the body are rapidly increasing. In this sense, it is worth recalling that the state of the victim with polytrauma is characterized by a complex of pathological syndromes, which in the complex for 3-5 days lead to the development of syndrome of multiple organ failure. For the early diagnosis of infectious complications, we used the markers of inflammation that are used in the world. Among a large group of inflammatory markers, we used procalcitonin. Depending on the content in the blood of the victim of this hormone, it is possible with a great deal of probability to talk about the existing infectious process that develops in the body of the victim. The research was conducted on the 7th day of treatment. Among the affected group, the prevalence of high levels of procalcitonin in the blood is up to 1.0 ng/ml, which was detected in 47.6% of cases. In the control group, more than half of the patients had low levels of procalcitonin to 0.1 ng / ml. High PKT levels indicated a more active infectious process that develops among the victims of a trauma as a result of an accident.

Abstract no.: 51070

TOURNIQUET-INDUCED ACUTE ISCHEMIA–REPERFUSION INJURY IN EXPERIMENTAL POLYTRAUMA MODEL

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Objective: Limb ischemia (2 hours) followed by reperfusion in polytrauma model associated with a systemic changes and remote acute liver, lung and kidney injury. Methods: this prospective, randomized, controlled, experimental animal study was performed in a university-based animal research facility with 72 male Wistar rats (weighed from 0,190 to 0,210 kg). Anesthetized rats (thiopental sodium – 40mg/kg) were randomized (n = 24 per group) to three groups: 2 hours of bilateral hind limb ischemia group, polytrauma group (blunt abdominal trauma, acute hemorrhage – 25% of circulating blood volume), group with polytrauma and bilateral hind limb ischemia. Control points were the 1st, 3rd, 7th day after reperfusion. We studied the superoxide production (superoxide dismutase) and antioxidant activity. Results: 1st group - indicators of superoxide production and antioxidant activity increased until the third day, slightly decreased to day 7; 2nd group – similar trend, changes in the indicators were not much larger than in group 1; group 3 - superoxide production increased until the seventh day, antioxidant activity increased to the third day, significantly decreased to the seventh day. This group was marked with acute liver, lung and kidney injury on the seventh day. Conclusion: the results suggest that tourniquet-induced ischemia–reperfusion injuries stimulated overproduction of superoxide and reduced antioxidant activity in polytrauma model.

Abstract no.: 51072

**SOFT-TISSUE MANAGEMENT IN ORTHOPAEDICS SURGERIES AND
IMPACT ON MORBIDITY: LONG-TERM FOLLOW-UP STUDY AND
REVIEW OF LITERATURE**

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Introduction: Skin necrosis is particularly important after reconstruction of tendoachilles (AT) tendon. This can involve the tendon itself because of little soft tissue coverage. The purpose of study is to outline the per-operative steps to minimize the incidence of skin necrosis after reconstruction of chronic AT rupture treated with peroneus brevis tendon augmentation transfer. **Methods:** Over the 15 years we managed 102 patients of chronic and neglected AT rupture using peroneus brevis tendon transfer through calcaneal tuberosity. There were 54 males/48 females, the age ranged from 34-56 years (average 42). 58 had history of local steroid injection for retro-calcaneal bursitis and the rest were spontaneous ruptures due to degeneration and trauma. We reported skin necrosis in four cases among first 30 operated cases in the initial five years. Subsequently we tried to analyse the situation and took steps to minimise this complication by making thick skin flap and careful tissue handling during surgery. **Results:** The long term results after these steps are very encouraging.. There was only one case of skin necrosis in one patient among last 72 patients treated in the last 10 years as compared to four out of 30 in the first five years. **Conclusion:** We observed that careful soft tissue handling, rising thick skin flaps, achieving absolute haemostasis, using tourniquet for minimum adequate time and lax skin closure (without squeezing the skin margins with tight closure) using proline suture which is more inert instead of silk;the complication of skin dehiscence can be minimised drastically.

Abstract no.: 51073

NAVIGATION IMPROVES ACCURACY OF ACETABULAR CUP PLACEMENT DURING PRIMARY THA

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Malpositioning of the acetabular cup component during total hip arthroplasty (THA) can be associated with significant post-operative complications including dislocation and revision surgery. Computer-assisted navigation has the potential to improve the accuracy with which surgeons place components during THA. The purpose of this study was to compare acetabular cup component position and post-operative leg length discrepancy (LLD) in patients who underwent primary THA (posterior approach) with (n=79) or without (n=93) the assistance of an imageless navigation device (Intellijoint HIP®). Radiographs were retrospectively reviewed from cases completed between February 2016 and February 2018 and analyzed using TraumaCad (version 2.5). Outcomes included cup position (anteversion/inclination), proportion of cups within Lewinnek's safe zone, proximity to a pre-operative target of 40° inclination/20° anteversion and the proportion of leg length discrepancies >5 mm. Mean orientation in the navigated group was 20.6°±9.3° (anteversion) and 42.8°±6.0° (inclination) vs. 25.0°±11.1° (p=0.005) and 45.7°±8.7° (p=0.01), respectively, in controls. In the navigated group, significantly more acetabular cups were placed within Lewinnek's safe zone (anteversion: 58% vs. 37%, p=0.005; inclination: 87% vs. 67%, p=0.002) and within a functional orientation of 40°/20° (70% vs. 53%, p=0.02). There was no significant difference in mean LLD in navigation and control groups (6.3 mm vs. 7.2 mm, p=0.36), although fewer LLDs >5 mm were reported in the navigated group (47%) than in controls (63%, p=0.09). The use of computer-assisted navigation improved the accuracy with which acetabular cup components were placed and may represent an important method for limiting post-operative complications related to cup malpositioning.

Abstract no.: 51075

THE INFLUENCE OF LIMB ALIGNMENT AND PROSTHETIC ORIENTATION OF PATIENT-DERIVED CLINICAL OUTCOME IN TOTAL KNEE ARTHROPLASTY

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Background: Several surgeons have reported the relationship between postoperative limb alignment and clinical outcomes in primary total knee arthroplasty (TKA). However, the instruments that are used to evaluate clinical outcomes of TKA are mainly the scoring systems from physician's viewpoint, not patient-derived outcomes. Therefore, the purpose of this study was to retrospectively investigate the relationship between postoperative limb alignment and patient-derived clinical outcomes using the 2011 Knee Society Knee Scoring System (2011 KSS). **Methods:** The present study included 155 knees of patients whose median age was 74 years and who underwent primary TKA for varus osteoarthritis, with a mean follow-up period of 46 months. The subjects were divided into three groups based on postoperative limb alignment and femoral and tibial component positioning angle (varus, neutral, and valgus). The 2011 KSS scores were compared among the groups. **Results:** As for limb alignment, the postoperative objective knee indicator score was significantly lower in the valgus groups than in the varus and neutral groups, whereas no significant differences were observed in all subjective categories of the 2011 KSS. However, as for femoral component angle, functional activity scores were significantly lower in the valgus group than in the varus and neutral groups. **Conclusions:** The subjective patient-derived score was not affected by the postoperative limb alignment. On the other hand, the valgus femoral component angle resulted in lower subjective functional scores. For clinical relevance, postoperative valgus positioning of femoral component should be avoided from patient-derived functional aspects during TKA.

Abstract no.: 51078

REQUESTING SPINAL MRIS EFFECTIVELY FROM PRIMARY CARE REFERRALS

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Introduction: The demand for outpatient spinal appointments significantly exceeds our services ability to provide efficient, high quality patient care. Currently, magnetic resonance imaging (MRI) of the spine is requested following first consultation. We aim to define if MRI scans can accurately be requested based on information provided in the primary care referral and therefore, streamline the patient journey. **Methods:** During routine vetting of primary care referral letters, three consultant spinal surgeons recorded how likely they thought each patient would be to have an MRI scan. Following the first consultation with the spinal service, the notes of each patient were reviewed to see if an MRI was requested. We measured the positive predictive value (PPV), negative predictive value (NPV), sensitivity and specificity of ordering MRI scans based on primary care referral letters. **Results:** 149 patients were included (101 females, 48 males, mean age 49 (16-87). There were 125 routine, 21 urgent, and 3 'urgent-suspected cancer' referrals. The PPV of ordering MRIs before first consultation was 84%, NPV was 56% with the sensitivity and specificity were 82% and 59% respectively. Ordering MRIs during initial vetting could shorten the patient journey with potential socioeconomic benefits. **Conclusions:** MRI scans can be effectively ordered based on the information provided by the primary care referral letter. Requesting MRI scans early in the patient journey can save considerable time, improve care, and deliver cost savings.

Abstract no.: 51080

ROLE OF THE HIGH TIBIAL OSTEOTOMY IN IMPROVING PAIN AND KNEE FUNCTION IN OSTEOARTHRITIS OF THE KNEE

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Introduction: Osteoarthritis is also known as osteoarthrosis or degenerative joint disease is a progressive disorder of the joints caused by gradual loss of cartilage resulting in the development of bony spurs and cysts at the margins of the joints. Aims and Objectives: To assess the efficacy of the high tibial osteotomy in improving pain and knee function in osteoarthritis of the knee and to correlate the axial alignment of the knee joint pre and post operatively with the results of procedure. Materials and Methods: This was a prospective study conducted in Dr. D.Y. Patil Medical College Pune on 30 patients of osteo-arthritis admitted to Department of Orthopaedics from June 2014 to June 2016. Visual Analogue Score and clinical knee society score was taken into account. Results: In our study we found that 15 patients achieved excellent knee scores while 9 patients in good and 3 patients in fair range. 3 patients had poor score. Discussion: Insall et al in their study noted complete or nearly complete relief of pain in thirty patients, partial relief in nine patients , and no relief in twelve patients. Partial relief of pain was recorded in a patient with valgus deformity. No pain relief was recorded in two patients, both of whom had knees with valgus deformity. Conclusion: On the basis of our study we concluded that High Tibial Osteotomy is the treatment of choice in relatively young to middle aged patients with disabling pain, who wants to pursue an active life.

Abstract no.: 51081

HIP HEMIARTHROPLASTY: THE MISNOMER OF A NARROW FEMORAL CANAL

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Bipolar prosthesis with modular stems is sometimes favoured over a monoblock for sizing options in narrow femoral canals for neck of femur fractures despite no advantage in clinical outcomes at higher cost. We investigated factors affecting surgeons' choice of prostheses, hypothesising Bipolar Hemiarthroplasty (BH) are overused for narrow femoral canals. All patients sustaining femoral neck fractures from March 2013 to December 2016 were retrospectively reviewed. BH performed for narrow femoral canal were included. We matched number of monopolar hemiarthroplasty (MH) through randomisation. Gender, age, grade of surgeon, Dorr classification and femoral head size was studied. We measured protrusion of greater trochanter beyond level of lateral femoral cortex postoperatively. Using TraumaCad for Stryker® ETS, we templated BH patients on pre-operative radiographs. 553 Hemiarthroplasty performed, 27 were BH for narrow canals. The ratio of BH to MH was 1:18. The average head size for MH was 46.7mm±3.6 and BH 44.07±1.5(p=0.001). There were 4 malaligned stems in MH group versus 14 in BH group (p=0.008). 18 (7mm±2.9) patients had unsatisfactory lateralisation in the BH group as compared to 8 (4.7mm±3.9) in the MH patients (p=0.029). Dorr classification was found to be significant (P=0.006) with 24 patients classified as Dorr A and B in the BH group as compared to 18 MH. 25 patients did not require BH on templating. Patients with narrow canals intraoperatively should not receive BH. Surgical techniques should be explored through education intraoperatively and departmental teaching to achieve lateralisation during femoral stem preparation to avoid unnecessarily prolonged theatre operating and anaesthetic time with potential cost-saving benefits.

Abstract no.: 51082

CALCIUM PYROPHOSPHATE DIHYDRATE CRYSTAL DEPOSITION SPONDYLITIS IS ONE OF THE DIFFERENTIAL DIAGNOSES OF SPINAL INFECTIONS

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Introduction: There are few reports about calcium pyrophosphate dihydrate crystal deposition (CPPD) spondylitis mimicking spinal infection. We encountered cases of CPPD spondylitis in which clinical, laboratory and radiological findings were similar to spinal infection. We came to think some culture negative spondylitis having been treated as spinal infection was possibly caused by CPPD. We have recently tried to conduct not only culture tests but also crystal inspections on the patients with suspected spinal infections. **Methods:** 26 patients with suspected spinal infection treated in our hospital since January 2015 were included in this study. Their medical records were reviewed. **Results:** Either blood or biopsy culture was positive in 17 out of 26 patients. CPPD was positive in 7 out of 13 patients who underwent crystal inspection. Both culture and crystal inspection were positive in 3 patients. In 4 patients only CPPD was detected with culture negative, although antibiotics had been administered in 3 out of these 4 patients. **Discussion:** It has been reported the identification rate of causative organisms of biopsy cultures varies from 43 to 78%. Differences among these reports may mean some suspected spinal infections include aseptic (i.e. CPPD) spondylitis. In this survey, CPPD was positive in 53.8% of those biopsied, and the patients with CPPD positive and culture negative might not have spinal infection. **Conclusion:** We think CPPD spondylitis is one of the differential diagnoses of spinal infection. We should conduct not only culture tests but also crystal inspections when evaluating spondylitis.

Abstract no.: 51083

A COMPARATIVE STUDY EVALUATING THE EFFICACY OF INTRAVENOUS TRANEXAMIC ACID AND TOPICAL TRANEXAMIC ACID ADMINISTRATION IN TOTAL KNEE ARTHROPLASTY

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The numbers of total knee replacements being performed are rising exponentially year by year. Recently the utility of tranexamic acid (TXA) in preventing haemorrhage related complications and need for blood transfusion has been established. As of yet the ideal route, dose, and method of administering this agent is yet to be recognized. We conducted a retrospective study on a cohort of 120 patients undergoing unilateral total knee arthroplasty with the same implants but undergoing different methods of TXA administration. One group received 1g IV TXA 5 minutes prior to tourniquet release. The second group underwent topical application with 1g TXA 5 minutes before tourniquet release and allowed to soak in the knee cavity for 3 minutes. Hemoglobin measurements pre and postoperatively were, incidence of blood transfusion, thromboembolic events, infection, any mortality, and length of stay were documented and assessed. The mean drop in haemoglobin in the IV TXA group was 0.89, whilst in the topical TXA group it was 0.93 with a P-value of 0.82 – not statistically significant. Neither group required blood transfusions post-operatively. Recent articles have demonstrated equal clinical benefits with topical TXA when compared to IV TXA with an improved safety profile. TXA use has been shown to reduce facility costs. Our study demonstrates similar outcomes between both the IV and topical TXA groups with no reported adverse events. Further studies are needed to establish the ideal dosing, delivery method, and whether additional therapeutic agents can further help improve outcomes following total knee arthroplasty.

Abstract no.: 51084

DOES DELAY IN SURGERY AFFECT MORTALITY IN DISTAL FEMORAL FRACTURES?

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Patients with distal femoral fractures are associated with similar mortality to neck of femur fractures. Surgery is often delayed due to the complexity of fracture configuration, temporary stabilisation or an associated periprosthetic fracture, requiring sub-specialty surgical expertise. We investigate the association of delay in surgery on mortality in distal femoral fracture patients. All patients admitted to a level 1 major trauma centre with distal femoral fractures were retrospectively reviewed between June 2012 and October 2017. 77 patients were included for analysis with mean follow-up of 32 months, mean age of 69 (range 16-101). 46 (60%) of patients were female, 10 (17%) were open fractures and 26 (34%) were periprosthetic fractures. 56 (73%) patients were operated in < 48 hours. Of those operated on >48hours, the mean time to surgery was 8 (range 3-20). On Kaplan-Meier plotting and Log-Rank test, there was no difference in mortality between those receiving operations before or after 48 hours ($p=0.933$). When age was considered, in those above 60 years old ($n=55$, 71%), there was no difference in mortality ($p=0.783$). There was no association between delay to surgery and mortality in patients with distal femoral fractures, especially those age >60 years. Whenever required, delay to surgery should be utilised for medical optimisation, temporary skeletal stabilisation and for the patients to receive the right operation from the right surgeon in distal femoral fractures.

Abstract no.: 51085

STEM FRACTURE OF A CEMENTED THOMPSON HEMIARTHROPLASTY: AN UNUSUAL CASE

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BACKGROUND: Despite the usage of the cemented Thompson prosthesis is in decline, the cemented Thompson prosthesis is still used especially in older patients, those with comorbidities, dependent preoperative mobility, or poor mental function or activities of daily living. **CASE REPORT:** A 81-year-old woman presented with a one-month history of pain on her right hip. She complained of difficulty standing for a long time and was unable to walk even with help. There was no history of trauma. The patient had under gone a cemented Thompson hemiarthroplasty due to fracture of the right femoral neck about 6 years previously. Radiographic evaluation showed that the stem of the Thompson prosthesis was broken into two pieces. The patient was scheduled for operation and underwent revision total hip arthroplasty. **DISCUSSION:** Intracapsular femoral neck fracture is common in the elderly and typically managed by hemiarthroplasty when displaced. The Thompson hemiarthroplasty was introduced in the 1950s. It is a monobloc hemiarthroplasty system with a nonporous coated collared stem inserted by cementation. Although modern modular porous coated cementless systems and cemented systems have continued to evolve, the Thompson hemiarthroplasty remains to be in regular use by developed countries. **CONCLUSION:** There are several major complications of cemented Thompson hemiarthroplasty described in the literature. However, to our knowledge there are no cases of stem fracture of a cemented Thompson prosthesis reported in the literature.

Abstract no.: 51087

CLINICAL AND NOSOLOGICAL CHARACTERISTICS OF VICTIMS OF MINE-EXPLOSIVE INJURIES OBTAINED DURING HOSTILITIES

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During the military actions of varying intensity in the eastern regions of Ukraine in 2014 through 2016 more than 21,000 wounded were registered. In the structure of the dead and the wounded the most people were civilians, among which the death toll reaches 75.5%, and among the wounded - 61.2%. To meet the goals and objectives of our study we analyzed the treatment of 107 wounded men and women who were treated at the stages of medical care. In 60 victims (56.1 %) the combined lesions were detected and in 47 victims (43.9%) –the isolated lesions of one anatomical site were observed. Mine-blast wounds occur in response to the effect of the striking force of a great energy used in modern combat operations; in mines and bomber wounds the extremities occur most often, which was observed in more than half of the general number of the research cases, as well as wounds in the abdomen in 17.7% of cases and injury of the pelvis in 14.0% of cases. Among injuries of the limbs in the victims of mine explosions injuries of the leg were most often recorded, (33.6% of cases) and wounds of the thigh, which were found in 18.4% of cases.

Abstract no.: 51089

DISTAL FEMORAL FRACTURE PATIENTS: TO FIX OR NOT TO FIX?

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Patients with distal femoral fractures are associated with high rates of mortality similar to neck of femur fractures. Identifying patients for conservative management poses challenges due to high risk of medical complications. We investigated mortality of conservatively managed distal femur fractures >65 years against those surgically managed. All patients above age 65 admitted to a level 1 major trauma centre with distal femoral fractures were retrospectively reviewed between June 2012 and October 2017. Nottingham Hip Fracture Score (NHFS) was recorded using parameters immediately pre-operatively. 61 patients were included for analysis with mean follow-up of 24 months, mean age of 82 (range 68-101). 47 (77%) of patients were female, 4 (6.6%) were open fractures and 27 (35%) were periprosthetic fractures. 10 patients were managed conservatively, of which 8 were due to 'frailty' after a multidisciplinary review. All patients conservatively managed were found to have NHFS ≥ 5 (high risk) compared to those surgically managed ($p=0.025$). Overall mortality at 30 days was 7% and 1 year was 33%. Patients with NHFS of <4 had a higher survival rate at 30 days (94% vs 86%) and at 1 year (80% vs 43%) when compared with those of higher risk (NHFS ≥ 5). On Kaplan-Meier plotting and Log-Rank test, patients that were conservatively managed were associated with higher mortality ($p=0.021$). When deemed 'unfit' for surgery, conservatively managed distal femur fracture patients are associated with high anaesthetic risk and mortality rate. Utilising a multidisciplinary approach and NHFS as adjunct, nursing care, pain management, and physiotherapy should be utilised to prevent complications associated with surgery.

Abstract no.: 51090

ACRONYMS IN TRAUMA AND ORTHOPAEDICS: DO WE AND PATIENTS UNDERSTAND THE SAME THING?

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Acronyms are commonly used within healthcare but poses patient safety issues, especially surrounding communication. We aim to study understanding of acronyms amongst healthcare providers and patients in a major trauma centre. Two questionnaires with common acronyms within trauma and orthopaedics were given to healthcare providers and patients to be answered before and after given clinical vignette to contextualise. Patients were asked (1) Do you read your consent form for procedures before signing it? (2) Do you read your consent form when given a copy? There were 28 healthcare providers with mean score before context 12 ± 3.485 and after contextualising, 14.86 ± 3.088 , ($P=0.002$). Intramedullary nail (IMN) was the most correctly answered acronym at 93% before context and 100% after contextualising. Warm well perfused (WWP) was the least answered acronym at 3.6%. Osteoporosis (OP) was the most wrongly answered acronym at first attempt (25%), with operation and outpatients suggested before context. There were 50 patients with mean score before context was $6.9\% \pm 8.3\%$ and after contextualising with a clinical vignette $7.1\% \pm 9.6\%$ ($P=0.856$). Deep vein thrombosis (DVT) was the most correctly answered acronym at 54% before and 68% after context, followed by pulmonary embolism (PE), 16% at first attempt. 56% of patients read their consent forms for a procedure prior to signing it and 60% of patients read their consent forms after receiving a copy of it. Amongst patients acronyms are poorly understood and should be avoided in patient materials such as information leaflets and consent forms. Standardisation and local departmental policy is required to minimise risk to patient safety.

Abstract no.: 51091

PAEDIATRIC ANTERIOR ELBOW DISLOCATION: A RARE CASE REPORT

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Introduction: Traumatic elbow dislocation by itself is a rare occurrence in the pediatric age group, with only 3-6% of elbow traumas resulting in dislocations. In this Posterior elbow dislocations are the most common with 90% incidence whereas the Anterior dislocation of elbow joint is of very rare occurrence with an incidence of only 1% in children. It usually occurs after a fall which results in a force striking the posterior forearm in flexed position. Hence in view of its rare occurrence, this paper reports a traumatic anterior dislocation of the elbow joint in an 8-year-old boy. Case report: The patient was an 8-year-old boy who sustained injury to right elbow joint by self fall from the bicycle. He was admitted in our hospital with complaints of pain and deformity in right elbow joint and inability to move the right upper limb. There was no neurovascular deficit. Radiological findings revealed anterior elbow dislocation of right forearm with fracture of olecranon process. Dislocation was reduced with distal traction on the wrist and backward pressure on the proximal forearm under general anaesthesia in emergency operation theatre. Post reduction elbow joint was stable in all range of movements. Conclusion: Anterior dislocation of elbow joint in children is an orthopedic emergency. Careful assessment and proper concentric reduction is of prime importance to ensure functional stability of the joint and prevention of deformity. This case is reported for its rare incidence in paediatric age group.

Abstract no.: 51092

USE OF DENOSUMAB IN GAI NT CELL TUMOUR TREATMENT

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Background: Denosumab is a fully human monoclonal antibody to RANK ligand (RANKL) which has shown good response in patients with inoperable Giant cell tumour of bone (GCT) in a phase 2 clinical trial. Denosumab may also be used to downstage tumours to allow for less morbid surgery. However, important questions remain such as the optimal dosing schedule for Denosumab especially for inoperable tumours as well as the safety of the drug for long term use. Questions: How is Denosumab used in a tertiary referral centre for bone and soft tissue tumours? What is the complication rate with long term use? Methods: We present a case series of patients with histologically diagnosed GCT treated with Denosumab in a single institution. Complications and recurrence rate were analysed from the onset of treatment. Results: 44 patients were treated since 2010 with a mean follow-up of 107 weeks. Denosumab was given as long term treatment in 20 patients for unresectable diseases or disease requiring morbid surgery and in 24 as neo-adjuvant treatment prior to definitive surgery. All patients had clinical and radiologic improvement on treatment. Serious complications occurred in 30% of patients on long term treatment necessitating discontinuation of Denosumab. Local recurrence rate was 33% in patients who subsequently underwent surgery with curative intent. Conclusions: Although Denosumab has shown good response in treating GCT, there are concerns with serious complications (ONJ, stress fractures) especially with longer term use. Further studies are required to determine the role of Denosumab for conventional extremity GCT.

Abstract no.: 51093

DISTAL FEMORAL FRACTURES: THE MAJOR TRAUMA CENTRE EXPERIENCE

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Patients with distal femoral fractures admitted through major trauma activation can be associated with polytrauma and higher mortality rate. We investigate the association in patients admitted through major trauma activation on mortality in distal femoral fracture patients. All patients admitted to a level 1 major trauma centre with distal femoral fractures were retrospectively reviewed between June 2012 and October 2017. 92 patients were included for analysis with mean follow-up of 32 months, mean age of major trauma patients were 59 (SD:26) compared to those of isolated injury 73 (SD:18,p=0.044). 27 patients were admitted through major trauma activation. 89% had an associated injury with a mean injury severity score (ISS) of 20 (SD:11.2), 15 (56%) of patients were female, 8 (30%) were open and 95% of patients were surgically managed. Overall mortality at 30 days was 7% and 1 year was 33%. Length of stay was 26 days for major trauma patients compared to isolated injury of 22 days. Patients admitted through major trauma activation had higher mortality rate at 30 days(12%vs5%,p=0.252).On Kaplan-Meier plotting and Log-Rank test, patients with major trauma showed similar rates of mortality at 1 year, (22%vs21%,p=0.662). This effect is sustained until 29 months where other factors in the isolated injury group (age, co-morbidities) are hypothesised to affect mortality. Patients with distal femur fractures admitted through a major trauma centre have similar mortality rates compared to those with isolated injuries. Despite other associated injuries, they have comparable mortality rates to those with isolated injuries. Polytrauma patients should be managed in major trauma centres.

Abstract no.: 51096

NOVEL TECHNIQUE TO ACCURATELY MEASURE FEMORAL DIAPHYSEAL CANAL DIAMETER USING A THOMAS SPLINT PREOPERATIVELY

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Accurate pre-operative assessment of femoral diaphyseal canal diameter allows surgeon to plan surgical technique and ensure appropriate equipment is available, such as narrow/paediatric sized nails. We propose a novel way to assess pre-operatively correct magnification of anterior-posterior (AP) femoral radiograph using femoral splint as calibration marker. Diameter of the rod on Thomas Splints just below push button mechanism measured at 13mm. When secured to the patient, longitudinal component lie parallel with the femoral shaft and horizontal to x-ray plate. 14 femoral radiographs with Thomas Splint applied after sustaining a femoral shaft fracture were retrospectively reviewed. Post-operative notes were reviewed for actual femoral nail size inserted and reaming size. Both reviewers were blinded to post-operative results and diameter of femoral canal obtained independently at isthmus. Linear Regression was performed with Spearman correlation Coefficients. The mean age of 64. The scatterplot between author one and author two was linear. Spearman correlation coefficient(r) is 0.956(P<0.001) for interobserver variability. The difference between observer 1 and 2 calibrations were less than 1mm in all 14 cases. 1 case did not record reaming size, with 77% of cases within 2mm of calibration value of canal diameter from reaming size. There was 1 case calibrated at 8mm preoperatively and would benefit from having appropriate equipment. Standardised radiographic calibration markers are expensive and rarely used correctly. We describe a novel technique in pre-operatively templating femoral nail size, which negates requirement for calibration markers, reproducible, easy to perform, and indispensable when faced with narrow femoral canal in diaphyseal fractures.

Abstract no.: 51100

TRANSFER OF THE LESSER TUBEROSITY FOR NEGLECTED POSTERIOR SHOULDER DISLOCATION: TWO-CASE REPORT

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Introduction: The posterior shoulder dislocation is a rare entity. Difficult diagnosis. We report one case of the posterior shoulder dislocation treat by open reduction with tuberosity subscapularis transfer to the defect (modified McLaughlin). Patient and Methods: women 60 years old, she is known with her epileptic seizures. Chronic dislocation (4 months old). Reverse Hill-Sachs defect < 40%. Man 43 years old, sports accident, Chronic dislocation (3 months old), Reverse Hill-Sachs defect < 40%. Discussion: Deltopectoral approach is used; the transfer of the lesser tuberosity for reverses Hill-Sachs lesions after neglected posterior dislocation of the shoulder, is most favorable. Consists of a filling of the notch by the trochin which opposes the internal rotation and avoids the swallowing of the notch during this movement. Conclusion: McLaughlin procedure appears to be a safe and effective method in the treatment of neglected posterior shoulder dislocations with reverse Hill-Sachs lesion, Seems to us to be a reliable and reproducible method.

Abstract no.: 51101

COMPARING THE EFFICACY OF LOCAL CORTICOSTEROID INJECTIONS AND AUTOLOGOUS BLOOD INJECTIONS IN PRODUCING ANALGESIA IN PATIENTS PRESENTING WITH LATERAL EPICONDYLITIS

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Introduction: Tennis elbow is defined as pain of the facet of the lateral epicondyle which is represented by digital palpation on the above site, resisted wrist extension, resisted middle finger extension and gripping and is commonly seen in middle aged patients. Aims and Objectives: To compare the efficacy of local corticosteroid injections and autologous blood injections in producing analgesia in patients presenting with lateral epicondylitis. Materials and Methods: This was a prospective study conducted in Dr. D.Y. Patil Medical College Pune on 50 patients admitted to Department of Orthopaedics from June 2015 to September 2017 for lateral epicondylitis. Patients were divided into 2 groups. Group A had 25 patients and were treated with autologous blood injection. Group B had 25 patients and were treated with local corticosteroid Injection. Pain was analyzed on Visual Analogue Score. Results: Out of 25 patients included in Group A; 12 patients showed good, 11 fair and 2 poor results. Out of 25 patients included in group B; 15 patients showed excellent, 7 good, 3 fair results. Discussion: Edwards SG et al in a study concluded the autologous blood injection provides cellular and hormonal mediators to induce a healing cascade. Conclusion: From our study we concluded that both, local corticosteroid and autologous blood, injection therapy are simple outdoor procedure for the treatment of the lateral epicondylitis. Due to autologous blood injection's better long-term results, and steroid injection's high recurrence rate, we suggest that the treatment of choice for lateral epicondylitis be autologous blood injection therapy.

Abstract no.: 51102

WASHING THE FEMORAL CANAL RESULTS IN MORE PREDICTABLE SEATING OF A SHORT TAPERED FEMORAL STEM

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Short femoral tapered stems may be at greater risk of incomplete seating since they require the preparation of a short femoral region without any reaming. This study determined the effect on implant seating in femora that were prepared by rasping alone with those that were rasped and the canal was washed with saline at the time of cementless THA with a short tapered, metaphyseal-filling femoral implant. We retrospectively analyzed 170 consecutive primary THA using a rasp only technique. The diamond tooth rasps remove bone for implantation of a slightly oversized implant. In the initial 99 patients, the canal was rasped only (Group 1). In the subsequent 71 patients the canal was rasped, and prior to implant insertion the canal was washed with 100 cc of normal saline to remove all loose cancellous bone (Group 2). We defined a difference of more than 2mm between the seating of the rasp and the final implant as a clinically significant mismatch. Overall, a significant mismatch occurred in 50% (49/99) of cases in Group 1 and 15% (11/71) in Group 2. Multivariate logistic regression analysis showed that washing significantly decreased the mismatch between the rasp and the implant (OR 5.32, CI 2.10-13.73, $p < 0.001$). A difference of 3 mm or more between the final rasp and the implant occurred in 39 hips (39%) in Group 1 and 7 hips (10%) in Group 2 ($p = 0.0001$). The mismatch was 4 mm or more in 8 hips (8%) in Group 1 and 1 hip (1%) in Group 2 ($p = 0.0001$). The rasp design does not adequately remove the bone debris to ensure reproducible seating of the implant. Washing the femoral metaphysis with saline to remove bone debris, significantly decreased the mismatch between the final rasp and the implant.

Abstract no.: 51107

SUPRACONDYLAR FRACTURE MANAGEMENT: HAS A NEW HOSPITAL MADE A DIFFERENCE?

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Background: Supracondylar fractures are the most common paediatric elbow injury. In the 9 months since paediatric orthopaedic services moved to a new tertiary referral centre has management changed? Methods: Retrospective audit. Case note review of consecutive patients identified via coding from Opera management system. All operatively managed displaced supracondylar fractures were included for the last 1 year from Yorkhill hospital (48 cases) and the first 9 months of Royal Hospital for Children (48 cases). Time to theatre was calculated from time of index radiograph to arrival time into anaesthetic room. Deviations from usual referral pathway were documented (i.e. referral from external sites), as was neurovascular status documentation and rationale for OOH operating. The data was pooled and analysed in Excel and subsequent separate analysis to assess for 'weekend effect' was performed. Results: Baseline demographics were comparable between the two groups. Seven fractures operated on OOH at Yorkhill (all had neurovascular status documented completely) and OOH 5 fractures operatively managed OOH at RHC of which 3 did not have NV assessment documented appropriately either in ED or OP note. Average time to theatre in Yorkhill 13hr14mins (0.39- 28.7) and RHC 14hr1min (1.25 – 38.4), average 1 hr 27 minutes longer time to theatre. Conclusions: 3/48 patients waited >24hours at RHC (1/48 Yorkhill) due to theatre logistics which is outside best practice guidelines. 3/5 patients had NV status not sufficiently documented at RHC, which is a potential medicolegal problem. RHC workload heavier than Yorkhill. No demonstrable 'weekend effect' at RHC.

Abstract no.: 51108

PREOPERATIVE GAIT ADAPTATIONS PERSIST AFTER SURGERY IN CLINICALLY WELL-FUNCTIONING TOTAL HIP REPLACEMENT PATIENTS

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The purpose of this study was to evaluate whether preoperative gait adaptations persist one year after THR in the same set of subjects. The hypothesis tested was that hip dynamic range of motion and peak external moments during walking return to normal after THR. Hip kinematics and kinetics were measured for 28 subjects before and one year after THR and compared to those of 25 subjects with radiographically normal hips. All THR subjects improved clinically after surgery with Harris hip scores improving from 33–85 (average 53) to 61–100 (average 95) (sign test $p < 0.001$). Preoperatively dynamic hip range of motion (ROM), and all peak external moments were reduced compared to normal (Mann-Whitney $p < 0.040$). Improvement was seen in the ROM and all but the frontal plane, and external rotation peak moments (Friedman $p < 0.023$). The preoperative and postoperative values of the ROM, and peak flexion, abduction and external rotation moments were all significantly correlated (Spearman $p < 0.020$) indicating a possible learned effect from before THR surgery. Postoperative THR subjects continued to have a significantly lower than normal ROM, and peak adduction and peak internal rotation moments (Mann-Whitney $p < 0.003$). Despite good to excellent clinical functional outcome, gait in THR patients does not return to normal by one year after surgery. Aggressive muscle strengthening is currently not emphasized after THR surgery. Some THR patients may benefit from more intensive rehabilitation before and after surgery.

Abstract no.: 51109

PERIOPERATIVE MANAGEMENT AND OUTCOMES OF PATIENTS TREATED WITH DRUGS AFFECTING HEMOSTASIS ADMITTED FOR HIP FRACTURE SURGERY

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Operating patients with hip fracture within 48 hours from hospital presentation is common practice and was shown to improve mortality. Many of the patients presenting with hip fracture are using drugs affecting hemostasis (DAH). In our medical center Aspirin and Clopidogrel do not delay operative treatment whereas DOACs (Rivaroxaban, Dabigatran, Apixaban) and Coumadin inflict delay of 24-36 hours. We compared post-operative outcomes of patients who presented with hip fracture and were exposed to DAH to unexposed ones. We used a retrospective cohort of patients who presented with acute hip fracture to the emergency department. DAH exposure data was taken from the patients' chronic medication lists on admission. Patients who were not exposed to DAH served as the control group. Percentage of hemoglobin change, odds of receiving blood transfusions and mortality were compared between the groups. Results were stratified according to the following different types of DAH: Coumadin, DOACs, Aspirin, Clopidogrel. Our cohort consisted of 1896 cases after exclusion of patients younger than 65 and those who underwent intra-capsular fixation with screws or total hip arthroplasty. Percent of perioperative hemoglobin change did not differ significantly between the groups (P-Value=0.52). Apart from the group on Coumadin, none of the groups had increased odds of receiving blood transfusions compared to the control group. There was no significant difference between the groups in odds of one-month and one-year mortality after multivariate adjustment. We conclude that the protocols we use for the perioperative management of patients with acute hip fracture treated with DAH are safe.

Abstract no.: 51110

ALIGNMENT IN TOTAL KNEE ARTHROPLASTY

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Restoration of neutral alignment of the leg is an important factor affecting the long-term results of total knee arthroplasty (TKA). Recent developments in computer-assisted surgery have focused on systems for improving TKA. In a prospective study two groups of 80 patients undergoing TKA had operations using either a computer-assisted navigation system or a conventional technique. Alignment of the leg and the orientation of components were determined on post-operative long-leg coronal and lateral films. The mechanical axis of the leg was significantly better in the computer-assisted group (96%, within $\pm 3^\circ$ varus/valgus) compared with the conventional group (78%, within $\pm 3^\circ$ varus/valgus). The coronal alignment of the femoral component was also more accurate in the computer-assisted group. Computer-assisted TKA gives a better correction of alignment of the leg and orientation of the components compared with the conventional technique. Potential benefits in the long-term outcome and functional improvement require further investigation.

Abstract no.: 51111

REASONS FOR REVISION HIP SURGERY

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The purpose of this study was to determine the indications for contemporary revision hip surgery in a consecutive series of patients. We retrospectively reviewed the clinical records and radiographs of 439 revision hip surgeries done between 1996 and 2003. Fifty-five percent of the surgeries were for aseptic loosening, 14% were for instability, 13% were for osteolysis around a well-fixed implant, 7% were for infection, 5% were for periprosthetic fracture, 3% were for conversion of a hemiarthroplasty, 1% was for psoas impingement, 1% was for loose recalled implants, and 1% was for implant fracture. As expected, aseptic loosening was the most common reason for revision surgery. Instability was a common reason for early revision whereas revision for osteolysis around a well-fixed implant was a more common reason for late revision.

Abstract no.: 51112

LOCAL INFILTRATION ANALGESIA: A TECHNIQUE FOR THE CONTROL OF ACUTE POSTOPERATIVE PAIN FOLLOWING KNEE AND HIP SURGERY

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We have developed a multimodal technique for the control of pain following knee and hip surgery, called “local infiltration analgesia” (LIA). It is based on systematic infiltration of a mixture of ropivacaine, ketorolac, and adrenaline into the tissues around the surgical field to achieve satisfactory pain control with little physiological disturbance. The technique allows virtually immediate mobilization and earlier discharge from hospital. Patients and methods: In this open, nonrandomized case series, we used LIA to manage postoperative pain in all 100 patients presenting to our service from Jan 1, 2005 to Dec 31, 2006 for elective hip resurfacing (HRA), primary total hip replacement (THR), or primary total knee replacement arthroplasty (TKR). We recorded pain scores, mobilization times, and morphine usage for the entire group. Results Pain control: generally satisfactory (numerical rating scale pain score range 0–3). No morphine was required for postoperative pain control in two-thirds of the patients. Most patients were able to walk with assistance between 5 and 6 h after surgery and independent mobility was achieved 13–22 h after surgery. Orthostatic hypotension, nausea, and vomiting were occasionally associated with standing for the first time, but other side effects were unremarkable. 230 (71%) of the 325 patients were discharged directly home after a single overnight stay in hospital. Interpretation: Local infiltration analgesia is simple, practical, safe, and effective for pain management after knee and hip surgery.

Abstract no.: 51114

TRANSFUSION IN HIGH-RISK PATIENTS AFTER HIP SURGERY

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The hemoglobin threshold at which postoperative red-cell transfusion is warranted is controversial. We conducted a randomised trial to determine whether a higher threshold for blood transfusion would improve recovery in patients who had undergone surgery for hip fracture. Methods: We enrolled patients who were 50 years of age or older, who had either a history of or risk factors for cardiovascular disease, and whose hemoglobin level was below 10 g per deciliter after hip-fracture surgery. We randomly assigned patients to a liberal transfusion strategy or a restrictive transfusion strategy. The primary outcome was death or an inability to walk across a room without human assistance on 60-day follow-up. Results: The rates of the primary outcome were 35.2% in the liberal-strategy group and 34.7% in the restrictive-strategy group (odds ratio in the liberal-strategy group, 1.01; 95% confidence interval [CI], 0.84 to 1.22), for an absolute risk difference of 0.5 percentage points (95% CI, -3.7 to 4.7). The rates of in-hospital acute coronary syndrome or death were 4.3% and 5.2%, respectively (absolute risk difference, -0.9%; 99% CI, -3.3 to 1.6), and rates of death on 60-day follow-up were 7.6% and 6.6%, respectively (absolute risk difference, 1.0%; 99% CI, -1.9 to 4.0). The rates of other complications were similar in the two groups. Conclusions: A liberal transfusion strategy, as compared with a restrictive strategy, did not reduce rates of death or inability to walk independently on 60-day follow-up or reduce in-hospital morbidity in elderly patients at high cardiovascular risk.

Abstract no.: 51120

INFECTION AFTER TOTAL KNEE ARTHROPLASTY

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The aim of our study was to determine the current incidence and outcome of infected total knee arthroplasty (TKA) in our unit comparing them with our earlier audit in 1986, which had revealed infection rates of 4.4% after 471 primary TKAs and 15% after 23 revision TKAs at a mean follow-up of 2.8 years. In the interim we introduced stringent antibiotic prophylaxis, and the routine use of occlusive clothing within vertical laminar flow theatres and 0.05% chlorhexidine lavage during arthroplasty surgery. We followed up 931 primary TKAs and 69 revision TKAs for a mean of 6.5 years (5 to 8). Patients were traced by postal questionnaire, telephone interview or examination of case notes of the deceased. Nine (1%) of the patients who underwent primary TKA, and four (5.8%) of those who underwent revision TKA developed deep infection. Two of nine patients (22.2%) who developed infection after primary TKA were successfully treated without further surgery. All four of the patients who had infection after revision TKA had a poor outcome with one amputation, one chronic discharging sinus and two arthrodeses. Patients who underwent an arthrodesis had comparable Oxford knee scores to those who underwent a two-stage revision. Although infection rates have declined with the introduction of prophylactic measures, and more patients are undergoing TKA, the outcome of infected TKA has improved very little.

Abstract no.: 51123

POSITIVE IMPACT OF TOTAL KNEE ARTHROPLASTY ON CARDIOVASCULAR STATUS IN ADVANCED OSTEOARTHRITIS OF THE KNEE

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Introduction: Patients with symptomatic osteoarthritis of knee are typically obese and relatively less active. Physical incapacity in advanced osteoarthritis of knee may induce cardiovascular deconditioning and increased risk of heart disease. Purpose was to evaluate impact of total knee arthroplasty upon cardiovascular status of patient, as assessed by endothelial function and its correlation with functional outcome. **Methods:** Twenty consecutive patients of advanced osteoarthritis of knee joint with tricompartmental involvement undergoing total knee arthroplasty (unilateral: 15 or bilateral: 5) were enrolled for this prospective study. Endothelial function was assessed by echocardiographic assessment of brachial artery to measure flow mediated dilatation (FMD) preoperatively and at 6, 18 months and final follow up (mean 32.2 months) postoperatively. Functional outcome was evaluated by Knee society score. Knee society score was correlated with degree of improvement in endothelial function. **Results:** Excellent improvement in Knee society score was observed from 65.4±30.3 (mean) preoperatively to 102.3±22.9, 152.5±19.8 and 161.8±14.2 at 6, 18 months and final follow up respectively. There was good improvement in endothelial function at 6 months (29.98±19.28%) and excellent improvement (69.87±35.57%) and (74.23±21.31%) at 18 months and final follow up respectively. Endothelial function and knee society score bore a negative correlation at baseline ($r=-.173$, $p=.467$) and 6 months ($r=-.018$, $p=.94$). There was insignificant correlation between cardiovascular status and knee score preoperatively and at 18 months and final follow up. **Conclusions:** Significant improvement in endothelial function can result following total knee arthroplasty in advanced knee osteoarthritis.

Abstract no.: 51125

BILATERAL TOTAL HIP ARTHROPLASTY: CLINICAL OUTCOME OF SHORT STEM VERSUS STRAIGHT STEM

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Introduction: Total hip arthroplasty (THA) is known to be the most successful orthopaedic surgery of the last century. The aim of the study was to compare outcome, blood loss and hospital stay of patients with simultaneous bilateral THA using a short stem and a straight stem. Materials & Methods: Forty-five patients underwent bilateral THA, whereas 23 received a straight stem and 22 a short stem. All surgeries were performed by two experienced senior surgeons. Blood count was checked routinely. All data from operation were collected from the operative reports. Results: Demographic data between the patient groups were similar regarding age, sex distribution and BMI ($p=0.021$, 0.887 , 0.536). In comparison to straight stem THA, short stem THA showed shorter operation time (mean: 69 vs. 115 min, $p<0.001$), less blood loss (mean Hb postoperatively: 1st day: 10.1 vs. 8.8, $p=0.009$; 3rd day: 9.6 vs. 9.0, $p=0.068$) and shorter length of stay at hospital (mean: 8 vs. 9 days, $p=0.118$). There was one revision for increased serum metal ions following MoM THA with a straight stem 57 months following implantation. Discussion: In the literature there are still controversies between 1- or 2-stage bilateral THA, where recent meta-analyses suggest superior results for 1-stage THA in terms of major systemic, cardiovascular or pulmonary complications. The current series also showed that 1-stage bilateral THA seems to be a safe and reliable procedure in selected patients without multiple co-morbidities. Further, short stem THA seem to be of advantage compared to straight stem THA concerning clinical performance.

Abstract no.: 51127

POSTERIOR TIBIAL ARTERY PSEUDOANEURYSM AFTER ANKLE ARTHROSCOPY

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The formation of a pseudoaneurysm after ankle arthroscopy is extremely rare. In this report we present the first documented case of a posterior tibial pseudoaneurysm in a young man undergoing arthroscopic debridement of a symptomatic os trigonum. Standard posteromedial and posterolateral portals were utilised. The patient presented a week post op with posterior medial ankle swelling and paraesthesia of the medial ankle and foot. The diagnosis was confirmed with a doppler ultrasound which demonstrated a characteristic yin-yang appearance and the lesion was further delineated with a CT angiogram. The patient underwent aneurysectomy with open ligation of the posterior tibial artery. His neurological symptoms which were secondary to the local mass effect of the pseudoaneurysm settled completely post op. The consequences of misdiagnosis of this rare complication are potentially catastrophic and surgeons should maintain a high degree of suspicion in patients presenting with atypical swelling post ankle arthroscopy. Meticulous dissection during the approach and preoperative mapping of the vascular structures are potential preventative measures.

Abstract no.: 51129

FIXATOR-ASSISTED NAILING IN THE TREATMENT OF FRACTURES AND VARUS MALUNIONS OF THE PROXIMAL HUMERUS

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Introduction: Fractures and malunions of the proximal humerus lead to functional impairment, especially limitation of abduction. Our aim was to develop a mini-invasive technique of correction of typical varus deformity providing easy closed nailing. Methods: 52 patients with 2-part fractures (37/52) and malunions of the proximal humerus (15/52) were operated. The technique featured small wire temporary external frame with two k-wires in the humeral head for spatial control. In case of acute fracture it allowed to reach alignment and proper length. In case of malunions percutaneous osteotomy of the surgical neck was performed prior to fixator application, and alignment was reached acutely by the fixator. Then closed intramedullary nailing was performed through a stab wound. Results: The technique allowed to restore anatomy of the proximal humerus and avoid varus malalignment. Mini-invasive approach provided fast functional recovery. 41/52 patients were available for follow-up in 1 year. 39/41 fractures and osteotomies healed, in two nonunions exchange nailing was performed. Patients demonstrated significantly increased shoulder function and quality of life. Discussion and Conclusion: The presented technique provides easy and reproducible way of mini-invasive restoration of anatomy of the proximal humerus in two part fractures and varus malunions. It results with low complication rate and good functional outcomes. Its feasibility in more complex injury patterns requires further research.

Abstract no.: 51130

HUMANITARIAN PAEDIATRIC ORTHOPAEDIC SURGERIES FOR SYRIAN REFUGEE CHILDREN IN LEBANON: THE NEED, THE MISSION AND THE RESULTS

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Background: the world is experiencing various problems, leading to high level of human displacement. Syria's civil war is the worst complex humanitarian emergency, 5 million Syrians fled to different countries, over half of whom are children. This study describes our orthopedic humanitarian mission, emphasizing on pediatric orthopedic problems in terms of presentation, treatment, follow up. Methods: from May to November 2017, screening in refugee camps all over Lebanon was done together with NGO. Candidates were children under 14 years, with serious orthopedic congenital conditions (DDH, foot deformities, polydactyly, syndactyly...) they were operated and followed in our institution. Results: 631 children were screened, 248 operations were done: 87 DDH (35%) with 5 Quadruple osteotomy, 24 Triple osteotomy, 8 Salter, 14 Dega, 36 open reductions. 42 neglected clubfeet (17%), 46 poly and syndactyly, 12 POPB, 73 other problems (tenotomy, metatarsus varus, flat foot, cubitus varus...). Three to six months follow up results show 94% patient satisfaction. Discussion: Late presentation makes treatment difficult and affects prognosis. Had they been not neglected, especially for DDH and clubfoot makes treatment feasible, costing less and better results could be achieved. Most common two pathologies were DDH (35%), and clubfoot (17%), which could have been treated without surgery if detected earlier. Conclusion: at present, there is a crucial need for such missions to treat medically neglected children. Early detections of orthopedic problems in pediatrics can tremendously affect treatment results and can improve the future lives of these children, changing their status from misery and hopelessness to happiness and hope.

Abstract no.: 51132

DUAL MOBILITY CUP IN FEMORAL NECK FRACTURES FOR HIGH RISK PATIENTS

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Dislocation is the most frequent complication when displaced femoral neck fractures are treated by hip replacements. The type of arthroplasty to be used in this clinical setting is still controversial above all in high-risk patients with obesity, cognitive impairment and neurologic diseases. DMC have been reported to have a low dislocation rate when used to manage these situation. This is a retrospective case series of 68 consecutive displaced femoral neck fractures, treated using a DMC as the acetabular component from 2013 to 2015. There were 49 females and 19 males. The mean age at operation was 69,5 years (range 49÷86). All the patients were treated via posterior approach with adequate capsular repair. The study cohort was classified according to the following 5 risk factors known to be associated with dislocation: femoral neck fractures, obesity, cognitive impairment, neurologic diseases and other orthopaedic disease. Forty patients knew a single risk factor, whereas 22 patients presented two risk factor and 6 patients three or more of them. None of the patients was lost to follow-up. One obese patient had early postoperative infection followed by multisystem organ failure leading to die. For the whole series, there is no revision for dislocation. The use of DMC has improved our approach to femoral neck fractures in high-risk patients, although neuromuscular and cognitive disorders are associated with greater risk of poor outcomes. Further experience and longer follow-up is needed before extending the application of this implants to more young patients and to assess the cost-benefit ratio.

Abstract no.: 51133

**DETERMINING OPTIMAL RATIO OF INTRAMEDULLARY NAIL
DIAMETER TO TIBIAL CANAL DIAMETER THAT LEADS TO RELIABLE
AND TIMELY HEALING IN TIBIAL SHAFT FRACTURES**

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The study was carried out at a Level I trauma center. 200 patients with tibial shaft fractures that underwent intramedullary nailing as definitive fixation were identified between Jan 2016 and December 2017. Of these, 90 had serial radiographs out to 12 months that could be analyzed for radiographic healing with an average age of 33 years old (range 18-60 years). There were 80 males and 10 females. All patients underwent intramedullary nailing of the tibia with documentation of both the diameter of the nail and radiographic canal width at the isthmus to determine the nail to canal ratio. Patients were followed with serial radiographs for at least 12 months to determine time to healing as a function of nail to canal ratio. The senior author assessed healing at 3, 6, 9, and 12 months using RUST criteria. Karlstrom-Olerud functional criteria was used to determine the functional status at follow up. Patients with an intramedullary nail to canal diameter ratio of less than 0.8 or greater than 0.99 were 4.4 times more likely not to heal than patients with a ratio of between 0.8 and 0.99. We concluded from the study that the ideal intramedullary nail to tibial canal diameter ratio to optimize tibial shaft fracture healing is between 0.8 and 0.99.

Abstract no.: 51134

DETERMINING OPTIMAL RATIO OF INTRAMEDULLARY NAIL DIAMETER TO TIBIAL CANAL DIAMETER THAT LEADS TO RELIABLE AND TIMELY HEALING IN TIBIAL SHAFT FRACTURES

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Abstract no.: 51135

SPONGE RUBBER REVEALED TWO YEARS AFTER PENETRATING INJURY

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This article illustrates a case report of a foreign body granuloma of the foot associated with two years retained spongy rubber foreign body, after penetrating injury. Considering the fact that it appeared almost two years after injury, a history of trauma was minimized, a foreign body has migrated from the plantar to the dorsal side of the foot and the roentgenographic appearance resembled a malignant process, it was difficult to rule out the possibility of a malignant tumour. This case shows weakness of MRI in discovering spongy rubber in the body and very rarely noticeable (to our knowledge just five in literature) bone osteoblastic reaction on the foreign body. Provided there is a suspicion of a previous trauma with embedded foreign body, the differential diagnosis of a bone neoplasm should take into account the possibility of a foreign body reaction, and it proved that biopsy is the best diagnostic tool.

Abstract no.: 51137

RETRO-LUNAR DISLOCATION OF CARPAL BONES WITH CAPITATE FRACTURE AND INTACT SCAPHOID: AN EXCEPTIONAL ENTITY WITH AN UNCERTAIN MECHANISM

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Retro-lunar fractures dislocations of carpal bones are rare lesions requiring a high-energy trauma which, when involving the capitate, are most often associated with a scaphoid fracture as part of the pseudo-Fenton syndrome described by Jones. These lesions are serious, in particular because of the threat they pose to wrist stability and the installation of osteoarthritis, which is often unavoidable, requiring an early surgical management. We report the case of retro-lunar dislocation of carpal bones with capitate fracture and intact scaphoid. A rare case whose pathomechanical mechanism remains the subject of much discussion. We propose a theoretical explanatory pattern that combines the lesion sequences described by Mayfield from lateral to medial but with resistance of the radio-scapho-capital ligament and the displacement of the transmitted force along Wagner's dislocation line from medial to lateral to justify both dorsal dislocation of carpal bones detaching the proximal pole of the capitate but with intact scaphoid and anterior tilt of lunate bones. Our management after orthopaedic reduction of the dislocation was surgical through dorsal approach and fixation of the proximal pole of the capitate. We then inserted three pins: scapholunate, triquetrolunate and scaphocapitate. 18 months after surgery, the functional evolution is satisfactory.

Abstract no.: 51139

MID-TERM RESULTS OF BONY GIANT CELL TUMOURS TREATED WITH ONLY CURRETAGE AND CEMENTATION

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Introduction: Giant cell tumor of bone is a primary benign tumor. Because of periarticular location of most GCTs, the limb function of the patient can easily be compromised, so intralesional excision with local curettage and filling the cavity with bone cement is the most preferred treatment method. The aim of this study is to present the midterm radiological and functional outcomes of bony GCT after curettage and cementation. **Material and Method:** We conducted a retrospective study of 37 patients with a histologically confirmed diagnosis of GCT of bone treated between the years 2005 and 2017. The involved bones were distal femur (14) followed by proximal tibia (10), distal Radius (4), proximal humerus (3), pelvis (2), proximal fibula (2) ulna and the second metatarsal bone (1) respectively. The average follow up was 47 months. (24-96 months). **Results:** The mean MSTS (musculoskeletal tumor society score) of the patients before the operation was 46% (40% -70%). The mean MSTS obtained one year after the surgery was %91.7 (73.3% -100%). One patient suffered deep wound infection, another patient suffered a superficial wound infection. We obtained tumor recurrence in four patients. One patient suffered also pulmonary metastasis at the second year follow up. **Conclusion:** Despite its local aggressive behaviour and frequent recurrence rates, GCT of bone is a benign condition and can be treated with intralesional curettage and bone cement support particularly when the tumor is nearby a joint instead of sacrificing the joint in order to achieve a better limb function.

Abstract no.: 51140

OUTCOMES FOLLOWING SURGERY FOR YOUNG PATIENTS WITH FEMORAL NECK FRACTURES

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Methods: Case series analysis of consecutive patients admitted to NHS AAA from 2008 to 2015. Patients included were aged less than 51 years. Patients were audited against the standard: anatomic fracture reduction must be achieved prior to proceeding with surgical fixation strategy rather than arthroplasty. Separate subgroup analyses were also performed based on fracture pattern. **Results:** Significant variability in practice and follow up exists. 30/46 patients were decided to have anatomic reduction of which 26/30 were fixed with a DHS. 3 patients underwent arthroplasty as a primary procedure, leaving 16/43 (37%) of patients not being treated according to the accepted standard of practice. Intracapsular fractures: 13/17 patients with anatomic reduction went on to heal with 4 requiring re-operations. 2/2 patients with an adequate reduction healed. 1/1 with a non-anatomic reduction developed AVN and went on to arthroplasty. Per/subtrochanteric fractures: 8/12 fractures healed with an anatomic reduction, with 3 patients lost to follow up and 1 painless non-union. 2/4 fractures with an adequate reduction healed, and 2 patients were lost follow up. 3/3 Non-anatomically reduced fractures healed with one ongoing pain undergoing removal of metalwork. **Conclusions:** This is the largest series of its type in the published literature. It highlights several key points: (1) the rate of AVN is lower than previously thought, occurring in 2/12 patients with anatomic reduction of intracapsular fractures; (2) the re-operation rate for fractures undergoing fixation is lower than previously thought, and (3) this cohort has significant pre-existing co-morbidities which should be considered during surgical planning.

Abstract no.: 51142

GORDON SYNDROME PHENOTYPE: A DIAGNOSTIC DILEMMA

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We report a case of multiple congenital contractures with phenotypical features suggestive of Distal Arthrogryposis Type 3 or Gordon syndrome. We are reporting a case of 7 years old female who presented to us with following features. Short stature, unable to walk without support, mode of ambulation mostly crawling. Polydactyly of hands and feet. There was campylodactyly in little finger left hand. Both forearms, shoulders and wrists were normal with preserved motor function. There was syndactyly in Right foot, campylodactyly in Left great toe. Presence of club foot in both left and right feet. The muscles of both lower limbs were wasted. Presence of cleft lip and high arch of palate. There was bifid tongue. The patient was of normal intelligence. Our case has no one in her family with congenital contractures. Gordon syndrome has autosomal dominant inheritance. Sporadic cases are more common in another subtype of Arthrogryposis i.e. Amyoplasia. The phenotypical features of Amyoplasia were absent in this patient. The literature is confusing regarding types of arthrogryposis described. So here we had a case with features suggestive of Gordon syndrome but the inheritance pattern was not there. So we would like to postulate that this condition is more likely to be a phenotypical expression of various heterogenous diseases.

Abstract no.: 51144

DO PREOPERATIVE BLOOD TESTS PREDICT PATIENT LENGTH OF STAY IN ELECTIVE TOTAL HIP REPLACEMENT?

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Background: Enhanced recovery begins before the onset of surgery with a thorough pre-operative assessment prior to their procedure. Numerous benefits have been proven from its implementation. Reducing postoperative complications, saving costs and shortening length of stay (LOS) are to name a few. Objectives: To determine whether pre-operative blood tests namely haemoglobin levels, white cell count and renal function tests, have an effect on patient's total length of stay in hospital. Study Design & Methods: Retrospective analysis of 51 patient records who underwent elective total hip arthroplasty. Results: Our data concluded that of these 51 patients, 41% were found to have a pre-operative Hb below 109g/L and of them 62% were discharged beyond 7 days. Of the remaining 30 patients who had a pre-operative Hb greater than 109g/L, 73% were discharged early (within 4 days). Of the 51 patients, 33% had a raised pre-operative WCC, of these, 53% were discharged more than 7 days after their surgery. Only 35% had an eGFR >90, 38% had an eGFR between 60-90, and 25% had an eGFR <60. Of those patients with an eGFR < 60, 10 were discharged more than 4 days after their surgery. Conclusion: The data collected shows that preoperative investigations prior to and during admission do have an almost predictable effect on the length of stay, and improving these variables would improve the post-operative outcome for our patients. It is imperative that these pre-operative investigations are rigorously analysed prior to the patient being listed for surgery.

Abstract no.: 51148

OPTIMISATION OF THE ALGORITHM FOR THE TREATMENT OF FRACTURES OF THE FEMORAL NECK IN PATIENTS OLDER THAN 80 YEARS

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Fractures of the femoral neck in old patients in most cases lead to loss of ability to support and, later, often to death. Treatment of such patients has a important features, that occur at all stages of treatment: examination, preoperative preparation of the patient and choice of the method of surgical treatment, the operation itself, postoperative management, rehabilitation. One of the main goals in the treatment of these patients is rapid activation. The work shows a detailed algorithm for treating old patients, which is used in our clinic from examination to rehabilitation. Important features of each stage of treatment are shown, which made it possible to shorten the periods before the operation, features in the rehabilitation. A treatment analysis was performed using the optimization algorithm in 27 patients with femoral neck fractures of 80 to 96 years old who underwent hip replacement. The data show the period of hospitalization, the time from injury to surgery and the time used to complete recovery from the time of injury. The implementation of the algorithm reduced hospitalization time and cost of treatment, significantly reducing the immobilization time and the period before surgery, and significantly influenced the success of rehabilitation and the return of these patients to normal life.

Abstract no.: 51151

A RETROSPECTIVE STUDY OF WRITTEN CONSENT IN TRAUMA AND ORTHOPAEDIC SURGERY

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With approximately 10,000 operations carried out in the UK each year, consenting patients for operative procedures represents an important daily duty for surgeons. In order for consent to be valid, patients must be provided with the relevant risks and benefits to facilitate an informed choice. Aims: With £46,000,000 in annual medical negligence costs arising from issues of consent, we set out to evaluate the adequacy of documented written consent in our Trauma & Orthopaedic department. Methods: A retrospective review of consent forms was undertaken in November 2017. Consent forms were analysed for the following parameters: procedure type, if forms were correctly signed by both patient and doctor, relevant risk factors listed and whether or not a copy of the consent form was given to the patient. British Orthopaedic Association endorsed procedure specific consent forms available from Orthoconsent.com formed the standard in which we measured against. Results: 52 patients reviewed: 31 excluded, 21 included. On average: 46% common risks, 55% less common risks & 49% rare risks were documented per procedure. 86% of patients did not receive a copy of their consent form & 66% of forms were signed in an inappropriate place by clinicians. Conclusions: This audit has raised a significant failure in our process of sufficiently informing patients of potential risks when undergoing common orthopaedic procedures. The findings observed highlight serious concerns regarding the validity of our current consenting process.

Abstract no.: 51155

ASSESSMENT OF THE SURGICAL MANAGEMENT OF ANKLE FRACTURES FROM PRESENTATION TO DISCHARGE: OUR EXPERIENCE FROM A DISTRICT GENERAL HOSPITAL

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Introduction: Ankle fractures are a common presentation to any trauma and orthopaedic unit. The patient journey commences from the emergency department (ED) and continues until their discharge with each stage presenting its own challenges. **Methods:** Retrospective Analyses of 49 patients with unstable ankle fractures requiring operative intervention from April 2017 to December 2017. The patient journey was assessed from presentation to the ED right through to discharge. **Results:** The age range was from 15-80 years. In the ED, <50% of the patients had a radiographic diagnosis of an ankle fracture within 30 minutes of arrival. 65% of patients had diagnostic X-ray within the first hour. After arrival to the ED, 25 patients were admitted to the ward within 4 hours, 5 patients having to wait for 9 hours. 27 patients (more than 50%) had their surgery within 2 days after being admitted, and 20 of them were discharged within 2 days. In comparison, 6 patients had to wait more than 6 days for their operation. 96% of patients received chemical thromboprophylaxis, all patients were advised to not weight bear on the affected limb for a minimum of 6 weeks, and no post-operative morbidity or mortality was encountered. **Conclusion:** Not only is operative intervention for unstable ankle fractures imperative to improve functional outcome, but surgical intervention, sooner rather than later, does reduce post-operative hospital length of stay. There is evidence to support no added benefit to post-operative chemical thromboprophylaxis, in low risk patients, and is something we should consider.

Abstract no.: 51158

CASE REPORT: FEMORAL NECK FRACTURE RESULTING FROM A LOW VELOCITY GUNSHOT TRAUMA

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Introduction: In Western Europe, gunshot wounds are relatively rare, but the incidence has been increasing. The majority are low velocity gunshot wounds. There is a limited number of publications on gunshot trauma resulting solely in femoral neck fracture. We present a case of a low velocity gunshot wound in the thigh that resulted in a comminuted basicervical fracture with no vascular or other lesions. Material: A 29-year-old male presented in the emergency department with a gunshot wound in the left thigh. There was no exit wound. The patient referred pain to the mobilization of the limb and had stable vitals. There were no neurological deficits and all the peripheral pulses were present. There were no signs of compartmental syndrome or any other clinical findings. Imaging exams, radiographs and CT scan, revealed a comminuted basicervical fracture, without vascular lesions, with a projectile image on the left buttock with no signs for intra-articular bullet fragments. Methods: Antibiotic prophylaxis was started. A joint sparing surgery was preferred - closed reduction and internal fixation with a dynamic hip screw, without extraction of the projectile. Results: No postoperative complications were observed. The patient was clinical discharged 4 days later with partial discharge and started physical therapy. Discussion/Conclusion: Femoral neck fractures after a gunshot wound are relatively rare, but can result in serious injury, due to a relatively high density of vital anatomy in this area. We report a case of a femoral neck fracture by gunshot trauma treated with joint sparing surgery with good results.

Abstract no.: 51160

PAEDIATRIC SUPRACONDYLAR FRACTURES WITH SURGICAL INDICATION: AN EPIDEMIOLOGICAL ANALYSIS OF 21 YEARS OF EXPERIENCE

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Introduction: Supracondylar fractures of the humerus (FSC) are common in the pediatric population. Most of these fractures are in extension and are classified according to Gartland classification. This retrospective analysis was to assert the epidemiology of these fractures with surgical indication treated at our institution. Materials: We retrospectively identified patients aged ≤ 16 years with a diagnosis of FSC, of the extension type, surgically treated at our institution, for 21 years, between 1996 and 2016. Methods: The files were individually reviewed, the parents contacted by telephone and data was collected regarding: age, gender, classification of fracture type according to Gartland, surgery and complications. Results: A total of 356 patients were identified. Average age was 6,48 years, with a prevalence of the male sex (65,9%). 135 (37,9%) were classified as Gartland II and 221 (62,1%) as Gartland III. We verified an incidence of 17,1 cases/year with higher incidence between April and October. In 27,5% of the cases the fracture was associated with the practice of sports. In 274 (77,0%) cases the surgical treatment was with percutaneous fixation with crossed kirschner wires (KW); 5 (1,4%) cases with open reduction and fixation with crossed KW; in 77 (21,6%) cases with lateral KW percutaneous fixation. In 16 (4,5%) cases were identified neurological complications; in 13 (3,7%) cases postoperative deformity. There were no vascular complications. Discussion/Conclusion: Epidemiological evaluation is an important element in assessing the characteristics of a given population in an attempt to relate patterns of behavior and activity with the incidence of specific lesions.

Abstract no.: 51162

TRAUMA TRIAGE CLINICS: STREAMLINING AMBULATORY TRAUMA THROUGH FRACTURE CLINIC

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Aims: Improve flow and efficiency of ambulatory trauma. **Introduction:** Torbay Hospital serves a fluctuating population of 386,000 patients annually, with 78,000 attendances to the Emergency department. Trauma Triage (TT) was initiated to ensure compliance of NICE and BOAST guidelines for fracture clinics. TT is an Orthopaedic consultant-delivered virtual clinic designed to treat non-operatively managed trauma more efficiently. **Methods:** Data was prospectively collected over three months of TT clinic outcomes in conjunction with a patient satisfaction questionnaire. **Results:** 1012 patients were reviewed in a TT clinic with 31% directly discharged, 25% had an urgent fracture clinic (< 1 week from injury), 32% had a routine appointment (> 1 week from injury) and 13% required allied health specialists. Of those brought back to a fracture clinic 13% had a sub-specialist review at their first appointment. This led to a mean of 347 less appointments a month equivalent to 58 hours saved; an actual reduction of fracture clinics from 16 to 12 per week. This eliminated unnecessary attendances allowing early sub-specialist review at the appropriate time post-injury and more clinical time for complex cases. 1039 patient satisfaction questionnaires were distributed (response rate 25%). 90% of respondents strongly agreed that the service they received was quick and efficient. **Conclusions:** TT has revolutionised the provision of our fracture clinic service, minimising the number of appointments required by patients without compromising their outcomes, and with excellent patient satisfaction.

Abstract no.: 51163

LONG-TERM OUTCOMES OF CEMENTED HIP ARTHROPLASTY IN 150 HIPS FOR OSTEONECROSIS OF FEMORAL HEAD

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Background: Total hip arthroplasty (THA) is commonly performed in advanced stages of osteonecrosis of femoral head (ONFH). Studies in patients who underwent hip replacement for osteonecrosis shows an overall failure rate higher than those with OA. Different etiologic factors carry different prognosis in long-term durability of hip replacements. Current literature with short to medium term follow up of uncemented THR is encouraging. However, there is a paucity of data regarding long-term results following cemented THR with the advent of refined surgical procedure and modern cementing techniques. Methods: Consecutive patients with cemented THA for osteonecrosis of hip managed by a single unit between April 1995 and July 2000 were included. 150 cemented THA were done during this period. Clinical and radiological outcomes were analyzed. Results: Mean age at the time of THA was 53years (23-85). Mean follow up was 9.26 years. At the time of final review, 08 patients had died. All patients had cemented THA. During FU period, 18 hips required revision. 14 for aseptic loosening of the cup, 2 for wear of cup, 1 for infection and 1 for dislocation. Prevalence of aseptic loosening of the cup was 9.33%. Rest of the patients had good to excellent result. Conclusion: This is the largest series of patients with osteonecrosis with long-term follow-up available. Cemented THR following osteonecrosis gives predictable clinical results and is an excellent option to be offered in this patient group.

Abstract no.: 51166

OBJECTIVE QUANTIFICATION OF SOFT-TISSUE BALANCING USING VERASENSE IN MEASURED-RESECTION AND GAP-BALANCING TOTAL KNEE ARTHROPLASTY

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Background: Soft tissue balancing which is above all most important factor of total knee arthroplasty, has been performed by subjective methods. Recently objective orthosensor has been developed for compartment pressure measurement. The purpose of this study was to evaluate: (1) objective quantification of ligament balancing in total knee arthroplasty, (2) types and effectiveness of additional procedures to compartment pressure, and (3) change of pressure values in both compartment throughout the range of motion in total knee arthroplasty. Methods: Eighty-four patients underwent total knee arthroplasty (TKA) using VERASENSE Knee System. TKA was performed by measured-resection and modified gap-balancing technique. Compartment pressure was recorded on full extension, 30°, 60°, 90° and full flexion at initial (INI), after each additional procedure, and after final (FIN) implantation. Balanced knees were defined as when the compartment pressure difference was less than 15 pounds. Results: Thirty patients (35.7%) showed "balanced" knee with no need to perform additional ligament balancing on initial pressure measurement. The proportion of "balanced" knee after initial bony resection, modified gap balancing TKAs showed significantly higher value than measured-resection TKAs ($P = 0.004$). On both compartment, the pressure was generally decrease throughout the ROM on both TKA methods. Both compartment showed statistically significant linear correlatton. Total 66 additional ligament balancing procedures were performed. Conclusion: Using the objective orthosensor, we were able to obtain 94% of well-balanced TKA. Furthermore, acquired objective data can lead to proper ligament balancing for the surgeons and consequently reduce the complications.

Abstract no.: 51167

PREDICTORS OF ANKLE FRACTURE FIXATION FAILURE

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Ankle fracture is the second commonest fracture in trauma and orthopaedics, representing a substantial trauma load. Revision surgery has significant impact on both hospitals and patients. We aimed to identify predictors of ankle fracture fixation failure. All adult patients presented with closed ankle fracture in our unit from October 2016 to October 2017, were screened. Baseline demographics, fracture classification (Danis-Weber classification), radiographic assessment, operative notes, complications and follow up data were reviewed, retrospectively. Predictors of ankle fixation failure were analysed using logistic regression analysis and Pearson's chi-squared tests. 82 patients, had their fractures fixed, were included. The mean age was 52.9 years (18-87). Fifty were females (61%). 54 cases were Weber B (65.9%), 20 (24.4%) were C, 24 (29.3%) cases had syndesmotic injury (4 isolated, and 21 associated with fracture), 3 (3.7%) presented with isolated medial malleolus fracture, and 1 (1.2%) was Danis-Weber A. 44 (53.7%) cases had bi- malleolar fixation, 15 (18.3%) managed by fibular plating, 12 (13.4%) had tri-malleolar fixation, syndesmotic screws were used in 8 (9.8%) cases, and 3 (3.7%) medial malleoli were fixed with screws. 8 (9.8%) fixations failed and revised. Risk factors of failure were male gender ($p = 0.03$), syndesmotic injury ($p < 0.000$), and medial malleolus fracture ($p = 0.02$). One patient (1.2 %) had re-revision. The identified risk factors of re-operation are useful to guide surgeons planning for ankle fracture fixation. Robust syndesmotic and medial malleolus fixation reduces the risk of fixation failure.

Abstract no.: 51174

A NEW ANKLE FRACTURE CLASSIFICATION SYSTEM

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Ankle fractures are common, Court-Brown et al calculated an incidence of 125/100000/year, they occur in bimodal age distribution with young males and old females being more subjected. Many systems are used to classify ankle fractures, Denis Weber, Lauge Hansen and AO/OTA are the most popular among them, all of the three systems were studied thoroughly to test their reproducibility and clinical impact, many drawbacks and limitations were reported. A new system is proposed, it is descriptive and based on the pattern of the medial and lateral malleoli fractures and the presence or absence of a syndesmotic injury, medial malleolus (M) is classified into three types, M1 is a transverse, M2 is oblique and M3 is a vertical fracture, for the lateral malleolus (L) Denis Weber system is retained, so La is infra syndesmotic, Lb is trans syndesmotic, and Lc is supra syndesmotic, for the syndesmosis (S), if it is intact Si, and Sd if it is disrupted, then the three elements are assembled together, for example, (M2 Lb Sd) is an oblique fracture of the medial malleolus with a trans syndesmotic fracture of the lateral malleolus and a disrupted syndesmosis. The system is easy, descriptive, and clinically relevant as it can adequately describe the fracture pattern and aids in the selection of implants for operative fixation, it can also address the issue of fracture stability.

Abstract no.: 51176

**INDICATIONS FOR ARTHROSCOPY IN A DEVELOPING WORLD
ORTHOPAEDIC HOSPITAL**

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Introduction: Arthroscopy is a less invasive minimal access surgery and it has revolutionized the management of the pathological knee. This study depicts a pioneering developing world experience. Methods: The theatre records of procedures between 2012 and 2015 were highlighted. Results: A total of 30 patients had Arthroscopy of the knee. 21 (70%) were males while 9 (30%) were females, (M:F=2.3:1), age range of 10-76 ; mean =35.8 (+/-14.5) years. The commonest indication for Arthroscopy was retrieval of loose body / foreign body (n=8 (27%)) ; followed by debridement/washout (n=6 (20%)) ; thirdly meniscal repair (n=5 (17%)) ; fourthly diagnostic arthroscopy only (n=4 (13%)) ; fifthly anterior cruciate ligament reconstruction (n=3 (10%)) ; and osteochondral surgery and meniscectomy occupying the sixth positions equally, (n=2 (6.66%). Conclusion: Arthroscopy where and when indicated is a faster route to recovery and return to play.

Abstract no.: 51181

EVALUATION OF BLOOD FLOW BEFORE AND AFTER THE SHORT EXTERNAL ROTATORS DISSECTION DURING THE POSTERIOR APPROACH IN TOTAL HIP ARTHROPLASTY

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Introduction: The posterior approach in total hip arthroplasty (THA) requires dissection of the piriformis muscle (PM), which increases the postoperative rate of dislocation. The rate of dislocation is effectively reduced by PM repair. However, repair of the PM after dissection causes progression of muscle atrophy. One of the known causes of muscle atrophy is reduced blood flow. The present study aimed to measure the blood flow in the muscles around the hip joint before and after dissection of the short external rotators (SERs) during the posterior approach in THA. **Methods:** This prospective study included 26 patients with coxarthrosis who underwent THA via the posterior approach between February and September 2017. A laser Doppler rheometer was used to measure the blood flow in the following tissues before and after dissection of the SERs: the PM, superior gemellus (SG), inferior gemellus (IG), obturator internus (OI), and subcutaneous tissue (as a control). **Results:** The respective average pre-tenotomy and post-reattachment blood flows were: 1.90 ± 0.28 and 1.92 ± 0.40 mL/min/100 g in the PM, 1.94 ± 0.20 and 1.99 ± 0.39 mL/min/100 g in the SG, 1.91 ± 0.21 and 1.94 ± 0.30 mL/min/100 g in the IG, 1.93 ± 0.22 and 1.98 ± 0.36 mL/min/100 g in the OI, and 1.94 ± 0.24 and 1.87 ± 0.38 mL/min/100 g in the subcutaneous tissue. The pre-tenotomy and post-reattachment blood flows did not significantly differ in any muscle or the subcutaneous tissue.

Abstract no.: 51183

A COMPARISON BETWEEN POSTERIOR-STABILISED AND POSTERIOR CRUCIATE LIGAMENT-RETAINING TOTAL KNEE ARTHROPLASTY IN RHEUMATOID ARTHRITIS KNEE: CLINICAL OUTCOME SPECIALLY KNEE PROPRIOCEPTION

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INTRODUCTION: The posterior-stabilized and posterior cruciate ligament-retaining total knee arthroplasty have been reported to confer favorite outcome. However, it remains to be investigated if one procedure is superior to the other in terms of proprioception. We evaluated knee proprioception after TKA in a of group patients with rheumatoid arthritis. **MATERIALS AND METHODS:** We estimated one-year postoperative knee proprioception in 33 patients (14 CR,19 PS). Proprioception was evaluated through reproduction of static knee angle. To do so, we developed a portable, easy-to-use digital computerized goniometer. We measured absolute angular error in different angle and position (weight-bearing and non-weight-bearing).. Mean knee flexion was compared between the two group of patients. **RESULTS:** When estimated in non-weight-bearing state, mean knee flexion among patients with CR TKA at 30, 45,70, and 90 degree of knee flexion were 33.8, 52.5,65, and 87.5, respectively. The corresponding figures among patients with PS TKA were 35.7, 51,62, and 88,($p>0.05$).In weight-bearing state thus the result aren't statistically significant in CR prosthesis versus PS type. These evaluations were performed on the non-operated knee of the opposite side, which no obvious difference, relative to the operated side, was found. **CONCLUSION:** in this study, no significant difference was observed in both prosthesis. Since the appearance of a good proprioception depends on having good function of joint, it can be said that the function of both prostheses in RA patient are similar and acceptable. Though more studies are more useful in this regard.

Abstract no.: 51185

ANATOMICAL STUDY AND CLINICAL APPLICATIONS OF ISLAND FLAPS BASED ON THE LATERAL PEDIS CHAIN-LINKED ARTERY

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To describe the use of lateral pedis island flap as one of the option to cover foot, posterior heel and ankle region. Methods: This study was divided into two parts: an anatomic study and clinical application. In the anatomic study, 60 cadaveric feet were injected with latex, and then the main vessels distributed at the lateral aspect of the foot were observed. Based on the anatomic characteristics, a chain-linked vascular network had been demonstrated on the lateral pedis, island flaps based on this vascular network were developed for clinical use and implemented in sixteen cases. Results: The anatomical study revealed the external caliber of the lateral calcaneal artery was 1.0 ± 0.3 mm. The descending branch of the anterior lateral malleolar artery with a diameter of 1.3 ± 0.3 mm runs distally along the anterior border of the lateral malleolar, and divided into two principal branches at the tip of the lateral malleolar. The posterior branch anastomosed with the lateral calcaneal artery. The anterior branch anastomosed with the lateral tarsal artery. The lateral tarsal artery gave off branch to anastomose with the fourth dorsal metatarsal artery. With true anastomosis these four arteries formed into a chain-linked artery. All the island flaps survived completely without any significant complications. Conclusions: A new lateral pedis chain-linked artery based island flap was designed. The territory covered by the flap could be enlarged with the communication among the arteries. This flap is a good alternative for soft-tissue defects of foot, posterior heel and ankle.

Abstract no.: 51186

POSTERIOR-STABILISED VERSUS POSTERIOR CRUCIATE LIGAMENT-RETAINING TOTAL KNEE ARTHROPLASTY IN RHEUMATOID ARTHRITIS KNEE IN RELATIONSHIP TO CLINICAL OUTCOME AND PROPRIOCEPTION

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INTRODUCTION: As was traditionally set in RA disease, PCL ligament has always some degree of weakness and degenerative changes, due to this problems PS-type prosthesis was the modality of choice. It shows that, there are no significant differences in knee stability and ROM between this two types of CR-type or PS-type prosthesis, we designed a retrospective study to show the clinical outcome and proprioception changes. **METHODS:** In our study , 26 CR-type and 14 PS-type TKA procedures were performed on 32 patients who suffered from RA between april 2010 and 2015. They have been followed up with radiological assessment and clinical evaluation with Knee Society clinical score (KSS). The proprioception assessment was done in the Gait analysis center. **RESULTS:** In 2 years follow-up we have two cases of revision. One of them due to infection and one other due to acute sinovitis. After surgery ,all the patients shows a significant enhancement in clinical and functional assessment but our study has not shown a significant difference between PS-type and CR-type prosthesis. In study of knee proprioception by gait analysis system our study shows no significant difference between PS-type and CR-type prosthesis TKA and also in operated versus unoprated knee of patient. **CONCLUSION:** In order to choose between two type of the prosthesis we need additional long-term follow-up studies , the results of our study shows that CR-type TKA in patients with RA could be performed with out any significant problems.

Abstract no.: 51187

DIAGNOSIS AND TREATMENT OF BROWN TUMOUR: A CASE REPORT

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Brown tumor is a tumor-like disease that can occur as a linked disease of hyperparathyroidism. It can cause osteoporosis, osteitis fibrosa cystica, and pathologic fractures by excessive activation of bone osteoclast activity. Brown tumor is known to be naturally recovered through the treatment for hyperparathyroidism. However, there is no consensus on the treatment for various bony lesions. The purpose of this paper is to report the treatment and results of bony lesions through four cases. A twenty-eight-year-old male is the first case diagnosed with pathologic fracture due to brown tumor. He underwent intramedullary nailing with parathyroidectomy. After four-year follow-up, bone marrow density was increased and bone union was accomplished. Remnant bony lesions were improved. A twenty-one-year-old female is the second case diagnosed with osteitis fibrosa cystica via bone biopsy. After three-year follow-up with conservative treatment, symptoms improved. A twenty-six-year-old female is the third case who underwent tumor resection and reconstruction using tumor prosthesis for osteolytic pathologic fracture of the right proximal humerus. After bony reconstruction, parathyroidectomy was performed. After two-year follow-up, the implant was well maintained and no additional bony lesions were occurred. Finally, a thirty-nine-year-old female was diagnosed as a brown tumor on the proximal humerus. Conservative treatment was performed. At final follow-up, symptoms improved. In conclusion, systemic examination should be accompanied by clinical symptoms and radiographic examination for abnormal bony lesions for accurate diagnosis of brown tumor. And a good prognosis can be expected when the parathyroid disease is treated simultaneously with the treatment of bony lesions.

Abstract no.: 51190

UNDERSTANDING PAIN PERCEPTION IN OA OF THE HIP

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Recent functional magnetic resonance imaging (fMRI) studies have identified a network of brain regions associated with chronic pain. This study was undertaken to see if fMRI can demonstrate changes in the resting state fMRI in patients with osteoarthritis of the hip. Thirty hip OA patients and 10 age-matched controls underwent resting -state fMRI, using a 3 Tesla MR scanner. Based on a previous fMRI study, the dorsal anterior cingulate cortex (dACC), secondary somatosensory cortex (S2), anterior and posterior insula, and thalamus were selected as regions of interest (ROIs), and were identified on each participant's anatomical images with the aid of an anatomical atlas. For each ROI, connectivity was compared between hip OA patients and controls using a mixed-effects GLM analysis. Results were presented as brain maps of the Z-score of the difference in connectivity, corrected for multiple comparisons using a false discovery rate (FDR) of 0.05. Relative to controls, connectivity between S2 and the left posterior insula was greater in hip OA patients. Connectivity was reduced between the posterior insula and the hip area of the primary motor and sensory cortices. Resting-state fMRI defines the brain signature for chronic pain secondary to OA of the hip joint.

Abstract no.: 51195

**CLINICAL OUTCOMES OF ACUTE CERVICAL SPINAL CORD INJURY
DEPENDING ON THE TIMING OF SURGERY**

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Background: There have been lots of prior studies that show optimal surgical time for acute spinal cord injury. Most studies reported that early surgery had better results than late surgery. However, the timing of surgery remains controversial. Materials and Methods: We analyzed patients whose surgery was performed for acute cervical spinal cord injury from 2007 to 2017. We analyzed change in ASIA Impairment Scale and ASIA motor subscore depending on the timing of surgery and analyzed the relation of clinical outcomes and age, gender, neurologic level of injury and type of spinal cord syndrome by multivariate analysis. Secondary outcomes were analyzed with complication and mortality. Results: A total of 154 patients with acute cervical SCI were enrolled. Of these, 49 patients(A) underwent early surgery (≤ 24 hr), 54 patients(B) underwent intermediate surgery (24~72hr) and 48 patients(C) underwent delayed surgery (≥ 72 hr). AIS improvement was shown as 44.8% in group A, 31% and 24.1 % in group B and C respectively (A vs B&C; $p=0.041$). In the multivariate analysis, with steroid administration, the rate of AIS improvement were 33% in early surgery group and 16% in the other group (odds ratio=2.6, $p=0.061$). Age, gender, and NLI had no relation with AIS statistically. Mortality during hospitalized period was 2 in group A and 1 in group B. The complication rate was 34.6% in group A, 28.5 and 24.4 % in group B and C respectively. Conclusions: Surgery prior to 24 hours after acute cervical SCI and preoperative mega-dose steroid administration could improve clinical outcome.

Abstract no.: 51196

**IS CERVICOTHORACIC JUNCTION PRESERVING FUSION A RELIABLE
PROCEDURE IN THE ASPECT OF ADJACENT SEGMENT DISEASE?**

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Introduction: When cervical spine fusion, especially multilevel fusion, is considered, some literatures say that cervico-thoracic junction should be fused in order to prevent ASD at C7-T1 level. However, there is still controversy about the extension of fusion and a paucity of literature reporting about the outcomes. Materials and Methods: We enrolled 142 patients underwent instrumented cervical spinal fusion from January 2006 to December 2014. We included the cases that involved the C6-7 segment preserving C7-T1 segment, and had minimum 2-year follow-up period. The patient's detailed medical records and radiographic studies were reviewed retrospectively. We analyzed clinical outcome using modified Odom criteria. Radiographic assessment including cervical lordosis before and after the surgery and degenerative change of C7-T1 segment were checked. Results: One hundred twenty three patients (86.6%) showed an excellent or good outcome, fourteen (9.8%) fair, and five (3.5%) poor at last follow-up. Radiographic instability at the adjacent segment was shown in twelve (8.4%) patients (combined anterior-posterior; 8 anterior; 4 patients C2-3; 1, C3-4; 3, C7-T1; 8, disease; 8, trauma; 4). Only five patients (3%) suffered from adjacent segment disease with clinical and radiographic evidences. Of five ASD patients (all were C7-T1 level), four (80%) were combined anterior-posterior surgery and one (20%) anterior surgery patients ($p=0.36$). There was no evidence of nonunion or delayed union with last F/U radiograph. Neck pain and radicular arm pain were improved only with medical treatment and there was not any case needed an additional surgery in order to correct the instability. Conclusions: Multilevel cervical fusion, which preserving C7-T1 segment, is safe, effective and reliable procedure, especially in the aspect of fusion and ASD.

Abstract no.: 51197

EFFICACY OF MULTILEVEL ANTERIOR CERVICAL DISCECTOMY AND FUSION WITH PEEK CAGE: PLATE CONSTRUCTS IN DEGENERATIVE CERVICAL SPINE DISEASES USING SURVIVAL ANALYSIS

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Background: Although it is well known that the anterior cervical discectomy and fusion shows reliable results, there is lack of studies about the survival of multilevel ACDF using PEEK cage-plate constructs in degenerative cervical spinal diseases. Materials and Methods: We enrolled 84 patients who underwent multilevel ACDF due to degenerative cervical spinal disease, they had minimum 3-year follow-up period after the operation, from January 2004 to December 2016. We analyzed the survival rate for the revision operation due to adjacent segmental disease by Kaplan-Meier survival analysis. We also evaluated the influences of age at the operation, sex, level of fusion, C2-7 lordosis, fusion segment lordosis, BMD and occupation on the revision surgery and implant-related complication. Results: Five of 84 patients needed a revision surgery (5.9%). As the revision surgery, the 3-year survival rate was 93%, 5-year, 7-year, 10-year survival rate were 83%. The reasons for the revision surgery were ASD in 2 cases, infected nonunion in 1 case, pseudoarthrosis in 1 case, and neurologic deterioration in 1 case. Screw and plate pull-out was observed in 12 patients (14%). Only one patient, who had pseudoarthrosis, needed a revision surgery. Ten patients (12.5%) showed evidence of adjacent segmental degenerations on the radiograph, only 2 patients needed a revision surgery. Only BMD was related with implant-related complications ($BMD < -2.0, p = 0.02$). Conclusions: When anterior cervical fusion is considered in the multilevel degenerative cervical spinal diseases, ACDF using PEEK cage-plate constructs is a recommendable treatment option in the aspect of fusion rate and low rate of revision operation.

Abstract no.: 51200

INCIDENCE OF HIP FRACTURES IN SOUTH KOREA DURING THE LAST TEN YEARS: AN EPIDEMIOLOGICAL STUDY BASED ON THE NATIONAL HEALTH INSURANCE DATABASE

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Background: This study investigated the incidence rate of hip fracture over the last 10 years on the basis of sex and age among people age ≥ 50 years in South Korea. **Methods:** Medical insurance claims regarding cases of hip fractures that occurred in Korea for the past 10 years, from January 1, 2007, to December 31, 2016, were collected through the Health Insurance Review and Assessment Service. The total Korean population and the population of each age group were identified by the National Statistical Office by collecting resident registration information from 2007 to 2016. We retrospectively analyzed the trends of crude incidence rate (CR) and age-adjusted incidence (AR) rate in patients age ≥ 50 years according to sex and age. **Results:** The annual percent change in AR of hip fractures except subtrochanteric fractures in the patients age ≥ 50 years increased by 3.66% ($p = 0.002$) in 2007–2010 and decreased by 1.07% in 2011–2016 ($p = 0.319$). In addition, the trend of the annual changes in AR of total hip fracture increased by 3.69% ($p = 0.005$) in 2007–2012 and decreased by 3.39% ($p = 0.040$) in 2013–2016. **Conclusion:** The number of hip fractures occurring in people age ≥ 50 years is increasing annually, and the incidence rate in the elderly is also increasing. However, the age-standardized incidence of fracture, adjusted for standard population, has been decreasing in terms of total hip fracture since 2012 and in terms of hip fracture except subtrochanteric fracture since 2010.

Abstract no.: 51203

**UNCEMENTED BIPOLAR HEMIARTHROPLASTY FOR
INTERTROCHANTERIC HIP FRACTURES AND STABILISATION OF
TROCHANTERIC FRAGMENTS WITH TROCHANTERIC CLIP: A
PROSPECTIVE STUDY**

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Introduction: Intertrochanteric hip fracture in elderly population is common. These fractures are difficult to fix with Dynamic Hip Screw and other implants when unstable. Nonsurgical treatment is with high morbidity and mortality. Rate of failure with internal fixation has been found to be high. The aim is to assess the efficacy of uncemented hemiarthroplasty in the management of proximal femoral fractures in these unstable variety. Material and Methods: Fifteen patients (3 males and 12 females) have under gone hemiarthroplasty using lateral Harding's approach. Trochanter fragments were fixed with trochanteric clip and cables. Harris hip score was used for the clinical evaluation. Results: Mean age 66.5 years, 9 cases were Evans type V, 4 cases were of type III, and 2 were of type IV. The mean follow up was 36 months. The average Harris hip score was less than 75 at 6 weeks and less than 80 at 3 months. Good to fair results were obtained at these follow-ups in 11 cases (90%) and poor in 2 (10%) cases. The average hospital stay was 3 days. Follow up X-rays showed no implant loosening or sinking. There was one case of superficial surgical wound infection. Conclusion: The treatment of unstable intertrochanteric fractures in selected elderly patients with severe osteoporosis and comorbid can be modified from the conventional fixation to replacement of head of femur and fixation of trochanteric fragments with trochanteric clip and cables. This offered early full weight bearing mobilization post operatively.

Abstract no.: 51204

DISCUSSION OF REASON OF INFECTION AFTER OPEN FRACTURE WITH SEVERE INJURY

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Background: When severe patients who were injured with trauma was carried to our hospital, he was treated by emergency Physicians and orthopedic surgeons. But unfortunately, a few wounds of open fracture were infected. We discuss why they were infected. Method: We eliminate patients with trauma that were admission to ICU from 2009 to 2017. We discuss about age, antibiotics, type of open fracture, medical history, mount of irrigation, the period from injury to irrigation, the score of SOFA APACHE-2 and ISS, the period during ICU, the period from injury to take antibiotics, the period from injury to operation, the period from injury to second operation, the period from injury to take the nutrition. Result: 40 patients had severe trauma injury and were treated at admission. 5 patients were infected and 2 patients had amputation. Conclusion: The reason that patients were infected were severe injury, worse general condition and type 3 of gastilo.

Abstract no.: 51206

OUTCOMES OF SURGICAL TREATMENT FOR THORACIC MYELOPATHY

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Because of the rarity of thoracic myelopathy, few studies have analyzed a large number of clinical results for patients with thoracic myelopathy treated in a single institution. The aim was to investigate the clinical outcomes in patients with thoracic myelopathy in a single institution and to identify prognostic factors for poor outcomes. Seventy-one patients who underwent surgical treatment for thoracic myelopathy between 2000 and 2011 in a single institution were included in this analysis. We investigated the patients' characteristics, surgical outcomes, and prognostic factors for poor outcomes. Of the 71 patients, 8 patients had disc herniation (DH) or spinal stenosis (SS), 10 had ossification of the posterior longitudinal ligament (OPLL), 38 had ossification of the ligamentum flavum (OLF), and 15 had OPLL + OLF. The mean patient age at the time of surgery was 62.2 years. Thoracic myelopathy was caused by OPLL and/or OLF in 63 patients (89%). Fifty-six patients underwent laminectomy, 8 underwent laminectomy and posterior fusion, 4 underwent OPLL extirpation and posterior fusion, and 3 underwent OPLL extirpation. The mean Japanese Orthopaedic Association Scoring System (JOA) scores before surgery and at the final follow-up examination were 6.0 ± 1.8 and 7.8 ± 2.0 points, respectively, yielding a mean recovery rate of $32\% \pm 44\%$. The JOA score improved significantly postoperatively ($P < 0.05$). Risk factors for poor outcomes were longer preoperative symptom duration, preoperative JOA score <7 , and OPLL and/or OLF. Large blood loss volume was significantly associated with a worse postoperative JOA score.

Abstract no.: 51209

DISTAL FEMORAL REPLACEMENT OUTCOMES: A MAJOR TRAUMA CENTRE STUDY IN THE ELDERLY WITH DISTAL FEMUR FRACTURES

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Background: The rise in an aging osteoporotic population has led to an increase in incidence of complex distal femur fractures. Many surgeons now consider utilising mega endoprosthesis such as distal femoral replacements (DFR) in treating such injuries. The study assesses outcomes after DFR performed in patients with such injuries in a level 1 major trauma centre. **Methods:** A retrospective review was conducted of twenty patients aged ≥ 65 with distal femur fractures that underwent DFR using Stanmore METS modular distal femur implant system TM from 2012 to 2017. We recorded demographics, type of distal femur fracture, post operative surgical complications, length of hospital stay, mortality and post-operative functional scores involving Euro Qol-5DL (EQ-5DL) and Oxford Knee Score(OKS). **Results:** Indications for DFR included twelve patients who had peri-prosthetic fractures whilst the other eight patients had distal femur fracture with AO type C classification. The median age of cohort at time of procedure was 79 (68-90). Eighteen patients were still ambulatory at time of last follow up. Median OKS score was 19 (range 5-32) whilst least affected domains of general health form EQ-5DL after DFR were noted to be self-care and pain where patient described themselves as having slight to moderate problems. Four patients underwent reoperations: two patients had infected DFRs one of whom underwent a two stage revision whilst others underwent wound debridement and washout. **Conclusion:** DFR is a limb salvaging procedure that allows patients for immediate weight bearing thus preventing institutionalization and regaining their ability to walk again.

Abstract no.: 51210

POSTOPERATIVE INFECTIONS IN SUBSTANDARD OT OF DEVELOPING COUNTRIES: HOPE FOR THE SURGEONS

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Introduction: To prevent post-operative infection, a clean, sterile and well-equipped Operation Theater (OT) is one of the most important factors. Maintenance of OT standard in least developed country is challenging due to many issues. In most of the developing countries operations are done in a less standard set up. **Method:** This study was done where the same OT is shared for both emergency and routine operations. Instruments are autoclaved for single time a day. Most operations are done after sterilization of instruments in boiling water as same instruments are to be used for many operations. OT neither has any laminar airflow system nor any suitable OT table. From January 2016 to December 2016 in the department of orthopedics of CMCH and Chittagong General hospital, the total number of operations done was (4533 +483)=5016. Among them routine case was 1059 and emergency was 3957. Open fracture 487 and closed case was 4529. Perioperative prophylactic antibiotic was given for 7 days in all cases. Dressing was done as required. Mean follow up was given for 6 weeks. **Result:** A total number of 322 (6.42%) operated cases got infected. 0-7 days: 63 (1.26%), 7-21 days: 161 (3.20%), 21 days- 6 weeks: 98 (1.96%). **Conclusion:** In spite of having a low standard and poorly equipped OT, the rate of infection is surprisingly below 7%, which is hopeful for the surgeons working in developing countries. Though a Standard and well equipped OT is always preferable.

Abstract no.: 51211

OUTCOMES IN PATIENTS WITH CHRONIC SPINE-RELATED PAIN WHO WERE PRESCRIBED OPIOIDS MORE THAN FIVE YEARS AGO

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Purpose: The purpose of this study was to compare opioid use and outcomes between patients with chronic spine-related pain who discontinued opioid use and those who continued it. **Methods:** We retrospectively surveyed 82 patients who were newly prescribed opioids for chronic spine-related non-cancer pain at our hospital between April 1, 2010 and July 3, 2012. The 55 patients admitted to our hospital were divided into two groups (Group A: opioids discontinued, Group B: opioids continued), and the duration of use (DOU) and maximum daily dosage (MDD) in morphine milligram equivalents was compared between them. **Results:** The study consisted of 31 men and 24 women with an average age of 65.6 years. In Group A (n=41), the DOU was 227 [60–762] days and the MDD was 15 [11.3–30] mg. In Group B (n=14), the DOU was 645.5 [91.5–1814] days and the MDD was 15 [15–27.5] mg. There was no significant difference in comorbidities between the two groups (p=0.313). However, 34 of 41 patients who underwent spinal surgery were able to discontinue opioid use (OR 9.56, CI [1.45–192.89], p=0.047). **Conclusion:** Even in chronic pain patients, we should consider spinal surgery to help avoid long-term opioid use.

Abstract no.: 51212

SAGITTAL BAND INJURY: A RARE ORTHOPAEDIC INJURY TO AN ORTHOPAEDICIAN

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We present a case report with unusual mechanism of radial sagittal band injury (SBI) that happened to an orthopaedician himself, and its early surgical intervention in the form of immediate repair. He presented with h/o snap at dorsum of right hand (dominant) while spinning a tennis ball. He developed pain and swelling over the dorsal aspect of the third metacarpal head in next few hours. Examination revealed erythema, swelling and tenderness over the dorsoradial aspect of third metacarpal head. Passive finger flexion produced pain and ulnar subluxation of the extensor digitorum communis tendon. Radiograph revealed no abnormality. MRI revealed intact extensor tendon with edema around radial aspect of the MCP joint of the middle finger with evidence of radial SBI. The operative management was decided after a broad discussion. Surgery was performed under local anaesthesia. A four-centimeter dorsal skin incision was made over the affected MCP. Intra operative findings revealed complete rupture of sagittal band attachment from the radial side of the tendon sheath, and no tear in mid substance. Flexion produced ulnar subluxation of the tendon. Direct repair was done using 4-0 polydioxanone suture (PDS). Post-operatively he was kept in a custom made splint to keep the affected MCP joint in hyperextension for three weeks, followed by sagittal band splint for three weeks. The effectiveness through conservative management is well known but to limit chances of delayed recurrence of tendon subluxation; an early surgical management may be a definitive mode of treatment in high demand professionals.

Abstract no.: 51218

EARLY RESULTS OF THE ARCOSTM MODULAR FEMORAL REVISION SYSTEM BY SINGLE CENTRE RETROSPECTIVE DATA COLLECTION WITH CLINICAL AND RADIOLOGICAL FOLLOW-UP

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Background: ARCOS is a comprehensive, press-fit revision design including various possibilities for modular proximal and distal reconstruction in femoral revision THA surgery. Purpose: To evaluate the early results after femoral revision in a consecutive series of patients operated in the period August 2011 to December 2014. Materials: 116 patients (mean age=73(39-96) years, F/M=61/55) were included in the study with a clinical mean observation time of 4 (0.5-6) years. The material included all femoral revisions performed with the ARCOS, and the analysis was stratified according to index operation and causes of revision. Clinical follow-up included present function of the hip assessed by Harris Hip Score, Oxford Hip Score and EQ5D. Primary endpoint: the rate of re-revisions. Secondary endpoints: complication-rate and present function of the hip. Findings: Of the 116 patients, 17 patients died and 46 patients attended the follow-up control. 5 (4%) hips were re-revised due to infection (n=2), fracture (n=2) or mechanical complications (n=1). No patient was re-revised due to aseptic loosening. The 1, 2 and 5 year probability of implant survival (95% CI) was 97% (93%-100%), 97% (93%-100%) and 96% (92%-99%) respectively. 88 patients received a combination of Broached+Slotted (BS), 28 patients received a different combination. When comparing these 2 groups the BS-group has a 5 year probability of implant survival (95% CI) of 97% (93%-100%) compared with the group of other combinations with a 5 year probability of implant survival (95% CI) of 90% (78%-100%). Conclusions: The early results and survival of the ARCOS are promising.

Abstract no.: 51220

ACCURACY OF CUP ORIENTATION IN TOTAL HIP ARTHROPLASTY IN THE LATERAL POSITION USING AN ACCELEROMETER-BASED PORTABLE NAVIGATION SYSTEM

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Background: Apparently, an incorrect positioning of the acetabular cup in total hip arthroplasty (THA) could exacerbate the rate of dislocation, impingement, edge-loading, polyethylene wear, osteolysis, and prosthesis failure. This preliminary study aims to assess the accuracy of the cup orientation in THA in the lateral position using an accelerometer-based portable navigation system (HipAlign Orthoalign, Inc., USA). **Patients and Methods:** Overall, 15 hips of 15 patients, who underwent unilateral primary cementless THA by a direct lateral approach in the lateral decubitus position using the HipAlign system, were observed. The cup was placed in the acetabular in a target alignment after reaming. The target angles for all cases were 40°+/-5° and 15°+/- 5° for inclination and anteversion, respectively. HipAlign exhibited the cup alignment; inclination and anteversion was displayed in the radiographic definition on the screen. Postoperatively, we assessed the cup alignment angle using postoperative CT in each patient and evaluated discrepancies in cup angles. **Results:** The mean postoperative cup angles were 40.1° +/- 3.2° □ (inclination) and 16.9 ° +/-7.8° (anteversion). The discrepancies from the intraoperative angle were 4.1° +/-2.6° (inclination) and 3.6°+/9.1° (anteversion). **Conclusions:** It is suggested that HipAlign is useful tool for accurate cup inclination. Variations in the cup anteversion angle could be attributed to the misaligned pelvic sagittal tilt in the lateral position. Thus, further study is warranted for the precise anatomical pelvic plane in the lateral position and registration to enhance the accuracy of cup anteversion.

Abstract no.: 51221

OUTCOMES OF INTRAOPERATIVE HEMOSTASIS IN TOTAL HIP ARTHROPLASTY USING IV TRANEXAMIC ACID, TOPICAL FERACRYLUM AND EPINEPHRINE

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INTRODUCTION: Hemostasis in total hip arthroplasty (THA) is important as it provides for a clear operating field, reduced operative time, reduced electrocautery use and reduced requirement for postoperative blood transfusion and its associated complications. Tranexamic acid and topical epinephrine have been widely studied for its role in reducing intraoperative blood loss. Feracrylum is a newer substance in use for achieving intraoperative hemostasis. **AIMS AND OBJECTIVES:** To evaluate the effect of intravenous tranexamic acid combined with local adrenaline infiltration and topical feracrylum in primary THA. **MATERIAL AND METHODS:** This study was conducted in 120 patients of either sex who underwent primary THA from January 2017 to December 2017. Patients divided into case and control group by random allocation. In cases, 1g tranexamic acid was given 10 minutes before incision, and repeated at wound closure and 6 hour postoperative. 1 ampoule of 1:100000 adrenaline diluted in 100ml normal saline was prepared and 50ml used for infiltration at incision site. Sponges soaked in 100 ml of 1% feracrylum citrate solution was used during surgery to achieve hemostasis by applying moderate pressure at bleeding sites. In control group, sponges soaked in 100ml normal saline were used. Surgery was performed by the same surgeon in all patients. Blood loss was calculated using Nadler's and Gross formulae. **RESULTS:** There was significant reduction in blood loss in cases (mean 546.4ml) compared to controls (704.6ml). Postoperative blood transfusion was higher in control group. **CONCLUSION:** The proposed regimen is effective in reducing perioperative blood loss and the need for postoperative blood transfusions.

Abstract no.: 51224

**OFFSET RECONSTRUCTION FOLLOWING TOTAL HIP ARTHROPLASTY
USING A NEW SHORT STEM SYSTEM**

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Background: The clinical relevance and the number of short stems implanted is increasing. The Ana Nova Proxy short stem was launched in 2015 and has been followed-up clinically and radiologically in a prospective multi-center study. The aim of the current study was to evaluate the offset reconstruction using different stem systems. Methods: A total of 100 stems were implanted in each device group. In the Corail group six patients were treated bilaterally. Preoperatively and postoperatively the measurement of the femoral (FO) and the total offset (TO) was done using the MediCAD 2D software. Results: In the Ana Nova Proxy group, the mean preoperative FO was 40 mm (SD 6.74) and did not change postoperatively (mean 40 mm, SD 7.75). The average TO was 78 mm preoperatively (SD 8.93) and changed postoperatively to 77 mm (SD 8.19). For the Optimys short stem, the mean preoperative FO was 39 mm (SD 5.79) and changed postoperatively to 43 mm (SD 7.49). The average TO was 76 mm preoperatively (SD 6.49) and changed postoperatively to 78 mm (SD 8.01 mm). The mean preoperative FO of the Corail stem was 36 mm (SD 7.63) and changed to an average of 41 mm postoperatively (SD 5.8). The TO was 70 mm preoperatively (SD 8.04) and changed postoperatively to 71 mm (SD 6.29). Conclusions: Clinical and radiological examinations showed an excellent reconstruction of the femoral and the total offset with all stem types, especially with the Ana Nova Proxy System.

Abstract no.: 51225

NEUROPHYSIOLOGICAL ASPECTS OF THE DIFFERENTIAL DIAGNOSIS OF DISTANT LESIONS OF THE CERVICAL SPINAL CORD

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The goal is to determine the electrophysiological criteria for the evaluation of distant lesions of the cervical spinal cord (SC) in the pathology of the occipito-cervical junction. The study involved 86 patients: Group I (n = 41) - patients with congenital pathology of the occipito-cervical junction and the presence of syringohydromyelia; Group II (n = 30) - posttraumatic syringohydromyelia and Group III (n = 15) - posttraumatic myelomalatic myelopathy of the cervical SC. The neurophysiological diagnosis was based on the registration of evoked potentials (EP) in response to stimulation by electric and magnetic impulses: somatosensory evoked potentials (n. medianus), blink-reflex (n. trigeminus), motor evoked potentials (mm. linguae, diaphragma, thenar). The group I characterized by a combination of moderate sensory and motor disturbances, reflecting the dynamics of chronic pathology SC. They were accompanied by an increase in the time of the central afferent conduction of the impulse to $7,0 \pm 0,6$ ms (control $5,7 \pm 0,3$) and elongation the time of motor conductivity SC to $10,2 \pm 1,5$ ms (control $8,3 \pm 0,5$ ms). The criterion for the progression of the pathological process in groups II and III was supra-segmental (C0-C4) defeat, correlated with an increase in the latent time EP (blink-reflex) to $47 \pm 0,8$ ms (control $38,9 \pm 0,9$ ms). A specific change in group III was the predominance of the time of the central motor impulse conduction to $14,2 \pm 1,2$ ms. Neurophysiological diagnosis allowed to differentiate the extent and prevalence of distant lesions of the cervical SC.

Abstract no.: 51226

PERINEURAL SACRAL CYSTS: SURGICAL TREATMENT

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The aim of this prospective comparative study is to investigate the outcome of lumbar-peritoneal shunt surgery and partial resection perineural sacral cysts. The potential surgery-related benefit and specific surgical intervention remain controversial. MRI is the standard modality to detect sacral perineural cysts. Preoperative symptoms include sacro-coccygeal or perineal pain, radiculopathy, neurogenic bladder, lower extremity weakness or/and numbness and sexual dysfunction. Surgical intervention would only be carried out if the cyst progressively enlarged, or patient became symptomatic. The goals of the surgical intervention were to relieve nerve irritation and compression and to stop bone erosion by to lessen the hydrostatic pressure in our 12 patients. The existence of communicated and multiple cysts required lumbo-peritoneal shunt surgery in 5 patients. The preference was given to the partial resection of cysts in other 7 cases. In 3 cases with almost complete obliteration of the cysts, the shunts were removed. Among the improvements in neurological functions, the most significant was sensation. The bladder dysfunction was restored more slowly with the partial preservation of manifestations in 2 patients. Careful patient selection is needed to receive significant clinical improvement postoperatively.

Abstract no.: 51228

THE EFFICACY AND PERSISTENCE OF SELECTIVE NERVE ROOT BLOCK UNDER FLUOROSCOPIC GUIDANCE FOR CERVICAL RADICULOPATHY

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Introduction: Cervical selective nerve root block (SNRB) may be considered as alternative treatment when patients suffering from painful cervical radiculopathy have not benefited from conservative therapy. **Purpose of the study:** The aim of current study is to evaluate the demographic factors affect the efficacy of cervical selective nerve root block. **Material and Methods:** We present result of retrospective 1-years follow-up study of 72 patients with radiculopathy due to cervical disc disease and spondylosis. Patients with myelopathy, gross motor weakness or any other pathology were excluded. Cervical nerve root blocks were administered every 2 weeks, up to 3 times. The clinical outcomes including Visual Analogue Scale (VAS) scores, Neck Disability Index (NDI), and patient satisfaction were assessed before the procedure with those at 1, 3, 6 months, and last F/U after the procedure. **Results:** At follow-up, the clinical outcomes showed no significant differences between old age (age ≥ 60) and young age group (age < 60). Also, there were no significant differences between male and female group. However, acute group (symptom duration ≤ 3 months) and disc herniation group showed statistically better than chronic group (symptom duration > 3 months) and cervical spondylosis group on the clinical outcomes ($p < 0.05$). **Conclusion:** Among multiple demographic factors, the symptom duration and etiology was most significant variable affecting the effect of cervical selective nerve root block.

Abstract no.: 51229

RELATIONSHIP BETWEEN POSTOPERATIVE COMPLICATIONS AND REDUCTION OF INTERTROCHANTERIC HIP FRACTURES: RETROSPECTIVE STUDY AND REVIEWS OF 548 CASES

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Background: Complication after surgical fixation of Intertrochanteric Hip fracture is related to the quality of the fracture reduction. Our primary interest is to clarify which kind of reduction has risk of postoperative complication. Methods: We conducted retrospective study with 551 patients who had sustained an intertrochanteric fracture treated in our institution during 2007 to 2017. General surgical outcomes were evaluated according to AO/OTA classification types (31.A1–3, B2), postoperative x-rays assessments with grading system of anteromedial column(calcar) reduction, and complications(2ndary varus/rotational displacement including Cutout/thorough, periprosthetic fracture without trauma). Results: Types of fracture were A1 151 cases, A2 331 cases, A3 53 cases and B2 16 cases. All cases were treated with sliding hip screw (SHS) or intramedullary nail (IM). After primary internal fixation, in 83 cases proximal anteromedial column were reduced extramedullary to the distal fragment, 103 cases intramedullary, and 365 cases anatomically. 50 cases resulted in secondary displacement and 31 cases resulted in treatment failure and needed reoperation. Intramedullary reduction had the highest rate (19.4%) of postoperative displacement and failure, anatomical reduction the lowest (4.1%). Conclusion(s): Large majority of cases with complication were intramedullally reduced to the distal fragment, lost anteromedial stability after surgical fixation. To construct a surgical stability, it is required to build 3 dimensional anteromedial support, considering sequential vector of displacement force, by reducing the proximal fragment anatomically to the distal fragment with pre- and intra-operative 3 dimensional assessment. Implications: Intertrochanteric Hip fractures needs surgical stability with 3 dimensional anteromedial support.

Abstract no.: 51230

**SPINE MOBILITY FEATURES AND TRUNK PROPORTIONALITY IN
IDIOPATHIC SCOLIOSIS DEVELOPMENT: PROSPECTIVE
COMPARATIVE STUDY**

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Prospective comparative study was performed in Republican scientific-practical center for traumatology and orthopedics, Minsk, Belarus after Institutions's Ethics Committee approval. 112 consecutive patients with IS at the age of 18-23 who underwent dorsal surgery and 44 with IS at the age of 23-33 who refused surgery at the age of 18-23 from a single institution were prospectively included. Statistical significance of the obtained data was set at $p < 0,05$. According to the developed algorithm, the estimation of the scoliosis spine was carried out by X-ray while standing in two standard projections - anteroposterior and lateral. In the frontal plane deformity arc was determined by J.Cobb angular values, in the sagittal plane by the spine profile state, the horizontal plane was characterized by the vertebral rotation in curving arcs. For the surgical group bending-test X-rays and under traction X-rays were also performed. The second group of assessment criteria illustrated the patient clinical appearance, based on the body plastic anatomy changes and the dynamics of the selected scoliosis disproportionality syndrome stages. Results: Obtained data showed significant difference in spine mobility features in two groups of patients. T-criteria and $p < 0,005$ were obtained using comparative indexes for assessment. Trunk proportionality stages regress achieved in surgical group. Patients self-confidence was reflected by the patient opinion using the SRS-24 questionnaire. It should be noted that the self-esteem of current patient group significantly improved after surgery and stored so during the observation period, as well as satisfaction with the treatment results.

Abstract no.: 51233

THE VALIDITY OF THE THORACOLUMBAR INJURY CLASSIFICATION SYSTEM IN THORACOLUMBAR SPINE INJURIES

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Introduction: Although there were many studies about the application of the TLICS classification to thoracolumbar spine injuries, large-scale studies of efficacy in treated patients were rarely investigated. Purpose of the study: This study aimed to assess the efficacy of TLICS classification in the selection of treatment methods for patients with thoracolumbar spine injury. Materials and Methods: From 2000 to 2016, we retrospectively studied 330 patients who were treated for thoracolumbar spine injuries. Clinical results and radiological data were studied and analyzed using ASIA scale, Magerl/AO classification and TLICS classification. Results: Among 330 patients, 139 patients (42.1%) received conservative treatment and 191 patients (57.9%) received surgical treatment. Of the 139 patients who underwent conservative treatment, 128 patients (92.1%) were consistent with the recommended treatment in TLICS. Of the patients who underwent conservative treatment, 10 patients (7.2%) failed conservative treatment and required surgical treatment. On the other hand, out of a total of 191 patients who underwent surgical treatment, 160 patients (83.8%) were consistent with the recommended treatment in TLICS. Conclusion: The TLICS classification is highly effective in the conservative treatment of thoracolumbar junction injury. In addition, it has relatively good efficacy in surgical treatment.

Abstract no.: 51234

TO STUDY ROLE OF SURGICALLY REFIXING FAILED OSTEOSYNTHESIS IN FRACTURES OF LONG BONES OF THE LOWER LIMBS

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Introduction: Osteo-synthesis failures can sometimes be refractory to treatment and often require multiple interventions over a period of months to years. Procedures requiring revision lead to a significant increase in the total cost of treatment. So it is immensely necessary that early diagnosis be achieved, prompt and proper treatment be given. Aims and Objectives: To study role of surgically re-fixing failed osteo-synthesis, in fractures of long bones of lower limbs, in terms of advantages and disadvantages of it. Materials and Methods: This was a prospective study conducted on 30 cases of failed osteo-synthesis in fractures of long bones of lower limb, admitted in Department of Orthopaedics, Dr. D.Y. Patil Medical College Pune from December 2015 to September 2017. Results: The results were analzed according to the criterion laid down by Merle d' Aubigne & Postal et al for fractures around hip joint and femur and criterion laid down by Savoie et al for fractures around knee joint and tibia. Out of 30 cases, excellent results were seen in 04 cases, good in 16 cases, fair in 06 cases and poor in 04 cases. Discussion: In a study on revision surgery for nonunion by A Ali et al in 2005 the results were excellent in 11, good in two, fair in two and poor in one patient. Conclusion: On the basis of our study we concluded that re-fixation of a failed osteosynthesis may prove to be the best option for patients who are in chronic pain and functional loss.

Abstract no.: 51235

NEW POSTERIOR COLUMN RECONSTRUCTION USING TITANIUM LAMINA

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Introduction: There have been few reports about posterior column reconstruction to reinforce the stability by maintenance of the posterior structure and provision of the posterior fusion bed, and to protect the neural structures such as the spinal cord. **Material and Methods:** Eight patients who underwent total en bloc spondylectomy with posterior column reconstruction using titanium lamina mesh and bone graft to treat a spinal tumour were included in this study. The mean age at the time of surgery was 50.6 years (range, 16.5–70.9 years) and the mean follow-up duration was 50.2 months (range, 28.1–68.7 months). The pathological lesions were located from the T2 to L1 vertebrae. There were four patients in each primary and metastatic tumour group. For the posterior column reconstruction, titanium lamina mesh was used and bone graft was applied over the lamina mesh. Radiographic evaluation was used to investigate the displacement of lamina mesh and union of the grafted bone above lamina mesh. **Results:** At the postoperative six month follow-up, a bony bridge on the titanium mesh between upper and lower adjacent lamina was observed in all cases, except for one with infection. On the last follow-up, there was no collapse or displacement of titanium lamina mesh, and there was no instability or malalignment of the spinal column. **Conclusions:** Posterior column reconstruction using titanium lamina mesh during total en bloc spondylectomy for spinal tumour was a useful surgical option that provided new lamina reconstruction for stability of spinal column and protection of the neural elements.

Abstract no.: 51236

DIFFERENCES OF CLINICAL OUTCOME AFTER UNCOFORAMINOTOMY

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Objectives: To evaluate clinical and radiologic result of uncoforaminotomy in anterior cervical discectomy and fusion. **Materials and Methods:** A retrospective study was performed on 40 patients (male: 11, female: 29, mean age: 57.25 ± 11.86) who underwent ACDF for cervical spondylosis from January 2010 to December 2016. There were 20 patients with ACDF alone, and 20 patients with ACDF and unilateral uncoforaminotomy (ACDF-U). Plate and tricortical iliac bone graft was used as fusion material in all patients. The Visual Analog Scale, Japanese Orthopedic Association score, and Odom's criteria for patient satisfaction were analyzed for clinical outcome. Radiologic assessment included segmental angle, fused segment height on preoperative, postoperative, and last follow-up lateral radiograph. The fusion rates were compared between the two groups by computed tomography at 1 year postoperatively. **Results:** Clinical results showed statistically significant improvement of pain in ACDF-U group at final follow-up in VAS score better than ACDF only group (ACDF only: 2.25 ± 1.07 , ACDF-U: 1.73 ± 0.90 , $p < 0.05$). There was no statistically significant difference in JOA score and patient satisfaction between two groups. In both groups, almost solid fusion was achieved. Fusion rates and the degree of subsidence was no statistically significant difference between the two groups. No complications were observed between the two groups, except hoarseness was found in ACDF-U group. **Conclusions:** Uncoforaminotomy in ACDF showed no significant difference in clinical outcome and fusion rate, except for the VAS score at final follow-up. We should pay more attention to the need for uncoforaminotomy in ACDF.

Abstract no.: 51238

DEROOFING AND MEDIAL FACETECTOMY ONE OF THE TREATMENT MODALITIES FOR MULTILEVEL DEGENERATIVE LUMBAR SPINAL CANAL STENOSIS

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BACKGROUND: Conventional laminectomy is a simple procedure that provides adequate decompression in case lumbar spinal canal stenosis. However, with this surgical modality, important posterior osteoligamentous elements necessary for spinal stability are lost; and it is often accompanied by damage to the facet joint. Bilateral interlaminar fenestration and deroofing of the intervertebral foramen to achieve decompression of the nerve roots and also dural sac. **METHOD:** At each level involved, a bilateral subarticular fenestration is performed under high magnification. The medial third of each facet joint is first removed with a fine and sharp chisel; then the thickened ligamentum flavum and adjacent laminae is removed. All tissue responsible for neural compression is removed, but the spinous processes, interspinous ligaments and much of the facet joints and laminae are preserved. Spinal stability is maintained because tissue disruption is minimized. **RESULTS:** Post operative discomfort is usually reduced, promoting early mobility and reduced hospital stay. The results of operation in 22 patients are assessed. The follow-up periods range from 6 months to 12 months. Of 22 patients who presented with neurogenic claudication, 14(60%) obtained complete relief and 8(40%) improved significantly. The mean hospital stay was 5 days (range, 3 to 7 days). **CONCLUSION:** This procedure of decompression provided satisfactory results.

Abstract no.: 51240

PROXIMAL FEMORAL INSUFFICIENCY FRACTURE AFTER INTERLOCKING IM NAILING FOR ATYPICAL FEMORAL FRACTURE

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Atypical femoral fractures have unique radiologic and clinical features that can be associated with severely suppressed bone turnover. For complete atypical femoral fractures, surgical fixation is required, and interlocking IM nailing is the preferred fixation method. The aim of this paper is to document four cases of proximal femoral insufficiency fracture after conventional interlocking IM nailing for atypical femoral shaft fractures as a very rare complication. We recommend the routine use of full-length reconstruction or cephalomedullary-type interlocking IM nail for atypical femoral fractures.

Abstract no.: 51241

**ANKLE AND FOOT DEFORMITY CORRECTION BY ILIZAROV
TECHNIQUE**

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There are many drawbacks for using conventional approaches to the treatment of complex foot and ankle deformities, like the increased risk of neurovascular injury, soft tissue injury, infection, scarring and the shortening of the foot. These problems can be eliminated by Ilizarov method. The etiologic factors are contracture, poliomyelitis, neglected and relapsed clubfoot, post traumatic deformity and infected foot. The average age of patients was 20 years (6-55) years. Deformity corrected in most of the cases. Our results indicates that Ilizarov method is an effective means of correction of complex ankle and foot deformities. Skin condition, rigidity of deformity, severity of deformity are some of the important aspects of preoperative assessment. Pre and post operative cases will be demonstrated.

Abstract no.: 51242

CLINICAL RESULTS OF OSTEOSYNTHESIS FOR DISPLACED HIP FRACTURES (GARDEN STAGE 3/4) IN MULTICENTRE STUDY

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Introduction: The displaced hip fractures were treated by young surgeons using BHA (bipolar hip arthroplasty). The aim of this study was to clarify results of osteosynthesis for displaced hip fractures. Patients and methods: The 85 patients were treated with osteosynthesis in 3 hospitals from Oct. 2011 to Oct. 2017. All 85 cases were Garden stage 3 or 4 who underwent closed reduction and three cancellous hip screws with trochanteric plate or AS hip screw (adjustable sliding hip screw). Subjects of analysis were bone union, screw cutting out, LSC (late segmental collapse), osteonecrosis, 2nd fractures, revision surgery, and mortality within 90 days. Results: There were 3 patients who died within 90 days and lost follow up were 2 cases. The remaining 80 cases were analyzed. Seventy-one cases were bone union including delayed union. Three cases had LSC performed with THA. CUT OUT cases were 6 with revised THA or BHA. Secondary fractures were 4 cases revised by osteosynthesis. One patients rejected reoperation because there was no pain and the patient was over 90. There were no infected cases. Discussion: Osteosynthesis treated as an emergency surgery. Bone union and delayed union were 88.7%. Reoperation rate was 16%. Osteosynthesis is small incision and less invasive which was fit for geriatric patients. Points of surgery were good reduction of fractures and fixed with valgus position of the femoral head. Conclusion: We recommend thinking of osteosynthesis in displaced hip fractures in geriatric patients. However, we also need to consider the 16% reoperation risk.

Abstract no.: 51244

CHARCOT'S ARTHOPATHY IN DIABETICS: TREATMENT BY ILIZAROV TECHNIQUE

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Background: To evaluate the results of the Ilizarov method for ankle arthrodesis in diabetic patients with Charcot's arthropathy. **Methods:** From 1990 to 2017, 54 patients were performed surgeries (40 males, 14 females) with Ilizarov apparatus in diabetic foot patient's with Charcot's joints (Eichenholtz stage II and III). The mean age of patients was 56 (range 36-65 yrs.) of which all patients were diabetic. All the patients have been treated with open resection, partial intra surgery reduction, Ilizarov frame application and progressive correction of the residual deformities. The mean follow up time has been 36 months. **Results:** We observed that solid fusion was obtained in all 53 patients out of 54, at an average of 18 weeks duration (range, 14-20 weeks), excellent 40 good-10, fair-3, poor-1. No major complications occurred. **Discussion:** With this technique we achieved the restoration of the foot morphology, with a plantigrade foot in all cases and no deep infection or recurrent skin ulcerations; no amputation were required. This technique is best reserved for patients who are at the highest risk for complication or have failed with standard orthopaedic methods of internal fixation. **Conclusion:** The Ilizarov method provides a successful and effective method by using this biocompatible fine smooth and olive wires for management of diabetic foot with Charcot's arthropathy associated with preexisting neural and vascular compromise as complications, especially when the use of internal fixation methods have its great limitations. In our series all patients were plantigrade with foot ulcer's healed.

Abstract no.: 51245

**INTRAOPERATIVE CONTROL WITH WRIST ARTHROGRAPHY FOR A
SALTER-HARRIS 4 FRACTURE OF THE DISTAL RADIUS**

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Clinical Case: We describe the case of a healthy 13 year old adolescent male, who presented with a Salter-Harris 4 fracture of the distal radius from a two meter fall over his left wrist. CT scan showed displacement the ulnar fragment of the joint. Surgery was performed, reduction obtained with percutaneous Kirschner wire levering (Kapandji technique) and additional percutaneous wire fixation. Intraoperatively, we performed a wrist arthrography by lateral approach, which allowed to assess and confirm adequate articular reduction. The postoperative course was uneventful, and the patient resumed full activities at 12 months. He was asymptomatic, had full range of motion, and an excellent radiographic result on further follow up. Discussion: We present a rare fracture of the wrist on an adolescent, with articular involvement. When faced with such injury, CT scan is advised to better define the injury to the articular surface. Adequate articular surface reduction is paramount in lowering the chances of incongruity with subsequent growth in the case of children. Assessment of the joint surface should be done in any doubt on the quality of reduction. Arthroscopy is a common choice for such, but if unavailable, wrist arthrography might be a valid option. Although wrist arthrography is established in the evaluation of ligamentous wrist injury, it's use in for assessment of the joint surface of the wrist was not described in recent literature to our knowledge. From the experience of this case presented, we feel it might be a valuable option to consider.

Abstract no.: 51247

INTERPOSITION OF PERIOSTEUM IN DISTAL TIBIAL PHYSEAL FRACTURES OF CHILDREN

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Purpose: To evaluate the factors influencing periosteal interposition in distal tibial physeal fractures of children. **Materials and Methods:** 44 cases of distal tibial physeal fractures were analysed. We confirmed the presence of periosteal interposition with MRI in all cases and accessed the relationship between periosteal interposition and gender, age, cause of injury, type of fracture, degree of initial displacement and after closed reduction. **Results:** 15 (34.1%) of 44 fractures had interposed periosteum. There was no statistically significant correlation between periosteal interposition and gender, age, cause of injury ($p > 0.05$). 8 (88.9%) of 9 pronation-eversion-external rotation type of fractures according to Dias-Tachjian classification had interposed periosteum and that was a statistically significant correlation ($p=0.006$). As Salter-Harris type was toward to high degree, there were decreasing tendency of periosteal interposition ($p=0.026$). There was high rate of periosteal interposition in case of displacement more than 2 mm in each initial and after closed reduction ($p < 0.05$). **Conclusion:** There was high incidence of periosteal interposition in pronation-eversion-external rotation type with displacement more than 2 mm in distal tibial physeal fractures of children. But, periosteal interposition could occur in fractures with mild displacement less than 2 mm, if initial fracture displacement was more than 2 mm, the methods of treatment should be decided after confirm the presence of periosteal interposition with MRI after closed reduction.

Abstract no.: 51248

DEVELOPMENT OF ILIZAROV METHOD AND RECENT ADVANCES

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We noticed several problems of original Ilizarov technique after many years of using this technique. We can categorize these problems into: 1) pain 2) inconvenience 3) soft tissue problems and 4) loss of joint range of motion (ROM) Technique of surgical difficulty also needs to be considered since some wires passed very close to the neurovascular structures. The original Ilizarov technique now we call Ilizarov Method. We now realize that the initial problems with the use of Ilizarov method were related to principal errors in surgical treatment. These errors includes: 1) incorrect placement of the wires. 2) inappropriate wire tension 3) insufficient number of rings 4) inadequate levels of fixation 5) poor frame design 6) hybridization 7) violation of original Ilizarov rules. All of these factors contributed to instability, pain and poor patient tolerance of the frame. Many orthopaedic surgeons mistakenly equate the Ilizarov method with the Ilizarov frame. One can use the Ilizarov method even with a monolateral frame, if he or she respects the biological parameters taught by Academician Ilizarov. The correction of complex deformities of the long bones, congenital or acquired, by the Ilizarov fixator is irreplaceable and I expect its further diffusion. Ilizarov holds a strong foothold in my country, Bangladesh. I expect it to evolve and change continuously because as we know, even in nature, things that evolve too quickly die and things that do not evolve become extinct.

Abstract no.: 51249

ELECTROPHYSIOLOGICAL CONTROL OF THE REHABILITATION OF PATIENTS AFTER TIBIA FRACTURES

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Electromyographic, ultrasound and rheographic methods were used to conduct a randomized prospective cohort study of the functional state of the muscles and the regional blood flow of the injured segments and adjacent segments in 21 patients with tibia fractures (control group) on the dynamics of restorative treatment who had an excellent/good result 6 months after osteosynthesis (group I, load on the extremity 90-100%), or a satisfactory result (group II, load on the limb 80% - use of a cane). The medical rehabilitation had been devised. The method studied was found to be very effective. Six months after the operation, patients with the developed rehabilitation programme had higher (than the control group) parameters of bioelectrical activity calf muscles (μV) by 35-77% ($p < 0.04$), the values of the space velocity of blood flow ($cm^3/100g/min$) by 11-25%, quantitative characteristics of the main vessels: arteries diameter (cm) by 3-9% and blood flow (cm^3/min) by 21-35%, veins diameter by 10-12% and blood flow by 32-67%. Clinical examination revealed an increase in the range of motion in adjacent joints and a reduction in the average time until ability to bear full body weight load by 2 weeks (from 3.8 ± 1.5 months to 3.4 ± 1.6 months). To increase the proportion of patients who reached the first functional class from 61% to 82% and a reduction in the duration between the operation and the ability to return to work by 2.1 weeks (from 21.2 ± 3.3 to 19.1 ± 2.1 weeks).

Abstract no.: 51251

THE HAZARDS OF TOTAL KNEE ARTHROPLASTY: A CLINICAL CASE

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Clinical case: We present the case of a 78 year-old woman with primary osteoarthritis of the right knee. She received a Total Knee Arthroplasty (TKA), that was complicated by significant anterior femoral condyle notching. Upon returning home she fell, resulting in a supracondylar femoral periprosthetic fracture (Su type 3). She was treated with revision to a femoral long stemmed component with added hinge, and the fracture fixed with two cerclage wires. Non-union of the fracture occurred, likely due to instability of fixation. Revision of fixation was performed, using plate osteosynthesis, and the fracture healed uneventfully. Two years later purulent discharge from the previous surgical wound was noted, and a delayed infection diagnosed. All implants were removed, and an antibiotic cement spacer placed. Five months afterwards, infection was deemed controlled, and revision TKA with a constrained hinged long-stemmed TKA was performed. Afterwards, she had a uneventful course and is currently doing well and satisfied with the final result – being able walk without aid, fully extend the knee and flex up to 100 degrees. Discussion: Several learning points can be taken from this case. Technical defects, such as notching, may predispose to post-operative complications. Precise technical execution is paramount. Each surgical intervention raises the risk of infection, and so the surgeon must strive to minimize the number of procedures needed. Even in difficult and complicated cases, some degree of persistence to maintain a functional knee may be appropriate – in the long run, satisfactory results may still be attained.

Abstract no.: 51252

TREATMENT OF PROXIMAL HUMERUS FRACTURES WITH HEMISPHERICAL ALLOGRAFT AND FIXED ANGLE LOCKING PLATE

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Treatment of symptomatic non-union of proximal humerus is challenging. Major problems encountered include low bone stock, poor bone quality & soft tissue adhesions. Several methods have been reported in the literature for the treatment of nonunions of proximal humeral fractures which include osteosynthesis with locking plate or nail or arthroplasty. Osteosynthesis is supplemented with autogenous bone graft or an allograft using femoral head as most of these fractures would have severe cavitation of the humeral head. Various ways have been described when using femoral head allograft. We have used a hemispherical femoral head allograft and a fixed-angle locking plate which has not been described in literature so far. We had two cases fixed with this method. First patient was eighteen month old non-union, had demineralised bone matrix and calcium sulphate biocomposite with bone marrow aspirate to supplement the fixation with allograft. Second patient was an acute four part fracture and was operated within ten days and did not have any demineralised bone matrix or bone marrow aspirate supplementation. Both had good results with Oxford Shoulder scores of 42/48 and 48/48, and achieved a favourable clinical and radiological outcome without any complications. Therefore, femoral head allografting by this method can be a worthwhile option for nonunion after fracture of the humeral surgical neck, especially in cases with severe cavitation of the humeral head.

Abstract no.: 51255

LONG-TERM RESULTS OF SALVAGE FOR THE '5 DS'

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Ilizarov Hip Reconstruction is typically consist of 2 osteotomies performed in the femur with the help of the Ilizarov external fixator. The classic indications for this procedure are 5 D's. 1. Destroyed hip joint 2. Dysplastic hips 3. Dislocated (chronically) hips 4. Dysvascular i.e. avascular necrosis of the hip joint 5. Deformed hips- for Coxa Vara Correction This operation is based on the Milch and Batchelor osteotomies which were very common until the 1970s. The subtrochanteric valgus osteotomy did a good job of giving pelvic support against the lateral wall of the pelvis or the acetabulum. The significant amount of valgus also helped to gain a little length. This operation was simple to perform and fixation was achieved with a hip spica cast or sometimes with special plates. The proximal femoral osteotomy is done at subtrochanteric level. A significant valgus of at least 45 to 60 degrees is created and this helps to achieve pelvic support despite an absent femoral head. At a distal level, a lengthening osteotomy is done. Distraction is initially carried out with the limb in valgus and over a few weeks. We have performed more than 75 such surgeries over the last 30 years. Many patients with AVN, this operation is an ideal salvage for hips with address issues of mechanics of the hip, limb length equalization, normalization of the mechanical axis of limb with due consideration to the knee joint as well.

Abstract no.: 51256

ROLE OF FIBULAR NON-VASCULARISED STRUT GRAFT IN MANAGEMENT OF PROXIMAL HUMERUS FRACTURE NONUNION: A PROSPECTIVE STUDY OF 21 CASES

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Management of proximal humerus non-union are challenging and controversial. We present a prospective study of 21 cases of non-union of proximal humerus due to medial structural defect. All cases were treated with reconstruction of medial wall with intramedullary non-vascularised fibular graft and philos locking plate. All cases were prospectively followed to evaluate radiological and functional outcomes. Functional outcomes were assessed by using the Disabilities of the Arm, Shoulder, and Hand (DASH) scores. Mean age was 54 years, our series included 13 male and 8 females with average 3 years follow up. Mean duration of radiological union was 5.5 months. Mean shoulder abduction was 95 degrees at final follow up. Mean DASH scores were 22. Based on our series we conclude that use of fibular non-vascularised strut graft in proximal humerus non-union is an effective treatment strategy with good functional and radiological outcomes.

Abstract no.: 51257

LOWER LIMB ARTHRODESIS USING THE ILIZAROV METHOD

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Introduction: To present the results of knee and ankle joint compression arthrodesis with the use of Ilizarov device. Materials and methods: 17 patients aged from 14 to 69 years (mean 30.6 years) in whom 15 arthrodesis was performed. 10 arthrodesis of the knee joint and 7 arthrodesis of the ankle joint. The indications for those procedures included ..para articular infected non union (4), Charcot ankle due to severe diabetes (3), post inflammatory joint ankylosis (2), foot drop (2), failed ankle joint arthrodesis with the shift – graft technique (2) and failed TKR with severe infection (4). Follow up time varied from 6 months to 80 months (mean 35 months). Treatment included Ilizarov fixation of the joint after articular surfaces resections. Construction of Ilizarov device included 2 rings below knee and 2 rings above knee in case of knee arthrodesis. For ankle arthrodesis 2 rings above the ankle and 5/8th for foot fixation. During the time of Ilizarov fixation, compression at the arthrodesis site was fast at the beginning (.25 to 1 mm per day) and then slow sustaining (.25 to .5 mm per week). Results: After 3 months to 5 months (mean 4 months) of Ilizarov device which used in all cases bony union achieved. In 5 patients simultaneously with knee joint arthrodesis, correction of axial deformity (flexion deformity of 25°, 45° and 90°) carried out. Conclusions: Ilizarov is a fantastic tool to obtain knee and ankle arthrodesis characterized by very good effectiveness and low complication rate.

Abstract no.: 51258

MANAGEMENT OF COMPLEX FOOT DEFORMITIES

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Correction of complex foot deformities needs special care to treat deformities of multiplaner direction and contracture of ankle joints, equinovarus deformity. In severe cases the best choice Ilizarov hinge distraction system to restore the function of joints and treat shortening of foot and correct deformity. Patients and Methods: Ilizarov fixation allows 3 dimensional correction of all parts of foot and allows stable fixation and high tolerance, walking ability in most cases much better. Average time correction was 4 to 6 weeks following by 2-3 months of fixation to keep final correction. Results: From 1990 to 2016 we treated 182 cases of severe foot deformities with CTEV, neurovascular deformities and post-traumatic deformities, age between 4 to 48 years, 90 cases excellent results, 70 good, 20 fair and 2 bad results. In all cases a plantigrade foot was achieved. Conclusion: The use of Ilizarov fixator is an ideal treatment in complex congenital or post-traumatic foot deformities to achieve a good correction and good functional and cosmetic results. Discussion: Correction of complex foot deformity has a specific anatomic requirements and we have to consider Ilizarov as a priority one.

Abstract no.: 51259

CASE SERIES OF WRIST ARTHRODESIS USING FIBULAR AUTOGRAFT AFTER EN BLOCK RESECTION OF GIANT CELL TUMOUR OF THE DISTAL END OF THE RADIUS

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We present prospective analysis of 9 cases of giant cell tumour of the distal radius treated by en-bloc resection and arthrodesis using autogenous non-vascularized ipsilateral fibular graft. Mean age of patients in our study of 7 female and 2 males was 32 years, mean follow-up was 2 years. In the two revision cases injection denosumab was given to prevent further recurrence. Radiological union was seen between 32-36 weeks. Functional evaluation was done for global finger grip strength, by accessing for three digital pinches (pulp-pulp, lateral and three points), and by Buck-Gramcko functional tests. Average grip strength was 65% compared to normal hand, average three digital pinch was 72% compared to normal hand and average Buck-Gramcko functional score was 7.2. Based on our series we concluded that wrist arthrodesis using ipsilateral fibular graft is an acceptable treatment in cases of GCT of radius after en- block resection with good functional outcome.

Abstract no.: 51261

ROLE OF THE ILIZAROV TECHNIQUE IN VASCULAR TRAUMA AROUND THE KNEE

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Vascular trauma around knee with or without bony injury or dislocation of knee is a great problem with many factors effecting management. A team of vascular and orthopaedic surgeon usually are involved. Time since injury is the factor effecting the result. So fast decision making and effective co-ordination of the team is paramount important. Role of orthopaedic surgeon in managing absolute stability to fracture or dislocation followed by vascular repair is important in protecting repair and soft tissue recovery. The main issue is the planning of long term strategy for soft tissue and bony injury with many obstructs arising during treatment which will require multistage surgical treatment. Doing vascular repair and finally definitive orthopaedic fixation has many failures of salvage, high number of resurgeries and high degree of residual functional disabilities. Role of Ilizarov techniques as primary treatment can improve the result in all fronts in these complex problems. We would like to present 16 cases of knee dislocation and vascular injury to demonstrate the protocol and technique showing results and complications, which can be further around by ourselves for handling these injuries in any tertiary care centres.

Abstract no.: 51263

INTRAMEDULLARY NAILING WITH GRAFT IMPACTED TITANIUM MESH CAGE MAY IMPROVE SHORT-TERM OUTCOME AFTER INDUCED MEMBRANE TECHNIQUE FOR LOWER LIMB LONG BONE SEGMENTAL DEFECTS

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Induced membrane technique (IMT) is used for treating segmental bone defects. During treatment, patients have to be kept on restricted weight bearing during defect consolidation. We studied, whether addition of a graft impacted titanium cage is safe to allow patients early weight bearing and improve limb function during the phase of consolidation. 15 patients with moderate (6 - 10 cm) to large (> 10 cm) lower limb segmental defects following traumatic bone loss/ infected nonunion treated with the IMT were prospectively followed. The I stage included debridement, application of a cement spacer \pm antibiotics, soft tissue cover and external fixation. In II stage, internal fixation was done using IL nails with the defect bridged by a titanium cage filled with autologous bone grafts. Time to union, weight-bearing, return to work and lower extremity functional scale scores (LEFS) at 3,6, and 12 months were assessed. The mean size of the defect was 8.5 cm (6 cm - 15 cm). Patients were able to bear weight without support at a mean of 3.5 ± 1.7 weeks. Radiological union took 6.7 ± 1.6 months and time to return to work was 3.3 ± 1.2 months. The LEFS scores at 3 months was 23.3 ± 5.2 , which improved to 61 ± 6.3 at 1 year. 1 failure was seen due to early recurrence of infection. Addition of a titanium cage makes the patient more functional during defect consolidation with excellent functional scores and early return to work.

Abstract no.: 51264

**SEVERE OPEN FRACTURES OF TIBIA IN PAEDIATRIC GROUP
RECONSTRUCTION BY ILIZAROV TECHNIQUE**

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The use of methods of Ilizarov fixation for the management of severe open fractures in children are very useful procedures. With Ilizarov technique we try to achieve fracture reduction and at the same time we adequately achieve elastic stability by biocompatible 1.5 Russian olive or smooth wires. Ilizarov fixator allows handling the damaged soft tissues, including bone loss, and ultimately get a good or sufficient function of the affected limb, avoiding amputation. Limb reconstruction with severe open fracture injury need experience, perseverance and knowledge of the biological evaluation of the tissues involved. The Ilizarov apparatus is a versatile tool for achieving these goals. There is a close relationship between the concept of severe open fracture and classifications. For me it is "Severe" when exist- 1. comminution (Multiple fragments) or 2. Bone loss 3. accompanied by extensive damage of soft tissues (tearing, crushing, bruising) 4. at least in a greater amplitude higher of the third the affected region 5. if there is also the main artery lesion with any form of damage; it is also severe on the edge of fracture amputation. We present a casuistic of 22 severe open fractures in children attended with the Ilizarov technique.

Abstract no.: 51265

TACKLING MIND-BOGGLING DEFORMITIES, ADVANTAGE BANGLADESH, FROM CHALLENGE TO OPPORTUNITY, A JOURNEY THROUGH CHALLENGES

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Man is mortal and life is very short. The curtain rises and the curtain falls. However, each day is a challenge, challenge never ends and a challenge is an opportunity to solve the unsolved problems, especially those which are “need based”. During my long period of Ilizarov surgery since 1982 (from abroad and home) till today I faced lot of problems and difficulties with very interesting, challenging and complex cases. Today I would like to share my experiences with these complex deformities and contractures. 1. Popliteal pterygium syndrome with 8 cm shortening, 2. Post traumatic right disorganized knee, bad scar in the leg with ankle valgus, 14 cm LLD, 3. Reconstruction vs. imputation, 4. Bilateral relapse CTEV with Bilateral genu valgum, 5. AMC of total body involvement and so on.

Abstract no.: 51266

FACTORS AFFECTING INDIRECT DECOMPRESSION AFTER LATERAL INTERBODY FUSION

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Introduction: Lateral interbody fusion (LIF) is a common and effective surgical procedure. Indirect decompression of LIF can bring good expansion of spinal canal. However, factors which affect the expansion rate of spinal canal are not clearly identified. We examined factors that may affect indirect decompression in LIF. **Method:** Forty patients received LIF from April 2014 to March 2017 included in this study. Cross-sectional area of dural sac (CSA) and various items were examined on pre and post MRI. We use JOA (Japanese Orthopaedic Association) score and Roland-Morris Disability Questionnaire (RDQ) for clinical evaluation. **Result:** JOA score and RDQ improve significantly after LIF ($p < 0.01$) CSA was significantly enlarged after LIF. Some cases enlarged chronologically after LIF, but average expansion rates have no significant difference. Antero-posterior diameter of spinal canal became longer, and the height of disc was higher and sagittal disc angle (SDA) became larger and size of disc bulging became smaller ($p < 0.05$). There is a high correlation between expansion rate of CSA and posterior disc height, distance between extended line of vertebral body endplate at posterior dural tube. In some cases, posterior height of disc was not higher with larger SDA, CSA was not enlarged enough. **Conclusion:** CSA was significantly enlarged after LIF. There is a high correlation between expansion rate of CSA and posterior disc height. In some cases, posterior height of disc was not higher with larger SDA, CSA was not enlarged enough. So, we have to pay attention on the change of posterior disc height to achieve good indirect decompression.

Abstract no.: 51267

OPTIONS FOR THE HIP JOINT STABILITY RESTORATION IN CHILDREN WITH CEREBRAL PALSY

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One of the major problems in children with cerebral palsy (CP) is related to a high chance of the hip joint destabilization. From 2006 to 2016, 137 operations were performed in children with cerebral palsy (CP) at the age from 3 to 16 years. Adductor myotomy was performed in 99 cases (43 patients on both sides), in 32 cases it was combined with different soft-tissue interventions. Varus-detorsion shortening femoral osteotomy (VDSFO) in combination with Salter's pelvic osteotomy was performed in 3 cases in 3 patients aged 4-6. Triple pelvic osteotomy was performed in 5 cases in 5 patients at the age 6 to 15, and in combination with varus-detorsion femoral osteotomy was used in 6 cases in 4 patients with hemiplegia and in 1 with diplegia (on both sides) at the age from 7 to 11. In 5 cases (5 patients) with a spastic femoral dislocation at the age of 7-13 was performed a triple pelvic osteotomy, (VDSFO) and an open reduction. Long-term stabilization of the joint was achieved in all cases after using surgeries on the pelvic bones and femur. Reoperation was necessary in three cases after VDSFO because of the progression of instability. After surgeries on soft tissues in 12 cases intervention to femur was required (in 3 cases in combination with pelvic osteotomy). Conclusion: Careful attention should be given to the condition of the hip joints and if instability occurs be able to correct it promptly.

Abstract no.: 51268

CLINICAL AND RADIOLOGICAL OUTCOMES OF PRIMARY TOTAL KNEE REPLACEMENT

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Elderly patients are at risk of increased length of hospital stay, postoperative complications and readmission after total knee arthroplasty (TKA). The purpose of this study is to compare clinical and radiological outcomes in patients aged more than 80 years and patients aged 75 years or less. A retrospective study was carried out on seventy patients aged more than 80 years and seventy patients aged less than 75 years that underwent primary TKA. The mean follow-up was 4 years. All patients were clinically and radiologically evaluated preoperatively and postoperatively. KSS, KSFS, WOMAC, and post-operative complications were recorded. The mean follow-up was 49 months. Both groups achieved an excellent improvement in clinical scores ($p < 0.001$). No differences were found in terms of length of stay and range of movement. The overall post-operative complications have shown to be higher in the over-80 group with regard of cardiovascular ones (19% versus 7%, $p = 0.0749$) and blood transfusion rate (39% versus 14%, $p = 0.0011$). Two octogenarian patients died within 90 days following surgery. There is still no consensus about the influence of age on patient satisfaction. Younger patients expectations' were met after surgery, and thus obtained greater satisfaction with the treatment outcomes. On the other hand, patient satisfaction was significantly low among patients less than 55 years of age. Patients aged more than 80 years showed good clinical results and no significant differences with younger counterparts. Postoperative complications have shown to be higher particularly in those patients presenting relevant comorbidities preoperatively.

Abstract no.: 51269

TREATMENT OF OSTEOARTHRISIS BY-HTO: AN OVERVIEW

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Introduction: Degenerative-dystrophic disease of the knee is common everywhere in the world. The purpose of this study is to assess the long term results after the treatment of OA with open wedge osteotomy and hemicallotasis using the Ilizarov ring fixator. Materials and Methods: From March 1995 to February 2015 a total number of 56 cases, female 46, 10 male, all below 60 years age except 2. The series include 2 male patients above 60 years, one who could not afford TKR and another who was scared of a new joint. The main indication for surgery was pain, drug dependence and altered quality of life in spite of conservative measures. HTO was performed at the level of the CORA and stabilized by Ilizarov external ring fixator. Gradual controlled hemicallotasis was performed after 4-5 days residual period unit aimed mechanical axis was obtained as possible. The mean duration of follow up was 36 months. Results: Radiographically mean 5.4 degree varus alignment preoperatively was improved to 8.5 degree valgus alignment postoperatively. Mean periods of Ilizarov external fixator was 70 days. Conclusion: We found that open wedge osteotomy and hemicallotasis using Ilizarov external fixator is effective for the treatment of medial compartment arthritis. The advantage of gradual correction of varus deformity by Ilizarov ring fixator seemed to easiness of adjustment, obtaining of accurate correction goal & gradual retightening of medial collateral ligament. A very good effective inexpensive-method. Scope for further TKR remains if needed.

Abstract no.: 51270

COMBINED USE OF DEVITALISED EXTRACORPOREALLY-IRRADIATED AUTOGRAFT AND VASCULARISED BONE GRAFT FOR RECONSTRUCTION OF MASSIVE BONE AND JOINT DEFECTS AFTER RESECTION OF MALIGNANT TUMOUR

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Introduction: Devitalized extracorporeally-irradiated bone autograft (DBG) for reconstruction of massive skeletal defects after tumor resection has an advantage of obtaining compatible bone grafts. However, the disadvantage is that it is a necrotic bone with no blood supply. Combined use of vascularized bone graft (VBG) may be the ideal resolution. **Patients:** We reviewed 20 patients (11 male, 9 female, mean age 36y.o.) old who underwent curative resection and reconstruction with DBG. 11 cases were reconstruction of bone stem and 9 cases included joints. The tumor location was tibia 7, femur 4, pelvis 4 and others 7. 15 cases had combined use of VBG. The mean follow up period was 69 months. **Results:** No local recurrence were detected from DBG. 93% of the VBG's survived but one case failed. 44% of the cases with joint reconstruction showed osteoarthritic changes but local pain remained mild. Full weight bearing was obtained at mean period of 6 months after surgery in the lower extremity reconstruction. In patients reconstructed with vascularized fibula and irradiated intercalary tibial bone graft, radiological and functional outcomes were excellent. **Conclusion:** DBG with VBG in a hybrid complex was proven to provide adequate bone stock, immediate stability, mechanical support for weight bearing and enhancing neo-vascularization to the avascular graft, in clinical setting. This procedure is best indicated in intercalary defect of the tibia. Some degree of osteoarthritis cannot be prevented in osteochondral graft in long-term but clinical outcome was excellent.

Abstract no.: 51271

TREATMENT OF CONGENITAL PSEUDOARTHROSIS OF THE TIBIA

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Congenital pseudoarthrosis of the tibia remains one of the least understood, most complex and most difficult to treat of all orthopaedic problems. There is a failure of normal bone formation in the distal half of the tibia, anterolateral angulation and pathological fracture. Neurofibromatosis of the tibia is an important cause of pseudoarthrosis in 40 to 80% of cases. The hallmarks of neurofibromatosis are café-au-lait spots and skin nodules, which we must look for. The associated problems in CPT are- 1. LLD 2. Multilevel multidirectional tibial deformity 3. Proximal migration of the fibula 4. Fibular non union 5. ankle mortise valgus 6. ankle joint dorsiflexion 7. Cavo valgus foot deformity 8. Persistent dorsiflexion contracture Even when union is achieved, the residual deformities, causes disability and that is the important cause of refracture. The Ilizarov technique of distraction osteogenesis has opened new vistas in the management of congenital pseudoarthrosis of the tibia and fibula. It is a comprehensive approach, simultaneously addressing all associated problems.

Abstract no.: 51278

**FREEZE-DRIED CHITOSAN SOLUBILISED IN PLATELET-RICH PLASMA
IN A SHEEP MODEL OF ROTATOR CUFF REPAIR**

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Introduction: Surgical reattachment of torn rotator cuff tendons can lead to satisfactory clinical outcome but failures remain common. Implants composed of freeze-dried chitosan (CS) solubilized in platelet-rich plasma (PRP) could potentially be used to augment repair. The purpose of the study was to determine implant residency, test safety of different implant doses, and assess efficacy over standard of care. Methods: Unilateral tears were created in the infraspinatus tendons of 22 mature ewes and repaired with four suture anchors in a suture bridge configuration (n = 6 standard of care controls). Freeze-dried formulations containing 1% w/v CS, 1% w/v trehalose and 42.2 mM calcium chloride were solubilized with autologous PRP and injected at the tendon-bone interface and on top of the repaired site (n = 6 with a 1 mL dose and n = 6 with a 2 mL dose). Outcome measures included MRI assessment at 6 weeks and 3 months, clinical pathology and histopathology. Acute implant residency was assessed histologically at 1 day (n = 2 with a 1 mL dose and n = 2 with a 2 mL dose). Results: CS-PRP implants were detected at the enthesis and at the surface of the infraspinatus tendon and muscle, and induced recruitment of polymorphonuclear cells to the injected site at 1 day. Analysis is still in progress for the remaining 18 sheep. Conclusion: This study will provide evidence on the safety and efficacy of CS-PRP implants in a large animal model that could potentially be translated to a clinical setting.

Abstract no.: 51280

USE OF A NOVEL CORRECTIVE MODALITY FOR ADOLESCENT IDIOPATHIC SCOLIOSIS: THE LINK ROD SYSTEM

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A prospective cohort study of patients with severe AIS treated in our institution with a novel technique of en bloc correction of deformity. We present results of this technique with outcome measures of surgical time, blood loss and coronal plane correction. Background: The Link Rod link system is designed for mass correction of the major curve in AIS spines. It acts as an external fixator prior to definitive placement of spinal rods post implantation of pedicle screws. Lever handles are attached to short bars at the upper and lower segments instrumentation, allowing direct visualisation of deformity reduction, with subsequent placement of the link rod to temporarily hold correction, and placement of contoured working spinal rod on the concave side. Once in situ, the link rod is removed and second rod inserted. Methods: AIS patients operated on within our institution during 2017 with major TL/L curves (n=17) were included. Pre and post operative Cobb angles and coronal balance; operative time; estimated blood loss, fusion levels and screw density were recorded. Results: The preoperative and post-operative mean Cobb angle (SD) were 73.3 (13.4) and 33.8 (11.9) respectively, with an average correction of 54% (SD 11%). The mean (SD) operative time was 03:35 (00:35). Fusion levels were over a mean of 12.1 (SD 1.7) vertebrae, with a screw density of 1.3 (SD 0.1) per level. Mean intraoperative blood loss was 829mls (SD 355). Conclusions: The link rod system allows for excellent correction of spinal deformity and a short operative time.

Abstract no.: 51281

A MODIFIED ANTERIOR APPROACH SURGERY FOR EARLY AND LATE CASES OF CERVICAL SPINAL FRACTURE DISLOCATION USING LEVER TECHNIQUE WITH LONG PERIOSTEAL ELEVATOR

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Introduction: There is no absolute technique for surgery for Cervical spinal fracture-dislocations. However, our study describes single anterior approach surgery is adequate for early & late cases using lever technique with long Periosteal Elevator while patient is kept in traction from both cranial & caudal ends. **Methods:** 258 patients (M-226, F-32) were studied from July, 2009-July, 2017. Anterior approach was adopted in all patients. Patients were kept in traction manually from cranial & caudal ends during operation while dislocation was corrected using lever technique with long Periosteal elevator based on adjacent stable vertebra. Then ACDF/ACCF was done accordingly. ACDF was done in patients with single level fracture-dislocations followed by insertion of autogenous iliac crest bone graft into the respective disc space & stabilization by plate & screws while ACCF was done in comminuted vertebral fractures using cage incorporated with bone grafts followed by stabilization by plate & screws. Follow up period was 6 months to 8 years. Pre & post-operative assessment were done clinically, radiology, comparing ASIA scale, VAS & ODI scoring. **Results:** All patients survived surgery. No neurological deterioration. No improvement in ASIA grading was observed in ASIA-A (46 patients). Other 212 patients (82%) had significant improvement in ASIA grading with a conversion into ASIA-E & ASIA-D. Post-operative complications included superficial wound infection & dysphagia in a few patients (2.1%) which were resolved conservatively. No patient needed revision surgery. **Conclusion:** Single Anterior approach is sufficient for surgery for Cervical spinal injuries. Lever technique is an effective method for correction of dislocation while fusion by cage & bone graft & stabilization by cervical plate & screws ensure better outcome.

Abstract no.: 51282

BILATERAL ERB'S PALSY IN A 37-YEAR-OLD LADY: A CASE REPORT

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Our case report describes a bilateral obstetric brachial plexus injury in a 37 year-old lady. The presentation was breech and her weight during deliver was 6kg. In the first year of her life she underwent exploration of Lt side, Rt. side she had conservative treatment in the form of physiotherapy. Last year presented with poor dysfunction of the upper limbs associated with paresis primarily of the shoulder flexors, abductors, external rotators, elbow flexors, but she can bring her hand to the mouth and face. X-rays, MRI shoulders, NCS, EMG were done. No dislocation of shoulders nor myelopathy of cervical spine. We embarked on rehabilitation and physiotherapy with no surgery at this stage. The key to success in the treatment of Erb's palsy is an interdisciplinary approach which includes pediatricians, neurosurgeons, orthopedists, plastic surgeons, neurologists, radiologists and physiotherapists.

Abstract no.: 51283

**ACCURACY OF PEDICLE SCREWING USING FREE HAND TECHNIQUE
IN REVISIONAL SCOLIOSIS SURGERY**

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Studies on reoperation of scoliosis is rarely reported as pedicle screw and vertebral fixation instruments placements are unsafe to perform. Therefore the authors performed posterior-only approach with free-hand technique pedicle screw insertion on scoliosis reoperations and are keen to report it. Patients diagnosed as scoliosis and operated in external hospitals showing progressive complications from 2006-2014 were included. Surgical technique for correcting the vertebral bodies was posterior-only approach. Pedicle screws were inserted using free-hand technique. Neurological status were recorded and CT scan was taken in order to assess the position of the pedicle screws. Grades were given to each screw according to its sagittal position on the pedicles. The degree of instability was compared between the screws placed in the fused pedicle and in the pedicle without fusion. 13 patients were included in total, producing 121 fusions and 304 pedicle screws. 224 out of them, the screws were inserted on the fused area of the bone. 121(39.8%) out of 224 screws penetrated the vertebra either medially, laterally, or anteriorly. 96 (31.5%) of them were given grade 1, 25 (9.2%) of them were given grade 2. 75 (33.9%) screws placed in the fused area penetrated the cortical bone. 25 (8.2%) out of them caused instable penetration of the cortical bone, meaning 91.8% of the were inserted safely. No statistically significant neurological symptoms were observed ($p=0.98$). Considering the difficulty in finding the anatomical landmark for the placement of pedicle screws in fused bone in revision scoliosis surgery, free-hand technique is thought to be relatively safe and useful.

Abstract no.: 51286

INTERFRAGMENTARY MOTION ASSESSMENT FOR THREE DIFFERENT FIXATION TECHNIQUES OF FEMORAL NECK FRACTURES IN YOUNG ADULTS

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BACKGROUND: Vertical femoral neck fractures in the youth could be happened in high-energy accidents, and because of dominant shearing forces, this fracture is considered as a troublesome injury with a controversy regarding selection of the best fixation method. **OBJECTIVE:** The long term goal of this quasi-experimental study was to find the more stable fixation method among cannulated screws (CSs), proximal femoral locking plate (PFLP), and dynamic hip screw with derotational screw (DHS+DS) for this kind of fracture. **METHODS:** Twelve fresh-frozen cadaveric femurs were assigned to three groups that were matched for mean bone mineral density and stiffness of intact bone. Vertical fractures were artificially mimicked in the specimens and fixed using three different implants, i.e. CSs, PFLP, and DHS+DS. Then, the samples were tested under incremental, cyclic, and failure loading phases. **RESULTS:** The differences in all biomechanical parameters were statistically significant among tested groups ($p < 0.05$). All biomechanical parameters for the DHS+DS method of fixation are significantly different from those corresponding to CSs ($p < 0.05$). There were no significant differences in failure load and failure energy between the PFLP and CSs techniques ($p > 0.05$). Also, there were no significant differences in relative stiffness and femoral head displacement between the PFLP and DHS+DS groups ($p > 0.05$). **CONCLUSIONS:** Based on the clinical assumption that restricted weight-bearing regimen is recommended in the postoperative rehabilitation protocol, the results of this study suggest that the priority order of selection for the stable fixation implant of vertical femoral neck fracture in young patients is DHS+DS, then PFLP, and finally CSs.

Abstract no.: 51289

PREDICTIVE PATIENT FACTORS FOR DEVELOPING POSTOPERATIVE DYSPHAGIA FOLLOWING ANTERIOR CERVICAL DISCECTOMY AND FUSION

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Introduction: This study evaluated the: (1) demographics; (2) length of stay; and (3) hospital charges of patients who underwent anterior cervical discectomy and fusion (ACDF). The goal of this study was to compare patients who did and did not develop postoperative dysphagia following ACDF to identify any potential predictive factors for postoperative dysphagia. **Methods:** The New York Statewide Planning and Research Cooperative System database was used to identify all patients who underwent ACDF from 2009-2013. This cohort was divided into two groups based on whether or not they were diagnosed with dysphagia postoperatively. Patients with dysphagia preoperatively were also identified. Demographics and hospital-related parameters were compared between the two groups. Logistic regression was performed to identify any predictive factors for developing postoperative dysphagia. **Results:** A total of 34,975 ACDF patients were included. Postoperative dysphasia developed in 795 patients. Also, 140 patients had preoperative dysphagia, but only 20 (14.3%) had dysphagia postoperatively. Preoperative dysphagia and postoperative dysphagia patients represented 2.5% of individuals diagnosed with dysphagia postoperatively. Preoperative dysphagia was associated with a 285% higher odds for postoperative dysphagia (OR=3.85; 95%CI, 3.26-4.54, p<0.001). Age (OR=1.045; 95%CI 1.043-1.048, p<0.001), black race (OR=1.338; 95%CI 1.232-1.454, p<0.001), and Charlson score (OR=1.122; 95%CI 1.099-1.146, p<0.001) were also predictors of developing postoperative dysphagia. **Conclusion:** This study found that patients who developed dysphagia were older, male and black. However, preoperative dysphagia was the most significant predictor of postoperative dysphagia following ACDF. This should assist spine surgeons to preoperatively counsel and risk-stratify their patients prior to ACDF.

Abstract no.: 51291

RESULTS OF OCCIPITO-CERVICAL FUSION IN POST-TRAUMATIC UPPER CERVICAL SPINAL INSTABILITY AND ODONTOID FRACTURE

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Introduction: Surgery for upper cervical instability (eg. Atlanto-occipital & Atlanto-axial) & Odontoid fracture is always challenging. Our study demonstrates the results of Occipito-cervical fusion when there is any of neurologic involvement, failure to conservative treatment & significant deformity due to post-traumatic injury at the mentioned levels. **Materials & methods:** 9 patients (M-7 & F-2) with the mean age of 23 years (range: 18-37) underwent Occipito-Cervical fusion at NITOR & BSOH in between July, 2015 & December, 2017. Posterior approach was adopted in all keeping them in neutral position with Tong traction during surgery. A midline incision extending from the superior nuchal line to below the level involved, was made. Fixation was done by Pedicle screw or Lateral mass screw or Occipito-cervical plate-rod system. Autogenous chunk bone graft taken from Iliac crest was given to ensure adequate fusion. Halo immobilization was continued for 6 weeks after surgery to maintain correction & ensure fusion. **Results:** All patients survived surgery. No neurological deterioration was there. They were kept at ICU during the post-operative period for a closed monitoring. C1-C2 trans-articular fusion was done along with Atlanto-occipital fusion for all. Solid fusion was achieved within 6 months. During follow up, satisfactory deformity correction & neurological improvement were noticed. Post-operative flexion decrease (average 28O) along with lack of rotation were seen in each patient. No implant failure & wound infection was noted. **Conclusion:** Occipito-cervical fusion is a reliable option for upper cervical spinal instability & significant deformity. It provides satisfactory clinical results with important neurologic recovery.

Abstract no.: 51292

COMPARISON OF THREE FIXATION METHODS FOR FEMORAL NECK FRACTURE IN YOUNG ADULTS: EXPERIMENTAL AND NUMERICAL INVESTIGATIONS

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Femoral neck fractures in young patients are usually caused by a high-energy trauma, which results in a perpendicular fracture. Although efforts are focused on preserving the femoral head in young patients, vertical femoral neck fracture is a problematic orthopedic injury due to the domination of shear forces. Due to controversy regarding which fixation method is the best choice, the purpose of this study was to find the most stable fixation method for this kind of fracture. This study includes experimental testing on cadaveric bone samples and finite element analysis (FEA) for three fracture fixation techniques, namely cannulated screws (CSs), dynamic hip screw with derotational screw (DHS + DS), and proximal femoral locking plate (PFLP). Experimental results of bone-implant stiffness, average femoral head displacement, failure load, failure energy, and relative position of the fractured fragments indicate that DHS + DS offers the strongest structure for stabilizing a vertical femoral neck fracture. Experimental data and FEA results both indicate that under static loading, the DHS + DS method of fixation produces the lowest femoral head displacement and interfragmentary movement, followed by PFLP and then CSs. The results of this research suggest that, based on the clinical assumption that a restricted weight-bearing regimen is recommended in the postoperative rehabilitation protocol, the DHS + DS method of fixation is a better choice compared to CSs and PFLP for a vertical femoral neck fracture fixation in young adults.

Abstract no.: 51294

CLINICAL EFFICACY AND RADIOLOGICAL OUTCOMES OF ANTERIOR CERVICAL DISCECTOMY AND FUSION USING EIT CAGES

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Method: Patients with degenerative cervical disease who were diagnosed and treated in Guys and St Thomas hospital under care two different senior spinal surgeons between January 2016 and December 2017 were included in this study. Patients who had operation in ACDF were selected. Neck Disability index score, EQ5D-5L health assessment and visual analogue scale before and after the surgery were measured. Subsidence was defined as ≥ 3 -mm decrease of the segmental height, and cervical kyphosis was defined as progression of $\geq 5^\circ$ at 06 months after postoperative follow-up compared to that measured at the immediate postoperative period. Results: A total of 28 patients were included in study. All patient had ACDF performed by using EIT plate. Mean age was 55 yrs. Most common size of cage used was 6 large (5-7 Large). Average Neck Disability index was improved from 43/60 moderate disability to mild disability 21/60. Average EDQ5D-5L index was improved from 0.52 (12/25) to 0.77(7/25) and VAPS was improved from 8 to 5. Segmental subsidence was observed (3.5%). Segmental kyphosis was not observed in any case to date. (0%). Conclusion: In our short term follow up using EIT cages, shows improvement in all scores postoperatively and no serious complication were recorded with very low rate of subsidence. We are aware of the inherent limitations of our study which include small number but it does show that using this technique is both safe and effective for patients. We will continue to follow our patients on longterm and will update our result.

Abstract no.: 51295

HAIR TOURNIQUET SYNDROME OR A CONSTRICTION BAND: A DIAGNOSTIC DILEMMA

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Background: Hair tourniquet syndrome is an uncommon clinical phenomenon that involves hair, thread, or similar material becoming tightly wrapped around an appendage that it results in pain, injury, and, sometimes, loss of the appendage. Case: We present a 5 month old female twin who was referred to us with history of painful, red, swollen left 4th toe. Mum noticed this over a month and mentioned that the toe looked progressively larger when compared to 1 month ago. There was no history of trauma in the past and mum does not recollect of any such instance where a hair strand had got stuck in the toe. The child had no other significant past medical history. On clinical examination, the child was afebrile and didn't look septic. The 4th toe was mildly swollen, erythematous, not warm and child was comfortable on moving the toe. Distal capillary refill was < 2 sec and the foot was well perfused. There was an obvious accurately demarcated circular constriction at the level of the PIPJ with slight maceration of the surrounding skin. Also there was superficial crusting over the solar aspect of the toe. Results : After repeated attempts and de-crusting of the circumferential ring it was reassuring that there was no obvious hair/thread causing this constriction. This was discussed with the paediatric plastic team who reviewed the pictures and agreed to the fact that if there was no obvious hair stand, then the likely diagnosis would be some sort of congenital band.

Abstract no.: 51297

DELAYED TREATMENT OF INTRA-ARTICULAR FINGER FRACTURES

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Background: A paradox occurs when a displaced intra-articular fracture of finger joints is encountered after its acute phase. Delayed surgical intervention is notorious for resulting in a stiff finger. The purpose of this study is to assess the results of delayed open reduction and internal fixation of this type of finger fracture. **Method:** Twelve intra-articular fractures of 12 patients were treated by mean delay of 26 days (range: 12 - 57). For 8 patients, open reduction by removing callus and fibrous tissue between osteo-cartilage fragments were cut by a number 11 blade knife and after reduction and fixation was achieved by screw, plate and screw, anchor suture and/or pins. For displaced and unstable fractures of one dorsal base P2 and 3 mallet fractures closed extension block pinning was done. Hemi-haminate arthroplasty was done for 4 patients by P2 volar base fracture. **Results:** Ten males and two female by mean age of 26.4 (range: 8-49) were treated and followed averagely for 9 months (range:4-34). The mean of total ROM was 207.5 (range: 105 -310) preoperatively and 280° (range: 95- 280) post operatively ($p>0.01$). Two fingers lost their fixation and had the stiff joint finally. One patient treated by hemi-haminate arthroplasty failed its fixation after 2 weeks and tolerated the revision surgery. This patient had clinically painless moving PIP (ROM: 5-65°) but radiologically subluxated join. **Conclusion:** The paradigm of / of fingers may be needed to be revised. More studies by large number of cases and comparison of different treatments are recommended.

Abstract no.: 51298

GLOMUS TUMOUR: A PAINFULLY BENIGN TUMOUR

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Background: Glomus tumour of the thumb is a benign neoplasm. It is uncommon and arises from the neuroarterial structure, the glomus body. Initial clinical presentation is a nonspecific tenderness in the affected digit without preceding history of trauma. AIM: To diagnose non specific chronic swellings around the nail bed and treat them appropriately with a view to avoid further symptoms and recurrence. Case: We present a case of a 73-old lady who attended the hand clinic with complaints of pain and swelling in her right thumb over 10 years which had got progressively worse over the last 4 months. The pain was insidious in onset, progressive in nature and increased on exposure to cold. There was no history of trauma. Clinical examination revealed an ingrowing thumbnail along the ulnar 1/3rd of the nail which was curled to around 90 degrees and was digging into the ulnar corner. On palpation, there was severe tenderness to light touch and there was no local rise of temperature. Peripheral zone of the nail was not tender to touch or pressure. There was no discoloration/discharge/ridges and there were no distal neurovascular deficits. Love's pin test was not performed as the patient was already extremely tender to light touch along the ulnar border. Radiographs were essentially normal. Patient underwent excision and HPE revealed a glomus tumor. Conclusion: A high index of suspicion can significantly narrow the diagnosis and a meticulous excision is the most effective treatment which provides histopathologic diagnosis along with rapid decline of symptoms.

Abstract no.: 51299

STATE-OF-THE-ART MANAGEMENT OF MULTIPLE-INJURED PATIENTS

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A syndrome of multiple injuries exceeding a defined injury severity (Injury Severity Score-ISS>17) with consecutive systemic trauma reactions which may lead to dysfunction or failure of remote—primarily not injured—organs and vital systems can be called a polytrauma. The management of polytrauma has evolved considerably in the last century. Advances have been made in all disciplines involved in trauma care from pre-hospital care and resuscitation protocols to diagnostics, surgical techniques, administration of novel pharmacological agents and late reconstruction procedures. The past century has seen many changes in the management of the polytraumatized orthopaedic patient. Early recommendations for non-operative treatment have evolved into early total care (ETC) and damage control orthopaedic (DCO) treatment principles. Focus on decision making to choose between early total care and damage control orthopedics, the different patient types, and the parameters (clinical and labs) needed to make decisions in multiple injured patients. • Long bone fractures, pelvic ring injuries, and unstable spine fractures represent the “critical” orthopedic injuries in polytrauma patients • The multiply injured patient is vulnerable to “2nd hit” insults which may originate from inadequate timing and modality of fracture fixation • Understanding the underlying physiological response to major trauma is a prerequisite for designing a priority-based treatment plan for orthopedic injuries At last we can stand for that, Stable patients are safely managed by ETC but A staged “damage control” concept should be strongly considered for the acute management of “borderline” patients, unstable patients, and patient “in extremis”.

Abstract no.: 51300

PAEDIATRIC LIGAMENTUM PATELLA RUPTURE: AN UNCOMMON ISOLATED INJURY

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Background: Ligamentum patella rupture is not an uncommon injury, although they are less common than the quadriceps tendon rupture, the age group of presentation is usually under 40. Case: We present a 12 year old boy who had sustained a twisting injury to his knee while playing football. At the time of presentation he was unable to weight bear and examination revealed lack of straight leg raise including after eliminating gravity. Radiographs confirmed a high riding patella and did not show any obvious bony injury. Intra-operatively he was found to have an intra substance tear of the patellar tendon and a chip fracture of the inferior pole of patella. He underwent a repair for the same using ethibond sutures, including the small avulsion fracture. This was immobilised in a cast for 6 weeks. Conclusions: Intra substance ligamentum patellar ruptures are rare in a paediatric age group when compared to the avulsion fractures, which can normally disrupt the extensor mechanism. A high degree of suspicion and a careful clinical examination would aid in the diagnosis and prevent further delay in definitive management.

Abstract no.: 51301

EARLY OPEN FRACTURE FIXATION BY PLATE AND SCREWS

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Introduction: Open fractures remain one of the true orthopaedic emergencies. Early administration of systemic antibiotics and timely surgical debridement, skeletal stabilization and delayed wound closure are the mainstay principles of treatment in open fractures. In the era of Gustillo Andersons first publication on open fractures they recommended strongly against internal fixation of open fractures with plates or intramedullary nails; instead, they recommended external skeletal fixation of some sort. But after thorough debridement, the use of biological fracture fixation techniques, and early soft tissue cover, internal fixation with plates or intramedullary nails are safe and effective. The restoration of skeletal stability is very important for the treatment of the soft tissues and prevention of infection. Conclusion: The prognosis of an open fracture depends on the severity of the injury. Stabilizing the fractured bone helps to prevent further tissue damage. Timing of surgery is less important than the adequacy of debridement and early use of antibiotics.

Abstract no.: 51304

MINIMALLY INVASIVE PLATE OSTEOSYNTHESIS

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A Good Option for Treatment of Comminuted Diaphyseal and Metaphyseal Fracture of a Weight bearing Long bone. In this procedure main theme is Tunneling a plate across a fracture via small skin incisions at each end of the bone to avoid the long surgery time and big wounds associated with traditional plate fixation. Our Place of Study was LABAID Hospital Ltd. Dhaka, Bangladesh. Period of study: January 2011 to January 2013. Study Population: comminuted diaphyseal and metaphyseal fracture of tibia. Number of Patients: 28. Fixation Techniques: MIPO. Implant used: LCP/ Metaphyseal Locking Plate (Proximal+ distal Tibial). There were 20 male (71.42%) and 08 female (28.57%). The lowest age incidence was 22 years and the highest age incidence was 69 years. The post operative follow up period was 3-24 months. Functional outcome obtained Excellent- 89.28% (25 cases) Good- 3.57% (01case) Fair – 3.57% (01case) Poor – 3.57% (01case).

Abstract no.: 51305

A CRIPPLING PAIN ACOMPANIED WITH OSTEOPOROSIS IN A POSTMENOPAUSAL WOMAN: AN UNDERDIAGNOSED CASE OF TUMOUR-INDUCED OSTEOMALACIA

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A 55-year-old postmenopausal woman presented with crippling pain and weakness that had started 3 years earlier accompanied with an asymptomatic slow-growing soft tissue mass in her right sole. The Dual-energy X-ray showed mild osteoporosis. The fine needle puncture biopsy of the mass only revealed some nonspecific cells. Many doctors believed it was merely osteoporosis. However, her pain had been aggravating and she had to use a wheelchair when she was first referred to us. On examination, diffuse mild bone tenderness and muscle weakness were the only notable findings. Laboratory evaluation showed severe hypophosphatemia with normal calcium. MRI for her right sole showed a 2×3 cm² soft tissue mass with distinct boundary. Then, with oral supplementation of phosphorus, calcium and calcitriol, her pain was relived significantly, while the hypophosphatemia remained. On further inspection for the mass, though asymptomatic, it did keep growing in the past three years. After a wide marginal resection, the serum phosphate became normal two days postoperative. And she was capable of waking freely and independently two weeks postoperative. Tumour-induced osteomalacia (TIO) is a rare and intriguing paraneoplastic syndrome characterized by severe hypophosphatemia leading to osteoporosis and osteomalacia. Surgical resection is curative. However, the culprit lesion is usually inconspicuous and difficult to locate. While pain from osteoarthritis and primary osteoporosis is very common in menopausal women, doctors should never overlook the possible diagnosis of TIO, as well as the significance of the time-honored history-taking and thorough physical examination.

Abstract no.: 51306

SCLERODERMA AND ITS ORTHOPAEDIC MANIFESTATIONS IN UPPER EXTREMITIES

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Background: Scleroderma is a rare condition that results in hard, thickened areas of skin and could also lead to problems with internal organs and blood vessels. It has a predilection for lower limbs and could lead to destructive and disfiguring calcific tendonitis. Case: We present a case report of a 58 year old female , a known case of Scleroderma since 12 years and currently under treatment for the same, came to us with chief complaints of restricted movements at the right elbow, swellings over the right and left wrists, elbows and shoulders. On examination she had a FFD of 70 deg and a further assisted flexion of 10 degree, multiple bony swellings over her right and left wrists, shoulders elbows with reasonable movement in all the other joints other than right elbow.Imaging revealed Extensive Calcific tumour like lesions in all the upper limb major joints. After a through pre operative work up, right elbow mass was excised without use of tourniquet due to a pre existing Raynaud's phenomenon, along with excision of soft tissue mass from right shoulder, wrist and elbow. This was sent for histology which revealed calcific tendonitis. Results: Post surgical excision, range of movement in the right elbow improved from 70 to 110 degrees over the next 6 months. The aim to restore functional range of movement along with cosmesis at the elbow, wrist and shoulder was nearly achieved with meticulous surgical planning and excision.

Abstract no.: 51308

THE RESULTS OF CONVERSION HIP ARTHROPLASTY FOR FAILED INTERNAL FIXATION OF FEMORAL NECK FRACTURES

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Internal fixation is the treatment of choice for the most of stable type of femoral neck fracture. However, it is reported a certain re-operation rate because of fixation failure, avascular necrosis of the femoral head, especially in the cases of older patients or unstable type of fracture. To rescue failed internal fixation, hip arthroplasty (THA or BHA) is considered to be "golden standard" in turn. Compared to internal fixation, hip arthroplasty has such advantage as more significant improvements in pain, early ambulation, and lower rates of re-operation. However, the complications such as newly femoral sub-trochanteric fracture or stem failure are reported in the past literatures. We hereby report the result of consecutive 4 cases of hip arthroplasty using unique stem after failed internal fixation performed in our institution. All failed implants were retrieved and revised with cementless collared Corail stem. The short-term follow-up (average 1year) revealed the successful clinical and radiographic outcome. No implants was loosened. Based on the results of the present report, we argue the indication of adequate type of stems, and report the satisfactory clinical and radiographic results of cementless collared Corail stem. Use of this type of stem has a capacity to avoid complications such as sub-trochanteric or shaft fractures induced by excessive rasping or remnant holes on conversion hip arthroplasty.

Abstract no.: 51309

PROXIMAL HUMERAL FRACTURE: DIFFERENT MODALITIES OF TREATMENT

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Introduction: Controversy surrounds the ideal management of unstable proximal humerus fractures. Different surgical options are available to achieve optimum results in these challenging fractures. Then choice of a particular method depends on a variety of factors such as bone quality, nature of the fracture, surgeon's experience and expertise and the functional demands of the patient. Total patient 67 in number let. Description: Treatment of unstable displaced fractures of the proximal humerus has remained controversial in literature. The management of displaced fractures of the proximal humerus is a challenge for every orthopaedic surgeon, and the results are often frustrating. Osteosyntheses may be followed by osteonecrosis, malunion, and soft tissue damage with reduced postoperative mobility. Displaced fractures generally require operative repair & in young patients with good bone quality the results are usually satisfactory. In contrast the osteoporosis found in the elderly patients makes internal fixation problematic & frequently contributes to failure of fixation. Various surgical treatment modalities for displaced proximal humeral fractures are pins, wires, heavy sutures, rush nails, screws & plates, hemiarthroplasty & pins, external fixation & tension band wiring. The present study was carried out for evaluation & analysis of the different modes of the surgical management of the proximal humeral fractures. Conclusion: Proximal humeral fracture management is challenging for orthopaedic surgeon regarding stable fixation & satisfactory outcome. Methods of fixation depends on fracture classification (Neer's), bone quality & surgeons experience. Young & active bone is better to treat by open reduction & internal fixation.

Abstract no.: 51310

NON-TRANSFUSION SURGERY OF ADOLESCENT IDIOPATHIC SCOLIOSIS SURGERY WITH MINIMAL INVASIVE SURGICAL TECHNIQUE AND TRANSAMINE MEDICATION

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Blood loss during surgical of adolescent idiopathic scoliosis is considerable, which frequently requires transfusion. This study is to analyze the effects of minimal invasive scoliosis surgery and transamine medication on AIS patients for minimizing the necessity of transfusion. In all 16 enrolled patients, the procedure was performed using the rod-rotation maneuver after pedicle screwing on the whole functional vertebral segment through two small skin incisions. For cosmetic considerations, thoracoplasty was performed through the same incisions. Transferrin injection and transamine were given before and during operation. Cobb's angle, coronal balance, and the spinal vertical axis were measured. SRS-22 questionnaire was given to each subject, and the surgical complications were checked. Peri-operative hemoglobin levels were evaluated sequentially for hemodynamic identification. Cobb's angle was corrected from a preoperative mean of 62° to 23° post-operatively, with a 73% of correction rate ($p < 0.001$). The Cobb's angle and sagittal vertical axis were significantly corrected ($P = 0.034$ and 0.002). The average amount of blood loss was 497 mL during the approximately 5-hour operation. Hemoglobin levels had changed sequentially as follows; 13 g/dL (pre-operation), 11 g/dL (immediate post-operation), 9 g/dL (3 days post-operation) and 10 g/dL (7 days post-operation). All patients were discharged after 7-12 days without any complications or transfusions. On the SRS-22 survey, the total score significantly increased from 3.8 to 4.6 ($p < 0.001$), and the satisfaction score was measured as 4.5 out of 5.0. Therefore, in AIS correction, the MISS technique combined with tranexamic acid administration can minimize blood loss allowing for non-transfusion surgery.

Abstract no.: 51311

DEVELOPMENT AND LONGITUDINAL EVALUATION OF LEG-LENGTH DISCREPANCY AFTER TOTAL HIP REPLACEMENT WITH SHORT STEM PROSTHESIS

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Introduction: Leg length discrepancy (LLD) after total hip replacement (THR) is a matter of concern for patient satisfaction. The subjective LLD varies in time and objective measurements lack scientific agreement in terms of appropriate measure points. We aimed to objectify the LLD over time and assess the reliability of various measure points. Methods: In a prospective study two independent researchers measured the LLD of 100 patients with THR at 1, 6, 12, 24 and 52 weeks after surgery on a.p. pelvic x-rays at five radiologic landmarks: tear drop figure, upper and lower sacroiliac joint, iliac crest, and trochanter tip (reference line). Observer agreement was assessed with intraclass correlation coefficient (ICC). Results: Analysis showed excellent agreement for all measure points with weakest reliability for measures at the sacroiliac joint (ICC = 0.92). The LLD over time could be best described on a quadratic function with an increase between week 1 and 6 and a consecutive steady state. Measures at the tear drop figure were in average 2.96mm larger than at the trochanter tip ($p = <.001$) and not significantly different from the sacroiliac joint. Highest LLD was measured at the iliac crest ($b = 1.72$ mm larger than tear drop figure ($p = <.001$)). Conclusion: Leg length discrepancies after THR seem underestimated during initial recovery. In average, LLD was about 3mm at the tear drop figure and significantly higher when measured at the iliac crest. For reliable results, we suggest LLD measures not prior to 6 weeks after surgery.

Abstract no.: 51313

IMPLANT AND LIMB SURVIVAL AFTER RESECTION OF BONE TUMOURS OF THE LOWER EXTREMITIES AND RECONSTRUCTION WITH MEGA-PROSTHESES

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Objective: Previous multicenter studies reports variable outcome and failure rates after mega-prosthetic reconstructions for tumors in the lower extremities. Purpose with this study was to make a long-term single center evaluation of patients treated with limb sparing surgery using mega-prostheses in the lower extremities. Methods: A retrospective study of 72 consecutive patients (F/M=30/42), mean age 44 (range 7-84) years with bone or soft tissue sarcomas (n=67), aggressive benign bone tumors (n=5) having surgery between 2006 and 2016 with bone resection (resection type: distal femur (n=21) proximal femur (n=34), proximal tibia (n=14), total femur (n=3), and reconstruction with a mega-prosthesis, GMRS(Stryker) (n=37). Segmental (ZimmerBiomet) (n=27), Mega-C(Link) (n=8). Postoperative function was evaluated with MSTS score. Causes of failure were classified according to Henderson et al. (JBJS Am 2011). Kaplan-Meier survival analysis was used for evaluation of overall patient survival. Fine and Gray competing risk analysis was used for assessing cumulative risk for implant failure and limb survival. Results: Fifty patients were alive at followup (01.02.2018). Twenty-four patients (33%) underwent revisions. Overall 10-year patient survival was 58% (95%CI 45-72%); 10-year cumulative risk of implant revision was 36% (95%CI 24-48%). Ten-year cumulative risk of amputation was 11% (95%CI: 3%-18%). Type 1 failure occurred in 30%, Type 2 in 13%, Type 3 in 15%, Type 4 in 30%, and Type 5 in 13%. Conclusion: Our results with second-generation mega-prostheses, justifies the use of limb salvage surgery. Our results are fully comparable with other findings, with regards to limb and prostheses surveillance, but also functional outcome.

Abstract no.: 51315

**TREATMENT OPTIONS IN NONUNION OF DISTAL TIBIAL FRACTURES:
IS BMP WORTHWHILE?**

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Background: Distal tibial fractures are always a challenge to treat. The dilemma between plating Vs nailing is always debatable. The situation is worse when it's an established non union. Case: We present a case report of a 78 year old female, diabetic, hypertensive with a an established non union distal 1/3rd tibia + implant failure of right tibia and post status ipsilateral T.K.R . 10 years ago. Excision of Atrophic fragment along with recanalization was done and packed with autogenous cortico-cancellous bone graft. This was onlayed with B.M.P coated membrane and the entire construct was held in place using a long distal tibial locking plate. The patient was mobilized non weight bearing for 8 weeks with walker and gradually allowed toe touch bearing to complete weight bearing at the end of 8 months. Results: Clinical and radiological results look promising at the end of 1 years follow up. There was good amount of consolidation at the fracture site and patient has been full weight bearing 6 months post surgery.

Abstract no.: 51318

UNINTENDED CONSEQUENCES OF THE NON-COVERAGE OF HA: A CAUTIONARY TALE

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The utilization of knee arthroplasty has grown rapidly in the U.S. during the past decade. Intra-articular hyaluronic acid (HA) is another treatment option for knee osteoarthritis, and has been associated with a delay to knee arthroplasty. However, certain health insurance plans have ceased reimbursing HA. We hypothesized that non-coverage of HA would result in substantial reductions in HA use, and in turn, would lead to increased knee arthroplasty use. Incidences of knee arthroplasty and HA were evaluated using a large claims database of over two million Osteoarthritis patients with Commercial Health Care coverage, based on states where The health care plan stopped HA coverage. Before reimbursement ceased, HA incidence, which did not exceed 15.5 HA patients per 100 knee OA patients, was generally lower than that of knee arthroplasty. Following reimbursement cessation, the incidences of knee arthroplasty and HA diverged in all eight states, with the greatest differences occurring in three particular states (ratio of knee arthroplasty to HA patient incidences were 17.3, 11.9, and 10.3, respectively, in 2016). This was associated with the decrease in HA use in all states, but was also correlated with the concomitant increase in KA use in 5 states. Even prior to the non-coverage decision, less costly HA was not as prevalent as more costly knee arthroplasty. Moreover, our study showed that the rate of knee arthroplasty increased in several states following the non-coverage decisions.

Abstract no.: 51322

SOMETIMES IT'S NECESSARY TO FOLLOW THE PATIENT LONG ENOUGH TO SEE COMPLICATIONS: A TALE OF FIBROUS DYSPLASIA HUMERUS

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Introduction: Fibrous dysplasia involving long bone difficult to treat but its poses significant challenge when its involve the entire shaft. We treat a 21 year male with huge fibrous dysplasia involving whole of humeral shaft with extensive curettage and non vascularised fibular graft without any metal augmentation. After surgery patient's postoperative course went well. There was no recurrence within one year and near full range of movement. Radiologically fibular humeralization also approaching. But after 3 and half year patient again presented with fracture / nonunion of humerus. We redo ORIF with DCP and autologus bone graft. Fracture was united and still no recurrence.

Abstract no.: 51326

THE EFFECT OF POSTERIOR CRUCIATE LIGAMENT RECONSTRUCTION COMBINED WITH POSTEROLATERAL COMPLEX RECONSTRUCTION IN LESS THAN 10 DEGREES OF DIAL TEST IN POSTEROLATERAL CORNER INJURY

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Purpose: There is a debate about PCL reconstruction combined with or without PLC reconstruction. **Methods:** The records of 47 patients, 51 knees who were diagnosed PCL injury between January 2008 and December 2015 were retrospectively reviewed with a minimum follow-up of 24 months. 14 cases underwent only PCL reconstructions. 37 cases underwent PCL reconstruction combined with anatomic PLC reconstruction. We compared between 16 cases in group of PCL reconstructions combined with PLC reconstructions had shown less than 10 degrees of dial test and 14 cases in group of isolated PCL reconstructions. Clinical outcomes were evaluated with International Knee Documentation Committee (IKDC) subjective, Lysholm, and Tegner activity scale scores. Knee stability was assessed the side-to-side differences of posterior instability by stress radiography. **Results:** There were no clinically differences in Lysholm scores and Tegner activity scale scores. But there was a significant difference in IKDC subjective score (Isolated PCL reconstructions: 72.8 ± 8.9 , PCL reconstructions combined with PLC reconstructions : 77.7 ± 10.1 ; $P < 0.05$). In addition, there was a significant difference in side-to-side measurements on posterior stress radiographs (Isolated PCL reconstructions: 4.8 ± 2.3 mm, PCL reconstructions combined with PLC reconstructions: 3.8 ± 2.1 mm; $P < 0.05$). **Conclusions:** PCL reconstructions combined with PLC reconstruction can result in better clinical & radiologic outcomes compared with isolated PCL reconstructions. In conditions of suspicious PLC injury in PCL injury, PCL reconstruction with PLC reconstruction can restore the posterior stability of knee.

Abstract no.: 51327

COMPARING 30-DAY OUTCOMES AFTER ANTERIOR CERVICAL DISCECTOMY AND FUSION BETWEEN ORTHOPAEDIC SURGEONS AND NEUROSURGEONS: AN EIGHT-YEAR ANALYSIS

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Introduction: Orthopaedic surgeons and neurosurgeons both perform anterior cervical discectomy and fusions (ACDF) but there is little evidence comparing ACDF outcomes between these two specialties. This study evaluated the: (1) demographics; (2) complications; (3) operative time; (4) length of stay; (5) reoperations; and (6) readmissions of patients after ACDF. We hypothesized that orthopaedic surgeons and neurosurgeons achieve similar outcomes after ACDF surgery. **Methods:** The National Surgical Quality Improvement Program database was utilized to identify all ACDFs performed from 2008-2016. This cohort was grouped by surgeon specialty (orthopaedic and neurosurgery). Demographics, comorbidities, labs, perioperative factors, and 30-day postoperative complication, reoperation, and readmission rates were collected. Regression models were developed to identify potential predictive factors for 30-day postoperative outcomes. **Results:** A total of 77,071 ACDF patients were included. Orthopaedic surgeons treated 33.1% of patients and 66.9% by neurosurgeons. Regression analysis revealed that age was a significant predictor for 30-day overall complication (OR=1.04, p<0.010), reoperation (OR=1.02, p<0.010) and readmission (OR=1.02, p<0.010) rates. Orthopaedic specialty was not a predictor for increased overall complication (OR=1.07, p=0.094) or reoperation (OR=0.99, p=0.863) rates but it was a predictor for lower readmission rates (OR=0.77, p=0.032). **Conclusion:** Neurosurgeons performed ACDF more often than orthopaedic surgeons but their outcomes were comparable for 30-day complications, reoperations and readmissions. Orthopaedic patients had longer LOS but orthopaedic specialty was also a predictor for lower 30-day readmission rates.

Abstract no.: 51329

INCIDENCE OF POSTOPERATIVE STROKE AFTER ANTERIOR CERVICAL DISCECTOMY AND FUSION IN PATIENTS WHO HAVE CAROTID STENOSIS

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Introduction: The purpose of this study was to determine the incidence of postoperative strokes after anterior cervical discectomy and fusion (ACDF) in patients with carotid artery stenosis (CAS), as well as other postoperative complications, and lengths of stay (LOS). **Methods:** The Statewide Planning and Research Cooperative System database from 2009-2013 was used to identify patients who underwent ACDF. Patients <18 years and patients with a previous history of a stroke that predated the ACDF were excluded. Demographics, Charlson scores, and LOS were recorded. Using the ACDF cohort, patients who had a preoperative diagnosis of CAS were identified, and were propensity score matched (1:1) to those without CAS based on age, sex, and Charlson scores. There were 61 patients with CAS and 61 patients without CAS; the CAS group was older (68 vs. 60 years, $p<0.001$). **Results:** The incidence of postoperative stroke in the CAS group was significantly higher compared to those without CAS (6.6 vs. 0%, $p<0.042$). Moreover, in terms of the other postoperative complications, compared to patients without CAS, those with CAS had a higher rate of acute renal failure (27.9 vs. 4.9%, $p=0.01$), sepsis (18 vs. 4.9%, $p=0.023$), and blood transfusion (39.3 vs. 13.1%, $p=0.001$), as well as a slightly shorter LOS (4.8 vs. 5.8 days, $p=0.736$). **Conclusion:** Patients with CAS who underwent ACDF had a greater incidence of developing a postoperative stroke, among other complications, compared to patients without CAS. These patients could potentially benefit from medical or surgical optimization of their CAS prior to undergoing ACDF.

Abstract no.: 51331

SPINAL CONSEQUENCES OF BACTERIAL ENDOCARDITIS

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Introduction: Infective endocarditis is an infection secondary to bacteria in your blood stream that settles in heart lining, valves or major blood vessel. Incidence is 3-9% per 100000 in developed countries. Male twice as more effected. IE typically involves bacteria that have platelet aggregating capabilities. Staphylococcus and Streptococcus species are the most common causative agents of IE taking this particular characteristics into consideration. Their ability to activate platelets creates a bed for vegetation formation and theoretically supports the use of antiplatelet agents in the management of disease. Their complications towards axial skeleton is rare but can cause significant disability if left untreated. There are no larger case series been reported in literature with few case reports in isolation. Methods: we report a case series of 5 patients that were presented to our hospital in last one year with infective endocarditis and subsequently have lumbar, Thoracic or cervical spine involvement. The initial involvement was in form of osteomyelitis and discitis followed by epidural abscess in one of those and subsequent need for surgical intervention. Results: we talk about their presentation, bacterial involvement, their immune status, any pre-existing disease, timing for antibiotics treatment, interval scan timings and follow up in clinic. We also highlight the challenges for diagnosing it in an already infected patient, high index of suspicion and multidisciplinary approach in their management involving interventional musculoskeletal radiologist to establish tissue diagnosis, microbiologist and spinal Surgeon. Till date in literature this case series is very unique and interesting in various aspects.

Abstract no.: 51332

A RARE CASE OF CORONAL SHEAR FRACTURE INVOLVING THE CAPITELLUM AND TROCHLEA IN AN ADULT

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Introduction: Coronal shear fractures of humerus are rare complex injuries around elbow which may present as isolated capitellum fracture or in combination with trochlear fracture or in association with complex periarticular trauma involving osseous or ligamentous structures around elbow. Considering rarity and complexity of these partial articular fractures, better workup with computed tomography rather than plain radiography is always necessary. While conservative management is an option in the past, surgical management is preferred choice nowadays. Case report : Thirty year old male patient presented to our hospital casualty with history of fall on outstretched hand with the complaints of pain and swelling over right elbow. On examination there was swelling and tenderness over right elbow with painful restricted movement. Radiological examination showed suspected capitellum and trochlear fracture with 'double arc' sign. Based on CT evaluation, we classified it as Dubberley type III A since capitellum and trochlea were two separate fragments with no posterior condylar comminution. Patient was operated with two separate incisions with lateral approach for capitellum and medial approach for trochlea. Both fragments were fixed with 3.5 headless screws with anteroposterior direction for trochlea and posteroanterior direction for capitellum. Fractures were immobilized for three weeks. Fractures completely united at six month post surgery and functional outcome with Mayo Elbow Performance Index showed excellent score nine months. Conclusion: Coronal shear fractures involving capitellum and trochlea are rare injuries which need proper preoperative planning and workup and when managed properly, its possible to achieve excellent clinicoradiological outcome.

Abstract no.: 51335

CERCLAGE CLAMPING USING CERCLAGE PASSER FOR REDUCTION OF COLUMNS IN ACETABULAR FRACTURES: IS IT SAFE TO USE CERCLAGE PASSER?

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Objectives: To evaluated acetabular fractures treated by anterior plate fixation with cerclage clamping through the ilioinguinal approach. **Methods:** Open reduction and anterior plate fixation with cerclage claping was performed in 16 patients. All patients had acetabular fracture with displaced columns and 7 patients had comminuted column fractures. There were 11 men and 5 women with a mean age of 58.1 years (42-77 years). For reduction of quadrilateral plate, we used ilioinguinal approach and limited subperiosteal dissection on the external aspect of the ilium. A large cerclage passer (DepuySynthes, Paoli, PA, USA) was carefully advanced into the true pelvis through the bony surface of the outer ilium and greater sciatic notch. Wire could be conveniently and safely delivered through the cerclage passer. After it was passed laterally, tension with twisting was applied to reduce the quadrilateral plate fracture. Anterior plating with screw fixation on the pelvic brim was added for the secure fixation of acetabular fracture. **Results:** The reduction was maintained in all patients until the fracture healed. All 16 cases healed at an average of 15.3 weeks (range 12-22) after surgery. All patients were able to return to pre-injury ambulation levels and Merle d'Aubigne score was 13.9 (11-18). No neurovascular or implant-related complication was encountered to latest follow-up. **Conclusion:** Temporary reduction by cerclage clamping using a large cerclage passer offers a means of satisfactory plating in difficult acetabulum fractures without neurovascular complications. In difficult acetabular fractures, cerclage clamping using cerlage passer may be a useful technique with valuable time saver.

Abstract no.: 51336

TRANSVERSE ACETABULAR LIGAMENT : A GUIDE TO ACETABULAR COMPONENT ANTEVERSION

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Positions of acetabular component generally are considered to be major causative factors of dislocation in total hip replacement. Accurate positioning is important to prevent wear and dislocation. In this study Transverse acetabular ligament is used as a reference in acetabular component positioning. In 50 patients undergoing total hip replacement, acetabular component positioning was done using transverse acetabular ligament as a guide. The anteversion of acetabular component was measured postoperatively with Ct scan. The mean anteversion was 17.8 degrees this was within the safe zone as described by Lewinnek. Our study concludes the use of transverse acetabular ligament in acetabular component positioning.

Abstract no.: 51337

ANKLE FRACTURE EPIDEMIOLOGY IN THE UNITED STATES

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Introduction: This study looked at the epidemiology of ankle fractures that presented to United States (US) emergency departments (ED) over a 5-year period, specifically evaluating: 1) age; 2) sex; 3) race; 4) mechanism of injury; and 5) disposition. Methods: The National Electronic Injury Surveillance System was used to extract all ankle fractures that presented to US EDs between 2012-2016. The US census data was used to determine the incidence rates (IR) of ankle fractures in terms of age, sex, and race. The IR were reported per 10,000 person-years. Results: An estimated total of 673,214 ankle fractures occurred during this period (mean age= 37 years, SD=22.86), yielding an estimated incidence of 2.11 per 10,000 person-years. Most ankle fractures occurred in those aged 10-19 years (IR=7.56). For sex, 44% of ankle fractures occurred in men (IR=3.81) and 56% in women (IR=4.63). Race data was available for 71%, and IR of ankle fractures was 2.85 in whites, 3.01 in blacks, and 4.08 in others. The most common injury mechanism resulted from falls (35.68%), then sports (35.26%), exercise (19.29%), jumping (5.38%), trauma (4.06%), and other (0.33%). For disposition, 81.84% treated and released, 1.43% transferred, 16.01% admitted, 0.59% held for observation, and 0.13% left against medical advice. Conclusion: Ankle fractures were most common in those aged 10-19 years, where men had the highest IR; however, women were more commonly affected for all other ages. Whites had the highest rate of ankle fractures, falls were the most common injuries, and 16% were admitted to the hospital.

Abstract no.: 51338

FUNCTIONAL OUTCOME OF OPERATIVELY STABILISED RADIAL HEAD FRACTURES

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Aim: To study the Functional and Radiological outcome of Radial head fractures which were stabilized surgically. **Material and Methods:** A Prospective Study was conducted on 15 patients with radial head fractures and fixed with radial head plates and headless compression screws. Mason classification and The Hospital for Special Surgery Scoring System were used for assessment **Results:** **Pain:** The average pain score at 3 months was 21 which improved to 26.67 at 1 year follow up In our study 09 patients with mason type 2 fracture were pain free at the end of 1 year 5 of our patients had no pain at rest and mild pain on bending at 1 year follow up. **Function:** 9 of our patients were able to do unlimited activities and were able to continue to use the elbow for more than 30 minutes at the end of 1 year. **Muscle strength:** 90% of our patients in the study were able to lift 3-5 lbs of weight to 90 degrees of elbow flexion even by the end of 3 months muscle strength was demonstrated by all of our patients at 1 year follow up. **Conclusion:** Open reduction and internal fixation in type 2 and type 3 radial head fractures give good to excellent functional results. We suggest open reduction and internal fixation even in comminuted fractures because it is bone conservation procedure, it gives good elbow function, early restoration of function and better muscle strength, It avoids radial shortening, loss of motion and wrist joint dysfunction as a result of radial head excision.

Abstract no.: 51339

HUMERAL SHAFT FRACTURES: A FIVE-YEAR REVIEW OF MANAGEMENT

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Introduction: Humeral Shaft fractures account for approximately 1-3% of all fractures. Management of this fractures are mostly non-operatively with functional bracing, however surgical indications include pathological fractures , open fractures, polytrauma patients , vascular injuries and floating elbows. The aim of our study is to compare the outcome after operative and non operative treatment of humeral shaft fractures. Methods: We undertook retrospective review of all cases of humeral shaft fractures managed at our center from January 2013 to December 2017. Results: A total of 55 patient were included in this study. 44 patients underwent internal fixation, 3 patients were treated with external fixations and 8 patient were treated non operatively. Average age of patients is 33 years old. The average time for union in operatively treated patient were 12 weeks compared to patients treat non-operatively were 15 weeks. Patients who were treated with bracing had malunion with the average degree of angulation of 16 degrees in coronal view and 17 degrees in sagittal view. Discussion: Non-operative treatment used to be the preferred choice of treatment in humeral shaft fractures. However in recent studies that have been carried out similar to ours, it has been proved that internal fixation have a faster union rate. Conclusion: The data indicates that plate fixation achieved higher and faster union rates. Nonetheless fractures managed with functional bracing were also successfully managed at our center.

Abstract no.: 51340

FROM THEORY TO DATA: CHARACTERISING IMBALANCE PATIENTS USING THE CDC NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY

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Introduction: Understanding global body balance is expected to be the next step in approaching and preoperatively optimizing spinal deformity patients. This study sought to characterize patients with reported imbalance and identify predictors of imbalance. **Methods:** The National Health and Nutrition Examination Survey database from 1999-2004 was queried to identify all patients who responded to questions regarding balance (n=9,964). Patients with imbalance were compared to those without imbalance for demographics, comorbidities, nutritional parameters, physical assessment and performance measures, and laboratory tests. Logistic regression was utilized to determine predictors of imbalance. **Results:** A total of 2,638 (26.5%) had imbalance. Imbalance patients were older (65.4 vs 60.6 years), more females (60 vs 48%), had more with osteoporosis (14.4 vs 6.6%), arthritis (51.6 vs 31.9%), low back (54.4 vs 32.7%) and neck pain (10.8 vs 4.3%), depression/anxiety (1.5 vs 0.6%), had more difficulty walking up 10 steps (43.8 vs 21%), stooping/crouching/kneeling (74.3 vs 45.7%), standing-up from armless chair (49.6 vs 21%), inability to stand-up on their own (4.0 vs 0.9%), greater time-to-walk 20 feet (9.5 vs 7.1 sec). Imbalance group had significantly lower dietary caloric intake. Regression revealed that grasping small objects (OR=1.73), females (OR=1.43), difficulties standing for long periods (OR=1.29), difficulties stooping/crouching/kneeling (OR=1.28), and increased time-to-walk 20 feet (OR=1.06) were significant predictors of imbalance. **Conclusion:** Imbalance patients were frail, undernourished, had identifiable comorbidities and most importantly were detectable using simple functional tests. Preoperative evaluation with medical, nutritional, and structural timed tests are important to optimize and stratify patients undergoing spinal deformity surgeries.

Abstract no.: 51341

TOTAL HIP REPLACEMENT IN THE ACTIVE STAGE OF TUBERCULOSIS OF THE HIP JOINT

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INTRODUCTION: There has been a reversal of the decline in incidence rates of tuberculosis worldwide. Osteoarticular tuberculosis in the hip and other joints is on a rise because of several factors and population in India commonly presents with advanced stages of joint destruction. **MATERIALS AND METHODS:** We evaluated 52 patients with an average age of 44 years. All cases had advanced stages of hip destruction clinically and radiologically. Diagnosis in all cases was confirmed by histopathology and culture. All patients were treated with primary total hip replacement and given peri-operative antituberculous medication and continued for 9 months postoperatively. **RESULTS:** Average follow-up period is 48 months with a maximum of 8 years. No reactivation was seen in 49 cases. One case with secondary drug resistance developed osteolysis & loosening. Two cases presented with discharging but without pain & loosening of components. They healed with surgical debridement and second line of ATT. Overall 51 patients had good to excellent results. **CONCLUSIONS:** We believe that when the infected tissue can be debrided completely or adequate and appropriate anti tubercular therapy is instituted, the outcome of joint replacement may not be adversely affected. Total hip arthroplasty in the tuberculosis of hip is a safe procedure and produces superior functional results compared to resection arthroplasty or arthrodesis. It is effective and safe to do total hip replacement even in presence of active tuberculosis especially young patients who lose most productive years of their life, waiting for the surgery which is delayed according to old concepts.

Abstract no.: 51342

PIGMENTED VILLONODULAR SYNOVITIS OF THE WRIST

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Introduction: Pigmented Villonodular synovitis is an uncommon benign condition that can affect joints, bursae and tendon sheaths. Methode: It is characterized by villous or nodular hyperplasia of the synovium. MRI has revolutionized the diagnosis and management of this disease. Treatment is not well defined because of the rarity of the disease. But total synovectomy remains the best therapeutic option to reduce the risk of recurrence. Pigmented villnodular synovitis of the wrist is a rare and benign lesion .the bone involovment means an aggressive form Result: An adequate treatment permit to ovoid the recurrences. The authors report a case with good evolution after synovectomy and bone resection, with review of literature.

Abstract no.: 51343

A FIVE-YEAR REVIEW OF MANAGEMENT OF SUPRACONDYLAR HUMERUS FRACTURES

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Introduction: Supracondylar humerus fracture is one of the most common fractures of the elbow in children. It is most commonly due to fall on an outstretched hand. Extension type fractures account for up to 95% of these fractures. Displaced fractures are challenging to treat and internal fixation with K wires are indicated for most type 2 and type 3 supracondylar humeral fractures to prevent malunion. **Methods:** We retrospectively reviewed the management of 93 patients admitted from January 2013 to December 2017 that were managed non-operatively and operatively with internal fixation and K wires. **Results:** A total of 93 patients were evaluated during this 5 year period with 3 type I fractures, 27 type II fractures and 63 type III fractures. Average time to surgery was two and a half days. Seventy-four patients required operative intervention (80%) with ulna nerve palsy being the most common reported post operative complication with 6 cases (8%). Time to union for type II fractures was 6 weeks and 12 weeks for type III fractures with average length of hospital stay of 4 days. **Discussion:** Type III supracondylar humeral fractures remain the most common fracture type requiring admission where operative intervention with cross pinning being the preferable method of fixation. Type II fractures were managed both operatively and non-operatively with comparable union times of 6 weeks. **Conclusion:** All supracondylar humeral fractures admitted were managed efficiently with short waiting time to surgery, quick surgery, short hospital stay and low complication rates.

Abstract no.: 51344

ANALYSIS OF EFFECTS SUSTAINED BY MISSILE INJURIES OF THE LIMBS IN IRAQI CONFLICTS DURING THE PERIOD 2014-2017

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Objectives: Wars are different in pattern of wounding. The study aims at analysing the missile injuries of the limbs during Iraqi conflicts (2014-2017). **Materials:** A descriptive observational study was conducted in Basra where 507 injured patient were analysed. Injurious agents, distance from blast, injury site and severity were classified. Fractures, nerve and arterial injuries, retained shells and amputations had also been reviewed. **Results:** Mean age was 31 years. Blast injuries comprised 68.24% while bullets comprised 31.76%. Projectiles caused (43.1%) of blast injuries. Average injuries' number was 1.69 injury/patient. Upper/lower limb injuries were 44.5/55.5%. In the upper limbs, bullet and blast injuries were severe in 62.1% and 31.2% respectively, in the lower limbs, bullet and blast injuries were severe in 56.1% and 35.1% respectively. There were 474 fracture in 299 patient, tibia was the first (20.5%). Retained shell(s) found in 69.82% . Nerves injuries recorded in 80 patients, ulnar nerve was the commonest. Arterial injury occurred in 24 patient, brachial artery was the first. Amputation occurred in 36. Hand amputations were the first and 72% of the amputations occurred within 5 meters zone. **Conclusion:** Blast injuries are more predominant than bullet injuries. But bullet injuries are more serious. Lower limbs affected more than the upper limbs. Tibia is the mostly fractured bone. Fingers are the most commonly amputated parts. Ulnar is the most injured nerve and Brachial is the most injured artery. More than two thirds of the patients have retained shells and lower limbs are location number one.

Abstract no.: 51345

RADIOLOGIC CT STUDY OF TRANS SACRA AND ILIO SACRAL SCREWS IN THE PELVIS IN AN INDIAN POPULATION

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Objectives: Nonsurgical management of unstable pelvic ring injuries is associated with poor outcomes. Screw fixation is being increasingly used to manage unstable posterior pelvic injuries. Limitations include a steep learning curve and potential for neurovascular injury. This is the first study in Indian population to describe the safe corridor for screw placement. **Methods:** This is a retrospective analysis of 105 pelvic CT scans of patients at a Level 1 trauma centre. Vertical height at the level of constriction (vestibule) of S1 and S2 was measured in coronal sections and anteroposterior width of constrictions was measured in axial sections. We created a trajectory for 7.3 mm cylinder keeping additional 2 mm free bony corridor around it and confirmed that bony limits were not breached in axial, coronal and sagittal sections. If there was a breach in bony limit we checked applicability of 6.5 mm screw. **Results:** The vertical height and anteroposterior width of vestibule/constriction of S1 was significantly higher in males, whereas S2 vestibule height and width were similar in males and females. Both male and female pelves were amenable to S1 Trans-sacral and S1 Iliosacral screw fixation. However, when S2 segment was analysed, only 42.9 percent of male pelves and 25.7 percent of female pelves were amenable to insertion of trans-sacral 7.3 mm screw. **Conclusion:** An individualized approach is necessary, and each patient's CT must be carefully studied before embarking on sacroiliac screw fixation in Indian population.

Abstract no.: 51346

IN VIVO TORQUE MEASUREMENT FOR INITIAL STABILITY OF HIGHLY POROUS COATING CUP IN TOTAL HIP ARTHROPLASTY FOR FEMORAL NECK FRACTURE

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Introduction: Highly porous coating cup (HP cup) is higher in coefficient of friction and in initial fixation than conventional cup. Therefore, we consider HP cup is effective in Total Hip Arthroplasty (THA) for femoral neck fracture based on osteoporosis. The purpose of this study is to measure an in-vivo initial stability using torque measurement during THA for femoral neck fracture. **Materials and Methods:** From June 2015 to February 2018, 38 patients who underwent THA for femoral neck fracture were included. Rotational torque test whether cups achieved the press fit was performed. The definition of the press fit was the rotation stability of 8-10N calculated according to body weight and in that case no need of screw were achieved. If enough cup stability was not achieved, additional two screws were inserted. In this study, primary end point was success rate of the press fit fixation without screws, secondary endpoint was the any complication including radiolucent line in post 12 months of operative X-ray. **Result:** The press fit was achieved in 37 patients(97.3%). No patients showed initial gap and radiolucent line. **Discussion:** High success rate of initial cup stability without screws in THA for patients with femoral neck fracture was shown. The use of HP cup might be beneficial in terms of shorter operation time, lower bleeding, and lower complication rate. **Conclusion:** High rate of enough initial stability of HP cup without screws measured by in-vivo torque test in patients with femoral neck fracture was demonstrated.

Abstract no.: 51347

CLINICAL AND RADIOLOGICAL OUTCOME FOLLOWING OPEN REDUCTION AND INTERNAL FIXATION OF DISTAL HUMERUS FRACTURES (AO TYPE 13C) IN ADULTS

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Type C fractures of the distal humerus pose a challenge to the surgeons owing to their complexities. We present a level 4 study done at a tertiary centre. 29 patients with AO type 13-C fracture were followed up retrospectively (24) and prospectively (5) after a minimum period of 12 months. Clinical evaluation was done using the Mayo Elbow Performance Score and the Cassebaum Scoring for elbow range of motion. Radiological evaluation was done to assess the union, valgus angle at the articular surface, the anterior tilt of the articular surface and heterotopic ossification at follow-up. The two angles were compared between the affected and the unaffected elbows at follow-up. The two angles on the affected side were correlated with the two clinical scores. 28 people had returned to routine activities at follow-up. 5 people had transient ulnar neuritis in the post-operative period. The median arc of flexion was 112°. 20 people had excellent score, 8 had good score and 1 had poor score on MEPS. 13 people had very good score, 15 had good score and 1 had poor score on the Cassebaum scoring. Radiologically, all the fractures had united at follow-up. One person showed heterotopic ossification. Comparison of the mean values of the valgus angle at the articular surface and the anterior tilt of the articular surface between the affected and unaffected sides were statistically insignificant. The correlation of these angles with the clinical scores showed no significant difference in the angles of patients who had different functional outcome.

Abstract no.: 51349

INTRAMEDULLARY FEMUR NAILING IN AN OBESE PATIENT: A HUGE CHALLENGE

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Introduction: Obesity is a health issue of increasing prevalence not only in Malaysia but worldwide. Given the continuous rise of obesity, femoral fractures are likely to become even more frequent. However there remains a scarcity of literature on intraoperative experiences and management of femoral fractures in the obese population. Methods: A 29 years old morbidly obese gentleman with a body mass Index of 58 was involved with a motor vehicle accident and had sustained a closed segmental fracture of his left femur. He was managed preoperatively with skeletal traction and adequate limb and chest physiotherapy. Retrograde intramedullary nailing was undertaken after 10 days of admission. The surgery was uneventful and post operatively he was discharged home after 3 days. Results: Post- operatively aggressive rehabilitation was undertaken. His fractures united uneventfully at 6 months and he obtained good function with no complaints of knee pain or stiffness. Discussion: In this case multiple challenges were encountered, firstly due to his body weight of 150kg were unable to use a single operating table as the maximum limit of our operating table is 135kg. Therefore, this case was undertaken using 2 operating tables. Secondly, because 2 operating tables had to be used, navigation of fluoroscopy had to be undertaken by reversing the C- arm to obtain lateral images. AP views were undertaken by the conventional method. Conclusion: This report provides tips to overcoming challenges of intramedullary nailing in morbidly obese patients which is an increasing trend globally.

Abstract no.: 51350

IDIOPATHIC JUVENILE OSTEOPOROSIS: A RARE OSTEOPOROTIC CONDITION

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Osteoporosis in children is uncommon and if present is due to various well-known causes. But in some the cause for osteoporosis remains obscure. Idiopathic Juvenile osteoporosis (IJO) is a rare condition of unknown etiology, characterized by generalised osteoporosis seen with prepubertal onset and spontaneous remission with progression of puberty. It can be challenging for a paediatrician and an orthopaedician in diagnosing and management of this condition. Case report: We had a nine-year-old female child, who came with pain in left thigh for 2 days following trivial injury. Further assessment revealed history of lower back for 3 months and multiple fractures in past two year. Radiological assessment revealed supracondylar fracture of left femur and proximal tibial fracture. Skeletal screening showed diffuse osteoporosis with signs of multiple healed fractures in the upper limb and compression fractures of the spine. She was assessed clinically for various common causes of osteoporosis in that age. Biochemistry, Endocrinological and haematological evaluations were conducted and found to be normal. Endocrinologist and paediatrician were involved. After elimination of all the possibility, she was diagnosed to have IJO. She was managed conservatively with splints, calcium, vitamin-D and bisphosphonates. She drastically improved with the above treatment. Conclusion: IJO is a diagnosis of exclusion and needs a multidisciplinary approach. It can be successfully managed conservatively with splints and bisphosphonates when diagnosed.

Abstract no.: 51351

A RARE CASE OF CERVICAL CORD HERNIATION AND MEDIAL END CLAVICLE NONUNION IN A SINGLE PATIENT

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A 25 year old male presented with complaints of severe pain in the right shoulder, loss of range of movements of the right upper limb with loss of sensation on the lateral aspect of the arm from shoulder to the hand. He gave a h/o Road Traffic Accident 7 months. An X-ray of the right shoulder was advised then which revealed a fracture clavicle of the medial end for which a clavicular brace and analgesics were given. No further workup was done. Now he presented to us with the current symptoms. A thorough clinical examination of the right upper limb aroused a suspicion of brachial plexus injury for which an Magnetic Resonance Imaging(MRI) of brachial plexus was done. X-ray of the right shoulder revealed an atrophic non union of the medial end of the clavicle. MRI revealed a focal dural defect with right ventrolateral cord herniation at C6-C7 level. Since its first report in 1974 approximately 180 cases of spinal cord herniation(SCH) have been reported in the literature with majority of them being located in the thoracic region. Few cases of SCH in the cervical region have been reported, but all of them are iatrogenic in etiology with no case of post traumatic etiology being documented till date. Fractures of the medial end of the clavicle are uncommon, representing only 2 to 4 per cent of all clavicle fractures with a non union rate of only 1%. We present this case to highlight the occurrence of two rare entities in one patient.

Abstract no.: 51353

RETROGRADE FEMUR NAILING; A REVIEW OF OUTCOME AND FUNCTIONAL STATUS

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Introduction: Intramedullary nailing remains the preferred and gold standard method for treating femoral shaft fractures. Retrograde femoral nailing is used in the treatment of these fractures especially in fractures in obese patients, concomitant ipsilateral femur and tibia fractures, fractures below a stemmed hip prosthesis and in polytrauma patients requiring multiple simultaneous surgical procedures. **Methods:** Patients (n=5) with femoral shaft fractures (OTA 32) treated with retrograde intramedullary nailing were studied. Their fracture characteristics, time to surgery, operative time, intraoperative blood loss, healing, complications and functional outcomes based on WOMAC and KOOS scores were evaluated. **Results:** Based on WOMAC scoring system our patients had the lowest score of 18, with highest at 32 whereas using KOOS scoring system, best functionality recorded at 70% and worst at 55%. Four out of 5 patients managed to regain knee range of motion up to 120 degrees of flexion. Patients were all able to return to work within 5 months post operatively. **Discussion:** The retrograde method of intramedullary nailing is fraught with potential complications due to its entry point through the knee. Studies comparing antegrade and retrograde femoral nailing reveal conflicting results. However in this study, all our patients achieved union and were free of complications. Four of them obtained good knee functional outcome based on WOMAC and KOOS score and thus enabling them to return back to work within the expected time frame. **Conclusion:** Retrograde femoral nailing is an effective method of femoral shaft fracture fixation in cases in which its indications are truly met.

Abstract no.: 51356

COMPARING THE IMPACT OF ELDERLY AGE ON OUTCOMES FOLLOWING CERVICAL SPINAL FUSION: A STATEWIDE ANALYSIS WITH TWO-YEAR FOLLOW-UP

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Introduction: Cervical spinal fusion (CF) is used to treat age-related degeneration, though there is little evidence comparing outcomes between elderly and adults. This study evaluated the demographics and two-year postoperative outcomes following CF. **Methods:** The Statewide Planning and Research Cooperative System database was utilized to identify all elective cervical spinal fusions performed from 2009-2011. Demographics, perioperative factors, and 2-year postoperative complication, reoperation, and readmission rates were collected for all patients, and were then grouped by age: 45-64 years and ≥80 years. Regression models were developed to identify predictive factors for two-year postoperative outcomes. **Results:** 14,578 patients were included with 96.6% 45-64 years (Younger) and 3.4% ≥ 80 years (Older) old at time of surgery. Older patients were more commonly male (54.0 vs 50.1%, $p<0.001$) and had Medicare (92.0 vs 11.6%, $p<0.001$). Older patients had higher hospital charges ($p<0.001$) and longer length of stay (8.5 vs 2.9 day, $p<0.001$). Older patients had higher complication (23.1 vs 4.7%, $p<0.001$) and reoperation (24.1 vs 13.3%, $p<0.001$) rates, but lower readmission (5.6 vs 13.2%, $p<0.001$) rates. Additionally, Older patients had higher complication rates, including anemia (5.6 vs 0.7%, $p<0.001$), ARDS (3.8 vs 0.7%, $p<0.001$), and DVT (3.6 vs 0.3%, $p<0.001$). Patient age was a significant predictor for higher two-year complication (OR=1.063, $p<0.001$) and revision (OR=1.020, $p<0.001$) rates, but not readmission rate. **Conclusion:** This study compared outcomes between age groups following CF. Older patients had higher two-year complication and reoperation rates, and age was a significant predictor for higher complication and revision rates.

Abstract no.: 51357

TIBIAL CONDYLAR FRACTURE DISLOCATIONS: WHY SPAN-SCAN-PLAN FAILS

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Tibial Plateau fractures are very common occurrence and more and more varied patterns of injuries have been recognised. The thumb rule of Span-Scan-Plan is followed worldwide with consistent results. We hereby report a particular subset of these fractures, the "condylar fracture dislocations" in which the femoral condyle digs into the split tibial condyle the and other half of the tibial condyle along with the tibial shaft dislocates outwards. The spanning external fixator will play no role in the treatment of these injuries and it would be impossible to reduce the tibial condyles as the femoral condyle would have pushed the menisci or capsule into the tibial fracture and only open reduction of the fracture would be able to tackle the imposition as well as the fracture. Recognising the fracture pattern with pre-reduction CT scan and MRI aids in documenting and planning the surgery. Midline skin incision with parapatellar approach would be required to visualise the soft tissues within the fracture site.

Abstract no.: 51359

COMPARING 30-DAY OUTCOMES BETWEEN ORTHOPAEDIC SURGEONS AND NEUROSURGEONS IN CERVICAL TOTAL DISC REPLACEMENT

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Introduction: Orthopaedic and neurosurgeons both perform cervical total disc replacements (CTDR). However, there is little evidence comparing outcomes between these two specialties for CTDR. This study compared the demographics, complications, operative time, length of stay, reoperations, and readmissions between orthopedic and neurosurgeons for patients following CTDR. **Methods:** The NSQIP database was utilized to identify all elective CTDRs performed from 2008-2016, grouped by surgeon specialty. Demographics, comorbidities, labs, perioperative factors, and 30-day postoperative complication, reoperation, and readmission rates were collected. Groups were compared with univariate analysis. Regression models were developed to identify predictive factors for 30-day postoperative complications. **Results:** 2,457 CTDR patients were included. 34.5% of patients were treated by orthopaedics and 65.5% neurosurgeons. Orthopaedic patients were younger (45.0 vs 46.0yrs, $p=0.017$) and had lower rates of diabetes mellitus (4.6 vs. 8.2%, $p=0.001$) and corticosteroid use (0.8 vs. 2.5%, $p=0.004$), though otherwise the groups were comparable. Orthopaedic operative time (112.6 vs 115.3min, $p=0.27$) and length of stay (1.1 vs 1.1day, $p=0.756$) were comparable compared to neurosurgery. Orthopaedic and neurosurgical patients also had comparable rates of 30-day complications (1.4% vs 1.0%, respectively, $p=0.348$), reoperations (0.5% vs 0.7%, $p=0.56$), and readmissions (1.2 vs 1.1%, $p=0.953$). Age was the lone significant predictor for higher overall complication rate (OR 1.04, $p=0.028$), though surgeon specialty was not a predictor for any 30-day complication rates ($p\geq 0.127$). **Conclusion:** Neurosurgeons performed CTDRs more often than orthopedic surgeons but their outcomes were comparable for 30-day complication, reoperation and readmission rates, and surgeon specialty was not predictive of 30-day complication rate.

Abstract no.: 51360

PAIN FOLLOWING TOTAL KNEE ARTHROPLASTY

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Background: Main Goal after Total knee arthroplasty (TKA) is to obtain a painless, stable knee with a good range of motion (ROM). Painful knee prosthesis is a frequent condition that bothers as well, the patient and the orthopedist. The aim of this study was to determine the prevalence of pain after TKA, to map the seat of pain and to identify probable etiologies. Methods: We carried out a retrospective study involving 168 consecutive total knee arthroplasty from January 1, 2015 to December 31, 2017. Patients presenting a painful TKA were contacted to evaluate pain and causes were investigated in the history, clinical examination and interpretation of X-rays. Results: The mean age was 63 years and 76% were female. We diagnosed painful prosthesis among 20 patients. There was no difference in the prevalence of knee pain after TKA in terms of mobile and fixed bearing implants or with and without replaced patella. Discussion: Residual pain after Total Knee Arthroplasty is experienced by 5-10% of patients. Many theories have been proposed to explain this phenomenon. We found that in most of the cases, pain was in the distal part of the incision which radiates transversely. Factors incriminated in painful prosthesis were essentially related to the patient's profile and to positioning defect. Conclusion: Painful Prosthesis is a frequent complication of total knee arthroplasty and patients undergoing this procedure should be apprised of the high probability of experiencing pain in the replaced knee.

Abstract no.: 51361

GAP NONUNION OF LONG BONES

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How the saga of gap between bony ends whether infected or traumatic bone loss has changed in the last 50 years from classification to causes and even management is amazing. The biotechnological pursuits' specially over the past 10 years enables surgeons with better understanding and outcome of these challenges in this changing environment of high velocity trauma. Since 1995 I have dealt 15 cases of different gap nonunion and this series depicts the challenges I met in different type of cases ranging from avascular to vascular, infected to traumatic bone loss and simple gap to complex nonunion. These cases were dealt from internal fixation with bone grafting, huntigtons procedure to external fixation with bone transportation to Masquelet technique with or without bone marrow aspirations or plasma concentrates etc. patience and perseverance are needed for successful resolution of infection and achieving union.

Abstract no.: 51362

LUMBAR DISC PROLAPSE: CORRELATION OF CLINICAL LEVEL WITH MRI LEVEL AND ROLE OF EPIDURAL STEROIDS IN ITS MANAGEMENT - A PROSPECTIVE STUDY OF 179 PATIENTS

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Objectives: a) To correlate clinical level findings with magnetic resonance imaging findings in patients with lumbar disc prolapse and b) to evaluate the short term and long term efficacy of epidural steroid injections in the management of lumbar disc prolapse. Methods: This was a randomized prospective study done on 179 patients of lumbar disc prolapse treated by epidural and non epidural injections. Results: Average age was 39.5 years with a Male: Female ratio of 1.65. 123 patients had paresthesia along L5 dermatome with MRI confirming it in 81 patients(65.8%). A significant improvement in both VAS scores and ODI scores of epidural/non epidural groups individually was seen, but no significant difference in improvement in ODI score and VAS score between the two groups after the treatment was found. Conclusion: Lumbar disc prolapse presenting as low back ache with radiation is common at L4- L5, followed by L5-S1. Clinical level correlates well with MRI findings. In short term and long term follow up, there is no difference in outcome between epidural and non-epidural group.

Abstract no.: 51363

FEMORAL SHAFT NONUNIONS: A NOVEL TECHNIQUE OF EXCHANGE NAILING WITH AUGMENTATION PLATING AND BONE GRAFTING

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Introduction: Non-union after intramedullary nail fixation of femur shaft fractures is infrequent but a challenging condition to treat. The treatment options available to deal with such a situation include exchange nailing, removal of nail and re-osteosynthesis with plating, or Ilizarov fixation. We believe that rotational instability, in the presence of a nail, is one of the main reasons for most of the non-union. We present our experience on exchange nailing with augmentation plating and bone grafting in such condition. **Methods:** In this retrospective study, we had operated 32 cases of the femoral shaft non-union, which were treated by exchange nailing, plate augmentation and bone grafting. The cases of infected non-union and any fracture less than one-year duration were excluded from this study. **Results:** We could achieve union in all the cases at an average time of 4.25 months. The average time of surgery between the primary surgery of interlocking nail fixation and the plate augmentation was 13 months. Mean surgical time for plate augmentation and bone grafting was 101 min. No major complication or implant failure was encountered. The length of the plate did not make much difference as long as three screws had good purchase on either side of the fracture site requiring augmentation. An average residual shortening of the limb was 0.9 cm and average range of motion of the knee was 104 degrees. **Conclusion:** Exchange nailing, plate augmentation with bone grafting seems an effective, reliable, safe procedure for the treatment of femoral shaft non-union.

Abstract no.: 51367

**DISPLACED INTRA-ARTICULAR FRACTURE OF THE CALCANEUM:
PRAGMATIC AND PRACTICAL RECOMMENDATION**

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Treatment of DIACF represents a source of economic burden as well as tremendous disability. It is still a challenge to an average orthopedic surgeon. Till to date no single approach either conservative or operative which is universally accepted and applicable has been recommended. Despite full meta analysis and randomized controlled trials, the literature is still unclear about the best way of treatment. The aim is to review and assess the latest available data along with our experience of 150 cases done since 2001, both conservatively and operatively, to offer a practical and pragmatic recommendation to address issues relating to DIACF particularly related to Indian life style.

Abstract no.: 51369

EPIDEMIOLOGY AND TRENDS OF 39 296 FRACTURES OF THE LUMBAR SPINE FROM 2007 TO 2016 IN THE UNITED STATES

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Introduction: This study sought to investigate the epidemiology of lumbar spine fractures by levels injured and identify temporal trends in number of fractures, demographics, and disposition in the US over a 10-year period. **Methods:** The NEISS database was used to identify all ED visits from 2007-2016 with diagnoses of lumbar spine fracture, and stratified by demographics and mechanism of injury. The estimation of frequency and incidence rates by age, sex, and race were determined using NEISS weight calculations and 2007-2016 US Census data. Temporal trends were analyzed using descriptive statistics and linear regression. **Results:** 36,296 lumbar spine fractures were identified. 82.5% were single-level. The annual number of fractures increased from 2,148 in 2007 to 4,301 in 2016 ($\beta=0.83$, $p=0.003$). The mean patient age was 60.9 years, and 22.6% of these injury types occurred between 80-89 years. 59.3% of injuries occurred in females (incidence 0.061 per 10,000 person-years), and 40.7% in males (incidence 0.022). Annual trends showed increasing numbers of fractures for males ($\beta=0.37$, $p=0.29$) and females ($\beta=0.82$, $p=0.004$). Race data was available in 77.2% of cases, and 69.2% occurred in whites and 2.7% in blacks with incidence of 0.103 and 0.024 per 10,000 person-years, respectively. 82.1% of injuries were due to falls. **Conclusion:** The incidence of lumbar spine fractures has doubled in the US, most single-level, and occurring between ages 80-89, more often in females. There was a significant increase of fractures for females for the 10-year period but not for males. Falls were the most common cause of injury.

Abstract no.: 51376

MICROSURGICAL AND STAGE ORTHOPAEDICAL RECONSTRUCTION OF THE UPPER EXTREMITY AFTER SEVERE TRAUMA

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We analyzed treatment results of 137 patients with multistructural trauma of upper extremity, in which we used transplantation or transposition of vascularized flaps for soft tissue defects filling. Age of patients ranged from 12 to 68 years, were: men – 109, women – 28, time from injury to specialized care ranged from 2,3 months to 3,5 years. By injury severity, patients were divided into 4 groups: the 1st group– 19 patients, the 2nd group – 23, the 3rd group– 50, and the 4th group– 45 patients. We used vascularized grafts in 69,3% cases of 3-4 degrees trauma. Number of surgical stages increased with increasing of traumatic injury severity. Transplantation of vascularized flaps usually performed first. Further reconstructive surgery was performed depending on type of injuries and their consequences. Treatment results were evaluated after 1 year or more, after treatment by calculating a quantitative index of integral function of the upper limb. Functional state of upper extremity in the 1st group before treatment was estimated $84,4 \pm 0,2\%$, after treatment - $93,4 \pm 0,1\%$; the 2nd group function index was $61,9 \pm 0,3\%$ and $76,0 \pm 0,2\%$; the 3rd group - $43,4 \pm 0,3\%$ and $63,9 \pm 0,3\%$ and the 4th group - $38,9 \pm 0,2\%$ and $55,6 \pm 0,2\%$. So we observed trend of function growth in patients with more severe trauma. Use of vascularized flaps transplant in orthopedic treatment of patients with multistructural trauma makes it possible to significantly improve upper extremity function, especially in patients with most serious injuries.

Abstract no.: 51380

**WILL CEMENT INCREASE ADJACENT VERTEBRA FRACTURE RATE?:
A CLINICAL STUDY ABOUT SANDWICH TYPE OSTEOPOROSIS
VERTEBRAL COMPRESSION FRACTURE**

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Introduction: Percutaneous kyphoplasty had been widely used in treating osteoporosis vertebral compression fracture, but whether bone cement would bring extra stress to adjacent vertebra was still under debate. At the same time, sandwich type fracture is a special type of fracture, the fate of the middle one was controversial. We believed the fate of sandwiched vertebra is the best indicator of secondary fracture due to cement. Material and Methods: We retrospectively collected consecutive patients between 2013.1 and 2015.6. One group included patients with sandwich type fracture, another group was composed of patients with multilevel fracture, but more than one vertebra in between. Demographical parameter, peri-operation data and radiological evidence were collected. Secondary fractures were recorded and compared between groups. Results: Total 120 patients with 323 vertebrae were enrolled in our study. The mean follow-up time was 26.33 months(12-48) with minimum follow-up of 1 year, and average cement usage is 4.77ml. The mean VAS pre and post operation were 8.32 (6-10) vs 1.43 (0-8), 6(5.4%) patients still had unrelieved pain. As for the new fracture, there were 11(17.7%) and 12(24.5%) patients in sandwich and non-sandwich group had second fracture. Only mortality and corticoid usage are related to secondary fracture ($p<0.05$). Conclusion: Sandwich type fracture have a similar secondary fracture rate compared with non-sandwich type, which suggests that cement augmentation vertebra will not increase adjacent vertebra fracture risk.

Abstract no.: 51385

RISK FACTOR ANALYSIS OF AXIAL SYMPTOMS AFTER CERVICAL LAMINOPLASTY: A FIVE TO 11 YEARS FOLLOW-UP STUDY FROM A SINGLE MEDICAL CENTRE

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Cervical laminoplasty had been widely used in treating multilevel cervical degeneration disease. But the axial symptoms including pain and stiffness around neck and shoulder had greatly decreased patients' life quality after operation. the risk factor remains controversial. To identify and analysis risk factors of axial symptoms after cervical longitudinal spinous splitting laminoplasty, consecutive patients received cervical laminoplasty in single medical center between May 2005 and July 2011 were included into study. 146 Patients were enrolled with an average 89.5 ± 18.4 months' follow-up. 57 patients (39.0%) suffered from axial symptoms, with 7 cases resolved 6 months after operation. 35 patients complained about stiffness while 22 patients complained about pain and stretching. Univariate analysis showed that blood loss had a significant correlation with axial symptoms ($p=0.008$, OR (odds ratio) 1.873, 95%CI (Confidence Interval) 1.177-2.981). And the multivariate Logistic regression analysis showed that diagnosis (OR 0.089, 95%CI 0.019-0.428), age (OR 0.946, 95%CI:0.902-0.992), blood loss (OR : 2.642,95%CI:1.281-5.449), C2-C7 Cobb angle in extension position (OR : 0.947,95%CI0.902-0.994), operation level (OR:0.050,95%CI:0.005-0.519) and JOA score (OR:0.723 , 95%CI:0.532-0.982) after operation all have a correlation ($p<0.05$) with axial symptoms incidence. Patients with CSM diagnosis, younger age, more blood loss, C7 involved in operation and lower JOA score after operation have a higher chance of axial symptoms after receiving cervical laminoplasty. And blood loss is an independent risk factor of developing axial symptom.

Abstract no.: 51388

**CALCIFYING EPITHELIOMA OF MALHERBE (PILOMATRICOMA):
ABOUT SIX CASES**

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Introduction: The calcifying epithelioma of Malherbe is a relatively rare benign epithelial tumor of the skin. The authors report six cases of different localizations occurring in adults. **Methods:** Three men and three women, aged between 31 and 50 years old, presented a calcifying epithelioma of Malherbe. The examination found a cutaneous mass, in all cases. This mass was located in the upper limb in 3 cases. Imaging showed soft tissue mass without bone lesion. The patients underwent a tumor resection. The histopathological analysis confirmed the diagnosis of calcifying epithelioma of Malherbe. **Results:** Good evolution in all the cases. No recurrence has been reported. Patients are satisfied. **Discussion:** Calcifying epithelioma of Malherbe, more currently called pilomatrixoma, is a firm, benign tumor of the skin, first described in 1880 by Malherbe and Chenantais. The most common anatomical location is the head and neck region, followed in frequency by the upper extremities, the trunk and the lower extremities. Pilomatrixomas most often present before the age of 20 years, and especially among children. The recommended treatment of pilomatrixoma is ideally by surgical excision but can also be managed by incision and curettage. The recurrence rate of pilomatrixoma is very low following complete surgical excision. **Conclusion:** Pilomatrixoma is an almost always benign skin tumor. The recommended treatment is ideally by surgical excision.

Abstract no.: 51390

**CENTRALLY PLACED GUIDE WIRE DIRECTED NAIL INSERTION
INSTEAD OF POLLER SCREW IN DISTAL DIAPHYSEAL LONG BONE
FRACTURE FIXATION: A NOVEL TECHNIQUE**

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Introduction: Maintaining correct alignment in distal diaphyseal long bone wedge or comminuted fracture is difficult one. Poller screw placement often needed to overcome this. We present here a novel technique of maintaining acceptable alignment using centrally placed guide wire directed nail insertion that avoid poller screw. In between Jan 2015 to December 2017 we treated 48 patients of distal tibia/femur shaft fracture having wedge fragment or comminution. There were 32 male and 16 female. Average age is 41 (22 to 58 years). We evaluated duration surgery, peroperative complication, alignment (varus /valgus, anterior /posterior angulation). Two patients needed mini open reductin and guide wire passage remaining 46 patients close reduction was successful. In 43 patients Centrally placed guide wire directed nail insertion was maintain alignment in acceptable position. Five patient need poller screw insertion. Duration of surgical time is much shorter in guide wire directed technique. Guide wire directed nail insertion is easy and handsome tecnique in distal diaphyseal wedge or comminuted long bone fracture to maintain acceptable reduction.

Abstract no.: 51391

POSTOPERATIVE C7 TILT CORRELATES WITH RADIOGRAPHIC SHOULDER BALANCE IN ADOLESCENT IDIOPATHIC SCOLIOSIS PATIENTS RECEIVING POSTERIOR SPINAL FUSION

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Introduction: In correction surgery for adolescent idiopathic scoliosis (AIS), shoulder balance affects patients' appearance and satisfaction postoperatively. Associated factors including selection of fusion level and T1 tilt had been highlighted; yet, these parameters showed limited utilization in determining postoperative shoulder balance. This study aimed to examine the correlation between the coronal tilt of individual vertebra in cervicothoracic junction and radiographic parameters of shoulder balance before and after surgery. **Methods:** From AIS patients who underwent posterior spinal fusion, standing anteroposterior radiographs for whole spine were retrospectively reviewed preoperatively and 3 months postoperatively. Pearson and Spearman correlation coefficient were introduced to examine the correlation between coronal tilt of vertebrae (C5-T4, upper instrumented vertebra (UIV)) and shoulder balance parameters. **Results:** 21 patients of AIS, who received posterior correction and fusion between July, 2015 to August, 2017, were recruited for analysis. Mean preoperative Cobb angle for main thoracic curve was 56.6 ± 10.1 (range 46.4-91.5), and the post-operative Cobb angle was 22.3 ± 7.8 degrees. (range 8.9-37.2). In correlation analysis, no particular one coronal tilt was correlated to radiographic shoulder balance parameters with statistical significance. However, in postoperative analysis, C7 tilt was highly correlated to radiographic shoulder balance parameters including clavicle angle ($r=0.59$, $p=0.0046$), 1st rib tilt ($r=0.82$, $p<.0001$) and CRID ($r=0.63$, $p=0.0022$). **Conclusion:** While most coronal tilts of cervicothoracic vertebrae was not associated with the shoulder balance parameters preoperatively, the postoperative C7 tilt was highly correlated to the postoperative shoulder balance. The result of this study suggested C7 tilt may serve as an intraoperative proxy for shoulder balance determination.

Abstract no.: 51392

MULTILOC NAILING IN PROXIMAL HUMERAL FRACTURES: OUR EARLY EXPERIENCES

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Introduction: Proximal Humeral Fractures account for nearly 3% of all fractures and treatment remains a challenge to the treating surgeon considering the comminution and osteoporosis. Open reduction and internal fixation with PHILOS plate has been a gold standard for a considerable time but is fraught with complications like varus collapse, subacromial impingement, axillary nerve damage. Nailing in trochanteric fractures femur has now replaced DHS in most of the centres with expected good results due to better biomechanics and lesser complications. Whether such an attempt to mimic this in proximal humeral fractures and be able to achieve similar good results have always been debated. MULTILOC nail has been introduced to treat these fractures and the early results are encouraging. Methods: 35 consecutive patients with proximal humeral fractures (3 or 4 part) in the age group 18 - 75 years were included in the study. they underwent MULTILOC nailing and the radiological and functional outcomes were analysed. Results: All the patients had radiological union with a mean of 8.4 weeks. Functional scoring was carried out at the end of 4 months. 31 patients (88.6%) had DASH score of < 20 (mean~6.1) and 4 patients (12.4%) had a DASH score of 21-40. None of the patients encountered any of the listed complications. Conclusion: MULTILOC nail is an excellent tool in treating proximal humeral fractures with very minimal if any complications. A randomised control trial against PHILOS with a large sample size and multicentric study is essential for further recommendations.

Abstract no.: 51395

KINETIC AND KINEMATIC ANALYSIS OF GAIT IN OSTEOGENESIS IMPERFECTA PATIENTS: A COMPARATIVE STUDY

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Introduction: It is observed that standard implants (telescopic nails) in OI often fail due to factors such as overloading, loss of fixation and lack of rotational stiffness. Improvement in implant design may be brought in through the knowledge of realistic loading, which was studied using 3 D gait analysis, and presented here. **Methods:** After Institute Ethics Committee approval, 5 OI patients (7.6 ± 1.67 years, 14.1 ± 3.23 kg, 108.6 ± 9.86 cm) and 6 normal subjects (9 ± 2.53 years, 35.4 ± 15.53 kg, 138.08 ± 14.89 cm) were included for this study. Gait data was collected using BTS GAITLAB with Helen-Hayes marker protocol. **Results:** OI subjects walk with lower velocity and stride length and step length shorter than normal. Kinetic data revealed that the double-humped profile for ground reaction forces is imprecise along with reduction in magnitude during load acceptance and push-off. Ankle push-off power is also reduced for OI group as compared to normal subjects and reduction of ankle flexion-extension torque and knee flexion-extension torque in OI patients as compared to controls, but hip flexion-extension torque was more for OI group. **Conclusion:** Results indicate imprecise double humped profile for vertical ground reaction force, reduced ankle push-off power and reduced walking speed. Apart from this magnitude of the vertical ground reaction force is also lower than the normal subjects. This information will be useful for the better understanding of the pathological gait and helps in design of subject-specific implants and rehabilitation.

Abstract no.: 51396

ELASTOFIBROMA: ABOUT THREE CASES

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Introduction: Elastofibromas are rare benign soft tissue tumours, almost always located at the inferior pole of the scapula. Their anatomical location and a distinctive clinical symptom distinguish them from malignant soft tissue tumours. The authors report three cases of Elastofibroma including an unusual location. Methods: A respectively 47 and 58 year old females and a 50 year-old male who presented a mass with a hard-elastic consistence, an irregular shape and it was not adherent to the overlying skin, located at the angle of the scapula for the two first patients and on the lateral side of the thigh for the third one. Imaging by CT or MRI indicated an indeterminate soft tissue neoplasm. Our diagnosis was based on location, clinical and imaging aspect. A biopsy is not necessary. Discussion: Elastofibroma is a rare, slow growing and non-encapsulated soft tissue benign tumour, occurring most often in the infrascapular region. Although 99% of the cases are located between the distal part of the scapula and the thoracic wall. It's characterised by the proliferation and alternation of fatty connective and fibrous tissue on the MRI. The clinical presentation of these benign neoplasms is typical. Surgery can be safely reserved only for symptomatic patients. Conclusion: Elastofibroma is a rare, benign soft tissue tumour, most commonly found at the scapular tip. These tumors usually can be distinguished from malignant soft-tissue tumors by their anatomical location and also through imaging techniques.

Abstract no.: 51397

DOES HA UTILISATION REDUCE THE DEMAND FOR KNEE ARTHROPLASTY?

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The utilization of knee arthroplasty has grown rapidly in the U.S. during the past decade. Intra-articular hyaluronic acid (HA) is another treatment option for knee osteoarthritis, and has been associated with a delay to knee arthroplasty. However, certain health insurance plans have ceased reimbursing HA. We hypothesized that non-coverage of HA would result in substantial reductions in HA use, and in turn, would lead to increased knee arthroplasty use. Incidences of knee arthroplasty and HA were evaluated using Blue Health Intelligence claims data (2011-2016; contains claims for 140+ million Blue Cross/Blue Shield (BCBS) members nationwide), based on states where BCBS stopped HA coverage (Alaska, Arkansas, Florida, Kansas, Massachusetts, Oregon, Rhode Island, and Washington). Before reimbursement ceased, HA incidence, which did not exceed 15.5 HA patients per 100 knee OA patients, was generally lower than that of knee arthroplasty. Following reimbursement cessation, the incidences of knee arthroplasty and HA diverged in all eight states, with the greatest differences occurring in Rhode Island, Kansas, and Arkansas (ratio of knee arthroplasty to HA patient incidences were 17.3, 11.9, and 10.3, respectively, in 2016). This was associated with the decrease in HA use in all states, but was also correlated with the concomitant increase in KA use in Alaska, Arkansas, Kansas, Massachusetts, and Rhode Island. Even prior to the non-coverage decision, less costly HA was not as prevalent as more costly knee arthroplasty. Moreover, our study showed that the rate of knee arthroplasty increased in several states following the non-coverage decisions.

Abstract no.: 51398

ROLE OF ULTRASOUND IN EVALUATION OF PLANTAR FASCIITIS BEFORE AND AFTER TREATMENT

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Introduction: Diagnosis of plantar fasciitis (PF) is based on history and clinical examination. The aims of this study were to test the utility of sonography in the evaluation of plantar fascia before and after treatment. **Material & Methods:** Consisted of two groups: Control group comprised of 50 asymptomatic volunteers (100 heels), 25 female and 25 male with age ranging from 40-65 years. Study Group comprised of 96 patients (108 heels), 82 female and 14 male with age varying from 40-62 years, 12 patients had bilateral and 84 patients had unilateral disease. Ultrasound was done with linear (17-5MHz) and (12-5MHz) probe. The thickness of plantar fascia was measured within 1cm of its calcaneal attachment. **Results:** In Control Group, thickness of plantar fascia was found to be between 2-4mm. In study group thickness of plantar fascia was found to be >4mm. BMI was increased in 60% of symptomatic patients. On re-evaluation after 6 weeks of steroid injection, in 89 patients where there was complete or significant improvement, the thickness of plantar fascia was reduced to >4mm. In 5 patients where there was no significant improvement, there was no decrease in thickness of plantar fascia. In 2 patient where there was no significant relief, the thickness of plantar fascia was found to be >4mm. **Conclusions:** Thickness of >4mm, indistinct margins and hypoechogenicity are diagnostic of PF. It is also useful in evaluation of response to treatment. It is low cost, easily available, with high patient acceptance due to its non-invasive nature.

Abstract no.: 51402

**APICAL VERTEBRAE MANIPULATION IN DUAL GROWING ROD
TECHNIQUE: A NEW METHOD TO IMPROVE AND MAINTAIN MAJOR
CURVE CORRECTION**

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Introduction: To evaluate the efficacy of apical vertebrae manipulation (AVM) technique on major curve correction in patients treated with dual growing rods (GR). Methods: From May 2010 to March 2014, 9 patients (3 males, 6 females) receiving dual GR treatment were reviewed. The average age was 8.8 ± 3.5 years old (range, 3-13 years). Medical records were reviewed, including age at initial surgery and the final follow-up, number and frequency of lengthening, and complications. Radiographic evaluation included Cobb's angle, thoracic kyphosis, lumbar lordosis, trunk shift, apical vertebral translation (AVT), length of T1-S1. Results: The mean follow-up was 40.7 ± 13.2 (range, 24-62) months. A total of 45 surgeries were performed, and 36 of them were lengthening procedures, with an average 4.0 lengthenings per patient. The mean Cobb's angle improved from $60.1 \pm 9.6^\circ$ to $22.1 \pm 10.0^\circ$ after initial surgery and was $24.6 \pm 11.8^\circ$ at the final follow-up. The average growth of T1-S1 length was 1.70 ± 0.75 cm/y. The AVT improved from 45.9 ± 4.6 mm to 20.0 ± 6.5 mm after initial surgery and was 19.2 ± 11.5 mm at the final follow-up. Two patients had complications. One patient encountered dual rod breakage, and both rods were changed during next extension procedure. Rod slippage from apical screw was observed in the other patient, and rod re-insertion was performed in a scheduled extension procedure. No infection and nervous system complications occurred. Conclusions: By using AVM technique in patients with large AVT, good correction rate of major curve was achieved and maintained very well, which may be helpful to reduce complications and reach better correction in the final fusion procedure.

Abstract no.: 51403

DIFFERENCES IN CAREGIVER PERSPECTIVE ON THE QUALITY OF LIFE OF CHILDREN WITH CEREBRAL PALSY

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The Caregiver Priorities and Child Health Index of Life with Disabilities (CPCHILD) questionnaire is a validated outcome measure used to assess health-related quality of life (HRQL) in children with severe Cerebral Palsy (CP). Although widely-used to evaluate the effectiveness of surgical interventions, caregiver demographics are not necessarily taken into account in longitudinal studies. The purpose of this study was to investigate differences in caregiver perspective on HRQL in children with severe CP as measured by CPOCHILD. Two primary caregivers of children with CP classified at GMFCS level IV and V completed the CPOCHILD Parent Version. Eligible caregivers included parents, legal guardians, foster parents, family members or healthcare providers. Patient and caregiver demographics were assessed and differences in CPOCHILD scores analyzed. 31 pairs of caregivers completed questionnaires. Caregivers were an average age of 42.5 years with an average age difference of 6.4 years. The average total CPOCHILD score was 47.8 points, 95% CI [42.4, 52.6] with an average score difference of 7.4 points [4.8, 9.9] between caregiver pairs. Caregiver pairs included biological parent, foster parent, and parent/professional caregiver relationships. Previous studies have shown a clinically significant change in CPOCHILD score to be ten points, and questionnaire validation revealed an equivalence margin of four points. Although larger numbers will be required, findings suggest there may be meaningful differences in caregiver perspective on the quality of life of their child with CP. Consequently, tracking which caregiver completes the CPOCHILD is important to accurately assess the impact of an intervention on the child's HRQL.

Abstract no.: 51404

BROWN TUMOUR SECONDARY TO HYPERPARATHYROIDISM: ABOUT FOUR CASES

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Introduction: A brown tumor is a non-neoplastic lesion resulting from an abnormality of bone metabolism secondary to a hyperparathyroidism. The authors report 4 cases of multiple brown tumors with different locations. **Methods:** Case 1: A 21-year-old man complained of a pain in his right lower limb. Radiographs and CT showed multiple lesions of the femur and tibia, without cortical rupture. Case 2: A 50-year-old woman complained of a pain in her right hip. Radiographs and CT showed lesions of the proximal femur. Case 3: A 47-year-old woman complained of a pain of the left forearm. Radiographs and CT showed lesions of the ulnar shaft. Case 4: A 50-year-old man complained of a pain in his right hip. Radiographs and CT showed lesions of the acetabulum. **Discussion:** Brown tumors, also known as generalized osteitis fibrosa cystica or TCG like tumors are frequently seen in primary or secondary hyperparathyroidism due to the excessive parathyroid hormone (PTH) synthesis and secretion. They are not true neoplasms, but rather reactive osteolytic lesions. Differential diagnosis, based on histological examination, is only presumptive and clinical, radiological and laboratory data are necessary for definitive diagnosis. The clinical management of a brown tumour aims primarily to reduce the elevated parathyroid hormone levels by pharmacological treatment. **Conclusion:** Brown tumor is one of the bone complications of hyperparathyroidism. It is a non-neoplastic lesion resulting from an abnormality of bone metabolism secondary to a hyperparathyroidism.

Abstract no.: 51406

COMPARING 30-DAY OUTCOMES BETWEEN ORTHOPAEDIC SURGEONS AND NEUROSURGEONS IN LUMBAR TOTAL DISC REPLACEMENT

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Introduction: Orthopaedic and neurosurgeons both perform lumbar total disc replacements (LTDR). However, there is little evidence comparing outcomes between these two specialties for LTDR. This study compared the demographics, complications, operative time, length of stay, reoperations, and readmissions of patients following LTDR between orthopedic and neurosurgeons. Methods: The NSQIP database was utilized to identify all elective LTDRs performed from 2008 to 2016, grouped by surgeon specialty. Demographics, comorbidities, labs, perioperative factors, and 30-day postoperative complication, reoperation, and readmission rates were collected. Groups were compared with univariate analysis. Regression models were developed to identify predictive factors for 30-day postoperative complications. Results: 581 LTDR patients were included. 42.9% of patients were treated by orthopedics and 57.1% by neurosurgeons. Orthopaedic patients were younger (44.71 vs 47.51yrs, $p=0.008$) and had lower rates of hypertension (26.9 vs 37.1%, $p=0.010$), otherwise, the groups were comparable. Orthopaedic patients had comparable operative time (159.3 vs 140.0min, $p=0.731$) and but slightly longer length of stay (2.59 vs 2.26d, $p=0.044$) compared to neurosurgery. The orthopaedic patient group had comparable 30-day complication (6.4 vs 9.3%, $p=0.203$), readmission (1.8 vs 5.0%, $p=0.052$) and reoperation (0.9 vs 1.6%, $p=0.473$) rates compared to neurosurgery. Patient age was the lone significant predictor for higher overall complication rate (OR 1.04, $p<0.001$), though surgeon specialty was not a predictor for any 30-day complication rates ($p\geq 0.352$). Conclusion: Neurosurgeons performed LTDRs more often than orthopedic surgeons but their outcomes were comparable for 30-day complication, reoperation and readmission rates, and surgeon specialty was not predictive of 30-day complication rate.

Abstract no.: 51407

PREDICTORS FOR NECK AND BACK INJURIES IN NATIONAL FOOTBALL LEAGUE ATHLETES

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Introduction: Injuries involving the cervical, thoracic, and lumbar spine represent common debilitating and career-altering injuries in many NFL athletes, however limited data exists regarding predictive factors for these injuries. The purpose of the present study was to determine if age, position, previous injury, or participation in other sports at the high school level were predictors of neck and back injuries sustained in the NFL. Methods: Data from 506 first and second round NFL draft picks from 2008-2015 was collected. Primary data points included player age, player position, total neck injuries, total back injuries, and number of high school sports played other than football. Neck injuries included herniated cervical discs, cervical stenosis, neck strains, and unspecified neck injuries. Back injuries included herniated discs, back strains, fractured lumbar or thoracic vertebrae, and unspecified back injuries. Linear regression was used to evaluate the development of neck and back injuries, total neck and back injuries, player age, player position, number of high school sports played other than football Results: 69 players sustained 32 neck injuries and 57 back injuries collectively, with 16 players having multiple documented injuries. Linemen who were multi-sport athletes had a 268% greater odds of sustaining a neck injury in the NFL (OR=3.68; 95%CI: 1.0-12.98; p=0.043). Conclusions: Neck and back injuries represent a significant cause of morbidity in NFL players, lineman were at a 268% increased odds of sustaining neck injuries in the NFL if they played multiple sports while in high school.

Abstract no.: 51408

EFFICACY AND SAFETY OF DUAL GROWING ROD TECHNIQUE FOR EARLY ONSET SCOLIOSIS WITH NEUROFIBROMATOSIS TYPE 1

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Introduction: To evaluate the clinical efficacy and safety of dual GR technique in the treatment of EOS patients with neurofibromatosis Type 1 (NF-1). **Methods:** Eight patients (2 males, 6 females) receiving dual GR technique for EOS with NF-1, from May 2010 to March 2014, were retrospectively reviewed. The average age was 7.4 ± 1.4 years old (range, 5-9 years). Medical records of all these patients were reviewed, including age at initial surgery and the final follow-up, number and frequency of lengthening, and complications. Radiographic evaluation included Cobb's angle, thoracic kyphosis, lumbar lordosis, trunk shift, length of T1-S1, and Campbell's space available for lung ratio (SAL). **Results:** The mean follow-up was 36.9 ± 13.5 (range, 24-64) months. A total of 41 surgeries were performed, and 33 of them were lengthening procedures, with an average 4.1 lengthenings for each patient. The mean Cobb's angle improved from $75.4^\circ \pm 26.4^\circ$ to $31.6^\circ \pm 10.8^\circ$ after initial surgery and was $30.9^\circ \pm 11.4^\circ$ at the final follow-up. The average growth of T1-S1 length was 1.66 ± 0.43 cm/y. The SAL increased from 0.92 ± 0.10 to 0.99 ± 0.02 after initial surgery and was 1.00 ± 0.05 at the final follow-up. Five complications occurred in 3 patients and most of them were implant-related (4 complications). No infection and nervous system complications occurred. **Conclusions:** The dual GR technique is safe and effective in the treatment of EOS patients with NF-1. It maintains correction achieved at initial surgery while allowing the growth of the spine and thoracic cage. The most complications are implant-related, while no significant increase of total complication rate is observed.

Abstract no.: 51410

**COMPLICATIONS ASSOCIATED WITH TOTAL HIP ARTHROPLASTY FOR
NECK OF FEMUR FRACTURES IN A DEVELOPING COUNTRY**

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The burden of hip fractures on health care systems is increasing with increase in life expectancy of patients. Traditionally mono block and then bipolar hemiarthroplasty use is noted on review of the literature. In recent past, a trend towards total hip arthroplasty (THA) for neck of femur patients is noted. The main concern with THA in hip fracture patients is the risk of dislocation, infection and anesthetic risks. In developing countries, there are unique issues associated with the adoption of this practice, including the lack of health facilities, time to theater and financial constraints. Aims: To assess the rates of complications associated with THA for neck of femur fractures in a developing country. Methodology: Retrospective case series from three different hospitals in the country. Data was obtained from prospectively held databases and patients with at least 6 months follow up were included in the study. Results: A total of 61 patients were included in the study, including 25 males and 36 females with an average age of approximately 61 years. The average time to surgery from date of injury was 4 days. Left side was involved in 38 patients. At final follow up (minimum 6 months), all the patients were alive and mobilizing. Only 2 patients had superficial wound infection, 1 patient had pulmonary embolism and 1 patient had dislocation at 2 months. Conclusion: THA remains a safe option for carefully selected patients with neck of femur fractures. In a developing country, despite numerous constraints we are still able to reproduce the same results as published in the world literature.

Abstract no.: 51418

COMPARING COMPLICATIONS AFTER ADULT SPINAL DEFORMITY SURGERY BETWEEN PATIENTS BASED ON OPIOID DEPENDENCY PRE- AND POSTOPERATIVELY

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Introduction: Surgeons must be aware of opioid dependence in their patients. This study characterized Adult Spinal Deformity (ASD) surgery patients and compared outcomes based on pattern of perioperative opioid dependence. Methods: The New York Statewide Planning and Research Cooperative System (SPARCS) was used to track patients across admissions from 2009-2013. All ASD patients were identified and data on opioid use was collected. Patients were split into groups by opioid use: never coded as dependent (Opioid-Free); baseline user (prior to/at time of surgery) but quit postoperatively (Opioid-Quit); baseline user and continued (Opioid-Continued); and new dependence following surgery (Opioid-New). Univariate analysis compared demographics, hospital-related parameters, complications, readmissions, and revisions with up to 4-year follow-up. Results: 12,899 ASD patients were included (Opioid-Free=12,711 [OF]; Opioid-Quit=42 [OQ]; Opioid-Continued=20 [OC]; Opioid-New=126 [ON]). Gender breakdown differed across groups ($p=0.007$). Opioid-Free was more likely to have Medicaid (47.3 OF vs 31.0 OQ, 5.0 OC, and 34.1% ON, $p<0.001$). Other demographics were comparable (all $p>0.05$). Opioid-Free had the lowest length of stay (5.8 OF vs 6.1 OQ, 9.3 OC, and 6.9 ON days, $p<0.001$). Opioid-Continued users had the highest overall surgical (55.0% OC vs 21.0% OF, 45.2% OQ and 44.4% ON, $p<0.001$) and medical (80.0% OC vs 21.6% OF, 54.8% OQ and 39.7% ON, $p<0.001$) complication rates. Conclusion: This study placed ASD surgery patients into 4 categories based on pre- and/or postoperative opioid dependence and compared outcomes between categories. Patients with continued postoperative opioid dependence had the highest risk of complications. Surgeons may use this data to risk-stratify patients.

Abstract no.: 51419

RADIOGRAPHIC ANALYSIS OF FEMORAL AND TIBIAL BOWING OF 966 LOWER EXTREMITIES IN INDIAN POPULATION AND ITS ASSOCIATION WITH OSTEOARTHRITIS

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Background: Osteoarthritis (OA) is the most common joint disorder affecting the elderly. Mechanical factors such as dynamic and the static alignment of the limb have recently been shown to be a strong predictor of the progression of knee osteoarthritis. Keeping this idea in mind we tried to investigate the association of femoral and tibial bowing with OA. Material and Methods: A total of 966 knees of Indian patients presenting with knee pain to the department of Orthopaedics OPD, AIIMS were prospectively evaluated. A standing scannogram was done which was assessed using a morphometric software (Matlab R2009a). The radiological grading of osteoarthritis (OA) was done according to Kellegren and Lawrence (K&L). Results: The mean femoral bowing was -1.19 degrees (SD 4.95). Significant association was seen between OA and femoral lateral bowing ($p=0.04$). There was a significant increase in the lateral bowing of femur an increase in the grades of OA. The mean tibial bow was -1.54 (SD 3.58). We found that there was increase odds of disease severity with tibial varus >3 degrees (Odds ratio=2.30; 95% CI, 1.35, 3.90). Also a significant decrease in the tibial bowing was observed with an increase in the severity of the OA grades. Conclusion: We analyzed 966 Indian limbs with knee pain in different grades of OA and found a positive association between the femoral and the tibial bowing reflecting its role in etiopathogenesis of OA. Change in the curvature of femur and the tibia was also seen with higher grades of OA.

Abstract no.: 51422

PATHOLOGIC FRACTURE OF PROXIMAL PART OF FEMUR DUE TO BONE METASTASIS: SURGICAL OUTCOME AND RADIOTHERAPY DOSE FRACTION

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Introduction: In this study we have evaluated surgical results of patients presenting with pathologic fracture of proximal part of femur as a result of bone metastasis. **Material and Method:** 31 patients with pathological fracture of proximal part of femur were assessed. these patients were evaluated according to age, sex, primary tumor site, location of fracture in proximal part of femur, surgical fixations method, postoperative complication, functional outcomes and postoperative radiation therapy (dose and fraction). Musculoskeletal Tumor Society (MSTS) scoring system was used for evaluation of functional outcome. **Results:** In this study, we had 19 females and 12 males. Primary cancer was breast cancer in 11 cases, lung cancer in 9 cases, gastric cancer in 4 cases, 4 cases of prostate cancer, esophageal cancer in 1 case, renal cell carcinoma in 2 cases. The mean age of patients was 58.2 years. location of the fracture in proximal of femur was in femoral head and neck in 6 cases, 15 cases in pertrochanteric, 10 cases in subtrochanteric region. Method of fixation was joint replacement in 21 cases and intramedullary nailing in 10 cases. Postoperative mean MSTS score was 22. Complications included 1 nail breakage and 2 cases of infection. Postoperative radiotherapy was done in 16 cases (30Gy in 10 fraction). **Conclusion:** proximal of femur is a common site for pathologic fracture due to bone metastasis. Surgery is effective for both early ambulation and pain relief. Emotional outcomes after surgery in this situation is satisfactory.

Abstract no.: 51424

RADIATION PROTECTION: ARE ORTHOPAEDIC SURGEONS AT RISK?

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Introduction: Modern orthopedic trauma practice involves increased exposure of the surgeon to ionising radiation. The aim of this study is to evaluate the knowledge of orthopedic surgeons on radiation protection, risks and consequences of the use of the image intensifier in the operating room. Methods: A survey was developed and distributed to orthopedic surgeons practicing in Algeria. The results were analyzed to determine their knowledge on radiation protection in the operating room. Results: 121 orthopedic surgeons (85% men) answered the questionnaire. 97% of surgeons think they are not sufficiently protected in the operating room. 52% report wearing a regular lead apron during radio-surgical procedures. 80% of surgeons report they know the effects of ionising radiation on health while only 53% know the principles of radiation protection. Discussion: The use of the image intensifier exposes the personal of the operating theater to the ionising radiations, whose harmful effects on the health must be known by all as well as the means of radioprotection. Almost all the surgeons surveyed believe that they are not well protected; only half use a lead apron in the operating room. 80% know the harmful effects of ionizing radiation emitted by the image intensifier. Conclusion: Ionising radiations can have a deleterious effect in the medium and long term on the organism according to the emitted dose and the recipient organ. Far from trivializing the risk of ionising radiation, we must instead be vigilant, educate, inform and above all protect ourselves.

Abstract no.: 51425

BONE MARROW ASPIRATE CONCENTRATE INFILTRATION: A NOVEL TECHNIQUE TO TREAT AVASCULAR NONUNIONS

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Introduction: Nonunion fracture shaft long bones is a difficult challenge to treat. It is imperative that the cause of nonunion whether mechanical, biological or both needs to be assessed so that appropriate measures can be taken to treat the same. In cases of avascular nonunion where biology is at fault, bone grafting is considered gold standard. Bone marrow aspirate concentrate due to its stem cells and growth factors is hypothesised to aid in healing of nonunion and if proved it could reduce the morbidities associated with bone grafting. We evaluated the efficacy of Bone Marrow aspirate concentrate in the treatment of avascular nonunion. Methods: 18 consecutive patients who were diagnosed to have un-united fractures shaft in whom the gap at the fracture site was less than 1 centimeters were included in the study. They underwent Bone marrow aspirate concentrate infiltration mixed with atellocollagen. This was carried out on a day care basis. Radiographs were taken after 6 weeks and in case of no difference in callus compared to previous radiograph, the procedure was repeated once again serially for a maximum of three attempts. In those patients in whom there was no improvement even after 3 attempts, bone grafting was undertaken as salvage procedure. Results: 16 of the 18 patients united with an average of 1.8 attempts. the remaining 2 patients underwent bone grafting and went on to unite. None of the patients had any complications due to the procedure. Average time to union after BMAC was 14.2 weeks. Conclusion: Bone marrow aspirate concentrate infiltration is a safe, "day-care" procedure which could be carried out with considerably satisfying results. Repeated attempt are often required to aid healing. This could be an alternative to more-morbid bone grafting and bone grafting could be reserved for failure cases.

Abstract no.: 51432

ANTICOAGULANT CHEMOPROPHYLAXIS IN JOINT REPLACEMENT: A REALITY CHECK

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Deep vein thrombosis (DVT) is projected as potentially fatal complications following arthroplasty and use of low molecular weight heparin (LMH). We evaluated the actual benefits and problems associated with the prophylactic use of LMH. Material & Methods: A prospective cohort of 400 patients did not receive any prophylactic LMH in group (A). A retrospective group (B) cohort of 400 patients who received routine prophylactic LMH. 200 out of 400 prospective cohort were subjected to the Colour Doppler on 4th and 15th postoperative day. Data regarding the demography, underlying pathology, predisposing factors for DVT, incidence of DVT and complications associated with use of LMH were complied and analyzed. Results: No symptomatic DVT was found in any patient. Doppler ultrasound showed DVT in 2 cases from group A with no signs or symptoms of thromboembolism. In group B, post operative excessive bleed loss in 48(12%) cases, wound hematoma and surrounding tissue staining in 94 cases (21%), postoperative infection in 20 cases (5%), epidural bleeding in 8 cases (2%) and nonfatal intracranial bleeding in 2 patient (0.5%) was seen. From group A only 2 post operative infection (2 %) and no other significant complications were noted. Conclusion: Routine prophylactic LMH in arthroplasty is associated with increased postoperative morbidity, blood transfusion, wound hematoma, delayed wound healing, wound infection, increased hospital stay and does not changes the incidence rate of fatal pulmonary embolism. Its use should be individualized and given in very high risk patients having history of thromboembolism, severe obesity and ischemic heart disease.

Abstract no.: 51436

BIOMECHANICAL MODELLING OF THE OPTIMAL FIXATION OF THE PROXIMAL FEMUR FRACTURES

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Choosing optimal implant for treatment of trochanteric fractures and its fixation is a matter of numerous factors, such as type of a fracture, bone condition, age and physiological properties of the patient. In order to analyze the key influential factors and their numerous parameters we have developed methodology based on 3D parametric models of femur and implants that allows for thorough virtual examination and checking of different patient-specific options. Our biomechanical analysis uses parametric-based models of the femur and implants for treatment of trochanteric fractures. These are so-called master models, which enable regeneration to the accurate patient-specific geometrical shape of femur and implants' sizes. Master 3D model of femur is created based on CT images, which are reconstructed using medical software Mimics. Conversion to 3D solid model and parameterization according to the anatomical measures and their variations are performed in CATIA V5 R21. According to the measures of the proximal femur obtained in typical anatomical sections provided on X-ray images, parametric master model regenerates to the accurate 3D patient-specific model. This model includes heterogeneous material properties and density distribution of bone. Current parameters define size of the implant. On the other side, different implant types and number and orientation of screws are varied in order to determine optimal stress distribution in both bone and implant. Numerous conducted biomechanical simulations have demonstrated that optimal selection of, or creation of patient-specific implant design could be significantly improved and better efficiency of surgical operations could be achieved when the computational results are used.

Abstract no.: 51441

FUNCTIONAL OUTCOME AND CLINICAL REVIEW OF LOWER LIMBS AFTER RESECTION OF PROXIMAL FIBULA IN MALIGNANT PATHOLOGY: A RETROSPECTIVE STUDY

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Introduction: Primary benign and malignant tumours of the proximal fibula are rare. The majority of the primary bone tumours at this site are usually treated with en bloc proximal fibulectomy. We present our experience of functional and clinical outcome after proximal fibular resections for tumours. **Material/methods:** study included 50 patients; 32 males/18 females with age ranging, 12-48 years (average: 27 years). There were 34 benign and 12 malignant tumours, treated with proximal en bloc fibulectomy and followed for median 48 months (24-120 months). In 15 (12 malignant and 3 benign giant cell tumours) patients the peroneal nerve required resection for the margins. Partial upper tibial resection was performed in cases of malignant tumours and 3 GCT. **Results:** Patients with peroneal resection had inferior functional outcome and no risk of tibia fracture in patients with partial tibial resection. Lateral collateral reconstruction gained good results and performed in all cases. Functional outcome was significantly better in patients with benign tumours than malignant tumours as these required neither resection of the peroneal nerve nor large amount of muscle excision. The functional results were evaluated using Musculoskeletal Tumour Society (MSTS) score and clinical outcomes were evaluated using knee and ankle movements and stability. The overall average MSTS score was 26.3. **Conclusions:** With good reconstruction of lateral ligament we can achieve good results after proximal fibulectomy for benign and malignant tumour without much instability. With partial upper tibial resection (i.e. the extra-articular resection of proximal tibio-fibular joint) adequate margins are feasible even in malignant tumours.

Abstract no.: 51449

COMPLETE DISRUPTION OF POSTERIOR LIGAMENTOUS COMPLEX AND DISRUPTION OF INTERVERTEBRAL DISC COMPROMISES CERVICAL SPINE STABILITY IN FLEXION

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Introduction: Spinal trauma can have devastating neurological consequences, especially when affecting the cervical segment. Emergency care procedure generally imposes the use of immobilization devices to prevent further damages. However, the ability of cervical collars to efficiently restrict unstable spine motions has recently been questioned. Objective: To study the impact of PLC disruption (supraspinous, interspinous and flavum ligaments) and disc disruption on the stability of the cervical spine. Design/Method: The C2-T1 segment was isolated from the Spine Model for Safety and Surgery. A stepwise reduction was performed at three different levels (C2-C3, C4-C5 and C6-C7). The protocol consisted in removing sequentially the supraspinous, interspinous, flavum and posterior longitudinal ligaments (PLL) and then a third, two thirds and finally the entire intervertebral disc. At each step, a flexion moment was applied. The impact of PLC disruption and partial or complete disruption of the disc on flexion rotations and strains in remaining ligaments was then analyzed. Results: Simulations showed that PLC disruption creates a mechanical instability in the cervical spine (increase in strain of 110–287% in capsule ligaments). PLL's disruption had no effect on flexion rotation, however partial and complete rupture of the disc had a significant impact on both local (104 -163 % increase) and global flexion rotation (10 - 20 % increase). Conclusion: The finite element analysis showed that PLC and disc injury creates instability in the cervical spine. It also pointed out that immobilization and stabilization should receive special care when managing injured patients with soft tissue injuries.

Abstract no.: 51466

SUPRASCAPULAR NERVE BLOCKADE FOR POSTOPERATIVE PAIN CONTROL FOLLOWING ARTHROSCOPIC SHOULDER SURGERY: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Purpose: This systematic review examines the efficacy of the suprascapular nerve block (SSNB) for pain control following shoulder arthroscopy in comparison to an interscalene brachial plexus block (ISB) as well as anesthesia without a nerve block. **Source:** PubMed, MEDLINE, and EMBASE were systematically searched for literature on randomized-controlled trials evaluating SSNB use for pain control following shoulder arthroscopy. A meta-analysis of standard mean differences (SMD) was performed to pool the estimated effects of the nerve blocks. **Principle findings:** Overall, 10 RCTs were identified that included 923 patients, with a mean (standard deviation) age of 54 (13) years. The mean follow-up time was 4 days (range, 24 hours - 6 weeks). Postoperative pain was significantly superior in the SSNB groups compared to control groups within 1 hour (SMD, -1.1; 95% confidence interval [CI], -2.0 to -0.1; P = 0.03), 4-6 hours (SMD, -1.1; 95% CI, -1.7 to -0.4; P = 0.002), and 24 hours (SMD, -0.5; 95% CI, -0.8 to -0.1; P = 0.02) postoperatively. No major complications were noted in the SSNB groups across the included studies. Minor complications such as hoarseness and prolonged motor block were significantly less common in SSNB compared to patients with ISB. **Conclusion:** Although not as efficacious as the ISB in terms of pain control, the use of SSNB provides patients undergoing shoulder arthroscopy with significantly improved pain control in comparison to patients receiving analgesia without a nerve block. Moreover, the SSNB is a safe procedure with few major and minor complications reported.

Abstract no.: 51468

THE DEMOGRAPHIC TRENDS IN CARPAL TUNNEL RELEASE: A NATIONWIDE STUDY ANALYSIS FROM 2005 TO 2013

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Introduction: The literature has flourished on investigation into carpal tunnel release. However, little is known about the patient demographics and their trends over time. This study sought to evaluate the trends in demographics of patients undergoing CTR; we suspect that this analysis would yield identifiable changes in trends of these procedures. **Methods:** This was a retrospective review using the National Inpatient Sample (NIS) from 2005-2013. Patients with CTR were identified via ICD-9-CM codes. Patients who received only CTR as the only procedure during their visit were included; patients with multiple procedures were excluded. Patient demographics, including age, sex, race, and insurance were collected, and temporal trends were evaluated utilizing linear regression analysis. **Results:** 13,084 cases of carpal tunnel release were performed between 2005 and 2013. The mean patient age was 49.5 years, with 56.9% males. Regarding race, 72.8% of patients who underwent these procedures were White, while only 1.3% of these patients were Asian. The majority had private insurance (37.7%), while only 1.4% of patients underwent the procedure at no charge. Over the study period, both the number of Black patients (8.6% to 10.6%, Beta=0.75, p=0.017) and patients with Medicare (Beta=0.74, p=0.024) and Medicaid (Beta=0.84, p=0.005) increased significantly, while the number of patients who held private insurance decreased (Beta=0.81, p=0.009). **Conclusions:** A shift in patient demographics reflected an increase in Black patients as well as Medicare and Medicaid patients, with concurrent decrease in the number of patients paying with private insurance, reflecting an expansion to more vulnerable and underserved populations.

Abstract no.: 51470

ARE WE USING THE RIGHT PROMS WHEN MEASURING OUTCOMES IN CERVICAL SPINE SURGERY?: A SYSTEMATIC REVIEW

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Patient-reported outcome measures (PROMs) have become an integral and crucial component of service improvement strategies in spinal surgery in the UK. The increasing number of available PROMs instruments makes it difficult to choose the most appropriate measure for a given condition. The evidence-base for the formulation of these PROMs is also unclear. This study assessed the variation in use of PROMs for cervical spine surgery and their evidence-base. Medline and Embase databases were searched to identify randomised controlled trials that reported PROMs data following cervical spine surgery. Utilised PROMs were recorded and a separate search was undertaken to determine the evidence base for their psychometric properties. 195 studies fulfilled inclusion criteria. The majority of studies utilised the following PROMs instruments: SF-36, EQ-5D, Japanese Orthopaedic Association Score (JOA), Neck Disability Index (NDI), and visual analogue scales or numerical rating scales for neck and arm pain. A consistent use of PROMs was identified. However, there was poor evidence for their psychometric properties when used in assessing outcomes for cervical spine surgery patients. For degenerative cervical spine surgery it appears most appropriate to use a combination of general HRQoL, disease-specific PROMs, as well as PROMs measuring pain intensity when required. An improved consensus on PROMs use in cervical spine surgery is required to improve consistency and enable more plausible inter-study comparison.

Abstract no.: 51471

POSTOPERATIVE ANALYSIS OF PATIENTS WITH CAUDA EQUINA SYNDROME

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Introduction: Cauda equina syndrome (CES) is a severe complication of lumbar spinal disorders; it results from compression of the nerve roots of the cauda equina. The purpose of this study was to analyse post op outcome of patients with CES based on factors including clinical symptoms, imaging signs, time of intervention and analysis of the results. Various literatures have mentioned variable results after surgical intervention in case of CES. Hence we analysed the results of CES patients treated in our institute surgically. **Methods:** The records of 20 patients with CES who underwent surgery were obtained. Patients were further divided based on duration from onset to presentation. The outcome including clinical symptoms, imaging signs and duration to recover was compared between groups. **Results:** Triad of CES included bilateral saddle sensory disturbance, bowel and bladder, and sexual dysfunction. The clinical symptoms of patients with multiple-segment canal stenosis identified radiographically were more severe than those of patients with single-segment stenosis. Clinical symptoms with intervertebral disc herniation were more severe than those of patients with canal stenosis. BCR and ICR improved in groups 1 and 2 after surgery, but no change was noted for groups 3 and 4. **Interpretation:** We conclude that bilateral radiculopathy or sciatica are early stages of CES and indicate a high risk of development of advanced CES. Patients at the preclinical and early stages have better functional recovery than patients in later stages after surgical. As delay in diagnosis results in substantial morbidity, prompt diagnosis and therapy is essential.

Abstract no.: 51472

THE ROLE OF THE IMAGING DISPLAY IN DIAGNOSIS OF OCCULT PROXIMAL FEMUR FRACTURES: A PILOT STUDY

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Introduction: In a substantial number of cases, there is no radiographic evidence on plain radiography when a fracture of the proximal femur is suspected (occult fractures). Most hospitals utilize non-medical grade displays for viewing radiographs. There is no evidence in the medical literature regarding the importance of the imaging display utilized for roentgenograms evaluation. The aim of this study was to compare non-medical and medical grade displays for diagnosis of occult fractures of the proximal femur (PFF). **Methods:** Retrospective analysis of all consecutive patients that were hospitalized with suspected PFF and performed MRI. Three orthopedic surgery specialists interpreted 180 soft-copy plain radiographs on commercial LCD monitor and on a medical grade display. The observers were asked to indicate their individual confidence levels regarding the presence of a fracture on each display. The rates of fracture diagnosis were compared for both displays. The observers' opinions were compared to MRI findings and False positive rates were calculated for both displays and compared. **Results:** 140 (22%) were found to be positive for a PFF on MRI scan. On the LCD display, average 10 ±6 were found to be positive for PFF by the observers. When radiographs were viewed utilizing the medical grade display 12 ±6 were positive (p=0.6). **Discussion:** No significant statistical differences in PFF detection performance were found among the LCD monitors and the medical grade monitor. **Conclusion:** The fracture detection performance on the LCD monitors was found to be equivalent to that on the high-resolution medical grade monitor.

Abstract no.: 51473

SEPTIC ARTHRITIS OF THE HIP: A NATIONWIDE PAEDIATRIC DATABASE STUDY

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Introduction: Septic arthritis of the hip in children requires immediate attention to prevent long-term sequelae. While the various risk factors have been proposed, there is a paucity of literature describing demographic trends. The purpose of this study was to determine recent changes in incidence of septic hip arthritis and determine if there was an association between demographic factors and the incidence of septic hip arthritis. Methods: The Kid's Inpatient Database was used to identify 3,061 children who were diagnosed with septic hip arthritis and underwent incision and drainage between 1997 and 2012, and age, sex, and race were collected. Univariate analysis was used to compare the differences in mean age and sex distribution between races. Linear regression was employed to analyze the trends of race and septic hip arthritis. Results: Whites comprised a majority (56.4%) of patients, followed by Hispanic (19.9%) and Black (14.4%). Incidence increased from 0.12 per 100,000 in 1997 to 0.18 in 2012. Similar increases were seen across races, with incidence in black patients increasing from 0.014 to 0.024 ($R^2=0.79$, $p=0.018$), Hispanics increased from 0.018 to 0.034 ($R^2=0.95$, $p=0.001$), and whites increased from 0.06 to 0.09 ($R^2=0.84$, $p=0.01$). The distribution of sex did not vary between races; however, the mean age in Hispanic patients varied significantly from white, with mean ages of 6 and 7 years respectively ($p<0.001$) Conclusion: The overall incidence of septic arthritis has increased across all patients. Further, there are stark differences between the average age of septic hip arthritis patients of different races.

Abstract no.: 51480

COMPARING THE FUNCTIONAL RESULTS OF TREATMENT OF COLLES' FRACTURE BY CLOSED REDUCTION AND PLASTER CAST APPLICATION VERSUS CLOSED REDUCTION: KIRSCHNER WIRING AND PLASTER CAST APPLICATION

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Introduction: Fractures near the wrist joint due to fall on the out stretched hand constitute one of the largest of all groups of bone injuries and are estimated to account for one-sixth of all fractures seen and treated in the emergency room. Aims and Objectives: To compare the functional results of treatment of Colles' fracture by closed reduction and plaster cast application versus closed reduction, Kirschner wiring and plaster cast application. Materials and Methods: This was a prospective study conducted in Dr. D.Y. Patil Medical College Pune from December 2015 to November 2016 on 50 patients admitted to Department of Orthopaedics. Patients were divided into two groups. Group A had 25 patients and were treated with closed reduction technique and casting. Group B also had 25 patients and were treated with K-wire fixation and cast application. Results: Patients were evaluated by method described by Gartland and Werley in 1951. Group A had 17 cases of excellent score, 3 cases of good and 1 case each of fair and poor score. Group B had 18 cases of excellent score, 4 cases of good score and 3 cases of fair score. Group B had no case of poor score. Discussion: Dias et al's (1987) reported that good function may be present in spite of residual bony deformity. Conclusion: On the basis of our study we conclude that both closed reduction and casting and k-wire fixation and casting are good methods of treating Colle's Fracture. However we recommend K-wire fixation.

Abstract no.: 51481

**TREATMENT OF TIBIAL PLATEAU FRACTURE (SCHATZKER TYPE V-VI)
WITH ILIZAROV EXTERNAL FIXATOR**

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Introduction: Tibial Plateau fractures are complex intra-articular fracture. These are serious complex injury difficult to treat. These are caused by low and high energy injury. Many options like open reduction/ MIPO technique are used. But these may be associated with infection; exposed bone, stiffness and other complications even required amputation. Hence multiaxial ring fixator is the excellent option. In our study some of the cases we used one ring in the supracondylar region of femur and removed within 1-1½ months. Materials and methods: Our study was done between Jan 2010 to Dec 2017. Total 115 patients with Schatzker type V and VI tibial plateau fracture were included in the study. Male female ratio was 14:3. Age of the patients was between 16 to 70 yrs. Mean age of the patients was 43 yrs. Result: fractures were considered united when radiographic union was achieved. Mean union time 3.75 to 5.0 month. ROM of Knee almost normal. Pt is allowed to go back to their jobs within next 3-4 weeks. Partial weight bearing was started within 3 weeks and full weight bearing at 4-6 weeks. Total hospital stay was 7-10 days. Conclusion: Ilizarov is one of the best methods for treating these type of fractures as functional outcome is more predictable, union rate is high, complication rate is minimum and can be done easily.

Abstract no.: 51482

RADIOGRAPHIC CHANGES OF THE SERIAL COMPUTED TOMOGRAPHY AFTER OPEN REDUCTION AND INTERNAL FIXATION WITH STEINMANN PINNING IN THE ROTATIONAL ANKLE FRACTURE

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Background: Positional pinning is useful to temporary fixation for syndesmotoc widening in the rotational ankle fracture. There were few computed tomography (CT) studies for usage of definite fixation of pinning for syndesmotoc injury. Therefore the aim of this study to investigate radiographic and clinical outcomes of open reduction and internal fixation for syndesmotoc injury with Steinmann pinning in the rotational ankle fracture. Methods: This study included axial CT images of 81 ankles with rotational ankle fractures between 2014 February and 2016 June. Mean follow up period was 24 months. At 10 mm proximal to the tibial plafond, anterior, middle, posterior shortest distances (aTFD, mTFD, pTFD) between fibula and tibia were measured, preoperatively, immediate postoperatively and at the followup after removal of syndesmotoc fixation. The shortest distance from the anterior border of the fibula to the connecting line between most prominent point of anterior tibia and most prominent point of lateral fibula (ATF) were measured and compared in both ankles preoperatively, immediate postoperatively and at the followup after removal of syndesmotoc fixation. Results: All CT parameters were significantly increased after removal of Steinmann pin. ATF were 0.83 ± 1.2 at the last followup. Osteoarthritis occurred in the ten cases. There were no significant correlation between occurrence of osteoarthritis and syndesmotoc widening pattern on CT. All postoperative clinical outcomes were improved significantly. Conclusions: Steinmann pinning for syndesmotoc fixation in the rotational ankle fracture could be helpful and syndesmotoc distance on the CT were variable which is not correlated with occurrence of osteoarthritis.

Abstract no.: 51487

POSTERIOR LUMBAR INTERBODY FUSION FOR THE TREATMENT OF SPONDYLOLISTHESIS

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Background: The posterior lumbar interbody fusion (PLIF) procedure allows restoration of the weight-bearing capacity to a more physiological ventral position and maintenance of disc space height. However, the procedure can be technically difficult and may cause complications. It has always been performed bilaterally, central fusion has not been commonly used. **Methods:** 48 patients who met the interbody fusion criteria from March 2013 to December 2017 were included in the study. Surgery was performed from the posterior with chips of bone graft for interbody fusion supplemented with transpedicular screws and rod. The follow-up period from 8 to 30 months with a mean of 14.4 months. It was a prospective study irrespective of age & sex. **Results:** Overall, 92.86% of the patients were satisfied after surgery. Radiography study showed the rate of bony fusion being 82.14%. Fibrous union was noted in two patients. One patient experienced tear of the dura without clinical sequel. One patient had misdisplacement of screws in disc space. Overall, the complications were negligible and none of the patients sustained a motor deficit and permanent complication. **Conclusions:** The PLIF procedure using central bone graft combined with bilateral pedicle screws fixation obtained satisfactory outcome within a short-term or long-term follow-up period. Since the implant-related complications have seldom been observed, it may be used as an alternative option for recurrent lumbar disc herniation or low grade spondylolisthesis with apparent degenerative disc disease.

Abstract no.: 51494

**DELAYED WEIGHT-BEARING AND DEWORMING PREVENTED
COMPLICATIONS IN REVERSE OBLIQUE TROCHANTERIC FRACTURE
OF THE FEMUR**

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Treatment of reverse oblique trochanteric femoral fractures is still controversial and challenging. Failure rates vary from 3 to 56 % in various series we treated 44 Patients with AO/OTA 31A-A3 FRACTURES with the proximal femoral nailing in our trauma centre. All the patients were dewormed and general condition was improved by giving blood transfusion and good nutritious diet. We did not permit weight bearing for 6 weeks after the nailing. Follow up ranges from 2 to 6 years. The fractures healed in all patients. The average consolidation time was 8.4 weeks (range 7-13). No intraoperative complications or postoperative failures (Z effect or reverse Z effect) were seen in this series. None of our case had postoperative infections.

Abstract no.: 51507

THE TOP 100 CLASSIC PAPERS ON ADOLESCENT IDIOPATHIC SCOLIOSIS IN THE PAST 25 YEARS: A BIBLIOMETRIC ANALYSIS

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Introduction: The purpose of this study was to evaluate the most cited papers in AIS to identify if over the past 25 years, studies pertaining to AIS are becoming more impactful. **Methods:** The top 1,000 cited studies published between 1992-2018 related to AIS were identified using Thomson ISI Web of Science. Articles were organized by number of citations, and the study titles and abstracts were screened. After excluding unrelated studies, the top 100 articles by number of citations were identified. Additionally, the study type, country, level of evidence, and journal impact factor were reviewed. **Results:** Among the top 100 articles, 42 were cited ≥ 100 times. The mean number of authors and citations were 5.64 and 118.3, respectively. Study types included retrospective (n=54), prospective (n=17), cross-sectional (n=13), systematic review/meta-analysis (n=7), review (n=5), longitudinal (n=2), animal (n=1), basic science (n=1). Topics included clinical/patient outcomes (n=51), methodology/validation (n=22), basic science (n=14), radiographic analyses (n=9), and gait/biomechanics (n=4). Most studies originated in the USA (n=67) and were published in SPINE (n=77), with 8,561 total citations. Most studies were of level III (n=55), level II (n=23), and level IV (n=13) evidence, with only 3 level I studies. Mean 5-year impact factor in 2016 was 3.47. **Conclusion:** The 100 most cited AIS articles originated in the USA, were published in SPINE, and focused on clinical/patient-reported outcomes. Most of the studies were level II or III, retrospective, non-randomized, and therefore, are subject to multiple biases. This underscores the need for higher quality studies to support our practice.

Abstract no.: 51512

A UNIQUE TECHNIQUE OF PATELLA FRACTURE FIXATION USING NEEDLE MOUNTED CERCLAGE WIRE

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Introduction: Treatment of fracture patella depends upon type of fracture & can be stabilized by Tension Band Wiring or Cerclage Wiring. Earlier, stainless steel (SS) wire was passed through large bore injection material. We reviewed series of patients with patella fracture treated by needle mounted SS cerclage wire to assess range of motion and radiological union. Methods: 50 patients (27 males, 23 females) of patella fracture with mean age of 39.3 years (range 18–63) were treated by needle mounted SS cerclage wire, which was passed through peri-osseous soft tissue in figure of 'O' and '8' pattern. Range of motion and evidence of radiological union were assessed at regular follow-ups. Results: 47 of 50 patients gained up-to 90 degrees of active flexion at end of 1 week. No patients developed superficial infection or skin irritation. All fractures had united by end of 12 weeks. Malunion or non-union was not seen in any of the cases. Conclusion: Needle mounted SS cerclage wire facilitates easy passage of wire, improves the trajectory, helps in correct plane selection for passing the wire and thus greatly reduces the time required for surgery. This technique has the advantage of less tissue damage as needle is passed through soft tissue. Full range of motion was achieved in majority cases.

Abstract no.: 51513

UNUSUAL PRESENTATION OF A SYMPTOMATIC SCHMORL'S NODE: A CASE REPORT AND LITERATURE REVIEW

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Introduction: Schmorl nodes represent a herniation of the intervertebral disc nuclear material through the cartilaginous endplate with a displacement of this material into the adjacent vertebral body due to a congenital or an acquired weakening of the endplate or the subchondral bone e.g. degenerative diseases, Scheuermann disease, neoplasms or vertebral trauma. Case Report: A 41-year-old, healthy Caucasian male was admitted to the internal medicine ward following an acute severe episode of dyspnea, accompanied by a sudden upper back pain. The pain was severe enough to restrain the patient from continuing his daily activities. Physical exam, Laboratory workup, ECG, and chest CT revealed no pathological findings. MRI scan of the spine revealed Schmorl nodes in correlation with the location of the pain. Conservative treatment including bed rest, NSAID and a low dose of oral steroids resulted in an immediate improvement. The patient was completely symptom-free after a week from the start of his treatment, he returned to work without any limitations or complaints. During a routine follow-up for two years, the patient had no further episodes of dyspnea or back pain or any other residual symptoms. Discussion: Clinicians should be aware that, occasionally, Schmorl nodes may be responsible for an acute back pain, severe enough to produce symptoms of dyspnea. Familiarity with this clinical entity can guide the clinician to an early diagnosis and an effective treatment. The current literature regarding clinical, diagnostic and treatment options is discussed.

Abstract no.: 51514

PERCUTANEOUS FIXATION TECHNIQUE USING J-NAIL FOR FRACTURE OF SURGICAL NECK OF HUMERUS

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Introduction: Displaced and unstable fractures of proximal humerus can lead to malunion, non-union or restricted motility of shoulder joint. Fixation using conventional or locking compression plating requires extensive soft tissue dissection and can lead to occasional devascularisation of small head fragment and implant extrusion. J-nail fixation being a closed method involves minimal invasion of soft tissues. **Objective:** To evaluate functional outcome in Two/ Three part fracture of surgical neck of humerus managed by J-Nail technique. **Methods:** This retrospective study was carried out over 10 years (2007-2016) on 60 patients of two/ three part humeral surgical neck fracture. Radiologic evaluation was done according to Neer's Classification. Mean age was 60 years (35 – 90 years). Closed reduction and internal fixation with J-nail flowering technique was done in all patients. Patients were followed-up for a minimum of 2 years. Clinical assessment was done at 3 months, 6 months, 1 year and 2 years and was graded according to the Neer's shoulder scoring system. **Results:** Mean angle of active forward elevation was 145 degrees (80-180 degrees) and of abduction was 142 degrees (80- 170 degrees) at 2-year follow-up. According to Neer's scoring system, functional outcome was excellent in 36 patients (60%), satisfactory in 19 (31.6%), unsatisfactory in 4, and failure in 1. **Conclusion:** J-nail fixation being a closed method, provides 3-point fixation. As the entry point for nail is at deltoid insertion, shoulder and elbow function is not impeded. The procedure reduces length of stay, provides reliable and effective fixation, avoids surgical devascularisation of fragments and pin back-out.

Abstract no.: 51520

OUTCOME OF BONE GRAFTING OF TIBIA CONDYLES DEFECTS IN PRIMARY TOTAL KNEE REPLACEMENT IN ENUGU, NIGERIA

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Bone defects in primary total knee replacement (TKR) in the West African sub region are not uncommon due to late presentation. Bone grafts serve as alternatives to metal augments in arthroplasty and significantly reduce cost of the procedure; especially in a depressed economy as Nigeria. Thus it is commonly used, and this study evaluated the outcome of bone grafts for tibia defects in our environment. It is a retrospective study of all patients that had autogenous bone grafting of tibia plateau defects for primary TKR. Their biodata, limb involved, type of bone defect and graft, number of screws used, deformity, tourniquet time, complications, time to incorporation and follow up duration were obtained from their records. All the patients with tibia condyles defects that required grafting were included. Tibia defects that were managed by other modalities were excluded. Twelve (12) of the patients had lateral tibia defects with valgus knee deformities ranging from 20-50 degrees, mean of 31.6 degrees. The remaining 13 had medial tibia defects with varus knees ranging from 10-40 degrees, mean 19.7 degrees. Seven patients had morsellized bone grafting for contained bone defects. 18 (72%) patients had structural bone grafting. Nine (9) of them had extension rods attached to their tibia stems for additional support. All the patients had good outcome in terms of osteointegration and joint function. Bone grafting for primary TKR defect is effective for both lateral and medial tibia defects amongst patients in our centre.

Abstract no.: 51521

BILATERAL CUBITAL TUNNEL SYNDROME IN THE ATHLETE: A CASE REPORT

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Introduction: Cubital tunnel syndrome is the most common site of ulnar nerve compression. Authors report a case of bilateral compression in a top athlete. **Methods:** A 31 year-old man, member of the Algerian national boxing team, presented paresthesia of the 2 upper limbs. The clinical examination found signs of severe bilateral compression of the ulnar nerve at the elbow, with both sensitive and motor disorders. The patient was operated on both sides, 21 days apart. He underwent nerve decompression, associated with subcutaneous transposition. **Results:** with 12 months follow-up, there is a good evolution. The patient have resumed sport. **Discussion:** cubital tunnel syndrome is the second most common compressive peripheral neuropathy after carpal tunnel syndrome. It affects the general population and athletes, alike. The preferred operative treatment for ulnar nerve compression at the elbow remains controversial: in situ decompression; decompression with medial epicondylectomy; and decompression along with subcutaneous, intramuscular, or submuscular transposition are most frequently performed. To date there have been no studies that demonstrate improved clinical outcomes with anterior transposition compared with in situ decompression of the ulnar nerve. Ulnar nerve transposition may be indicated for patients –like the case reported- who present with severe pathology. **Conclusion:** Successful management of ulnar neuropathy starts with a sound clinical approach to the patient and appropriate interpretation of diagnostic studies. Operative interven- tions, including in situ decompression or anterior transposi- tions, may be necessary in cases of recalcitrant neuritis, severe pathology, or in cases of ulnar nerve subluxation.

Abstract no.: 51522

PAEDIATRIC RADIAL NECK FRACTURES: A NEW PERCUTANEOUS REDUCTION TECHNIQUE

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Background: Pediatric radial neck fractures are relatively uncommon, and comprise 4-12% of all elbow fracture in children. The upper limit of acceptable angulation is unclear, however it is widely agreed that angulation of less than 30 degrees is unlikely to cause functional limitation and displaced fractures with more than 30 degrees of angulation should be surgically treated. Several surgical techniques have been described, including percutaneous pin reduction (Joystick), elastic stable intramedullary nailing (Metaizeau), and open reduction. Methods: We present our technique of percutaneous reduction for moderate or severely angulated fractures. The reduction is performed by percutaneous insertion of a blunt instrument ("Mosquito, Pean or Kelly") distal to the fracture site, using the instrument to elevate and reduce the epiphysis. After adequate reduction has been achieved, a thin K wire is inserted to buttress the radial head (indirect fixation). Between the years 2007 to 2016, 28 children (average age 8.3y), were treated surgically. Percutaneous reduction was initially performed in all. In 80% of cases, good reduction was achieved, and in 20% the reduction was insufficient or impossible. These required open reduction. Results: At the final follow up, 25 (89%) of the children had good or excellent results clinically and radiographically. Three patients (10%) had fair results with limited pronation. No patient had functional restriction or pain. Conclusion: Our technique is an "indirect" method for reduction of the radial head with less risk of injury to the Epiphysis or Physis. This method is simple and easy to master and teach.

Abstract no.: 51523

THE ROLE OF THE IMAGING DISPLAY IN THE ACCURACY OF DIAGNOSIS OF OCCULT SCAPHOID FRACTURES: A PILOT STUDY

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Introduction: Most hospitals and clinics utilize non-medical grade displays for viewing radiographs wrist. The aim of this study was to compare the rates of scaphoid fracture diagnosis by nonmedical grade Vs medical grade displays. Methods: Wrist radiographs of consecutive patients from our institution that had a clinical signs of scaphoid fracture without findings on plain radiography (suspected scaphoid fractures) were retrospectively interpreted for radiographic signs of fracture by two senior hand specialists, a hand fellow, and a non hand orthopedic specialist, on non medical grade and medical grade displays. The difference in fracture diagnosis rates was studied. Kappa statistics were used concerning the opinions of the four observers. Results: One hundred and seventy-five wrist radiographs were interpreted. Mean 48.25 (27%) scaphoid fractures were observed on non-medical grade display Vs 66 (38.2%) on medical grade display ($p=0.076$). Discussion: No significant statistical differences in scaphoid fracture detection were found between the different displays. We showed that there is a higher rate of scaphoid fracture diagnosis when the X-rays are evaluated on a medical grade display. Conclusion: The scaphoid fracture detection rate on the nonmedical grade display was found to be higher with medical grade displays. Utilizing medical grade displays can increase the rate of diagnosis in cases of clinically suspected scaphoid fractures.

Abstract no.: 51524

OUTCOMES OF PERCUTANEOUS FIXATION OF AVULSED TIBIAL EMINENCE FRACTURES

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Introduction: Avulsed tibial eminence fractures are commonly treated by open reduction technique, however surgical morbidity especially soft tissue infection, profound stiffness, surgical & technical difficulty in fixation of small fragments have been reported frequently. Therefore, we carried out this study to study outcomes of percutaneous fixation. Methods: This retrospective study included 96 fractures in 94 patients (adults and children) who underwent percutaneous fixation. Follow up consisted of obtaining a history, physical examination and radiographs; completion of the Hospital for Special Surgery (HSS) knee score and recording of complication rates. Results: Of 96 knees in 94 patients, bony union was achieved in all the cases. There was no evidence of superficial or deep infection in any of the cases. 2 patients had terminal extension block due to penetration of screw beyond the eminence. Intra-operative open reduction was required in 4 cases for excessive comminution of avulsed eminence or inaccurate reduction achieved percutaneously. None of the 16 children developed any epiphysial growth disturbance. Conclusion: Percutaneous technique provides a satisfactory quality of fracture reduction & fixation. It reduces complications like soft tissue infection, reduces hospital stay & eventual faster recovery. This is a useful technique in patients having associated femoral shaft fracture, tibial shaft or condyle fracture and polytrauma cases. It is also helpful in children with open epiphyses. Implant retrieval is easy.

Abstract no.: 51527

WHAT ARE THE RISK-BENEFITS OF ANTI-OSTEOPOROSIS TREATMENTS?

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Background: Osteoporosis is a major public health concern in the developed world. Older women are at the highest risk of the morbidity and mortality associated with osteoporotic fractures and as such the majority of research into anti-osteoporosis therapy has necessarily focused on women leaving men an under represented population. An array of multiple therapies exist to reduce the impact of osteoporosis each with their own unique benefits and risks. Bisphosphonates are typically the first line treatment and the benefits and risks of bisphosphonates as anti-osteoporosis treatment in men is considered within this review. Methods: A literature search of Pubmed was performed with 16 suitable studies identified with a total study population of 2765 men. Both oral and intravenous bisphosphonate delivery methods were included. Conclusions: Despite the global health burden there remains at present a relatively small literature base assessing the benefits and risk of bisphosphonates therapy in men. From the available studies there is good evidence to suggest the beneficial effects of improved bone mineral density and reduced fracture rates as observed in women are transferrable to men. The association between bisphosphonate therapy and osteonecrosis of the jaw and atypical femoral fracture observed in other literature sources was not present within the material reviewed.

Abstract no.: 51528

ARE CERAMIC BEARINGS BECOMING COST-EFFECTIVE FOR ALL PATIENTS WITHIN A 90-DAY BUNDLED PAYMENT PERIOD?

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We analyzed whether the total hospital cost in a 90-day bundled payment period for ceramic-on-polyethylene (C-PE) and ceramic-on-ceramic (COC) THA bearings was changing over time, and if the cost differential between ceramic bearings and metal-on-polyethylene (M-PE) bearings was approaching the previously published tipping point for cost-effectiveness of US\$325. Methods: A total of 245,077 elderly Medicare patients (65+) who underwent primary THA between 2010 and 2015 were identified from the United States Medicare 100% national administrative hospital claims database. The total inpatient cost, calculated up to 90-days after index discharge, was computed using cost-to-charge ratios, and hospital payment were analyzed. The differential total inpatient cost of C-PE and COC bearings, compared to metal-on-polyethylene (M-PE), were evaluated using parametric and nonparametric models. Results: After adjustment for patient and clinical factors, and the year of surgery, the mean hospital cost up to 90 days for primary THA with C-PE or COC was within $\pm 1\%$ of the cost for primary THA with M-PE bearings ($p < 0.001$). From the nonparametric analysis, the median total hospital cost was US\$296-353 more for C-PE and COC than M-PE. Cost differentials were found to decrease significantly over time ($p < 0.001$). Conclusion: Patient and clinical factors had a far greater impact on the total cost of inpatient THA surgery than bearing selection, even when including readmission costs up to 90 days after discharge. Our findings indicate that the cost-effectiveness thresholds for ceramic bearings relative to M-PE are changing over time and increasingly achievable for the Medicare population.

Abstract no.: 51529

NON-BICORTICAL MEDIAL MALLEOLAR FRACTURE FIXATION

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Medial malleolar fractures are common injuries that may require surgery. Different fixation techniques have been described including unicortical or bicortical screws. Some authors note that bicortical screws which engage the lateral distal tibia are biomechanically superior to unicortical screws. Clinical studies have found a higher failure rate with unicortical screws, although the authors have used unicortical screws routinely without problems. We wanted to investigate the clinical results of a large series of patients with unicortical medial malleolar fixation. Patients who underwent unicortical medial malleolar fracture fixation between 2011 and 2017 were reviewed. In total, 61 patients were identified who suffered a medial malleolar fracture. The primary outcome was radiographic union. Any loss of reduction, complication, or subsequent surgery was recorded. Most patients suffered from bimalleolar fractures (67.2%), followed by trimalleolar fractures (21.3%) and isolated medial malleolar fractures (11.5%). There was one asymptomatic radiographic nonunion (1.6%). No patients lost reduction. Nine complications were noted: five wound complications, two saphenous neuropraxias, one loose screw, and one DVT. Ten patients had painful hardware that required removal. Unicortical fixation of medial malleolar fractures resulted in consistently good healing with minimal problems.

Abstract no.: 51532

EARLY OR DELAYED ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION: IS ONE SUPERIOR? - A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: ACL reconstruction is a rapidly developing field and an area of notable clinical equipoise. Optimal timing of surgery in an acute (<3 weeks) or delayed (≥3 weeks) time frame remains an unsolved with a 2010 meta-analysis concluding no difference between groups. In an era of evidence-based medicine surgeons are potentially basing their decision on when to operate on little more than anecdotal evidence and personal preference. Methods: A systematic literature search was performed in May 2017 of Embase, Medline and OpenGrey in accordance with (PRISMA) guidelines. 658 articles were retrieved with 6 suitable for inclusion covering 576 reconstructions. Four meta-analyses were performed assessing subjective measures of Tegner Activity Scale (TAS) and Lysholm score, and objective measures of arthroscopically identified meniscal and chondral injury. Study bias was assessed and reported using the Downs and Black checklist. Results: A statistically significant difference was found of 0.39 points on the TAS in favour of early surgery within 3 weeks (RR 0.39, CI 0.10,0.67, p=0.008). No statistically difference was found between groups for the patient reported Lysholm score (RR -0.18, CI 2.40,2.05, p=0.17). There was no statistically significant difference between groups in intraoperative findings of meniscal lesions (RR 0.84, CI 0.66,1.08, p=0.17). A trend towards significance was observed for the incidence of chondral lesions in the early surgery group (RR 0.56, CI 0.31,1.02, p=0.06). Conclusions: Although a statistically significant result on the TAS exists in favour of early surgery, the magnitude of effect may not translate into any clinically meaningful difference.

Abstract no.: 51533

MAGNETIC RESONANCE IMAGING IN THE EARLY DIAGNOSIS OF OCCULT PROXIMAL FEMUR FRACTURES: A REVIEW OF A SINGLE CENTRE EXPERIENCE

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Background: The diagnosis of occult fractures of the femoral neck is challenging but crucial, as early diagnosis and management may avoid displacement and improve overall mortality and morbidity. Since 2013, Magnetic Resonance Imaging (MRI) scanning is routinely performed for evaluating of patients presenting with clinical signs of hip fracture and negative roentgenography. The purpose of this study was to present our experience with evaluation of suspected femoral neck fractures and the role of MRI in this process. **Methods:** The study population comprised of all consecutive patients that arrived at the emergency room between 1.1.2013 and 30.10.2017 with history and physical examination suggesting femoral neck fracture and negative X-rays. Demographic, clinical and radiographic data were collected from the medical records. **Results:** The study population comprised of 182 patients. Demographic data, the rate of positive diagnosis of femoral neck fractures and subtypes, the rate of nonfemoral neck fractures including subgroup analysis of various parameters were found (long list of data that is beyond the allowed word count and therefore can't be fully described here) **Conclusions:** This study illustrates the role of MRI in assessing clinically suspected proximal femoral fractures. This study shows that performing a CT before MRI caused a delay in diagnosis, unnecessary exposure to radiation and increased cost.

Abstract no.: 51536

FOOT MALALIGNMENT AND DEFORMITIES IN END-STAGE OSTEOARTHRITIS KNEE AND THEIR CORRECTION FOLLOWING TKA: A PROSPECTIVE BLINDED STUDY

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Introduction: Patients undergoing total knee arthroplasty (TKA) with end-stage osteoarthritis of knee have secondary ankle pathology. Some compensatory changes occur at ankle and subtalar joint secondary to deformity at the knee joint. Purpose was to evaluate the changes in hindfoot malalignment and foot deformities in patients with end-stage osteoarthritis of knee requiring TKA and effect of correction of knee deformities post TKA on foot/Ankle alignment. **Methods:** 61 consecutive patients with Kellgren-Lawrence grade IV osteoarthritis knee undergoing TKA were enrolled in a prospective blinded study. Demographic data, deformities at knee and ankle, hindfoot malalignment and functional outcome scores such as VAS, KSS, WOMAC scores, Foot and Ankle Disability Index (FADI) and Foot posture index (FPI) were recorded preoperatively and postoperatively at 6, 12 weeks and final follow up (range: 6-21 months; mean: 14.2months). **Results:** Statistically significant improvement was observed in KSS score, WOMAC score, FADI and FPI after TKA. There was improvement in ankle valgus after correction of knee varus deformity. Hind foot changes mainly occurred at subtalar joint. Hallux valgus (10 patients), and Pesplanus (5 patients) were associated with advanced osteoarthritis of knee. Gait profile score and Gait deviation index improved significantly after TKA. There was increased stance phase and decreased stride length in knee osteoarthritis patients which improved after TKA. **Conclusion:** Hind foot malalignment with foot deformities (hind foot valgus) occur secondary to knee deformities (varus deformity) in advanced osteoarthritis of knee which subsequently improve following TKA.

Abstract no.: 51537

SHOULD SURGICAL PLANNING FOR AIS SURGERY INCLUDE ANATOMICAL OR SCOLIOSIS-DRIVEN LEG-LENGTH DISCREPANCIES?

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Introduction: This study compared anatomically-driven (LLD-A) and scoliosis-driven (LLD-S) leg length discrepancy (LLD) in patients undergoing posterior spinal fusion for AIS to determine the impact of LLD on postoperative correction. **Methods:** 52 AIS patients (mean age= 18.6 years; 71% female) were evaluated for baseline LLD from 2010-2015. Each patient underwent scoliosis and scanogram imaging. LLD-A was defined as >1 cm of discrepancy between anatomical lengths of both limbs (length between femoral head and center of plafond). LLD-S was defined as >1 cm difference between iliac crest apices. Sagittal and coronal radiographs were obtained at baseline, with mean 2-year follow-up. Magnitude of correction and alignment was compared between patients with and without LLD-A and -S. Four categories based on LLD-A and LLD-S of <or>1 cm was suggested: No LLD (LLD-A and S<1cm), Pure LLD-A (Only LLD-A>1cm), Pure LLD-S (Only LLD-S>1cm), LLD-A,S (Both LLD-A and S>1cm). **Results:** Mean LLD-A was 10.2±2.4 mm and mean LLD-S was 9.2±7.9 mm. 19.2% had LLD-A and 38.5% had LLD-S. The percentage in each group were: No LLD (55.8%), Pure LLD-A (5.8%), Pure LLD-S (25%), and LLD-A,S (13.5%). All groups had similar baseline coronal deformity and magnitude of correction at 2-year follow-up. Those with and without LLD-A and LLD-S had comparable baseline and 2-year sagittal profiles. **Conclusion:** LLD-S patients achieved similar radiographic outcomes at mean of two years following posterior spinal fusion for AIS, suggesting the LLD-S phenomenon as a compensatory mechanism to coronal deformity. Similarly, anatomical LLD patients had comparable outcomes to those without LLD.

Abstract no.: 51540

DECREASING RECURRENT PAIN AND ANXIETY IN MEDICAL PROCEDURES WITH A PAEDIATRIC POPULATION: A PILOT STUDY

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Children with injuries, including fractures and burns, experience significant pain during medical procedures. Non pharmacological pain management with virtual reality (VR) could distract patients from pain by engaging multiple senses. To our knowledge, no studies have tested the feasibility of VR for procedural pain management in children with fractures and burns undergoing painful procedures. Aim: This pilot clinical trial aims to assess the acceptability and feasibility of VR distraction using Oculus Rift(r) in children with fractures and burns undergoing painful medical procedures. Method: 1-Study design: Within subject/crossover. Each child serves as his own control and receives both standard and experimental treatment during the same session through a randomized order. 2-Convenience sample: 20 children 7 to 18 yo with an injury, from the surgical-trauma and orthopedic outpatient clinics of Ste-Justine Hospital, Canada. 3-Interventions: Standard care/VR distraction via Oculus Rift(r) goggles. 4-Measures: Pain (NRS) and anxiety (CFS) measures are taken before the procedure and after each sequence, followed by a measure of nurses' satisfaction. Memory of pain and anxiety is assessed 24h after the procedure. Data is also collected on the occurrence of side effects and design's feasibility outcomes. 5-Quantitative data analysis: Mean differences in pain and anxiety scores between the two treatment sequences will be compared using Wilcoxon signed-rank tests. Results & Conclusion: 12 participants have been recruited since July 2017. We expect to reach the desired sample size by July 2018. This innovative approach will allow to improve pain and anxiety management in outpatient surgical-trauma and orthopedic clinics.

Abstract no.: 51543

MANAGEMENT OF MOREL LAVALLEE LESION ASSOCIATED WITH PELVI-ACETABULAR FRACTURES

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Introduction: Morel-Lavallee (ML) lesion is an uncommonly diagnosed soft tissue injury associated with pelvic and acetabular fractures. This study was undertaken to analyse the outcome of ML lesions associated with pelvi-acetabular fractures managed by a protocol based intervention in level-one trauma centre of a developing country. Method: All patients with pelvi-acetabular fractures from Jan 2010-Dec 2014 were evaluated for soft tissue condition on arrival. On the diagnosis of ML lesion irrespective of the time lag from the injury, the lesions were treated initially by the same protocol of percutaneous drainage and suction drainage followed by evaluation of the skin and soft tissue damage. Results: Of the total 35 patients, 14 patients had acetabular fracture while 17 patients had pelvic fracture. Four patients had both acetabular and pelvic injury. Surgical intervention for pelvi acetabular fractures was undertaken in 29 patients whereas 6 patients were managed conservatively. The formal procedure of percutaneous drainage was successful in nearly all cases except those cases which had deep abrasions which lead to eschar formation and required formal debridement with negative pressure wound therapy followed by Spilt skin grafting. The remaining cases improved with average of 7-10 days of drainage. The surgical intervention in these cases required expertise in the various approaches for fixation. Conclusions: Management of ML lesions presents a challenging situation especially in countries with limited resources. We recommend that all cases should undergo percutaneous drainage irrespective of the duration of injury. Only exceptions are cases with deep soft tissue abrasion on presentation.

Abstract no.: 51544

VALIDATION OF A VIDEO ARTHROSCOPIC SKILL ANALYSIS METHOD THROUGH SIMULATION

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Evaluate the applicability and performance of a low cost knee arthroscopy simulator in measuring individual surgical skills. Development of a low cost knee arthroscopy simulator has the potential to quantify the abilities related to this surgical procedure as objective and measurable fashion, avoiding the high costs of the commercial simulators currently available. The simulator can be used as a simple and reproducible method in teaching and assessing abilities related to knee arthroscopy in hospitals and universities. The perspective of disseminating a more precise and reliable analysis method is created not only in Brazil but also in other developing countries. Material and Method:Thirty medical graduate students and ten orthopedic residency preceptors with experience in arthroscopy will perform a simulated arthroscopic procedure using a low cost simulator developed. The procedure performed will be a partial meniscectomy, which will be recorded in video for posterior analysis of multiple objective parameters of surgical ability (prevalence of look downs, total time to complete the task, prevalence of instrument lost, triangulation time and a check-list of goals to be achieved during a partial meniscectomy). Participants will also answer a Likert Scale questionnaire on their impressions on the model developed and its applicability in medical teaching. After evaluating the participants through the training model applied, it is expected to obtain a direct correlation between individual performance and previous orthopedic and arthroscopic training. The goal is to validate the proposed method as an assessment tool in surgical abilities related to the performance of an arthroscopic procedure.

Abstract no.: 51549

IS THERE A DIFFERENCE IN CUP INCLINATION ON THE RIGHT AND LEFT SIDES AFTER BILATERAL SIMULTANEOUS TOTAL HIP ARTHROPLASTY BY DIRECT ANTERIOR APPROACH?: A RADIOGRAPHIC ASSESSMENT

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Backgrounds: Simultaneous bilateral total hip arthroplasty (THA) has shown good outcomes and due to the supine position of the patient, the direct anterior approach (DAA) facilitates this operation. The aim of this study was to compare cup inclination between the right and left sides after bilateral simultaneous total hip arthroplasty by direct anterior approach without intraoperative fluoroscopy guidance in postoperative anteroposterior pelvic radiographies. **Method:** All simultaneous bilateral THA which were performed between 2013 and 2017 by the orthopedic department of Imam Khomeini Hospital, Tehran University of Medical Sciences by DAA were included. Postoperative anteroposterior pelvic radiographies of patients were examined with a digital software. The angle of cup abduction in both sides was measured and compared. The sequence of surgery (starting with right side vs left side) was also considered. **Results:** A total of 101 simultaneous bilateral THA were performed by DAA (71 male and 30 female patients) with a mean age of 51 years. Mean cup abduction angle was 46.5 on the right side and 48.2 on the left side with no significant difference ($p\text{-value}=0.1$). In subgroup analysis, there was no difference in mean cup abduction angle regarding patients age and gender. **Conclusion:** One-stage bilateral THA is a safe procedure with equally acceptable cup abduction angle on both sides regardless of sequence of side of surgery and patient's age and gender.

Abstract no.: 51550

WHAT ARE THE SUCCESSFUL GANZ PROCEDURES FOR DEVELOPMENTAL DYSPLASIA OF HIP AND COMPLICATION MANAGEMENT AT THE LOCAL LEVEL?

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Introduction: Untreated acetabular dysplasia becomes symptomatic before the age of 50 in 25% to 50% of patients with DDH. Important factors in the success of the operation is the experience of the surgeon, completion of learning curve and complication management. Methods: 16 hips in 13 patients were included with acetabular dysplasia and had Ganz osteotomy between 2009 and 2017. This was a retrospective study and the patients were assessed for centre-to-edge (CE) angles, acetabular index (AI), Tönnis Tönnis angles, leg length difference and Harris Hip Scores pre- and postoperatively and also for complications. Results: There were 12 females, 1 male. Mean age and follow-up were 23.9 (13-44) and 43.8 (16-98) months retrospectively. Mean CE angles, lateral CE angles, Tönnis angles and acetabular index were all improved postoperatively. There was mean of 14.5 mm increase in the leg length on the operated side postoperatively. Harris Hip scores were 66.2 (61.5 - 68.6) pre-operatively and improved to 96 (91.7-100) postoperatively. All 3 retroverted cases had revisions in 5-7 days. One of those had infection and treated with irrigation and vacuum treatment. 2 patients had partial failure of fixation. One of them required screw change and augmentation with suture. Another patient had painful delayed union of ischial osteotomy site and not required further management and another patient had fracture of osteotomised region intraoperatively. Conclusion: Ganz osteotomy is a difficult technique and not without complications but these were manageable well with good outcome in experienced hands.

Abstract no.: 51555

SURGICAL TREATMENT SCAPULA OSTEochondroma: A CASE REPORT

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Osteochondroma also known as exostosis is one of the most common benign bone tumours, and are characterised by bone protuberances surrounded by a cartilage layer. They generally affect the extremities of the long bones in an immature skeleton and deform them. They are 02 main types solitary or multiple forms. They are easily diagnosed at the level of the appendicular skeleton. However, atypical localization (axial skeleton which are rare) and malignant transformation (frequent with the multiple type) are sometimes challenging to diagnose on clinical evaluation and plain radiography. Therefore, more refine diagnostic tools may be required. Location of a solitary exostosis in the scapula is relatively rare. We report the case of a 17year old male patient reporting worsening shoulder pain since 3years with right scapula winging. CT scan revealed an osteochondroma on the ventro-medial surface of the right scapula extending into the scapula-thoracic space. Surgical excision was done and histopathological study showed osteochondroma of the scapula. We noted an excellent post operative pain alleviation after two weeks, full range of motion and better self-esteem.

Abstract no.: 51559

OPEN REDUCTION ELASTIC STABLE INTRAMEDULLARY NAILING OF DIAPHYSEAL FRACTURE OF THE FEMUR AND TIBIA IN CHILDREN

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Introduction: ESIN is a method of endo-medullary fracture fixation using elastic nails for the surgical treatment of long bones diaphyseal fractures with fluoroscopic guidance. In the absence of sophisticated fluoroscopic techniques, open surgical procedures becomes indispensable. Objective: the main aim of this study was to evaluate the short and long term outcomes of open reduction ESIN Patients and methods: it is a retrospective study of data compiled in the trauma and orthopaedic surgical service of the Yaoundé Central Hospital over a period of 05 years running from January 2011 to December 2016. A total of 40 patients aged 5 to 15 years presenting with diaphyseal fracture were treated with open reduction ESIN. The treatment outcomes were evaluated using the Flynn criteria. Results: At an average follow up of 18 months (12-15 months), the results were excellent in 25 cases, good in 18 cases, and poor in 2 cases. The femoral segment was the most frequently involved 30 cases. Kirschner wires (K-wires) were exclusively used. The average consolidation period was 12 weeks (7-16 weeks). The average duration of pin removal was 6 months. The main complications here were: delayed union (10 cases), skin pin irritation (08 cases), malunion (04 cases). Discussion: Open reduction ESIN of diaphyseal fractures of the femur and tibia has showed satisfactory results. The use of K-wires is a cheap alternative to ESIN in resource limited settings like ours.

Abstract no.: 51560

**SPECTRUM OF SPORTS INJURIES IN A DEVELOPING WORLD
ORTHOPAEDIC HOSPITAL**

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Introduction: Sports injuries constitute an untoward adverse effect that undermines the benefits of regular physical activity and a delayed return to play. In the developing world setting complications are common. Methods: Patients with sports injuries who presented to the hospital in year 2011 were retrospectively studied. Results: One hundred cases of injuries in ninety-five patients were recorded. Ninety patients (94.7%) were males and five (5.3%) were females Most patients were in the third decade of life. Mean age presentation = 25.5 years (+/- 10.8). Football injuries were the commonest (n=80 (84.2%)). Commonest location is the lower extremity (n=79 (79%)). The knee is the most traumatized joint in the study (n=33 (41.8%). The most devastating injuries were spinal with resultant post-traumatic quadriplegia. Fractures (n=34 (34%)) were more common than soft tissue injuries. Various complications like non-union, bone infections and lower limb gangrene due to the meddlesomeness of the traditional bone setters were also recorded. Conclusion: Spectrum of sports injuries traverses the realms of bony and soft tissue injuries with devastating complications in the developing world setting where career in sports can be terminated or jeopardized.

Abstract no.: 51561

ANALYSIS AND DISCUSSION OF A BRIDGE BRIDGING BONE GRAFT AND HERBERT NAIL COMPRESSION FIXATION OF SCAPHOID FRACTURE

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Methods: 26 cases of scaphoid fractures treated with one-stage bridging bone graft and Herbert nail compression fixation. Routine anti-infective dressing and supplemental rehabilitation measures, such as the use of grip plasticine, grip ring, finger movement and other finger function activities to prevent joint stiffness, muscle atrophy and promote bone healing. Dynamic removal of plaster fixed proper wrist movement. Complete removal of gypsum after 6 months, regular review of X-ray, dynamic observation of fracture healing, and gradually, step by step to strengthen the wrist active functional exercise. Efficacy assessment: the degree of pain to take the VAS score, wrist function assessment using Krimmer assessment method for evaluation. Result: The wound healing rate was 100%. Fracture healing was observed. The follow-up ranged from 9 to 24 months (15.34 ± 5.366). Fracture healing time (10.615 ± 3.15), a good alignment, no deformity. Evaluation of curative effect: The degree of pain was assessed by VAS score: preoperative (6.800 ± 1.208), postoperative (2.038 ± 1.427), preoperative and postoperative VAS score at $\alpha = 0.05$ test levels were statistically different. The preoperative and postoperative functional values of Krimmer were statistically significant at the $\alpha = 0.05$ test (53.654 ± 11.699) and postoperatively (87.538 ± 8.443) respectively. Excellent rate of good and good rate of 88.46%. Conclusion: Using a bridge span inset bone graft plus internal fixation of the same surgical treatment of scaphoid fractures, whether fresh, old, delayed or non-union, the clinical results are satisfactory, allows patients to get a complete treatment effectively shortening the treatment cycle.

Abstract no.: 51565

THE 100 MOST IMPACTFUL PAPERS IN HAND AND UPPER EXTREMITY SURGERY OVER THE LAST 25 YEARS: A BIBLIOMETRIC ANALYSIS

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Introduction: This study sought to identify and characterize the most impactful papers in hand/upper extremity over the last 25 years. **Methods:** The top 1,000 cited studies published between 1992-2018 related to the hand/upper extremity were identified with Thomson ISI Web of Science. Studies were organized by number of citations, and the titles and abstracts were screened. After excluding unrelated studies, the top 100 articles by number of citations were identified and reviewed to identify study type, institutional origin, level of evidence, and journal impact factor. **Results:** Among the top 100 studies, all were cited ≥ 100 times, and mean number of authors and citations were 4.51 and 169.4, respectively. The top study types were case series (n=52), randomized controlled trial (n=17), prospective (n=16), retrospective (n=8), and basic science (n=4). Topics were most commonly related to shoulder (n=34), wrist/forearm (n=21), hand (n=17), and elbow (n=14). The most common areas for shoulder studies were rotator cuff injuries (n=18), wrist/forearm studies were distal radius fractures (n=12), and hand studies were nerve/nerve repair (n=10). Most were published from US institutions (n=63). Most were level IV (n=51) and II (n=16). Journal of Hand Surgery-American had the most citations (n=33), with 5,092 citations three among the top 10. Mean impact factor was 3.29. **Conclusion:** The majority of the top 100 articles were published in JHS Am, were case series, and focused on the shoulder. Most were level IV or II, retrospective, and non-randomized studies, emphasizing the call for higher-quality, prospective, randomized trials to bolster our evidence-based practice.

Abstract no.: 51566

**CONVERSION OF HIP FUSION TO TOTAL HIP ARTHROPLASTY
THROUGH THE DIRECT ANTERIOR APPROACH**

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Background: Technical difficulties make conversion to total hip arthroplasty (THA) from a fused hip a challenging procedure with mixed results. Here we report our surgical technique and early results of conversion of fused hips to THA via direct anterior approach (DAA). Method: Between 2013 and 2017 we performed 15 conversions to THA in 13 patients with hip fusions through DAA. The procedure was performed on a standard table, in supine position, and with or without fluoroscopy guidance. Patients were followed up for a mean of 3 years. The clinical and radiographic outcomes of this approach are reported in this study. Results: There were 9 men and 6 women with a mean age of 45 years old. The mean time interval between fusion and THA was 26 years. The mean follow up period was 3 years. All acetabular components were in safe zone. There was one recurrent dislocation due to abductor insufficiency. Harris Hip Score and WOMAC score were significantly improved in all patients. Conclusion: The DAA is a safe and efficient approach for conversion of fused hips to THA with benefits of having better landmarks and possibility of utilizing intraoperative fluoroscopy.

Abstract no.: 51568

**CHARACTERISTICS AND CONSIDERATIONS OF OSTEOSYNTHESIS
FOR CORONAL SHEAR FRACTURES OF THE PROXIMAL FEMUR**

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Introduction: Coronal shear fractures are proximal femoral fractures that the fracture line extends from the anteromedial part of the femoral neck to the posterior intertrochanteric fossa. Fractures of this type, which combine components of femoral neck and trochanteric fractures, are very unstable, and no standard treatment policy has been established. Methods: Between January 2012 and December 2016, 1,872 proximal femoral fractures classified as AO/OTA 31 type were admitted in our trauma center, out of which sixteen (0.85%) patients had a coronal shearing fracture. Among these, ten patients who underwent a complete follow-up examination at 3 months were surveyed for this study. We investigated operative procedure and clinical courses. Results: All ten patients included in our study underwent osteosynthesis, and none underwent femoral head replacement. Eight patients were treated with an intramedullary nail, and two patients were treated with a CHS-type implant. Eight patients achieved union, one exhibited delayed union, and one resulted in cut out. There was no avascular necrosis of the femoral head. Conclusion: Coronal shearing fractures can be treated using osteosynthesis from the aspect of femoral head circulation. However, strict operative procedures are required for these patients because this type of fracture is dynamically unstable. In some cases, femoral head replacement might be necessary.

Abstract no.: 51569

STUDY AND COMPARING THE SHORT-TERM FOLLOW-UP RESULT FOR SOFT-TISSUE AUTOGRAFT AND ALLOGRAFT IN ACL RECONSTRUCTION SURGERY

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Introduction: Comparing allograft and autograft in ACL reconstruction, may determine the preferred method with minimum complication and maximum effectiveness. **Method:** 38 patients with ACL TEA no any other associated ligament injury have been put into 2 groups by random computerized selection and their group has been advising them in closed pockets. Finally 18 patients were in allograft division and 20 other one in autograft. In the beginning physical examination have been done and also IKDC objective, Lysholm, level of activity, KOOS and quality of life scoring forms have been filled for all patients as before operation process. Then patients have been operated by standard arthroscopic method. Graft fixation in femur bone has been done by endobutton and in the tibia bone by interference screw (Smith and Nephew). In the next step above mentioned scoring forms has been filled after 3 months, 6 months and one year after operation. And required physical examinations have been done again. In this period of time patient have been under exact observation regarding related complications. **Result:** All mentioned scoring form and pivot shift test, lachman test and ADT showed significant improvements in patient postoperative period. Lysholm ($p=0.07$), IKDC objective ($p=0.08$), level of activity ($p=0.09$) and KOOS ($p=0.15$) represented that there are no statistical differences between two autograft and allograft groups. Infection risk in both groups has been almost same ($p=0.3$). **Conclusion:** All findings clarify that short term result were equal in 2 groups.

Abstract no.: 51570

SIMPLE SINGLE DEVICE FOR TIBIAL FIXATION OF ANTERIOR CRUCIATE LIGAMENT AND ANTEROLATERAL LIGAMENT IN CASES OF COMBINED RECONSTRUCTIONS

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Background: ACL injuries are common knee injuries. The current concept of anatomic single bundle reconstruction is believed to restore AP stability, but ignores the rotational stability. Attention to and reconstruction of the anterolateral ligament restore knee rotational stability. **Patients & Methods:** a case series was conducted on 20 patients suffering from ACL injuries. Pre-operative assessment consisted of X-rays, MRI and clinical evaluation relying on the Lysholm, and objective International Knee Documentation Committee scores. Hamstring tendons were the graft of choice in all cases. The semitendinosis was prepared into ACL graft. The gracilis was prepared into the ALL graft. Both were fixed on the femoral side with bio-screw and distally tied over the U-loop. All patients were followed up for at least 6 months, during which they underwent the accelerated rehabilitation program. And assessed using Lysholm, and objective IKDC. **Results:** Lysholm score; 7 patients (35%) had an excellent score (95-100). Twelve (60%) were good (84-94), only one (5%) had a fair score (65-83). IKDC score, 13 patients (65%) were normal, 5 (25%) were nearly normal, 2(10%) were abnormal. Mean KT-1000 side to side difference at final follow-up was 1.1 ± 0.8 . Rotational stability assessed using kinematic analysis in a gait lab showed an improvement in side to side difference between pre-operative and post-operative values. **Conclusions:** Combined ACL plus ALL reconstruction improves rotational stability of the knee. U-loop is a simple single cheap reliable method of fixation that serves for fixation of both ACL and ALL grafts on the tibial side.

Abstract no.: 51573

ILEOPUBIC AND ISCHIOPUBIC RAMI OSTEOMYELITIS: REGARDING A CLINICAL CASE

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Introduction: Osteomyelitis is uncommon in children. Hematogenous osteomyelitis typically occur in tubular bones, with pelvic involvement being rare. The clinical presentation of these cases is nonspecific, being a diagnostic challenge. 45% of the cases are mistakenly diagnosed upon presentation as arthritis. Materials: A 4-year-old male patient presented, at the emergency department, fever (40°C) with gait claudication, with no inflammatory signs or other clinical findings, with 1 day of evolution. Two weeks before had influenza-like illness. Analytically: leukocytosis 17000, c reactive protein 1.9mg/dL and sedimentation rate 45mm/h. Ecographically aspects suggestive of joint synovitis. Methods: The patient was admitted for surveillance. In the 1st day there was aggravation of the inflammatory analytical parameters. It was collected hemocultures and initiated antibiotic therapy (cefotaxime + flucloxacillin). On the 5th day had apirexia for more than 48 hours, without claudication, pain or inflammatory signs. Due to the isolation of methicillin-sensitive *Staphylococcus aureus*, antibiotics were altered according to the sensitivity spectrum (gentamicin + flucloxacillin). MRI (11th day) showed findings suggestive of osteomyelitis of the proximal part of the left iliopubic and ischiopubic ramus, with absence of arthritis in the coxo-femoral joints. Bone scintigraphy with technetium at day 19 with findings within normal limits. Results: After 21 days of intravenous antibiotic therapy with flucloxacillin and 9 of gentamicin, with clinical and analytical improvement, the patient was discharged. He underwent 3 weeks of flucloxacillin in the ambulatory setting. Discussion/Conclusion: We present a case of an uncommon infection with often late diagnosis, at the expense of a nonspecific clinic.

Abstract no.: 51575

**RARE INTRAOPERATIVE COMPLICATIONS DURING
HEMIARTHROPLASTY FOLLOWING HIP FRACTURE: REPORT OF TWO
CASES**

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Introduction: Cemented hemiarthroplasty is a common treatment for displaced intracapsular neck of femur fracture in the elderly patient. There are potential complications when preparing the femur for the implant. We present two cases of intraoperative complications involving cement restrictor insertion. **Method:** Retrospective review of two cases. Review of radiographs, operative notes and clinical notes. **Results:** Two patients, one male and one female treated with Exeter stem cemented bipolar hemiarthroplasty. Both procedures were performed by experienced middle grade surgeons. No intraoperative difficulties were noted. Routine postoperative radiographs revealed extrusion of cement at the level of the cement restrictor. One patient subsequently had a dislocation of the prosthesis and died as a result of infection. One patient developed a wound infection and required a washout. **Discussion:** Cement restrictor application is a source of risk of intraoperative fracture. Cement restrictor trials are measured in 2mm increments. Stryker recommend using size of the first trial that does not pass the isthmus in Total Hip Replacement. Cement restrictor is approximately 1.5 mm bigger than trial. In osteoporotic bone this may put patient at risk of fracture. We suggest use of cement restrictor sizes where the last trial passed the isthmus as a safer alternative.

Abstract no.: 51576

LATERAL LUMBAR INTERBODY FUSION: THE RELATIONSHIP OF PSOAS MUSCLE MORPHOLOGY TO NEUROLOGIC COMPLICATIONS

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Introduction: LLIF is a concept to achieve maximum disc excision and subsequent bigger end plate availability for interbody fusion. Provides indirect decompression of the neural foramina. Avoids major visceral/vessel injuries, and/ or disruption posterior elements with lower infection rates, decrease operative times, faster rehab and decrease hospital stay. Other radiological advantages include foraminal height (80.3%), foraminal width (7.4%), disc height (116.7%), segmental lordosis at L4-L5 (14.1%), and global lordosis (11.5%) however, included a high risk for neurological injury 7 – 23%. Although most neurological injuries are transient neuropraxias but one that persists cause significant disability to patient walking abilities. For retractor placement a perioperative understanding of psoas muscle anatomy is important as shown in literature. Taking close proximity of lumbar plexus to psoas into consideration. During careful assessment of MRI scan anatomy psoas muscle we identified two variants in muscle anatomy. One type identified muscle as a lump with a major bulk and a very minor posterior part. The other type quadrangular shape with equally distributed muscle anterior posterior and midline split. We postulated that planning trans-psoas approaches for lateral lumbar interbody fusion in patients whom psoas muscle is a single lump is related with higher long term neurological complications. Methods: 80 patients included with 100 levels, retrospective data collected following review of their imaging and their neurological complications assessed in two sub groups of psoas muscles on MRI with one year followup. Results: No statistically significant difference in neurological complications. Larger studies required with prospectively collected data.

Abstract no.: 51582

CONSERVATIVE TREATMENT OF CRITICALLY ILL PATIENTS WITH HIP FRACTURE LEADS TO GREATER MORTALITY

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The overall 1-year mortality after hip fracture surgery is 20-25%. Conservative treatment of these patients worsens their quality of life. Our aim was to determine 30-day, 90-day and 1-year mortality after hip trauma in non-operated versus operated patients. A retrospective study on hospitalized patients due to hip fracture (ICD-10 codes S72.0-S72.2) between May 2014 and June 2016 was conducted in our hospital. In total 927 patients (245 men and 682 women) were included. Operation was done on 859 patients (ASA grade from 1 to 4), but 68 were not operated (ASA grade from 2 to 4). Overall 30-day mortality in non-operated patients was 41.2%, in operated - 3.6% ($p=0.000$), 90-day respectively - 60.3% and 9.3% ($p=0.000$), 1-year - 76.5% and 21.2% ($p=0.000$). After selecting the patients with ASA grade = 3-4 (66 non-operated, 571 operated), 30-day mortality counted 42.4% and 4.7% respectively ($p=0.000$), 90-day - 62.1% and 12.6% ($p=0.000$), 1-year - 77.3% and 26.8% ($p=0.000$). After selecting the patients with ASA grade = 4 (43 non-operated, 20 operated), 30-day mortality counted 48.8% and 30.0% ($p=0.183$), 90-day - 72.1% and 35.0% ($p=0.007$), 1-year - 83.7% and 40% ($p=0.001$). In all groups mortality was significantly higher in non-operated patients. The only exclusion was the 30-day mortality in ASA grade 4, where the lack of statistical significance ($p=0.183$) could be explained by the little number of patients. We conclude, that even critically ill patients with hip fracture should be operated. Conservative treatment of hip fracture leads to greater mortality.

Abstract no.: 51584

INTRODUCTION OF THE 'GOLDEN PATIENT' IMPROVES TRAUMA LIST START TIMES IN A DISTRICT GENERAL HOSPITAL

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Introduction: Fewer delays in starting a trauma list can reduce cancellations. A novel system has been previously described where a patient is identified the day before and optimised for theatre. The patient is listed first and designated "Golden Patient". This project aimed to assess the impact of introducing a "Golden Patient" system on trauma list start times in a district general hospital. Method: Two months of first case sending and anaesthetic start times were recorded retrospectively (43 cases). The "Golden Patient" system was introduced with a multi-disciplinary implementation group. Target send time of 0830hrs and anaesthetic start time of 0900hrs was agreed. First patients on trauma lists were noted in two cycles (Cycle 1: 46, Cycle 2: 38). Results Prior to implementation: Mean Send Time (MST) of 0855hrs, Mean Anaesthetic Start Time (AST) of 0921hrs. Cycle 1: MST fell by 9 minutes ($p=0.03$) and AST by 11 minutes ($p=0.023$). Lists labelled with a "Golden Patient" (47.8%) were sent 14 minutes earlier ($p=0.004$) and started 12 minutes earlier ($p=0.02$) than those not labelled "Golden". Cycle 2: Implementation produced a 13-minute reduction in send times ($p=0.003$) and start times ($p=0.008$) overall. "Golden Patient" cases (42.1%) showed an improved MST of 0836hrs and AST of 0902hrs, 10 minutes earlier than those not designated "Golden". Significance: Implementation of the "Golden Patient" produced a significant improvement in trauma list starts overall. Specifically, "Golden Patients" help to improve efficiency in sending and anaesthetic start times, by up to 19 minutes on average.

Abstract no.: 51587

PATIENT, CAREGIVER AND HEALTHCARE PROFESSIONAL ATTITUDES ABOUT LOWER-EXTREMITY AMPUTEE CARE IN TANZANIA: RESULTS FROM A QUALITATIVE STUDY

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Despite the rising rates of amputations secondary to trauma and associated disability in low-resource settings, little data exists characterizing this population in low- and middle-income countries (LMICs). This study investigates the attitudes of amputees, caregivers, surgeons, prosthetists and social-workers about amputee care in Tanzania. Five lower-extremity amputees concurrently enrolled in a prosthetic study, four caregivers, surgeons and prosthetists, and three social-workers in Dar-es-Salaam, Tanzania were interviewed about the effects of amputation, post-amputation care, prosthetics and research. The interviews were coded using thematic analysis. Loss of income (50%) and independence (45%) were the most common effects of amputation. Only 20% of amputees were referred to the prosthetic workshop and 40% received psychosocial counselling, though 63% of surgeons and social-workers reported referrals and 100% of social-workers reported counseling patients. The biggest barriers to prosthetic-provision were affordability (80%) and awareness of prosthetic options (45%). Lack of interdisciplinary teamwork was additionally reported by 88% of surgeons and prosthetists. Return to regular activities (90%) and work (85%) were the most common perceived benefits of a prosthetic. The most important benefit of research was encouragement of government assistance for amputees (45%). While 60% of patients and caregivers said that prosthetics research has no pitfalls, 36% of healthcare professionals cited lack of post-trial prosthetic-availability and real changes to practice. Most interviewees believed patients are responsible for repair/replacement of their study-funded prosthetic (60%). These results support the need for education and reconciliation of expectations regarding amputation, post-amputation care, and the role of prosthetics and related research in LMICs.

Abstract no.: 51588

ANTERIOR SUBFASCIAL TRANSPOSITION OF THE ULNAR NERVE FOR CUBITAL TUNNEL SYNDROME

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The surgical management of the cubital tunnel syndrome has no strict rules to follow. Surgical treatments are various, but none of them has been shown to be superior to the others. This retrospective study presents the clinical results in 24 patients who underwent an anterior subfascial transposition of the ulnar nerve, between 2008 and 2013, with a minimum 4-year follow-up. Twenty four patients were assessed with an average follow-up of 58.6 months. McGowan grading system as modified by Goldberg was used to analyse clinical results, preoperatively and at follow-up. The DASH score was used to assess physical function. The average preoperative evolution of symptoms was 18.3 months, and mean period to resolution was 4.5 months. The grade in McGowan grading system as modified by Goldberg significantly improved at follow-up. Only two patients kept paresthesia. The satisfaction rate was 98%, and all the patients except one returned back to their occupation. There was neither infection nor complex regional pain syndrome. The anterior subfascial transposition leads to very good clinical results, satisfaction and physical function. It is an effective surgical method, without complication in our study, which gives long-term results.

Abstract no.: 51593

INCIDENCE AND MANAGEMENT OF RAMP LESIONS THROUGH STANDARD ANTERIOR PORTALS

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Background: meniscal lesions are found in association with ACL injuries in up to 47% of the cases. Lateral meniscal injuries are more common in the acute setting, while in chronic ACL deficient knees, medial meniscal lesions prevail. Despite the fact that most medial meniscal tears are visible on routine knee arthroscopy, many other lesions remain occult and are evident only on posteromedial viewing. From its name, RAMP lesions occur in the RAMP area; the menisco-tibial attachment of the posterior horn of the medial meniscus. Aim of this work: to identify the incidence of RAMP lesions in ACL deficient knees and the correlation with duration. To detect sex and age differences. To correlate the arthroscopic finding with MRI of the patients. Patients and methods: Between September 2016 and September 2017, 100 patients with ACL deficient knees undergoing arthroscopic ACL reconstruction were examined during routine DKA for presence of RAMP lesions prior to ACL reconstruction. Anatomic single bundle (ASB) ACL reconstruction was performed for all patients. Posteromedial examination for RAMP lesions was performed through the intercondylar notch through standard anterior portals. Lesions were repaired using all-inside sutures Results: Out of 100 patients, 26 had a RAMP lesion. Looking back at the MRI, in 8 out of the 26 patients with RAMP lesions; an abnormal signal could be seen suggestive of the lesion. There was no correlation between incidence of RAMP lesions and time from trauma to surgery.

Abstract no.: 51596

INTEROBSERVER ERROR IN THE COMMONLY USED CLASSIFICATION SYSTEMS FOR INTERPROSTHETIC FRACTURES

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Introduction: An interprosthetic fracture occurs between a hip and knee arthroplasty. There is currently no universally agreed classification. The aim of this study was to determine the inter-observer and intra-observer reliability of the most commonly used interprosthetic fracture classifications. **Methods:** 19 interprosthetic fractures were classified by 3 reviewers for inter and intra-observer reliability. The most commonly used interprosthetic fracture classifications were the Soenen classification, Platzer classification and Pires classification. Cohens kappa coefficient was calculated. **Results:** A moderate inter-observer reliability was found for all the classification systems. The Platzer classification had a Kappa value of 0.486, the Pires classification 0.459 and Soenen classification 0.422. The intraobserver error was 0.767 for the Platzer classification (substantial agreement), 0.636 for the Pires classification (substantial agreement), and 0.318 for the Soenen classification (fair agreement). **Conclusions:** This study has demonstrated moderate inter-observer reliability and substantial intra-observer reliability for both the Platzer and Pires classifications. This paper would recommend the use of either classification for interprosthetic fractures.

Abstract no.: 51598

A META-ANALYTICAL METHOD COMPARING THE SO-CALLED 'RULE OF THIRDS' WITH CURRENT LITERATURE REPORTING INTERVENTION CHOICES FOR ANTERIOR CRUCIATE LIGAMENT RUPTURE

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Introduction: Noyes et al described the 'rule of thirds' for the management of ACL rupture over three decades ago. Recent literature remains variable with limited and conflicting evidence. Our work aimed to determine whether the traditional categories resonate with current long-term results from comparative studies. Methods: MEDLINE, Embase, CINAHL and the Cochrane Register were used to conduct a systematic extraction of studies. Meta-narrative analysis of individual participants characteristics (IPCs) and types of interventions were conducted. Results: Seven studies reporting 584 patients with at least one principal outcome measure at minimum five years follow-up were selected from 119 original articles. 110 (19%) received initial ACL reconstruction within three months from injury, 207 (35%) received initial physiotherapy followed by ACL reconstruction, and 267 (46%) received non-operative treatment. Reasons for switch from rehabilitation to surgery, were: subjective patients choice 40% (n=82), desire to avoid modification of activity 26% (n=54), presence of meniscal tear 23% (n=48), participation in professional sports 7% (n=14), and persistent instability 4% (n=9). Further IPCs analysis demonstrated higher functional demand, higher return to sports and more associated meniscal injuries with delayed reconstruction. Conclusion: In contrast with the previous concept, isolated ACL rupture patients can be divided into modified three-polar types: (I) initial reconstruction, (II) initial rehabilitation with delayed reconstruction, and (III) rehabilitation treatment alone. Selected patients who aim for a pre-injury level of activity must have periodic examination with the option of delayed ACL reconstruction. Further research is however needed in order to prospectively delineate this particular group.

Abstract no.: 51600

IMPROVING THE SYSTEM OF CURRENT HANDOVER PRACTICE IN A TRAUMA AND ORTHOPAEDIC DEPARTMENT IN A DISTRICT GENERAL HOSPITAL

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Introduction: The introduction of shift based working patterns within the National Health Service has put a greater emphasis on clear and effective handover between colleagues. This helps to reduce error and improve continuity of care for patients. **Method:** Data gathered over seven-day period. A note was made of number of handover tasks for the evening and night team. Subsequently, the on call doctor was asked to provide a report of the number of verbal handovers received. National guidelines were reviewed for comparison. **Results:** Current handover practice on a weekday involves handover tasks written on a whiteboard in the afternoon, and a formal handover from evening to night staff at 2000 hours. Weekend daytime tasks are documented on a seminar room whiteboard only. Over a seven-day period, 19 tasks were recorded, with 3 of the 19 tasks including a verbal handover. **Discussion:** There are no formal guidelines on handover practice. Handover practice is dependent on local need. It has been acknowledged that ad hoc handover risks missing important aspects of care. Subsequently, a formal afternoon handover time was introduced at 1600 hours. A handover task diary and formal afternoon verbal handover was introduced.

Abstract no.: 51601

KNOWLEDGE OF LEG FASCIOTOMY INCISIONS AMONG TRAUMA AND ORTHOPAEDIC TRAINEES: A CALL FOR BETTER TRAINING

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Introduction: Surgical decompression remains the only effective treatment for leg compartment syndrome. A previous audit demonstrated that 50% of trainees in Plastics surgery and 70% in Orthopaedic surgery were not familiar with techniques for leg fasciotomy. Despite a clear set of standards trainees may not be aware of the most optimal placement of leg fasciotomy incisions. **Methods:** Questionnaires were distributed to orthopaedic specialist trainees during regional teaching. They were asked about their experience of fasciotomies and to illustrate surgical approaches. Using diagrams trainees were asked to demonstrate: number of incisions, placement of incisions, vertical extent, and planes of dissection. Results were compared with the mutual UK guidelines published by BAPRAS and BOA. **Results:** A total of 42 trauma and orthopaedic surgical trainees covering all grades completed the questionnaires. Despite all trainees recognizing the need for two incisions, only 38% received formal training with an average of one case done per trainee (range: 0 to 5). 74% of trainees correctly demarcated the site of incisions. Nevertheless, over half of trainees 57% failed to adequately identify the site of perforators in the leg. In addition, the overwhelming majority 83% failed to adequately outline the planes of subcutaneous and fascial dissection. **Conclusion:** Due to the reduction of training hours, special attention needs to be granted to areas of limited exposure. There are no substitutes for hands-on experience. Practical training adjuncts such as cadaveric workshops are a must.

Abstract no.: 51603

EFFECT OF CEMENT-AUGMENTED OSTEOSYNTHESIS IN THE TREATMENT OF PROXIMAL HUMERAL AND FEMORAL FRACTURES: DOES THIS TECHNIQUE REDUCE COMPLICATION RATES IN OSTEOPOROTIC BONES?

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Introduction: The aim of the study was to observe outcomes after cement-augmented osteosynthesis compared to non-augmented care of proximal humeral and femoral fractures. Our hypothesis was that cement-augmentation in poor bone quality leads to a lower complication rate through the improved bone-implant interface. **Methods:** Only patients over 60 years and the same material design were involved. Patients with complex humeral head fractures (n=269) and proximal femoral fractures (n = 288) comprised in the study. In 45 humerus cases (16.7%, 45/269) screws were cemented. In 118 femur cases (41%, 118/288) the head-neck implant was augmented. **Results:** In humeral augmentations (group I) one case (n = 1, 5%, 1/20) resulted in an intraoperative axillary cement leakage. One (n = 1, 5%, 1/20) avascular humeral head necrosis (AVN) was objectified. In humeral non-augmentations (group II) eleven cases (n = 11, 55%, 11/20) resulted in an at least partial AVN. Ten cases (n = 10, 50%, 10/20) of secondary screw perforations were objectified. In femoral augmentations (group III) four cases (n = 4, 4%, 4/118) resulted in revision surgery, only implant failures and nonunion were observed. In femoral non-augmentations (group IV) ten cases (five cutouts) (n = 10, 6%, 10/170) guided to revision surgery. **Conclusion:** Cement-augmentation has proven to be a safe method in elderly patients in order to increase the primary stability of the osteosynthesis. Since the usual complications could be reduced to a minimum, primary stability may play a bigger role than previously thought - especially in humerus fractures.

Abstract no.: 51605

EX VIVO MORSELISATION INCREASES CHONDRAL MATRIX PRODUCTION OF OSTEOCARTILAGENOUS AUTOGRAFTS

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Purpose: Articular cartilage paste grafting, utilizes osteocartilagenous paste of autologous articular cartilage, bone marrow and progenitor cells in combination with a morselized defect bed. This paste is hypothesized to augment progenitor/stem cell supply from vascularized subchondral marrow access, and may present the cellular signals and conductive matrix to produce appropriate repair tissue. **Materials & Methods:** This IRB approved study characterizes osteochondral paste graft and control plugs harvested from the intercondylar notch from 20 patients using a 6-mm trephine. Cell viability/proliferation, collagen type I/II, SOX-9, aggrecan gene expression via RT-PCR were analyzed at 24 & 48 hours. Histology of culture samples evaluated matrix production and cell morphology. **Results:** Cell proliferation was significantly enhanced in paste graft specimens which displayed ~34% and ~80% greater proliferation compared to plugs at 24 & 48 hours post processing respectively. qRT-PCR analysis yielded an increased fold change of aggrecan, Sox9, Collagen type I and type II at 24 & 48 hours. Histological examination displayed cell division occurring throughout the paste samples, with deep accumulation of aggrecan content around multiple chondrocytes localized in lacunae. **Conclusion:** In culture and compared to intact cartilage cores, paste graft preparation resulted in increased mobility of chondrocytes by virtue of matrix disruption without loss of cell viability. The impaction procedure forming the paste stimulated chondrocyte proliferation, division and resulted in a cellular response to re-establish native ECM. This cell sequencing within ECM supports a regenerative process of cartilage tissue formation contradicting long held beliefs that impaction trauma leads to immediate cell death.

Abstract no.: 51607

FUNCTIONAL AND RADIOLOGICAL DIFFERENCE IN OUTCOME BETWEEN THE USE OF AN INTRAMEDULLARY VERSUS EXTRAMEDULLARY TIBIAL ALIGNMENT GUIDE FOR TOTAL KNEE REPLACEMENT

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Introduction: Implant survival in Total Knee Replacement (TKR) is influenced by component alignment to achieve neutral mechanical axis. The aim of this study was to evaluate the difference in functional and radiological outcome of TKR between Intramedullary (IM) versus Extramedullary (EM) Tibia alignment guide. Method: Retrospective analysis of the data for 384 patients (400 knees) undergoing TKR (192 matched patients each using IM and EM technique) was performed from January 2010 to December 2011. The functional assessment was done using Oxford Knee Score (OKS) and radiological parameters were recorded at final follow up. Tibial component alignment was measured in coronal and sagittal plane. Secondary outcomes like tourniquet time, blood loss and post-operative complications were compared. Result: Average coronal and sagittal alignment of tibial component in IM group was 89.16 and 88 degree and in EM group, 88.1 and 88.5 degree. The adjusted mean difference in the change of Pre-operative and Post-operative OKS in IM group compared to EM group was 0.5 (p=0.52). There was consistent trend for decreasing preoperative and postoperative scores with increasing BMI, but trend was for change in score to improve. There was no statistically significant difference in complications between two groups. Subgroup analysis of patients with BMI >35, showed tibial component alignment in IM group 90.5 degree and in EM group 89.4 degree. Conclusion: Intramedullary alignment technique gives more consistent component alignment and reduces tourniquet time especially in patient with high BMI. This may not correlate to difference in functional outcome in long term.

Abstract no.: 51609

**POSTEROMEDIAL APPROACH: A SAFE AND VERSATILE APPROACH
IN MANAGEMENT OF COMPLEX TIBIAL PLATEAU INJURIES**

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Background: Increasing number of complex injuries and their low functional outcomes when treatment is based on the popular "Shatzker classification"; highlighted the need for better description and pre-operative planning. In the light of the above, the columnar theories described by Chang et al and Luo et al appreciate posterior fragments improving fracture management and outcomes. With the new perspective, the use of posterior approaches became more popular when treating such challenging injuries. Patients and methods: a prospective case series was conducted on 25 patients suffering from tibial plateau fractures with posterior elements. All patients were operated upon using the PM approach in the prone position. In 2 patients it was performed in the figure-of-four position and in two cases, we added an anterolateral approach in the supine position to facilitate management of associated lateral column injuries. The posteromedial fragment is the key fragment and its reduction and fixation was undertaken first. Patients were graded using the Rasmussen clinical and radiological score at final follow-up. Results: Rasmussen clinical score, 14 (56%) patients scored excellent, 11 (44%) were good. According to the Rasmussen radiological score, mean score was 15.96, ranging from 12-18. Eleven (44%) were excellent and 14 (56%) were good. Conclusion: Articular fractures warrant anatomic reduction and internal fixation. The choice of the approach is dictated by the fracture pattern and fragments. Posteromedial approach is a safe versatile approach useful in many tibial plateau fractures involving posterior columns, yielding excellent or good clinical and radiological results in all of the patients.

Abstract no.: 51610

IS THERE A RELATIONSHIP BETWEEN BODY MASS INDEX AND DEGREE OF ANGULAR DEFORMITY IN PATIENTS FOR PRIMARY TOTAL KNEE REPLACEMENT?

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Majority of patients presenting for total knee replacement (TKR) in our environment have varying degrees of angular knee deformities. We sought to see if the body mass index (BMI) affected the extent of the deformity, or the deformity was worsened by the fact that most pathology had been ongoing for a long time. A retrospective review of the patients that underwent TKR in the last nine years was done. The major variables studied were the angular deformities present and degree of deformity, the height and weight which were used to calculate the BMI, the duration of the pathology and the patients' biodata. The patients who had no angular deformity were excluded as well as those that had incomplete records on the variables studied. A total of 86 patients were recruited, 41 patients had varus knee deformities while 45 patients had valgus knee deformities. The mean varus deformity was 16.5 degrees while the mean valgus deformity was 23.7 degrees. The BMI showed low negative correlation with the degree of angular knee deformity (correlation coefficient 0.080, p value 0.601). There was a significant moderate correlation between the duration of pathology and increasing valgus angle ($\rho=0.188$, $p=0.4555$). We therefore conclude that the BMI had no significant effect on the severity of angular knee deformity and the duration of the pathology had a positive correlation with degree of varus deformity.

Abstract no.: 51612

MID-TERM RESULTS OF FINE KNEE (CR) 404 KNEE ROM

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Introduction: Obtaining good stability and range of motion is the most important aspect for restoring excellent function of the knee joint after total knee arthroplasty (TKA). Objective: We report on the knee joint Range of Motion (ROM) and the JOA Score for the 404 knees which performed surgery using our surface replacement surgery method and FINE knee (CR). Additionally, we analyzed the poorly ROM knee of 100 degrees or less before the operation and the regular knee after the operation. Subjects: FINE knee (CR) who underwent operation at our hospital for about three years from January 2012 to December 2015, excluding the Valgus knee and the Revision total knee arthroplasty. 404 knees. OA: 401 knees, RA:3 knees. The average age was 73.6 years old. The cases with less than 100 degrees before the operation were 20 knees, 5%. Results: Range of motion and the JOA score before and after surgery. The average pre-operative range of motion of the 404 knee is -5.1 degrees to 132.2 degrees. The mean range of motion after surgery was improved, from -1.3 degrees to 135.4 degrees (± 12.9). The knee flexion angle was measured by holding the knee. The JOA score improved from 64.1 points to 78.2 points at 4 weeks post-operatively. ROM knee of 100 degrees or less before the operation group average maximum flexion angle improved to 122.0 degrees (± 9.5). Conclusion: We reported the FINE knee (CR) ROM of 404 knees. The mean maximum flexion angle after operation was 135.4 degrees.

Abstract no.: 51613

THE EFFECT OF OBESITY ON SYNOVIAL VASCULARITY AND INFLAMMATION: SYNOVIAL IMMUNOHISTOCHEMISTRY COMPARISON BETWEEN YOUNG LEAN AND YOUNG OBESE PEOPLE WITH ADVANCED PRIMARY KNEE OSTEOARTHRITIS

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Introduction: OA is a complex disorder with multiple risk factors including obesity. The aim of this laboratory research is to determine the relationship between BMI and synovial vascularity and inflammation in young people with advanced knee OA. Methods: A total of 11 patients (matched for age, gender, advanced stage of OA requiring total knee arthroplasty, Kellgren-Lawrence score, comorbidities, ASA grade, medications and functional outcome score) were recruited into two groups based on age (young <60) and BMI (lean <30, obese >35). Group-1: young-obese (N=6) with age and BMI mean (SD) 53.3 (2.33) and 38.53 (1.16) respectively. Group-2: young-lean (N=5) with age and BMI 55.60(4.5) and 27.01(1.59) respectively. Synovial tissues obtained during surgery were examined using H&E staining and Immunohistochemistry (IHC) on 5µm sections. The monoclonal antibodies included vWF, CD34, CD68, CD3, CD20 and vimentin (all Dako Ltd.). Visualization employed DAB. Quantitative assessment of each marker used image J software. Additional manual counts, vessel diameter and distance to the synovial surface, were undertaken on vessels in the synovial and fat sectors. A synovitis score was determined using the H&E stained sections. Results: overall vascularity did not show any significant differences ($p=0.468$); and inflammatory markers showed a trend of increasing with increase BMI but no significant difference. The vascular density was significantly higher in the fatty sections with big fat cells ($p= 0.028$). Inflammatory markers showed positive correlation with BMI. Conclusion: The lean and obese young people showed almost similar inflammatory and vascularity response with an increasing trend towards obese people.

Abstract no.: 51614

OUTCOMES AFTER HIP FRACTURE IN THE NEW MILLENNIUM

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We analysed a single centre, prospectively collected hip fracture database of 2345 consecutive patients admitted with a proximal femur fracture, from 2010 to 2016. All patients older than 15 were included. 10 were lost to follow up. At one year, outcomes were recorded using our previously published assessment system across categories 3 functional outcome categories, scored from 1 (best) to 8 (worst) for pain and social dependence and 1 (best) to 10 (worst) for mobility. Fisher exact test was used for two group binary outcome analysis and unpaired t-test and ANOVA for continuous data with statistical significance at $p < 0.05$. The mean (range) age was 81 (15-105) years. 30.7% were male. 822 patients had a hemiarthroplasty, 52 a total hip replacement, 592 a plate fixation of extracapsular fracture, 433 an intramedullary nailing of extracapsular fracture, 507 internal fixation of intracapsular fracture with multiple screws and 29 were treated conservatively. At one year overall mortality was 26.5%, being higher in older patients, males and those with lower independence ($p < 0.001$). The mean (\pm s.d.) pain score was 1.7 (\pm 1.1) with 79.1% will have no or minimal pain. Mean increase in mobility and dependence scores were 1.4 (\pm 2.0) and 0.7 (\pm 1.6), respectively with the trend increasing with age ($p < 0.001$). Of those admitted from home 85.2% had returned back, 9.4% were in residential care, 9.0% in care home and 1.9% in hospital. Present day outcomes are considerably superior to many earlier reports. Improvements may be attributable to more contemporary implants and rehabilitative care.

Abstract no.: 51616

LONG-TERM SURVIVORSHIP ANALYSIS OF AN UNCEMENTED MOBILE BEARING TOTAL ARTICULAR CONDYLAR KNEE PROSTHESIS

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Background: The cementless fixation with mobile bearing design in total knee arthroplasty was introduced in 1980s. The long term follow up studies include experience of mainly the original designer group of LCS knee implants. Aims and Objectives: To prospectively evaluate long term results for a series of patients treated by a single surgeon with cementless total condylar articulating meniscal bearing knee prosthesis. Methods and Results: From 1987 to 2002, 171 knees in 139 patients were followed for an average of 12.1 years (5-19). There were 73 men and 66 women at an average age of 59 years (21-91). Main diagnosis included osteoarthritis (68 %) and rheumatoid arthritis (28.7 %). The average hospital for special surgery knee score preoperatively was 45.32 (19-82, SD 13.24) which improved post-operatively to 83.87 (45-98, SD 10.17). Range of motion increased from averaged 85° (65-130) preoperatively and to 103° (70-130) post-operatively. There were 16 revisions for failure. The Kaplan-Meier survival taking revision for any reason was 80% (95% CI, 84% to 95%) at 25 years. Conclusion: The study reports outcome which favorably compares to the other studies and reinforces the concepts of mobile bearing design and cementless fixation for young and active group of patients.

Abstract no.: 51619

DECISION-AID TOOL TO OPTIMISE REFERRAL PROCESS FOR KNEE ARTHROPLASTY CONSULTATION BASED ON KINEMATICS AND GENDER

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Introduction: Kinematic data has been shown to be a discriminating input in objective classification algorithms as diagnostic aids for knee osteoarthritis (OA). The purpose of this study is to design classification algorithms capable of discriminating knee patients OA deemed appropriate, or not, for surgeon consult for total knee arthroplasty using 3D knee kinematics. **Methods:** After IRB approval, one hundred fifty three (153) knee patient OA (61 male, 92 females) referred for arthroplasty consultation were enrolled after being seen by an orthopedic surgeon and allocated to surgical candidate (SC, n= 80) or non-surgical candidate (N-SC, n= 73) groups. All participants underwent an in-clinic treadmill 3D knee kinematics analysis (KneeKGTM). Previous studies reported gender differences in knee OA patient's function, therefore, two independent classifiers based on gender and kinematic parameters were developed. Effectiveness of the classifiers was evaluated by the area under the receiver operating characteristic curve (AUC), sensitivity, and specificity. **Results:** Classifier effectiveness discriminating SC and N-SC in males reached an AUC, sensitivity, and specificity of 0.84, 82.7% and 84.3%, respectively. Values for the classifier developed for females were 0.74, 74.5% and 73.1%, respectively. Although different for both models, only two kinematics discriminant features were needed to build decision trees. **Discussion:** A decision-aid classification algorithm based on knee kinematics and gender could help appropriately prioritize patients for orthopaedic surgeon referral. Including clinical data in a future iteration of the decision tree would strengthen algorithms and in turn, serve as a screening tool to optimize referral process for arthroplasty consultation.

Abstract no.: 51620

COST-EFFECTIVENESS OF PATIENT-SPECIFIC SINGLE-USE CUTTING GUIDES WITH DISPOSABLE INSTRUMENTATION IN PRIMARY TOTAL KNEE ARTHROPLASTY

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Background: CT-based 3D templating and patient-specific cutting guides are an alternative to conventional cutting guides for Total Knee Arthroplasty (TKA). This technique is now available with single-use instruments. The objective of this study was to evaluate the economic and/or time advantage of this single-use instrumentation compared to standard metallic instruments. Methods: This is a comparative, non-randomized study, comparing two groups (FIRST postero-stabilized prosthesis was used for all TKAs). Group A consisted of 51 TKAs performed with patient-specific cutting guides and metallic conventional instrumentation. Group B consisted of 49 TKAs performed with patient-specific cutting guides and single-use instrumentation. Surgery durations, number of instrumentation trays and sterilization costs were compared between the two groups. The two groups had comparable demographics (age, sex ratio, BMI, lower limb deviation). Results: There was no significant difference for surgery durations. The mean number of instrumentation trays was 8.0 ± 0.8 for the group A and 5.1 ± 0.9 for the group B ($p < 0.001$). At a mean sterilisation cost of 47.5CHF per tray, there was a mean cost reduction of 137CHF per intervention in group B ($p < 0.001$). The difference in clinical results between both groups was not compared, as it was not the aim of this study. Conclusion: Compared to standard metallic instrumentation, the use of single-use instruments for total knee arthroplasty reduces the number of instrumentation trays by 36%, and allows savings of 36% in sterilization costs. If the fabrication costs of the single use instrumentations are sustained by the company, the total cost is significantly diminished.

Abstract no.: 51621

SURVEY OF UK CONSULTANT HIP SURGEONS' OPINIONS ON SURGEON-SPECIFIC DATA PUBLICATION IN ORTHOPAEDIC SURGERY

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Introduction: The publication of orthopaedic surgeon specific data (SSD) in the UK is presented with mortality as a key indicator. This data has potentially significant implications on service provision, innovation and training. We developed a questionnaire with the aim of exploring the opinions on the current format of data publications and related concerns. **Methods:** Our questionnaire was adapted from one used in a survey of UK cardiothoracic surgeons. The questionnaire explored topics that had been defined previously in cardiothoracic literature. 395 members of the British Hip Society were invited to complete a modified anonymised questionnaire online utilising questions with Likert Scale answers and free comments. **Results:** The return rate was 28% (110/395). Responses demonstrated that 55% of surgeons were against publication of SSD but 70% support Hospital specific data. 89% and 77% believe that published data will be misinterpreted by the public and colleagues respectively. 67% believe that publication of this data will have adverse impact on training. Finally, 63% responded that more surgeons will be risk averse. **Conclusion:** From this study we conclude that the current reporting of data has made many consultant hip surgeons risk-averse. There is a feeling that this data is not adequate in its current form and will be subject to manipulation with long-term effects on patient care, training, and morale. Mortality is rare but there are other measures that would be more informative such as revision and infection rates.

Abstract no.: 51623

CHRONIC POSTERIOR SHOULDER DISLOCATION TREATED BY LESSER TUBEROSITY TRANSFER AT 11 MONTHS POST-INJURY

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We are reporting a young patient with this injury treated at eleven months post injury. A 38 year old right hand dominant gentleman presented to Emergency department with third episode of seizure and left shoulder pain. He had AP & 'Y' (lateral scapular view) view radiographs of his left shoulder which was reported normal. He was assessed and was discharged with exercises. After 3 months of physiotherapy, where he was treated for frozen shoulder he was not improving & so was referred to our shoulder clinic. On examination, Active left shoulder movements were elevation 140 degrees, abduction 90 degrees, internal rotation thumb to L5, & no external rotation possible. INVESTIGATIONS: He had a CT scan with 3-D reconstruction & MRI of his left shoulder. CT confirmed a posterior shoulder dislocation with a reverse Hill-Sachs deformity measuring 1.7 by 2.4 cm and is 7 mm in depth. This roughly amounted to the defect between 25% - 50%. the rotator cuff is intact and no other significant abnormality is noted. OPERATION: He underwent open reduction left shoulder and lesser tuberosity transfer (modified McLaughlin procedure) more than 11 months after his injury. The reverse Hill-sachs lesion was debrided and lesser tuberosity transferred into the defect and fixed with a small titanium plate and two screws (from the Arthrex Laterjet kit). Supplementary fixation was done with with two Bioraptor anchors. At one year follow up he had excellent clinical result with no pain and good range of movements. X-rays showed that the graft is incorporating very well of the lesser tuberosity.

Abstract no.: 51625

OUTCOMES OF DYNAMIC HIP SCREW VERSUS MULTIPLE CANCELLOUS SCREWS FOR INTRACAPSULAR FRACTURE NECK OF FEMUR IN YOUNG PATIENTS: A COMPARATIVE STUDY

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Introduction: Osteosynthesis of NOF fractures have a reported rate of complications between 40-50%. MCS have been in use for several decades. The DHS is well accepted in extracapsular fracture management. DHS has also been suggested as an alternative to MCS, however direct comparative evidence is lacking. This study aims to compare the outcomes of two different modes of Osteosynthesis in young NOFs. **Methods:** A comparative study of matched cohort was undertaken. All patients with intracapsular fracture NOF aged <60 from January 2009 - December 2012 managed by Osteosynthesis at our institution were considered. A consecutive series of 33 patients were selected and matched for age, sex, anatomical fracture pattern, Garden's index, mechanism of injury and follow-up ($p>0.05$). The matched MCS group had 17 patients and DHS group 16. **Results-** Mean age was 52(range 31-59). Mean follow up was 2.2 years(range 0.75 - 8). Reoperation rate was 47% (8/17) in MCS group (all reoperations in Garden-III/IV fractures), whereas 0% in DHS group, $p=0.022$ (significant). AVN was noted in 52% (9/17) in MCS group whereas 25% (4/16) in DHS. Non-union rates were 23% (4/17) in MCS whereas 0% in DHS. Head collapse was noted in 47% (8/17) in MCS and 12.5% (2/16) in DHS. **Conclusion:** In our experience, DHS is safer option with lower re-operation rate for intracapsular NOF fractures in young patients in comparison to MCS. We believe that improved mechanical stability lowers the risk of complications in spite of DHS being a larger dimension screw. A prospective comparative study is recommended.

Abstract no.: 51627

DYNAMIC HIP SCREW IMPLANT FAILURE AND ASSESMENT OF BIOLOGICAL RISK FACTORS FOR IMPLANT FAILURE IN A COHORT OF SRI LANKAN PATIENTS

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Introduction: Fracture neck of femur (FNF) is a global orthopaedic problem with the ageing population. Extra- capsular FNF is one of the most common presentation in hip fractures in Sri Lanka. The dynamic hip screw (DHS) is used to achieve rigid fixation. DHS may complicate with screw cut-out, loss of reduction, non-union, malunion, marked shortening of the affected limb and extensive collapse. Objective: to identify the biological risk factors associated with DHS implant failure. Methodology: Descriptive case control cohort study with a retrospective collection of patient's data, prospective analysis of outcome of surgery and morbidity. Study included with previously mobile patients with fracture, which comes under AO classification (31 A- 31A 3). Statistical analysis of the data carried out using SPSS software. Results: The results suggests that the relative risk of biological factors for DHS implant failure differ from each variable. Relative risks for implant failure for low s. albumin 2.37, low s.protein 1.32, high blood urea 2.95, high s.creatinine 1.58, low haemoglobin 2.99 and for s. corrected calcium 0.39. Conclusion: Out of the all variables low levels of BMD, low haemoglobin, high blood urea, high S. creatinine, low S. albumin, and, low S.protein are having relatively higher risk for implant failure. If we improve the patient's acute management with related to haemoglobin status, serum protein levels and optimize the renal functions, we can minimize the DHS implant failure and improve the outcome.

Abstract no.: 51628

EARLY INTRA-PROSTHETIC HIP DISLOCATION IN DUAL MOBILITY IMPLANT: AN UNUSUAL COMPLICATION

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Introduction: Dual mobility implants are useful tools for preventing hip dislocation in primary and revision hip prosthesis. These devices have numerous advantages, but can also bring extra complications, namely intra-prosthetic dislocation (IPD). Literature show few publications about late dislocation due to wear retention of the cup; early dislocation however is much less common. We describe an IPD linked to a reduction manoeuvre and document this case exclusively with scannographic and intra-operative images. Methods: A 78-year-old woman presented a first dislocation 6 days after revision total hip arthroplasty with total dual mobility implants. Initial closed reduction was uneventful, but the hip felt unstable. The standard radiographies after reduction showed no anomaly. We therefore performed a CT-scanner of the pelvis showing an IPD of the dual mobility hip implant. Results: Decision was made for revision of the hip prosthesis, finding the liner in the great gluteal muscle, detached from its initial position between the neck and shell. We opted for reorientation of the acetabular implant with another dual mobility hip implant. Postoperative clinical and radiographic controls remained uneventful at 2-year postoperative. Conclusion: Dual mobility implants are good solutions to reduce the risk of hip prosthesis dislocation, but increase the potential number of complications due to an increase of interfaces. In case of dislocation of such an implant, we recommend to do closed reduction under general anaesthesia reducing the risk of intra-prosthetic dislocation. Dealing with an irreducible prosthesis dislocation with a dual mobility implant, we recommend to do a CT-scan to exclude IPD.

Abstract no.: 51629

ANKLE FRACTURE MANAGEMENT IN A UK DISTRICT GENERAL HOSPITAL

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Introduction: There is a reported incidence of 174 ankle fractures per 100 000 adults in the UK per year. With such a high prevalence of this injury, the British Orthopaedic Association created specific guidelines on the management of this injury (BOAST 12). Aim: To audit the management of our clinical practice against a national standard over a 2 month period (Oct-Dec 2017). Methods: A prospective audit was undertaken and 30 patients with newly diagnosed ankle fractures were assessed against the BOAST standards. Results: Mechanism of injury was documented in 100% of cases, NV status pre-reduction (90%) and comorbidities (97%). Skin integrity was only documented in 74% of cases; neurovascular (NV) status post-reduction (74%) and smoking (66.6%). The median duration of timing of surgery from date of injury was 5 days. Conclusion: This study has highlighted significant concerns regarding documentation of important considerations for operative management of ankle fractures; particularly post reduction NV status and smoking. This will be escalated to the emergency and trauma and orthopaedic departments in order to improve clinical practice with implementation of a dedicated ankle fracture proforma. This will then be re-audited in due course.

Abstract no.: 51630

THE CLINICAL RESEARCH OF PERCUTANEOUS PEDICLE FIXATION TO TREAT THORACOLUMBAR FRACTURES

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Objective: This topic screened 12 thoracolumbar fracture patients who were treated by percutaneous pedicle and compared with 15 treated by open reduction and internal fixation. Aspects 1. blood loss during surgery, operation time, speeding of hospitalization; 2. Postoperative imaging index: anterior vertebra height and Cobbs angle between pre and post operation; 3. Postoperative pain (VAS score) to evaluate the surgical method, providing a reference for a way to improve clinical treatment of thoracolumbar fracture surgery and exploring the issues related to the treatment of thoracolumbar fractures. **Method:** 27 thoracolumbar fracture patients with fresh closed fractures and no obvious neurological symptoms. Fracture categories: 20 simple wedge compression 20, 5 blowout and 2 chance. The percutaneous pedicle fixation group of 12 patients were treated with minimally invasive surgery with fixation of percutaneous pedicle, they include 9 simple wedge compression, 2 blowout and 1 chance; the open reduction and internal fixation group of 15 patient include 11 simple wedge compression, 3 blowout and 1 chance. **Results:** All subjects were followed up for an average of 12 months. No difference between the two groups of patients with operative time, however, blood loss, hospital stay and postoperative pain scores six months (VAS) percutaneous screw fixation group was significantly lower than ORIF group, but after comparing the two groups of patients radiographic index was no significant difference. **Conclusion:** Percutaneous pedicle fixation of thoracolumbar fracture small incision, less trauma, reducing the soft tissue damage and less bleeding, shorter hospital stay and a safe and effective surgical method.

Abstract no.: 51631

RETROSPECTIVE ANALYSIS OF GIANT CELL TUMOUR LOWER END OF RADIUS TREATED WITH EN BLOC EXCISION AND CENTRALISATION OF THE ULNA

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Distal end of radius is third most common site for GCT of long bones and 1% of these metastasize mostly to lungs. Commonly used reconstruction methods are vascularized and nonvascularized fibula, centralization of ulna, translocation of ulna and endoprosthetic replacement. We report the outcome of series of 20 Cases where we did en block excision of tumour with centralization of the ulna. The mean age of patients was 31.2 (rage 18-50) years. We had 13 of Campanacci grade III and 7 of grade II. Preoperative x ray and MRI of the involved forearm and wrist were done. We had 8 male and 12 female patients. Mean followup duration was 3.2 (range 2 to 13) years. In our opinion centralization of ulna is a good procedure, with advantages of retrained vascularity, and elimination of risk of donor site morbidity.

Abstract no.: 51633

LATERAL LUMBAR INTERBODY FUSION: A NOVEL TECHNIQUE FOR INDIRECT DECOMPRESSION OF NERVE ROOT IN COMPLEX REVISION DISCECTOMIES

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Introduction: Lumbar discectomy is one of most frequent operation in lumbar spine. Reoccurrence of the disc requiring revision within first year of operation is around 5 in every 100 discectomies. Dural tear with or without nerve root injury is another complication reported in literature up to 3% in primary surgery. Similar complications had been reported as high as 21% in patients undergoing revision surgery following reoccurrence of disc. Cause been perineural scar, adhesions and distorted anatomical tissue plane. LLIF Provides indirect decompression of the neural foramina. Avoids major visceral/vessel injuries, and/ or disruption posterior elements with lower infection rates, decrease operative times, faster rehab and decrease hospital stay. Radiological advantages include foraminal height (80.3%), foraminal width (7.4%), disc height (116.7%), segmental lordosis at L4-L5 (14.1%), and global lordosis (11.5%). **Methods:** We present a case series of 6 patients prospective collected data where we used XLIF as indirect decompression of neural foramina. Our patient selection was based on reoccurrence of disc within a year of lumbar discectomy that is not getting better with non operative management. Furthermore modic type end plate changes and facet joint hypertrophy on MRI with clinical complaints of intractable low back. Basically patients with degenerative motion segment with reoccurrence of protruded intervertebral disc. **Results:** Patient were followed up to 18 months and showed comparable ODI and Visual analogue score as of revision discectomy. Better over all quality of life improvement and No complications. Irrespective prospective RCTs are required with greater number of patients to produce a statistically significant results.

Abstract no.: 51636

PATELLAR HEIGHT IN GAP BALANCING VERSUS MEASURED RESECTION TECHNIQUE: A CT STUDY

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There are still a significant number of patients suffering from anterior knee pain after a total knee arthroplasty (TKA) which might be related to postoperative changes of patellar height. The changes of patellar height might occur immediately after the procedure due to implant positioning or develop during the postoperative time period. In literature authors found a significant correlation between patellar tendon shortening and loss of knee flexion. The purpose of this study was to compare patellar height in patients underwent to TKA using the gap balanced and measured resection technique respectively. Thirty patients were randomized in two group: Group A (15 patients, gap balanced group), and Group B (15 patients, measured technique group). The patellar height was measured preoperatively and postoperatively on CT scans on lateral plane, using the Insall–Salvati index (ISI). Follow-up included clinical evaluation using Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC). In group A the ISI changed from 0.89 to 0.88 ($P>0.05$) and in group B from 0.93 to 0.92 ($P>0.05$). The mean postoperative WOMAC score was 83.69 in Group A and 86.29 in Group B ($P>0.05$). Patients with patella infera reported to suffer from anterior knee pain and reduced range of movement. However the changes of patellar height did not exceed the defined thresholds to be classified as patella alta or baja using balanced gap or measured gap techniques.

Abstract no.: 51640

RETROSPECTIVE CONTRAST STUDY OF SURGICAL AND NON-SURGICAL OUTCOMES IN THE TREATMENT OF ADULT CERVICAL CORD INJURY WITHOUT FRACTURE AND DISLOCATION

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Methods: 26 cases are divided into 2 groups. A for surgical within 7 days and B non-surgical. Use of JOA score system to all cases: admission, discharge, three months, six months later to give a mark and range of mark, and then process the results of statistics using the two independent sample test. Use the neural classification standard of international spinal cord injury score at the time of admission and discharge, follow up to evaluate the function by using the Kruskal-Wallis and then analyze the results. Results: In all the medical records, there are 2 panplegia patients at the time of admitting to the hospital whose recovery of spinal cord function is poor, the rest of the patients had different degrees of recovery. ASIA classification: GroupA: pre-operation: A 1 case, B 3 cases, C 8 cases, D 1 case, E 0 case; post operation: A 0 case, B 1 case, C 2 cases, D 8 cases, E 2 cases. Group B pre-operation: A 1 case, B 2 cases, C 7 cases, D 3 cases, E 0 case; post operation: A 1 case, B 1 case, C 7 cases, D 4 cases, E 0 case. Conclusion: For patients with CSCIWORA, active surgery treatment can provide conditions for the recovery of the spinal cord function. The curative effect of non-surgical treatment is not obvious. Surgery can remove pressure and stabilize the cervical spine, and it is very favorable for spinal cord functional recovery in future.

Abstract no.: 51644

EXPERIENCES WITH TOTAL FEMUR REPLACEMENT FOR MALIGNANT BONE AND SOFT-TISSUE TUMOURS

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Introduction: Reasonable function can be restored after total femur replacement after massive resection of bone and soft-tissue sarcomas of the thigh. **Methods:** We retrospectively analyzed 24 patients [mean age 38 (range, 11-59) years] who underwent total femur replacement for the treatment of malignant bone [primary sarcoma (16), metastatic carcinoma (four)] and soft tissue (four) tumors of the lower extremities. Follow-up periods ranged from one to 11 years (mean=four years). Total femur replacement was applied following wide resection in majority (21 patients=87.5%); it was performed as a primary procedure in 16 and re-resection for recurrence (two) or inappropriate interventions (three) in five patients. Previous tumor prosthesis which was applied for a tumoral condition was replaced by a total femur in three patients (12.5%). Growing total femur was applied in two children. Three young children underwent acetabular replacement as well to prevent acetabular resorption and migration. Bipolar femoral head was used in remaining patients. **Results:** Oncological outcomes were died of disease=DOD in seven cases, no evidence of disease=NED in 12, and alive with disease=AWD in five. Except for one case, none of the patients required a revision for total femur endoprosthesis; 95.8% implant survival rate was achieved. The mean Musculoskeletal Tumor Society (MSTS) functional score was 60% (range, 50%-90%). The overall complication rate was 20.8% (five patients) and 12.5% required surgical intervention [two-stage revision for deep infection (one); closed reduction under general anesthesia for hip dislocation (one); soft tissue reconstruction with local muscle flap for wound problem (one)]. **Conclusion:** These results suggest that total femur replacement is useful as a means of reconstructing affected limbs in patients with malignant bone and soft tissue tumors.

Abstract no.: 51645

AN ALGORITHM FOR SOFT-TISSUE RECONSTRUCTION FOLLOWING STANDARD OR COMPLEX RESECTIONS PERFORMED IN INITIAL OR REVISION SURGERY OF PRIMARY OR RECURRENT BONE AND SOFT-TISSUE SARCOMAS

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Introduction: Soft tissue reconstruction frequently is required following primary or re-resections of bone and soft tissue sarcomas and revisions of previous reconstructions. **Methods:** Between 2003-2017, 192 (22%) of 872 patients in our bone and soft tissue sarcoma registry required a soft tissue reconstructive procedure for coverage, filling the dead space or function. The average age of the study group was 47 (8-84) years. Soft tissue reconstruction was required for standard resections in 81 (81/643; 12.6%) primary cases, complex resections in 76 (76/168; 45.2%) recurrent or inappropriately managed cases, and revisions in 35 (35/61; 57.3%) cases. An algorithm based on type of procedure (limb-salvage or amputation; primary resection/re-resection/revision), extent of resection (wide/radical), type of bony reconstruction (endoprosthetic/biological) and localization of tumor was used; the procedures included local pediculated (140; 73%) or free flaps (52; 27%) in both upper and lower extremities and trunk. The overall follow-up was 3 (1-14) years. **Results:** The patient survival was 72% at 5 years. The overall complication rate was 27% (52/192 patients) and 22 (11.5%) of them were purely related to soft tissue reconstruction, including failures. A total of 11 (4 pediculated, 7 free flaps; 5.7%) soft tissue reconstruction was failed postoperatively. All failed reconstructions required additional procedure(s) in the form of another soft tissue reconstruction [8 patients (72.7%); alternative pediculated or free flap] or amputation [3 patients (23.3%)]. Seven of the remaining 11 soft-tissue related complications required a re-operation preserving the flap. **Conclusion:** An algorithm can be helpful to clarify the options of soft tissue reconstruction for each individual sarcoma surgery.

Abstract no.: 51646

TUMOURS ARISING FROM THE MESODERMAL GERM LAYER ARE A RARE VARIETY AND THEY ARE OFTEN MISMANAGED IN THE UNTRAINED HANDS: AN EPIDEMIOLOGICAL SURVEY OF 200 PATIENTS PRESENTED TO SARCOMA SURGEON IN PAKISTAN

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One of the reasons for mismanagement is lack of knowledge, training and the absence of dedicated sarcoma units. This puts more burden on the sarcoma surgeon as patients are alive with metastatic disease for longer duration now. In the absence of a multidisciplinary board and approach, these patients are very frequently mishandled which compromises their outcome. We present an epidemiological survey of the first 200 patients presenting to a fellowship trained sarcoma surgeon in Pakistan, where sarcoma services provided are very scant and a la carte. Approximately 60% of our patients were male and the average age at presentation was 30 years. Sixty percent of our patients presented with bony lesions. Primary disease was present in 68 percent of patients and the commonest location of these tumours distal femur followed by proximal humerus and proximal tibia. The commonest primary bone tumour was osteosarcoma followed by Ewings and chondrosarcoma. Biopsy was already performed in approximately 40% of the patients before presentation and was an open biopsy in all the cases and approximately 50% of those were improperly performed. Limb salvage surgery was performed in approximately 1/3rd of the patients. Based on this data we can tentatively suggest that sarcoma services need to be developed in order to deliver effective services to the population. Along with training of the resident orthopaedic surgeons, public awareness campaigns need to be arranged to inform the masses of the red flag features.

Abstract no.: 51647

SURGICAL TREATMENT USING X-CORE FOR LUMBAR VERTEBRAL FRACTURE

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Introduction: X-Core is a novel cage for minimally invasive anterior vertebral fusion. Outcome of surgery using X-Core, complications and technical problems associated with X-Core are reported. Methods: Between 2015 and 2017, six patients [2 male and 4 female, mean age: 65 (27-82) years old, the average follow-up term: 270 days (85-527)] underwent anterior vertebral fusion using X-Core after posterior instrumentation for single level lumbar vertebral fracture. Types of fracture according to AO classification were A3.1: two cases, A3.3: three and B2.3: one. Results: Mean operation time (minutes) of anterior fusion was 222.7 (162-323), mean bleeding (g) of anterior fusion was 336.2 (14-878). The vertebral level of fracture and a range of posterior fusion were Case 1: L2 (2 above–1 below: 2A-1B), Case 2: L3 (1A-1B), Case 3: L4 (1A-1B), Case 4: L2 (3A-2B), Case 5: L1 (2A-2B), Case 6: L3 (1A-1B). Local lordosis angle (degrees) (preoperation/postoperation/last visit) and length (mm) between cranial and caudal vertebra [preoperation/postoperation/last visit] were Case 1: (-10/-10/-20), [37/37/30], Case 2: (4/10/8), [35/38/34], Case 3: (14/20/20), [30/34/34], Case 4: (2/10/5), [35/39/36], Case5: (-27/2/2), [26/33/33], Case 6: (-19/-6/-15), [31/41/35]. Subsidence of cage was observed in Case 1,2,4,6. Discussion: Although X-Core is expected to give strong stability after anterior fusion because of its wide endplate, subsidence following correction loss appeared in present study. It is suggested that local scoliosis and excessive extension of cage height are possible risk factors.

Abstract no.: 51648

THE STUDY OF OPERATIVE TIME IN ROBOTICS-ASSISTED UNICOMPARTMENTAL KNEE ARTHROPLASTY

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Integrating new technology into the operating room can be associated with increased operative time, which introduces inefficiency into the surgeon's practice and the operating room work flow. This study quantifies the intraoperative time required for the hand-held robotic technology (Navio, Smith and Nephew) for unicompartmental knee arthroplasty in the early stage of its introduction. Intraoperative surgical time assessment of 211 UKA procedures, (89 in the US, 3 surgeons, and 122 in the Asia Pacific, 3 surgeons) was performed. In order to standardize the method of time collection between various centers, the times studied here are covering the interval between tracking frames attachment and the final trialing stage. The average intraoperative time for all surgeries (n=211) across all surgeons was 28 minutes \pm 16minutes (range: 11min to 1 hour and 40mins). This includes both the learning curve cases as well as the steady state cases. In the US (n=89), the average intraoperative time for the three surgeons studied was 20 mins \pm 11 minutes (range: 11 mins to 59 mins). In the APAC regions (n=122) the average time with three surgeons was 34 minutes \pm 16 minutes (range: 16 mins to 1 hour and 40 mins). By minimizing the OR footprint with handheld smart instruments, combined with image-free planning and dynamic gap balancing, and the ability to complete intra-operative steps for unicompartmental knee replacement at an average time of less than 30 minutes, the NAVIO system aims to provide ergonomic and efficient robotics assisted solutions for orthopedic reconstruction.

Abstract no.: 51652

COMPLEX REGIONAL PAIN SYNDROME TREATED WITH ABOVE KNEE AMPUTATION AND OSSEOINTEGRATION

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In this case report, osseointegration was used as the main rehabilitation strategy which significantly improved her clinical outcomes. Here we report a 24-year-old woman with unremitting complex regional pain syndrome type I (CRPS-I) underwent a trans-femoral amputation, then reconstruction with osseointegration surgery. Radiographs revealed profound osteopenia of the involved limb, and the presence of the right patella was difficult to determine due to severe osteoporosis. Radiographs and CT scans also revealed good delineation of the proximal and distal shaft of the right femur with no definite bony abnormality or irregularity other than osteopenia. Bone scans demonstrated dramatically increased uptake and tracer activity in the right patella, consistent with the prior diagnosis of CRPS-1. In December 2013, the patient received a regional epidural several days preceding the surgery. This resulted in the CRPS-1 being well demarcated, accompanied by significant erythema and hyperaemia. The patient then underwent an above knee amputation one hand's breadth proximal to the visible level of demarcation, followed by first-stage osseointegration as previously described. Nine weeks later, the second-stage osseointegration surgery took place, which entailed the creation of a stoma and insertion of a transcutaneous adaptor for connecting an external prosthetic limb. This unique case demonstrated that amputation followed by osseointegration may become an effective treatment for some CRPS patients, improving their function, mobility, and quality of life. We believe this treatment strategy holds genuine potential as a definitive option for therapy-resistant pain in dysfunctional limbs resulting from CRPS.

Abstract no.: 51653

AMPUTATION DUE TO CONGENITAL FEMORAL DEFICIENCY TREATED WITH OSSEOINTEGRATION

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A 25-year-old female presented to the osseointegration clinic with a right knee disarticulation amputation due to congenital right tibia hemimelia and tibial deficiency related to CFD. The patient mobilised with suction socket prosthesis. Although independent in all activities of daily living, her poorly-fit prosthesis regularly inflicted pain, skin irritation and discomfort. Following rigorous assessment, the patient underwent osseointegration surgery in late 2012, where a small custom built intramedullary implant was inserted into the distal femur. This smaller implant was custom-designed for the patient's under-developed femur. In May 2014, the patient presented with inability for weight-bearing and severe pain. Significant periprosthetic lucency was evident, particularly at the proximal postero-medial and distal lateral borders. Nuclear bone scans revealed ongoing hypervascularity and periprosthetic activity. Eventually the implant loosened and was subsequently removed. Hypertrophy of the distal femoral shaft was evident, which enabled single-stage revision surgery with a standard-sized osseointegration implant. At follow-up, the patient was mobilising well with two crutches despite slight muscle pain. Furthermore, increased load-bearing on the congenitally deformed hip joint resulted in a total hip replacement. The most striking feature of this case was that prosthetic loosening induced a stress response in the surrounding femur. Radiographs revealed periosteal reactions and distal femoral shaft hypertrophy. This enabled revision surgery using a standard sized implant. The ability to induce bone hypertrophy in a controlled manner to facilitate the enlargement of congenitally under-developed bones can enable the fitting of larger, more stable and well-designed implants to produce improved outcomes.

Abstract no.: 51656

**EXPERIENCE IN A TERTIARY PELVIC FRACTURE REFFERAL UNIT:
WHAT WE GET AND HOW WE TREAT THEM**

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The purpose of the study was to find out about the efficient use of tertiary referral centre for pelvic fractures. As this is a major pelvic fracture unit and a level 1 trauma centre, we get a high volume of referrals from regional units, all of which come through A&E trauma call and all referrals are at consultant level. In a year we got 41 patients. Males: females 3:1. Average age in females was 54 and in males were 49. Acetabular fracture was recorded in 50% and only 10 % were treated conservatively, rest had an open reduction and internal fixation. 26% patients had pubic rami fractures which were all treated conservatively. 12% needed pelvic external fixation. 29% of patients had associated spinal injuries. 56% of the injuries the mode was road traffic accident, rest were fall or fall from height. 87% were admitted through trauma calls. No death was recorded in the ward. 75% of patients went home, rest were referred back to Referral Hospital. Thus in conclusion, our service is running efficiently as evidenced by no death, and majority of patients going home after treatment for their fractures. The major contributing factor may be a consultant led service, in which decision making is prompt. We recommend a further study with outcome measures in post operative pelvic fracture patients.

Abstract no.: 51659

SINGLE-STAGE OSSEOINTEGRATED RECONSTRUCTION AND REHABILITATION OF LOWER LIMB AMPUTEES

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Osseointegration has emerged recently as a novel approach for the reconstruction of amputated limbs and overcomes many socket-related problems by directly attaching a prosthetic implant to the skeletal residuum. The study evaluates the safety and efficacy of a single-stage osseointegration procedure performed in our centers, which dramatically reduces the time of recovery to approximately 3-6 weeks. The inclusion criteria are age over 18 years, unilateral trans-femoral amputation and experiencing socket-related problems or difficulties in using socket prostheses. Functional (Six Minute Walk Test, Timed Up and Go, and K-Levels) and quality of life (Questionnaire for persons with a Trans-Femoral Amputation, and Short Form Health Survey 36) outcome measures are recorded pre-operatively and at defined post-operative follow-up intervals up to 2 years. Post-operative adverse events (infection, revision surgery, fractures, and implant failures) are also recorded. The pre- and post-operative values are compared for each outcome measure, and the benefits and harms of the single-stage procedure will be compared to results obtained using a previously employed two-stage procedure. Significant improvements for all outcome measures were observed compared to pre-operative values which were very similar to the results obtained using the two-stage procedure. The occurrence levels of adverse events including the infection rate and revision rate were also similar to the single-stage procedure. These preliminary results suggest that single-stage osseointegration surgery for trans-tibial amputees can be considered safe and effective treatment for amputees experiencing socket-related discomfort.

Abstract no.: 51662

**OSSEOINTEGRATED IMPLANTS FOR LOWER LIMB AMPUTEES:
EVALUATION OF BONE MINERAL DENSITY**

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Amputee patients are known to have decreased BMD and an increased risk of osteoporosis in the affected proximal femur and hip region. The major cause of these issues in these patients is the absence adequate loading leading to bone resorption in accordance to Wolff's law. In this paper, we present a prospective study reporting changes in BMD among amputees who received osseointegrated implants to determine if the loading through the osseointegrated implant can overcome the bone resorption issues. This is a prospective study of 33 patients, consisting of 24 males and 9 females, aged 22-77 (mean = 51.0 ± 2.0) years with one and two-year follow-up. All patients received osseointegrated implants press-fitted into the amputated limb. BMD was assessed using DXA in the femoral neck (operative and contralateral) and lumbar spine (L2-L4) regions, and corresponding Z-scores were generated. DXA scans were taken preoperatively as well as one-year and two-years following osseointegration surgery. Mean BMD and Z-scores of spine, and operative and contralateral sides were generated for all patients. Dependent t-tests were used to test for significant differences ($P < 0.05$) preoperative, one-year, and two-years for mean changes in BMD and Z-Scores following surgery. These results suggest that osseointegrated implants are effective at encouraging bone growth and restoring BMD levels for amputees within a short period of time post-surgery. Osseointegrated implants therefore have the potential to address stress distribution issues associated with socket prostheses and restore the normal bone loading regime in lower limb amputees.

Abstract no.: 51665

A COMBINATION OF HYALURONIC ACID SCAFFOLDS AND MICROFRACTURE AS A SINGLE EVENT PROCEDURE IN THE TREATMENT OF KNEE CHONDRAL DEFECTS

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Introduction: Benzyl ester of hyaluronic acid works as a scaffold providing a three-dimensional structure that allows for the attachment and proliferation of mesenchymal stem cells (MSCs). The scaffold acts to contain the cells within the defect and protect the neocartiliginous tissue during early phases, and then is gradually resorbed by the body. To our knowledge there are no studies in the literature looking at outcomes of chondroplasty using this technique in an Asian population. Methodology: Single center longitudinal study done in 14 consecutive knees who underwent chondroplasty using hyalofast ® and microfracture for isolated chondral injuries. The minimal follow up was 24 months and pre-operative and post-operative chondral defect size, depth of the defect and location of the chondral defect were compared with corresponding IKDC values. Results: There was a statistically significant increase in the IKDC scores from 31.43(8-46.1) to 65.41(21.8-95.4) p-value 0.0002 from pre-operative to post-operative. There were 9 chondral defects on the medial femoral condyle with an average size of 15.7mm (20-10) and the lateral and trochlear chondral defects were 2 each with an average size on 10.5mm and 18mm. All the chondral defect gradings were ICRS 3-4. We had one patient who needing a re-scope at 4 months post-operative for arthrofibrosis. Conclusion: Chondroplasty using Hyalofast and microfracture is a safe and effective way of treating chondral defects in knees in the Asian population. Patients age, gender, race or BMI did not show any statistical significance in relation to IKDC scores.

Abstract no.: 51668

SEASONAL TEMPERATURE AFFECTS THE INCIDENCE OF DEVELOPMENTAL DYSPLASIA OF THE HIP

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Background: Developmental dysplasia of the hip (DDH) is one of the most common pediatric orthopedic diseases. Although many studies demonstrated that many factors increased the risk of DDH, whether the latitude or the weather condition influences the incidence of DDH was still a popular belief with no evidence. The purpose of this study was to investigate the relationship between the latitude, longitude, the weather parameters and the incidence of DDH. Methods: Medical literatures from 1956-2016 were reviewed and the data of incidence of DDH was retrieved and obtained from total 93 unique manuscripts. The latitude, longitude, average yearly precipitation and seasonal temperature of all institute locations that published the articles were recorded. We used the Pearson's correlation coefficient to analyze the linear correlations between the incidence of DDH and latitude, longitude and these weather parameters. Results: The incidence of DDH was not statistically significantly influenced by latitude or longitude but negatively correlated with the seasonal temperature and average yearly precipitation. Conclusion: We found that the results reinforce the idea that the lower seasonal temperature may promote the higher incidence of DDH in infants. The pediatric orthopedic surgeons should be aware of this phenomenon and be cautious of this common orthopedic disorder in newborn in the low average-yearly temperature region.

Abstract no.: 51691

**SURGICAL TREATMENT OF SUPRACONDYLAR FEMUR FRACTURES
TREATED BY RETROGRADE SUPRA CONDYLAR FEMUR NAIL**

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INTRODUCTION: Supracondylar femur fractures are one of the common fractures encountered. The distal femur has wide medullary canal, thin cortex and often associated with comminution. Management of these supracondylar femoral fractures is a challenge to orthopaedic surgeons. Still there is controversy in the correct line of management to be selected. The surgeons will face difficulties in restoring the anatomical alignment and joint congruity. **MATERIALS AND METHODS:** Between Jan 2009 to Jun 2014, 26 distal femoral fractures treated with supracondylar nail. 2 pts lost for follow-up. Of the remaining 24 fractures, 19 were closed fractures 5 were of open fractures. AO classification was used for these fractures (A type: 14, C type: 10). **DISCUSSION:** Average follow-up was 14 months (6 - 24 months). Functional assessment was done using a scale developed by Sanders et al for distal femoral fractures. 23 fractures healed well and 1 patient had nonunion. We had excellent to good results in 18 pts (75%) and fair in 4 patients. **CONCLUSION:** Supracondylar nail provides stable fixation in a region of femur where a widening canal, thin cortices, and poor bone stock make fixation difficult. The retrograde supracondylar nail is an excellent alternative to lateral fixation devices for supracondylar fractures of femur.

Abstract no.: 51693

EXTRA SPINAL MUSCULOSKELETAL TUBERCULOSIS STILL REMAINS UNDIAGNOSED IN MORE THAN 90% CASES EVEN IN DEVELOPING NATIONS

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Skeletal tuberculosis is seen in 3% of total cases of tuberculosis. In skeletal 40 to 50% cases involve spine in rest other 50 percent remaining part of skeleton and soft tissue related to skeleton, despite the availability of advance investigations and common in poor countries, this gets diagnosed after more than 9 months. This is study of more than 1000 cases of such cases, the order of frequency of involvement is hip, knee, foot and ankle, elbow, shoulder, wrist and carpels, long bones, sternum, pelvis and other soft tissue as bursa, tendons etc and soft tissue cold abscesses of unknown origin. Different regions have different presentation as swelling of joint as in knee, elbow, wrist, ankle etc., difficulty in movements, stiffness, discharging sinuses, deformity of joint, thickening of bones as in small bones of hand and feet. in wrist as compound palmer ganglion, carpal tunnel syndrome . In soft tissue as bursitis. These days many cases after implant surgery for various reasons as in fracture, joints replacement. In countries where it is endemic a simple clinical suspicion is enough to diagnose along with routine investigation as x-ray, simple blood along with fnac, advance and costly investigation in only 10 % of cases. 10 to 20 percent are associated with pulmonary tuberculosis which also makes the diagnosis easy. if seen early and diagnosed early with effective anti t.b. drugs full function can be restored, but delayed diagnosis will lead to loss of function and deformity though disease may be controlled.

Abstract no.: 51695

PEDICULAR ANEURYSMAL BONE CYST: A CASE REPORT

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Spine Aneurysmal Bone Cyst is a relatively uncommon lesion in the spine. It can be found on the vertebral body and rarely on a pedicle. In our case it occurred in a 28 years old man who was suffering since 2 years of severe lower back pain. Neurological examination was normal. Ct Scan shows an lytic expansile lesion of the left pedicle of L4. The patient had surgery and we did a left pediculectomy and an unilateral short construct between L3 and L5. Post operatively, he had complete relief of pain.

Abstract no.: 51700

OPERATIVE TREATMENT OF PILON FRACTURES WITH THE USE OF LCP PLATES (OUR LOOK ON THE PROBLEM AND EXPERIENCE OF USAGE)

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The treatment of patients with Pilon's fractures still has the high risk of negative results. The difficulty of given damages is provided by that these fractures have multi-part structure, including joint surface of tibia, often (85%) with the fracture of fibula, which provides instability of this area. These fractures are combined with high-energy traumas with dislocation and impaction of metaphyseal joint surface, which creates incongruent joint surfaces of ankle joint with future painful and reduced movement. We consider obligate CT scanning with the aim of stating the size of fragments and impaction of joint surfaces. Surgical access is done with the consideration of character of fracture and the location of bone fragments. If it is necessary, we consider that two accesses to the tibia region are better than 1 which is longer in size. Firstly, the length of tibia is restored with the usage of semi-tube of reconstructive plate, which in next step allows better reposition of tibia fragments. The feature of fixating the distal fragment of tibia is considered the planning and modeling the plate in such way that after the extraction of impacted fragment of metaepiphysis, the stable fixation with the help of blocking screws in plate must be done, which allows to start the maximum movements in ankle joint. The stable fixation of fragments and early dosed function of ankle joint allows to reduce the number of complications which are: vascular, purulent-necrotic, contractures of ankle joint which lead to deformative artrosis and disability of a patient.

Abstract no.: 51701

SURGICAL TREATMENT OF CYST FORMATIONS OF LIMB BONES

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The problem of early detection and treatment of tumors and tumor-like diseases of limb bones does not resolve completely. The main method of treatment of patients with benign tumors of the musculoskeletal system is surgical and it's aimed reducing the risk of malignancy and relief of pain syndrome. Objective: The aim of the study is to develop methods for optimizing early diagnosis and surgical treatment of bone tumors through minimally invasive access. Material and methods: From 2015 to 2017. There were 25 patients aged 14 to 48 years with various lesions at the bone level of the extremities Under our supervision. Male 9, Female 16. Surgical access depended on the localization of the tumor. The localization of the bone formation was determined under the X-ray control, and marked with a needle. The skin and subcutaneous was cut for 2 cm. The tissues were parted by blunt method for reached to the bone. The cortical layer of the bone was opened by drill to insert a spoon, and the tumor was removed. The plastic of the defect in 6 cases was made by bone graft, in 13 cases the cavity was filled with the collagen allograft, in 7 cases was used combined of both.

Abstract no.: 51704

THE EVALUATION OF LOWER LIMB ALIGNMENT WITH HIP-TO-CALCANEUS RADIOGRAPH AFTER UNICOMPARTMENTAL KNEE ARTHROPLASTY

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Background: Recently, hip-to-calcaneus radiograph including hind foot alignment has been reported to evaluate the lower limb alignment. The purpose of this study was to evaluate lower limb alignment with hip-to-calcaneus radiograph after unicompartmental knee arthroplasty (UKA). Methods: Fifty-six consecutive medial UKAs were enrolled in this study. Postoperative lower limb alignment was examined by hip-to-calcaneus radiograph. hip-knee-ankle (HKA) and hip-knee-calcaneus (HKC) were measured. Tibial implant inclination angle in coronal plane was also measured with or without hind foot alignment, which was defined as β' angle and β angle, respectively. Paired t-test was used to compare between HKA and HKC angle, and β and β' angle. Results: The mean age of the patients at time of operation was 73.2 years. There were 32 osteoarthritis knees and 24 idiopathic osteonecrosis knees. The mean postoperative HKA angle was $2.9 \pm 2.2^\circ$ in vairs and HKC angle was $2.0 \pm 2.3^\circ$ in varus. The mean postoperative β angle was $87.8 \pm 1.9^\circ$ and β' angle was $88.7 \pm 1.9^\circ$. There were significant differences between HKA and HKC angle, and between β and β' angle ($p < 0.01$). Discussion: These results indicate that lower limb alignment significantly changes if hind foot alignment is included. Slightly varus alignment in HKA tend to neutral if hind foot alignment was included. Also, slightly varus inclination angle of tibial implant tend to decrease if hind foot alignment was included. Measuring the lower limb alignment including hind foot alignment might be important to discuss about postoperative lower limb alignment in UKA.

Abstract no.: 51713

LEAVING HALF THE ACETABULUM IN PELVIC RESECTIONS IMPROVES FUNCTIONAL OUTCOME

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Introduction: Functional half-acetabulum resection results were compared with a historic group of age-matched cohort which had undergone a total periacetabular resection. Methods: Half resection of acetabulum was attempted in 23 cases of malignant pelvic tumors, which were involving the ilium, and the superior dome of acetabulum (called Type I and a half resection) or which was involving the pubis and the medial or/and floor of the acetabulum. If approached through a conventional system, both scenarios would have warranted a resection of the acetabulum along with the ilium (type I plus II) or the pubis bones (type II plus III). Results: There were 15 chondrosarcomas, 4 cases of Ewings, 2 of Osteosarcomas and 2 cases of pleomorphic sarcomas of the Pelvis. Average age was 39.6 years. 16 cases had type one and a half and 7 had type III and a half resection. There were 15 males and 8 females. Mean MSTS score for the Type one and a half cohort was 80 (17 to 100). Mean MSTS score for Type two and a half pelvic resections was 75 (15 to 90). The average follow-up was 32.6 months. Conclusion: Type One and and a half and type three and a half have better functional outcome when compared to conventional types of pelvic resections as defined by Enneking. Ours is a new classification of Pelvic resections which yields good functional results.

Abstract no.: 51714

FUNCTIONAL OUTCOME FOLLOWING ECRT FOR LOWER LIMB TUMOURS

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Purpose: Extra Corporeal Radio Therapy is a commonly used method in limb reconstruction following tumor excision. Unfortunately there are few studies which evaluate functional outcome. Aim of our study was to evaluate functional outcome in patients undergoing ECRT. **Methods:** Ours was a prospective observational study carried out between January 2007 and January 2016. A total of 37 patients who underwent ECRT for malignant tumors of the lower limb were evaluated. Post tumor resection we debulked the tumor and irradiated the specimen with one dose of 50 Gy. The irradiated bone was reimplanted and fixed with necessary metalware. Plain radiography was used in assessing union while functional outcome was evaluated using the MSTS scoring. Along with MSTS, patients with tumors around the knee were evaluated using the Knee Society Score.^[1]
Results: There were 23 males and 14 females in the study. Avg age was 18.6 years, average follow-up was 3.7 years Femur was the commonest bone involved (14 patients) followed by Tibia (n=11), Ewings sarcoma was the commonest diagnosis (n=20) Union was assessed at the osteotomy site using plain radiography. Average time to union was 8.6 months. Union was achieved in 25 patients. 7 patients underwent non union. Average MSTS score at end of 3 years was 25.4. Infection was the commonest complication (n=12). 9 patients died due to disease Average Knee Society Score was 88.4. We had no local bony recurrences. **Conclusion:** ECRT is an effective biological and cost effective method of limb reconstruction following tumor resection.

Abstract no.: 51715

**POST-TRAUMATIC DEFORMITY OF TIBIA CORRECTION BY ILIZAROV
EXTERNAL FIXATION**

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Background: Deformities of the tibia lead to axis deviation of the lower limb. Accurate correction of the malalignment and of the joint orientation is important for function and to prevent joint degeneration. Objective: To Assess the Functional outcomes of post traumatic deformity of tibia correction with Ilizarov external fixator. Methods: This prospective study was carried out from 2013 to 2015. Patients with post traumatic malunion and deformed tibia were included & stabilized with Ilizarov external fixation and corrected gradually by distraction method through the hinges and motors, the patients followed in review clinics after every fifteen days. The functional out comes was assessed according to ASAMI criteria. Results: Total 40 patients were included; their mean age was 34.23 years. According to the pre-operative mechanical axis deviation 55.0% were with Medial (Varus) and 45.0% were Lateral (Valgus). Pre-operative magnitude of angulation mostly cases 47.5% were found with 21-30 degree, followed by 45.0% patients were with 11-20 degree, while 7.5% patients were found with 1-10 degree. Magnitude of shortening 52.5% patients were found with 6-8 cm, 40.0% were with 2.5-6 cm and only 3 cases were noted with <2.5cm shortening. Outcome was assessed on the basis of ASAMI criteria as excellent 75.0%, good 12.5%, fair 10.0%, while only one case was found with poor result. Conclusion: We concluded that the posttraumatic tibial deformities by Ilizarov method is safe, effective, and versatile correcting the deformities (angulation, translation, shortening) simultaneously.

Abstract no.: 51716

INFLUENCE OF THE SAW BLADE GEOMETRY ON INITIATION AND PROPAGATION OF AN OTV HINGE CRACK: FINITE ELEMENT MODELLING

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The hinge plays a critical role for OTV holding and consolidation. A weakening of this hinge leads to a potential risk of failure. In this work, we study the influence of the cutting edge profile of the saw blade to create crack initiation and propagation through the hinge. For this, a finite element model is developed using transverse isotropic mechanical properties for the bone. An anteroposterior kerf of 1.27mm thickness is created leaving a 1 cm thick hinge. The studied cutting edge profiles were rectangular, U, and V shapes. A 1mm bone opening is performed with a distal applied load and fixed proximal part. Two simulations are developed ; the first one without crack initiation in the hinge, the second one with a 2mm crack initiation directed with a 15° upwards angle. The two simulations allow the identification of the stress concentration constraints corresponding to the energy restitution developed to create and propagate the crack through the hinge. The results show that the "U"-shape saw profile presented the lowest stress concentration. They also showed the lowest energy release rate corresponding to the lowest probability to create and propagate the crack through the hinge. This could help in the improvement of osteotomy saw profile. The results need be validated with experimental measurements.

Abstract no.: 51732

SYNTHETIC AUGMENTATION FOR MASSIVE ROTATOR CUFF TEARS

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Background: The treatment of massive chronic tears is problematic. The re-tear rate following surgery for extensive cuff tears remains high, and there is little consensus regarding optimum treatment. **Aim:** To investigate the outcome of a cohort of patients who had open repair of an extensive cuff tear using the Leeds Kuff patch as an augment. **Methods:** A retrospective cohort study of consecutive patients with a massive cuff tear who had surgery in our regional elective orthopaedic centre over a two year period from January 2015 to Dec 2016. All patients followed identical rehabilitation protocols, supervised by physiotherapists with an interest in the shoulder. Outcomes assessment was undertaken at a minimum of 12 months by a registrar or physiotherapist who was not part of the treating team. Pre-op data collection included; range of motion, pain score, Oxford shoulder score (OSS), assessment of muscle atrophy on MRI. **Results:** Data collection was completed in 15 patients. The mean age was 62 yrs (56 - 75). The mean pre-op OSS was 22, improving to a mean of 43. The range of motion and pain score improved. There were no intra-operative complications. One patient required a second surgery for evacuation of a haematoma at 10 days post op. One patient had an obvious re-tear at 4 months. **Conclusion:** Open rotator cuff repair with synthetic Kuff patch augmentation for chronic degenerative tears appears worthwhile when assessed at 12 months and they continues improving. This treatment method may be a useful option even in patients > 70 years.

Abstract no.: 51739

CLASSIFICATION AND OPERATIVE MANAGEMENT OF MALUNION AFTER MIDFOOT INJURY

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To characterize clinical treatment of the malunion after midfoot injury. Methods: 22 cases of malunion following complex midfoot injury from 2004 to 2012. They were 19 men and 3 women with mean age of 37.8. The foot deformity was categorized into 3 types and 3 subtypes, with type I indicating normal foot arch (type Ia forefoot abduction, Ib forefoot adduction and Ic forefoot normal), type II Cavus deformity (subtype is same as I), and type III flatfoot deformity (subtype is same as I) . There were 2 cases of type Ia, 4 cases of type Ic, 9 cases of type IIa, 4 cases of type IIIa, 3 cases of type IIIc in our cohort. According to the malunion typing, osteotomy, joint arthrodesis, or realignment was used to correct deformity. Clinical outcomes were evaluated by AOFAS score and VAS. Results: All the patients were followed up for average 34.7 months . The mean VAS score was 2.0 points (0-6) and mean AOFAS score was 83.9 ± 2.3 points (73-94) at the last follow-up, giving an excellent to good rate of 81.8%. All cases obtained favorable functional outcomes without bone nonunion, except one patient who still suffered from midfoot walking discomfort 3 years after operation. Conclusion: Operative management of malunion following midfoot injury is effective and good results can only be obtained by stabilizing injured joint, realignment and recover foot arch. Our typing of the midfoot malunion is helpful in the operative treatment.

Abstract no.: 51740

TREATMENT OUTCOMES OF BUTTRESS PLATING FOR POSTERIOR PILON FRACTURES

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Objective: The purpose of current study was to retrospectively analyze the clinical outcomes of buttress plate treatment of posterior pilon fractures. **Methods:** Between January 2005 and December 2009, 16 patients with posterior pilon fractures underwent buttress plate fixation. There were 11 males and 5 females and the mean age was 37.6 years (range, 23 to 62 years). Preoperative radiographs, CT scans and three dimensional reconstructions were used to evaluate the fracture patterns. On the basis of the extension of the fracture lines presented on the CT scans, a posterolateral approach or a combination of both posterolateral and posteromedial approaches were used to reduce and fixate the posterior malleolar fragments. Clinical and radiographic examinations were used for postoperative follow-up. The American Orthopaedic Foot and Ankle Society (AOFAS) ankle-hindfoot score and the Visual Analogue Scale (VAS) were used to evaluate the functional outcomes. **Results:** According to the CT scan images, the posterior pilon fractures were classified into 3 types. 14 patients were available for follow-up. The mean time of follow-up was 37.6 months. The mean AOFAS score was 86.4 points, and the mean VAS score was 1.4 points. One patient was found with ankle joint swelling and long term walking discomfort at 2-year follow-up. Other patients received favorable functional outcomes. No hardware failure occurred. **Conclusions:** The clinical outcomes of buttress plate treatment of posterior pilon fractures were satisfactory. Buttress plating availed the patients to return to earlier weight-bearing and functional exercises.

Abstract no.: 51741

COMPUTER-ASSISTED PLANNING AND PATIENT-SPECIFIC GUIDES FOR THE MINIMAL INVASIVE TREATMENT OF CALCANEAL FRACTURE

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The purpose of this study was to provide a guideline and detailed overview for the computer-assisted planning and 3-dimensional (3D) correction of calcaneal with minimal invasive approach. Methods: The 3D bone surface models of the pathologic and contralateral sides were created on the basis of computed tomography data. The computer-assisted assessment of the deformity, the preoperative plan, and the design of patient-specific guides enabling compression plating are described. The specific guide was designed to facility the screws insertion. Results: We demonstrate the benefit and versatility of computer-assisted planning for reduction and insertion of screws for calcaneal fractures. In combination with patient-specific guides and screws, the fixation can be performed in a more standardized fashion. We describe the determination of the contact-optimized screws position. Screws along this directions facilitates the fixation of sustentacular process at once which it is crucial for stabilization of fixation and not easy to access by hand. We further developed a technique of a stepped distraction that is based on the calculation of the angulations and length. The stepped osteotomy enables the length and varus to be restored without the need of too much fluorescence intraoperative. Conclusions: The 3D preoperative planning and patient-specific guides for minimal invasive treatment of calcaneal fracture may help reduce the number of potential complications and yield results that are more predictable.

Abstract no.: 51742

**ROTATING-HINGE KNEE PROSTHESIS IN PRIMARY SURGERY:
LITERATURE REVIEW AND META-ANALYSIS**

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Rotating-hinge knee replacements are usually reserved for revision surgeries, when the extent of soft tissue loss makes a constrained implant more suitable. They remain an uncommon choice in primary surgery where by comparison the soft tissue loss is not as extensive. In a review of the literature and meta analysis on the rotating-hinge prosthesis in the primary setting we found that for certain indications the prosthesis has impressive survival rates and functional outcomes; in particular patients have a significant improvement in their pain score. Infection is the most commonly reported cause of failure of the prosthesis. We concluded that the rotating-hinge knee prosthesis is a viable option in primary surgery when there is extensive soft tissue destruction surrounding the joint.

Abstract no.: 51746

PERCUTANEOUS KYPHOPLASTY FOR THE TREATMENT OF KÜMMELL'S DISEASE WITH SCLEROSIS AROUND THE INTRAVERTEBRAL CLEFT

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Objective: To evaluate the therapeutic efficacy of percutaneous kyphoplasty (PKP) for the treatment of Kümmell's disease with sclerosis around the intravertebral cleft. **Methods:** 20 patients suffering osteoporotic Kümmell's disease with sclerosis around the intravertebral cleft were treated by PKP in department of Orthopaedic Surgery, the First Affiliated Hospital of Soochow University during Jan. 2011 to Jun. 2013. The clinical data were retrospective analyzed. Visual analogue scale (VAS) , Oswestry disability index (ODI) scores, the height and the kyphotic angle of the involved vertebral body were analyzed at pre- and post-operative 2 days and the last follow-up with SPSS13.0 software. **Results:** All patients who were followed up for 12~36 months (average 1 months), received back pain improvement postoperatively. The preoperative VAS scores, ODI scores, the height and kyphotic angle of involved vertebral body were 8.9 ± 0.4 , 87.5 ± 3.5 , $41.3\pm5.2\%$, $22.1\pm1.8^\circ$, dropped to 2.2 ± 0.6 , 31.8 ± 4.1 , $71.2\pm4.9\%$, $12.6\pm1.4^\circ$ at postoperative 2 days, respectively. There was significant difference between pre and postoperative 2 days ($P<0.05$). The data of the last follow-up after the treatment turned to 2.0 ± 0.3 , 26.1 ± 1.3 , $70.7\pm4.8\%$, $13.2\pm1.8^\circ$, with no statistic difference comparing to ones at postoperative 2 days, respectively ($P>0.05$). **Conclusion:** PKP has satisfactory efficacy in pain relief, function improvement, the height reconstruction of involved vertebral body and kyphotic angle correction for patients suffering from osteoporotic Kümmell's disease with sclerosis around the intravertebral cleft, which is a feasible and effective minimally invasive procedure.

Abstract no.: 51750

RESULTS OF OXFORD MOBILE BEARING MEDIAL UNICOMPARTMENTAL KNEE REPLACEMENT IN INDIAN POPULATION AT A MINIMUM FOLLOW-UP OF FIVE YEARS

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Oxford medial unicompartmental knee replacement (UKR) is indicated in patients with anteromedial osteoarthritis (AMOA) of the knee. We report the clinical and radiological results of UKR in 50 patients with a minimum follow-up of 5 years. A retrospective study of 50 cemented medial Oxford UKRs implanted in 42 patients was done. Post-operative alignment of the tibial and femoral components was analysed. Patient reported outcome measures were recorded using Oxford Knee Score (OKS) and the American Knee Society Score (KSS). Tegner Activity Scale (TAS) was used to record the activity level. 50 consecutive medial Oxford UKRs were studied. All patients were followed up in this prospective ethically approved study. The mean follow-up was 79 months and the minimum follow-up was 62 months. No patient died and none were lost to follow-up. At the final follow-up, the average OKS of the cohort was 39.2 (SD: 5.2). 91.2 % of the patients had good or excellent OKS with only 3.5 % reporting poor OKS. The overall limb alignment was 5 varus (0 - 14 varus). Median bearing size was 3 (range: 3 to 6). There was one case of bearing dislocation and one case of aseptic tibial loosening. Conclusion: We have reported good or excellent scores in more than 90 % of patients implanted with UKR at a minimum follow-up of 5 years. This is the first study in Indian population to report the mid-term results of UKR.

Abstract no.: 51755

AGGRESSIVE GIANT CELL TUMOUR OF THE BONE: TREATMENT AND RESULTS OF 115 CASES IN A SINGLE CENTRE

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Introduction: Giant cell tumor of bone rarely give rise to metastasis but frequently they lead to recurrences . The aim of this study is to assess the risk of recurrence compared to different types of treatment . Methods: one hundred and fifteen patients were treated with agressives giant cell tumors from 2005 to 2015. Most tumors were treated with intralesional surgery, curettage and filling with cement, or monobloc resection. The mean âge was 27 years with 66 females and 49 males. The most common site was around the knee (69%). The mean follow up was 18,6 months . Results: The recurrence rate of patients who received first treatment at our department was 17,3%. Based on treatment the highest rate of local recurrence occurred after intralesional procedure. Metastatic disease developed in four patients, one of whom died with malignant transformation. The rate of local recurrence with or without pathological fracture was the same. Conclusion: Our results suggest that intralesional treatment with filling with cement might be considered for us and for much authors as the first choice for treatment of high-grade giant cell tumors even in the presence of pathological fracture. The 25% mortality for patients with malignant giant cel tumors in our series and 16% reported in the literature suggests low-grade malignancy.

Abstract no.: 51770

A COMPARATIVE CLINICO-RADIOLOGICAL STUDY TO EVALUATE DIFFERENCE IN FUNCTIONAL OUTCOME IN MANAGEMENT OF INFECTED NONUNION TIBIA BETWEEN ILIZAROV AND RAIL ROAD FIXATOR

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Introduction: Precarious blood supply and scarce soft tissue around tibia, makes tibia vulnerable for infection and non union. Various external fixation modalities have been used to control infection and stabilization of fracture, we evaluated the difference in functional outcome in infected tibial non union fractures, treated by either Ilizarov external ring fixator or rail road fixator. **Methods:** A total of 31 patients, having infected tibial non union, were recruited in our study. They were divided in two group and managed by debridement, freshening of bony ends, with or without bone transport and external fixation by ilizarov in Group A(n=16) and rail road fixator in Group B(n=15). Cases were followed up clinically as well as radiologically. Functional outcomes of patient were accessed in terms of Modified Functional Evaluation System by Karlstrom-Olerud (MKO). **Results:** All patients were followed for a minimum of 34 months. In group A all patients had shown union, 10 patients had shown good, 5 patients had fair outcome while 1 had poor outcome. In group B all patients had shown union, 9 patients had shown good, 5 patients had fair outcome while 1 had poor outcome. In group A MKO score at final recent follow-up was 28.37 while in Group B it was 29.12 ($p>.05$). **Conclusion:** There was no difference in functional outcome at final follow-up in both group, we conclude that both Ilizarov and rail fixator are good options for management of infected non union of tibia but ilizarov is better for three dimensional deformity correction though compliance is poorer in comparison to rail road fixator.

Abstract no.: 51771

**MANAGEMENT OF FIBROUS DYSPLASIA OF THE UPPER EXTREMITY
IN PAEDIATRIC PATIENTS WITH FIBULAR STRUT GRAFTING**

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Background: Fibrous dysplasia (FD) is a benign skeletal disorder where normal osseous bone substance along with marrow is replaced with fibrous tissue, predisposing to deformity, pathological fracture and functional impairment. After histopathological diagnosis, an early intervention is desired to prevent progression of deformity and occurrence of pathological fracture so as to limit functional impairment. We evaluated the functional outcome and efficacy of non vascularised fibular strut graft used for reconstruction of defect after resection of defective tissue in cases of fibrous dysplasia. Materials & Methods: Total 9 biopsy proven FD cases of upper extremity, nine with humeral and two with ulnar lesion, were recruited. All patients were managed by curettage and fibular strut bone grafting. All patients were followed up for a minimum of 29 months. Radiological evaluation was done by observing healing of bone graft while functional outcomes of patient were accessed in terms of Revised Musculoskeletal Tumor Society Rating Scale(MSTS). Results: All patients showed radiological healing of bone graft at mean of 4.9 months while mean MSTS score at final follow-up was 81. One case developed infection at donor site while there was no neurological or functional deficit at donor site. Conclusion: Curettage and Fibular strut grafting is an effective, viable option for the treatment of upper extremity fibrous dysplasia and it is associated with good functional outcome.

Abstract no.: 51775

MANAGEMENT OF GATA TYPE-II TUBERCULAR SPINE TREATED WITH ANTERIOR DECOMPRESSION AND STABILISATION WITH VARIOUS AUTOLOGOUS BONE GRAFTS IN COMBINATION WITHOUT INSTRUMENTATION

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Background: Anterior decompression in tubercular paraplegia is treatment of choice. In GATA type II lesions, anterior decompression with various autologous bone grafts promotes fusion of affected segment of spine and prevents further progression of deformity. This study is to analyse the outcome of anterior decompression and stabilisation with various autologous bone grafts without instrumentation. Material and Method: Twenty patients of tubercular spine (GATA type II) with paraplegia were operated with anterior decompression and stabilisation with various autologous bone grafts. They were grouped (10 in each) into GROUP-A: which includes patients treated with autologous fibula strut, rib and iliac crest graft, GROUP-B: includes patients treated with only autologous rib and iliac crest graft. Results were analysed on the basis of neurological improvement, graft uptake, correction and progression of kyphosis. Results: Patients in both group shows similar neurological recovery from Frankel Grade A to E. Group-A patients shows mean correction of 6.7° (3°-22°) in kyphosis with no loss of correction on 2 year follow up. Whereas patients in Group-B shows increase in kyphosis in immediate post-operative period without further progression on follow up. Graft uptake was good in 19 cases and graft subsidence was seen in 1 patient of Group A. Conclusions: In GATA type II lesions, anterior decompression and stabilisation with autologous bone graft has shown complete neurological recovery with bone block formation. Our study justifies that use of fibula strut graft along with cancellous bone graft is essential to correct the kyphosis and to prevent its further progression.

Abstract no.: 51776

NON SUB-UNGUAL PRESENTATION OF OSTEOCHONDROMA IN TOES: A RARE ENTITY

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Introduction: Osteochondroma is the most common benign bone tumor. It is more common in metaphyseal region of long bones eg: distal femur, proximal tibia, proximal humerus etc. It is relatively uncommon in tubular bones of hand and foot. However, cases of osteochondroma of phalynx as solitary or as part of hereditary multiple exostosis have been reported. Number of cases of subungual exostosis/osteochondroma affecting great toe has also been reported in literature. But so far only one case of solitary large osteochondroma of third toe at non subungual site has been reported (D Greenberg et al. 1983). We described a case of large non subungual Osteochondroma in third toe and its review of literature.

Abstract no.: 51786

MISSED TRANSIENT PATELLAR DISLOCATION IN YOUNGER PATIENTS WITH TRAUMATIC KNEE INJURIES

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Background: Acute patellar dislocation is a common injury, with up to 40% of the cases missed due to a high rate of spontaneous reduction. Complications mainly arise due to osteochondral fractures, resulting in patellofemoral osteoarthritis and rupture of medial patellar stabilizers, leading to recurrent patellar instability. Methods: Institutional database was retrospectively reviewed to find patients with missed transient patellar dislocation. From January 2010 to January 2015, ten otherwise healthy patients with a history of indirect trauma to the knee were diagnosed with missed patellar dislocation. They all had persistent pain and effusion, despite conservative treatment. Results: Eight patients eventually underwent arthroscopic debridement of osteochondral fractures and repair of ruptured ligaments, with no case of recurrent instability. Conclusions: Detailed history taking and physical examination of all acute knee injuries, with a standard three dimensional (3D) X-ray imaging and a low threshold to obtain magnetic resonance imaging (MRI) studies, could minimize cases of missed patellar dislocation and possibly severe complications.

Abstract no.: 51787

TOURNIQUET RELEASE AT THE END OF TOTAL KNEE ARTHROPLASTY IS NOT NECESSARY

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Background: Total knee arthroplasty is historically associated with significant blood loss. There is an ongoing debate regarding the need for tourniquet release and cauterization before finishing the procedure. This study was performed to assess the need for tourniquet release at the end of total knee arthroplasty. Methods: A retrospective review of all patients undergoing total knee arthroplasty during a 5-year period was performed. Age, drug history, previous surgeries (primary or revision surgery), duration of the procedure, and post-operative complications were extracted. Results: A total of 856 primary total knee arthroplasties performed during the study period, 794 primary and 62 revision procedures. In all patients, tourniquet release was performed only after meticulous wound closure, and compressive dressing. A splint was not used. Suction drainage was only used in revision surgeries. Only one case of post-operative hematoma in a patient with hemophilia A was identified. Conclusion: This study clearly demonstrates that tourniquet release at the end of total knee arthroplasty is not necessary. A meticulous, multi-layer closure of the surgical wound, and compressive dressing negates the need of tourniquet release and cauterization, with less blood loss.

Abstract no.: 51789

**OPEN PATELLA PERIPROSTHETIC FRACTURE AROUND A TUMOUR
ENDPROSTHESES: A CASE REPORT AND REVIEW OF THE
LITERATURE**

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Introduction: Periprosthetic fracture after total knee arthroplasty is one of the most common reasons of revision arthroplasty and periprosthetic fracture of the patella has been shown to be very rare. Literature review has shown no reports of periprosthetic fracture of the patella around tumor end prostheses and only one study has discussed management of open periprosthetic fractures of the patella as this type of fracture is extremely rare. Case presentation: We report a particular open periprosthetic fracture of the patella around a tumor end prostheses in a 60 years old female. Conclusion: Despite the fact that operative management of periprosthetic fractures of the patella has high rate of complications and poor outcome, it can be considered for patients with this problem specially when the extensor mechanism is compromised.

Abstract no.: 51791

OCCULT HIP FRACTURE

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Patients complaining of sever hip pain following a trivial trauma or twisting injury in whom plain radiographs fail to show a bony injury are difficult to diagnose and treat. In this category of patients we have to keep in mind occurrence of occult hip fracture which may be detected by MRI in almost all patients with one hundred sensitivity. Where MRI is not available emergency CT scan may be performed with less sensitivity by comparison with MRI and high percentage of false negative results. We are reporting the occurrence of an occult hip fracture in a 76 years old female patient, who denied any history of trauma. Later investigations showed that this fracture was secondary to hyperparathyroidism, which made treatment decision little bit difficult to some extent. By reviewing the latest literature still there is no general agreement on treatment options but regarding diagnosis MRI is the imaging method of choice. The lesson we learned from this case is that suspicion of an occult hip fracture in such cases is the clue to it's diagnosis.

Abstract no.: 51793

UNICOMPARTMENTAL KNEE ARTHROPLASTY FAILS TO COMPLETELY RESTORE NORMAL GAIT PATTERNS DURING LEVEL WALKING

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Most gait analysis studies have reported conflicting results for functional assessment after UKA. This meta-analysis compared the gait patterns of UKA patients and healthy controls during level walking. Studies were included in the meta-analysis if they recorded vertical ground reaction force (GRF), flexion at initial contact, flexion at loading response, extension at mid-stance, flexion at swing, walking speed, cadence, and stride length in UKA patients or healthy controls. Seven studies met the criteria for inclusion in the meta-analysis. The UKA patients and healthy controls were similar in terms of vertical GRF (95% CI: -0.54 to 0.23; n.s.), flexion at initial contact (95% CI: -0.47 to 4.96; n.s.), flexion at loading response (95% CI: -1.29 to 3.69; n.s.), and flexion at swing (95% CI: -8.85 to 0.40; n.s.). In contrast, extension at mid-stance (95% CI: 0.53 to 4.88; $P = 0.01$), walking speed (95% CI: -2.13 to -0.15; $P = 0.02$), cadence (95% CI: -1.02 to -0.25; $P = 0.001$), and stride length (95% CI: -2.02 to -0.22; $P = 0.01$) differed significantly between groups. Subgroup analyses revealed that the pooled data were similar between groups: 1st maximum (heel strike), -0.43 BW (n.s.); 1st minimum (mid-stance), 0.61 BW (n.s.); and 2nd maximum (toe off), -0.46 BW (n.s.). The current findings suggest that, clinically, UKA fails to completely restore normal gait patterns.

Abstract no.: 51794

THE IMPACT OF A COMMUNAL MULTIDISCIPLINARY TEAM ON LIMB SALVAGE WITH ENDOPROSTHETIC RECONSTRUCTION

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Background: Various challenges hinder the management of extensive bony and soft tissue defects in a resource poor environment. These factors include high cost of endoprostheses when required, as most patients invariably pay for surgery out of pocket due to poor health insurance coverage. The absence of coordinated multidisciplinary teams (MDT) in most centres in subsaharan Africa has also been identified a clog in the wheel of major Orthopaedic reconstruction. Method: Consenting patients presenting with musculoskeletal tumours from different institutions in the Lagos metropolis were included for discussion at monthly meetings, under the aegis of the Lagos Musculoskeletal Oncology Network [LAMON]. 22 patients who had endoprosthetic reconstruction (EPR) after evaluation at the LAMON MDT were included in this study. Patients demographics, symptoms interval, resection lengths, complications and functional outcomes were recorded. Results: Over the 48 months, the LAMON MDT reviewed 642 patients with suspected musculoskeletal tumours. The age range of the patients was 3-95 years. In patients requiring EPR, the resection length varied between 12cm and 27cm. Mechanical and non-mechanical complication rates were 10% and 40% respectively. Functional outcomes were graded using the MusculoSkeletal Tumour Society scoring system (MSTS) and scores were good to excellent in 15 patients, moderate in 5 and poor in 2 patient. Conclusion: The functional outcome after major reconstruction suggest that perhaps evaluation of patients at communal MDTs and harmonisation of resources may improve reconstruction for extensive bony and soft tissue defects in resource constrained environment.

Abstract no.: 51800

**FRACTURE DISLOCATION OF PROXIMAL HUMERAL EPIPHYSIS
ALONG WITH IPSILATERAL FRACTURE ACROMION IN A THREE-YEAR-
OLD CHILD: A CASE REPORT**

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Introduction: Proximal humeral fractures are common in children, but a fracture-dislocation of the proximal humeral epiphysis, along with an ipsilateral fracture of the acromion is very rare. Only a few cases are reported. We present one such case treated by the author, with a follow-up of nearly two years. Case Summary: A three year old female child was admitted on 01/07/2016 with pain, swelling and limitation of movements of her left shoulder following a fall from a staircase about four hours prior to admission. Clinically there was a haemarthrosis of the left shoulder, no distal neurovascular deficit, with painful limitation of movements. There were no other injuries, general and systemic examination being normal. X-rays revealed a fracture-separation of the proximal humeral epiphysis, which was dislocated, with an ipsilateral undisplaced fracture of the acromion. After optimisation, the child was taken for immediate surgery-open reduction and internal fixation of the proximal humeral epiphysis was done with smooth K-wires, using a deltopectoral approach. The acromial fracture wasn't fixed as it was undisplaced and stable, and a plaster of paris "U" slab was applied. The child recovered uneventfully, and discharged after five days in a good condition. She came for regular follow-up. The K-wires and the plaster slab were removed after six weeks, and physiotherapy started. The proximal humeral epiphysis and acromion healed well and the glenohumeral dislocation was well reduced- the shoulder was stable. She has been followed up for nearly two years, and has regained full movements of her left shoulder, with no growth disturbances of the left humerus till date. She is still under regular follow-up.

Abstract no.: 51802

CAN THE SEVERITY OF A FEMORAL FRACTURE BE A MARKER FOR THE OCCURRENCE OF RESPIRATORY DISTRESS SYNDROME IN POLYTRAUMA PATIENTS?

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Introduction: Acute Respiratory Distress Syndrome (ARDS) is a frequent and serious early complication of polytrauma. The literature is contradictory on the technique of fixation in emergency: external fixation or intramedullary nailing (IN). Some suggest ISS (Injury-Severity-Score) to decide. Our emergency strategy is IN for any ISS. The objective is to evaluate incidence of ARDS in polytrauma after IN according to the severity of femoral diaphyseal fracture and ISS. We also assess rate of early (surgical site infection (SSI), pulmonary embolism, leg syndrome (LS)) and late complications (nonunion). Methods: We analyzed a retrospective consecutive cohort of 191 patients with an average follow-up of 18 months. IN was performed first day. Group A(n=85), consisting of severe fractures in case of vascular or nerve complications or associated lesion on bone segment (bilateral femoral fractures, neck fracture, floating-knee, hip-dislocation). Group B (n=128), consisting of non-severe fractures. Results: ISS was higher in Group A (23.6vs19.2,p<0.05). Open fractures and smoking subjects were identical. Operating times were longer in Group A (135vs107min,p<0.05). Positive correlation was found between ISS and occurrence of ARDS (p<0.007). ARDS was higher in Group A(11.8%(n=10)vs3.1%(n=4),p<0.007). Rate of SSI was higher in Group A (11.8%(n=10)vs3.1%(n=4),p<0.007). LS were more important in Group A (6vs1,p<0.007). There were more nonunions in Group A (11.8%(n=10)vs3.1%(n=4),p<0.007). No difference was found for the other complication. Conclusion: Occurrence of ARDS is significantly increased in severe femoral fractures treated with IN in polytrauma patient. They attest higher energy trauma as attested by higher ISS. The use of fracture severity as a predictive factor for ARDS and complications may be interesting, associated with ISS, to decide the treatment of femoral fractures in polytrauma patients.

Abstract no.: 51803

USE OF 18F-FDG PET/MRI ASSOCIATED WITH METAL ARTIFACT SUPPRESSION (MAVRIC) IN DIAGNOSIS OF TOTAL KNEE ARTHROPLASTY INFECTION: A PILOT STUDY

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The number of total joint replacements has increased in the past decade and, consequently the number of complications of this procedure also increases. The most challenging complication is the periprosthetic joint infection (PJI). Diagnosis of PJI is very complex. The method used for diagnosis is the one proposed by Musculoskeletal Infection Society. This method is dependant on joint aspiration, which involves risks to the patient. The purpose of this pilot study was to evaluate the viability of a non-invasive method using 18F-FDG PET-MRI associated with metal artifact suppression (MAVRIC) as an aid in the diagnosis of a PJI at the knee. Patients with any suspicion of Total Knee Arthroplasty (TKA) infection were selected for the study. Initially, eight patients were included. They were submitted to 18F-FDG PET-MRI associated with MAVRIC. The Musculoskeletal Infection Society (MSIS) definition of periprosthetic joint infection was utilized for the definition of cases as aseptic or infected. According to the MSIS definition of PJI, 4 patients were considered infection and 4 aseptic. With the PET-MRI was possible to notice an increase in uptake in all patients, but in a higher intensity in septic cases. It was also possible to identify an increase in uptake at the tibia-prosthesis interface in the 4 patients with infection. It is early to evaluate the accuracy of PET-MRI associated with MAVRIC in PJI diagnosis. However, with this method it was possible to evaluate areas with increased peri-prosthetic metabolic activity, which was not possible with other imaging methods.

Abstract no.: 51806

EPIDEMIOLOGY OF TRAUMA PATIENTS PRESENTING TO AN ORTHOPAEDIC DEPARTMENT IN A TERTIARY CARE HOSPITAL

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Background: To record the epidemiological statistics of orthopaedic trauma patients presenting to a major trauma center. **Methods:** In this descriptive study, 5527 patients who presented to the emergency of Orthopaedics department from 5th January 2015 to 4th January 2016 were included. Those who presented with serious injuries associated with trauma fulfilled the criteria. **Results:** Out of 5527 patients, 3002 (54.31%) were males and 2525 (45.68%) females. Male to female ratio of 1.19:1. Lower limb fractures were found in 2516 (45.52%) patients as compared to upper limb fractures which only occurred in 1625 (29.40%). Shoulder dislocations (47%) were found to comprise the majority of the patients who presented with traumatic dislocations. Most of the patients who presented with fractures belonged to the age group of 21-30 years. Motorcycle accident victims made up 34.20%, making it the leading cause of trauma admissions. A rise was seen in patients presenting due to trauma during summer season (April-September) with their incidence 60.29% as compared to winters (39.71%). 2534 (45.85%) patients out of total 5527 patients were discharged on the same day of admission. Fat embolism developed in 108 patients. Out of 295 patients who developed compartment syndrome, 259 (87.8%) had lower limb fractures as compared to those who presented with upper limb fractures (12.20%). **Conclusion:** Preventive measures based upon these statistics can help plan out strategies which will not only reduce the trauma incidence if implemented on a national level but also guide regarding allocation of resources which will benefit the patient in long run.

Abstract no.: 51809

VITAMIN D LEVELS AND SEVERITY OF FOREARM FRACTURES IN CHILDREN

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Objective: To determine the effect of Vitamin-D levels on the severity of forearm fractures in children. **Methodology:** This prospective cohort study was conducted in the emergency Department for a duration of 03 years (5th February 2015 to 4th February 2018). All patients aged up to 12 years of age presenting with low impact closed radius/ulna or both fractures were included in the study. Open fractures, congenital bone disorders, previous fracture of fore-arm, etc. were excluded from study. Based on the fracture alignment, they were either managed conservatively in a cast or operatively. On presentation Vitamin-D levels were measured. If Vitamin-D levels less than 20 ng/dL, termed as deficient. If levels between 20-30ng/mL, termed insufficient. If Vitamin-D level between 30 – 100 ng/dL, it was termed as normal. Data analyzed with SPSS version 23. **Results:** Out of the 475 children with forearm fractures included in the study, 276 (58.1%) were male and 199 (41.9%) females. Patients had a mean age of 9.22.7 years. 86 (18.1%) patients managed operatively while 389 (81.9%) non-operatively. 138 (29.05%) had deficient, 271 (57.05%) insufficient and 66 (13.9%) had normal Vitamin-D levels. Patients undergoing operative treatment (n=86) had mean Vitamin-D levels 19.27.6ng.mL ($p<0.05$) while those treated non-operatively 29.48.5ng/mL ($p<0.05$). Relative risk of surgery with Vitamin-D deficiency was 3.6. **Conclusion:** There is a significant relationship between low Vitamin-D levels and operative management of forearm fractures. Therefore, screening of Vitamin-D levels in children should be made a standard protocol to decrease the likelihood of operative management with low energy forearm fractures.

Abstract no.: 51810

STUDY OF MORBIDITY AND MORTALITY AFTER INTRAMEDULLARY NAILING OF DIAPHYSEAL FEMORAL FRACTURES IN POLYTRAUMA PATIENTS ACCORDING TO ISS

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Introduction: Literature is contradictory about the technique of emergency fixation of femoral diaphyseal fractures of polytrauma. Currently, choice is based on the ISS(Injury-Severity-Score). Intramedullary nailing(IN) is proposed when $ISS < 16$ and Damage Control Orthopaedics(DCO) if $ISS > 25$. Between 16 and 25, the technique is discussed. We practice IN even if $ISS > 25$. The objective is to evaluate early and late complications after IN between ISS categories ($< 16, 16-25, > 25$). Methods: We analyzed a retrospective consecutive cohort of 191 patients (Mean follow-up: 18 months). IN was performed first day. 62 patients had an $ISS < 16$ (Group A), 80 an ISS between 16 and 25 (Group B), 49 an $ISS > 25$ (Group C). We evaluated early (ARDS, surgical site infection (SSI), pulmonary embolism, leg syndrome) and late complications (nonunions). Correlation analyzes were performed using Pearson test. Results: Mean ISS was 20.7[9-75]. Rates of ARDS and SSI were statistically correlated with ISS , respectively: Group A, 1.6%(n=1); 1.6%(n=1)/Group B, 3.8%(n=3); 3.8%(n=3)/Group C, 20.4%(n=10); 20.4%(n=10), $p < 0.007$. Among patients with $ISS > 15$ (n=129): mean ISS was 25.5, 10.1%(n=13) developed ARDS and 10.1% developed SSI. SSI in group C were related to fractures with associated vascular, nerve or bone injury. All cured after appropriate treatment. 5 nonunions have been reported. No correlation were found between other complications and ISS . Conclusion: To compare to literature, an $ISS > 15$ group (Mean $ISS = 25.5$) was extracted. Rate of ARDS reported post-DCO varies from 10% to 20.9% (10.1% in our series). Rate of SSI post-DCO is 11.7% vs 10.1% in our series. No studies report the rate of nonunion post-DCO. Early IN of femoral diaphyseal fractures is justified for polytrauma patients with $ISS < 25$. This strategy generates a significant material and human saving compared to DCO. Beyond 25, a prospective randomized study is needed.

Abstract no.: 51811

MANAGEMENT OF DISTAL FIBULAR FRACTURE NONUNIONS

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Managing non-union of distal fibular fractures can pose a challenge. It is a unique area subjected to multiple forces including shear, torsion, rotation and compression. This complex interaction of forces particularly in an environment of un-united fracture makes it difficult to treat. The exact incidence of non-union in this area is unclear. Treatment options need to take into account several variables but for patients with symptomatic non-union open reduction and internal fixation with or without bone grafting is usually recommended. We present our strategies depending on the type of non-union and level of fracture in treating this condition from a Major Trauma Centre. We had 10 patients with symptomatic non-union of distal fibula who underwent osteosynthesis with or without bone grafting (Calcaneal/iliac crest/allomatrix). There were four males and six females with a mean age of 42.5yrs (range 18yrs-69yrs). All patients had CT scan confirming non-union prior to osteosynthesis. Average time to diagnosis of non-union was 18 weeks. All patients healed and were asymptomatic at discharge.

Abstract no.: 51815

IN VITRO AND IN VIVO STUDIES INVESTIGATING THE ANTI-INFLAMMATORY AND ANTI-RESORPTIVE ACTIONS OF RSOLVIN D1: RELEVANCE TO RHEUMATOID ARTHRITIS

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Introduction: A number of studies have shown that RvD1 exhibits anti-inflammatory and anti-catabolic activities in experimental models of inflammation through mechanisms that are not fully understood. The aim of this study is to further investigate the in vitro and in vivo effects of RvD1 on the major factors involved in arthritis pathophysiology. Methods: Osteoclasts (OC) recruitment and inflammation markers were assessed in murine macrophages RAW267.4 treated with LPS with or without RvD1 for 72 hours. Bone resorption was measured by Von Kossa staining using human monocytes seeded in hydroxyapatite plates and treated with RNKL and M-CSF with or without RvD1 for 2 weeks. The in vivo effect of RvD1 was carried out using mouse model of collagen antibody-induced arthritis. Results: RvD1 inhibits OC recruitment and activation. Furthermore, it decreases bone resorption to basal level, as indicated by the inhibition of OC phenotype markers (TRAP and cathepsin-K) expression and hydroxyapatite matrix resorption. Besides, RvD1 reduces inflammatory mediators (TNF- α , IL-1 β , and PGE2) and concurrently enhances the anti-inflammatory cytokine IL-10 in OC. Moreover, in arthritic mice, RvD1 alleviates clinical score and paw inflammation. Besides, RvD1 reduces inflammatory mediators (TNF- α , IL-17, IL-1 β , IL-6, PGE2) and markedly decreases serum CTX-II levels. Conclusion: Our results clearly show that RvD1 may play an important role in preventing a number of pathophysiological changes associated with arthritic. Additionally to our previous data, our findings suggest that RvD1 presents a novel and original perspective to musculoskeletal diseases therapy.

Abstract no.: 51816

PATTERN OF PELVIC FRACTURES, ASSOCIATED INJURIES AND EARLY COMPLICATIONS IN PATIENTS PRESENTING TO A MAJOR TRAUMA CENTRE

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Objective: To determine the incidence, pattern, associated injuries and early complications of pelvic fractures in trauma patients presenting to a major trauma centre. **Methodology:** This prospective cross-sectional study was conducted for a duration of 01 year (7th January 2017 to 6th January 2018). Trauma patients presenting with pelvic fractures aged 18 years and above included in the study. Patient demographics, fracture pattern and associated injuries recorded. Patients were followed-up for a period of 3 weeks. This was done on 1, 3, 7 and 21. Clear documentation of pelvic fracture pattern from the AP, in-let and out-let pelvic views and all associated injuries. The pelvic fracture pattern was correlated to the mechanism of injury, patient demographics, presence of early complications using SPSS. **Results:** Majority of patients with pelvic fractures were male with a mean age of 36 years. Main mechanism of injury was motor vehicle accidents (60.9%). There was no significant relationship between mechanisms of injury and pattern of pelvic fractures (p -value=0.289). The main Tile's fracture type was type B (67.5%). Acetabular fractures were reported in 26.1% cases. There was no significant relationship between acetabular fracture and pattern of pelvic fractures (p value=0.950). 63% of pelvic fractures were associated with other injuries. Head injury (23.9%) followed by Genito-urinary injuries (21.7%) were the most common associated injuries. There was no significant relationship between associated injuries and pattern of pelvic fractures (p -value=0.289). **Conclusion:** This study showed that the mechanistic classification systems by tiles do not correlate to specific associated injuries as described in some studies. It also highlights the high prevalence of associated injuries in patients with pelvic fractures. Motor vehicle accidents were still the major cause of pelvic fractures.

Abstract no.: 51820

LIMB-LENGTH DISCREPANCY AFTER TREATMENT OF PAEDIATRIC FEMORAL SHAFT FRACTURES WITH TRACTION AT A TERTIARY CARE HOSPITAL

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Objective: To determine the limb length discrepancy (LLD) after treatment of paediatric femoral shaft fractures with traction at a tertiary care hospital **Methodology:** This prospective cross-sectional study was conducted for 02 years' duration from 20-03-15 to 19-03-17. Paediatric patients up to 07 years' age with fracture shaft of femur managed with skin traction were recruited in the study. The demographic data, data on mechanism of injury, type of fracture, associated injuries and duration of treatment was collected. The length of the affected limb was measured on completion of treatment and compared with the length of the normal limb to get the limb-length discrepancy. The average limb length discrepancy was determined for all patients and associated factors determined. **Results:** 182 patients were enrolled into the study. Their ages ranged from 2 to 8 years with an average age of 5.9 years. The male to female ratio was 1.08:1. The average duration of traction was 29 days with a range of 17 to 40 days. The average limb-length discrepancy was -0.94cm. **Conclusion:** Treatment of fractures of the femur with Perkins traction at a tertiary care hospital is generally satisfactory with respect to limb-length discrepancy.

Abstract no.: 51822

COMPLEX THR IN A HIP WITH PROTRUSIO ACETABULUM AND PERIPROSTHETIC FRACTURE AROUND DISLOCATED BIPOLAR PROSTHESIS

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70 year old female after a fall had pain in the right hip and inability to bear weight. In the past, 7 years ago for hip fracture, bipolar prosthesis was placed on the affected side. After recent fall she underwent THR elsewhere for the fracture dislocation, surgery was abandoned due to poor bone stock and inadequate implants. She then presented to us with dislocated hip with THR components. **MATERIALS:** Allograft and cerclage wires were kept ready. Acetabular implants multi holed hemispherical cup with Burch Schneider cage. Femoral modular interlocking long stem uncemented prosthesis was chosen. **CHALLENGES:** Difficult dislocation, loss of column support could make cup placement difficult. Posterior approach, ETO was done to facilitate removal of the prosthesis. Acetabulum: Intraoperatively less than 50 percent host bone and loss of posterior column, cage was placed. Medial defect filled with morcellized allograft over metal mesh. Burch Schneider cage was used. 47 Cemented acetabular cup with poly liner implanted. Femoral side prophylactic wires were placed to avoid fracture propagation. 27.5cm long stem with a collar length of 25cm were inserted into the femoral canal+8.5 cm 28 mm metal head was used. Distal interlocking screw placed. **CONCLUSION:** Osteolysis can be noted with bipolar prosthesis. In protrusio it is difficult to reconstruct the normal centre of rotation of hip. Preoperative classification of bone loss and intraoperative reassessment important to decide the choice of implant. In cases with loss of column support cage is useful. Grafting the medial wall allows lateralization of hip center. Modular interlocking stems can be useful in Type 4 Paprosky femoral defects and allow for independent adjustment of fracture stability and adjustment of limb length, offset and version.

Abstract no.: 51824

LONG SEGMENT BONE LENGTHENING OF THE FEMUR WITH MONO-LATERAL FRAMES

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Introduction: Limb lengthening should be considered for patients with limb length discrepancy of 4 cm. or more. Limb lengthening has been reported to be associated with a high complication rate. **Patients and Methods:** A total of 28 patients with long segment femoral bone shortening (or loss) of various etiology were operated upon, using a mono-plane mono-axial frames. The Ilizarov method of metaphyseal corticotomy-callotasis was applied to most cases except in 8 cases of chronic poliomyelitis where a metaphyseal anterior closing wedge (recurvatum) corrective osteotomy was done to treat hand to knee gait, and another one case of old femoral mal-union with shortening & angulation where a diaphyseal corrective osteotomy was done. The bi-focal technique was done in 4 cases (14.2 %). **Results:** The femora were lengthened to an average of 9.3 cm. (= 26 % of original femoral bone length), range of lengthening was: 6.5 - 17 cm. (= 17 – 56.6 %). The average healing index was 32 days per centimeter (with a range of 26 to 43 days per centimeter.). **Conclusion:** It was concluded that mono-plane lengthening devices can provide a high success rate in femoral bone lengthening of various etiology with a well accepted complication rate.

Abstract no.: 51825

COMPOSITE CERAMIC GRAFTS IN PAEDIATRIC LARGE BENIGN BONE TUMOURS

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Introduction: In the pediatric age group, filling of some cavitory benign bone lesions may be problematic because of the limited available volume of autogenous iliac bone graft and donor site morbidity. So, synthetic materials are becoming an increasingly popular alternative or adjunct to bone graft in such situations. **Objectives:** To evaluate prospectively the results of using a combination of TCP and HA in pediatric large benign bone defects. **Methods:** 37 cavitory benign bone lesions (in 34 children 1.5 – 9.6 y.) were managed by local curettage and the application of a composite ceramic bone substitute. The mean size of the cavitory bone lesion was 21.7 cm². Patients were followed clinically and radiologically for an average of 44 m (26m – 57m). **Results:** Patients` function and parents` satisfaction with the procedure were graded as satisfactory end result in all patients. Bone healing (according to Neer et al. grading system) was 28.6% type (1), 64.3%, type (2) and 7.1% type (3). Graft resorption and incorporation (according to Irwin's staging system) was 35.7% grade II and 64.3% grade III, at the latest follow up (average 44 m). There were no major early or late post-operative complications. **Conclusions:** Composite ceramic bone substitutes are a satisfactory option in the management of pediatric cavitory benign bone lesions.

Abstract no.: 51828

EXTERNAL FIXATION AND PERCUTANEOUS PINNING IN UNSTABLE DISTAL RADIUS FRACTURES

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Background: Distal radius fractures (DRFs) crush the mechanical foundation of man`s most elegant tool, the hand. The impact of Colles` teaching, led many surgeons to refer loosely to any DRF as a Colles` fracture. Because of its frequency and the impact of the old teaching, it is usually managed by inexperienced junior staff. Unfortunate results are obtained frequently, as the malunited DRF is associated with significant functional deficits. Patients and methods: 126 unstable DRFs (in 121 patients: 18 - 80 y.) were operated upon. Percutaneous pinning (PCP) was performed in 90 fractures, and external fixation (\pm open reduction \pm PCP) was done in 36 fractures. Bone grafting was done in 27 fractures. Mean follow-up period was 16.8 m. with a range of 10 – 24 m. Results: Final radiologic scoring (Sarmiento & Latta`s modification, 1981) was 77.8% satisfactory and 22.2% unsatisfactory results. Final clinical end results (Jakim et al., 1991) were 35% excellent, 31.7 % good, 19% fair and 14.3% poor. Total complication rate was 36% (110 complications = 0.87 complication / fracture). Conclusion: reduction of inherently unstable DRFs must be maintained with PCP or distraction fixation, otherwise a high complication rate and less favorable final outcome should be expected.

Abstract no.: 51831

BRIDGING INFECTED LONG TIBIAL DEFECTS

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Introduction: Post-traumatic tibial non-union in association with infection is not uncommon. When tibial shortening occurs and soft tissue complications are added to this problem due to multiple surgical procedures to solve the first problem, this is one of the heaviest complications in bone-joint surgery. **Objectives:** to evaluate the results of radical debridement, compression, and remote callotasis using monoplane frames in infected, non-united tibiae with bone loss. **Methods:** 25 tibial non-united fractures;(8-65y), complicated with infection, shortening (4-11 cm.) and skin or other soft tissue complications; following repeated surgeries (2-5 previous operations) were subjected to debridement of the soft tissues at the non-union site with excision of bone ends till healthy bone (adding more shortening). Mono-planer external fixators were applied to all cases; compression was applied to fracture site, and distraction-callotasis principle was performed at a proximal (or distal) corticotomy. **Results:** Bone healing was achieved in 24 cases (96%) in 12 – 28 weeks (mean of 18.2 weeks). Infection was eradicated in 22 cases (88 %); all were united. The mean length gained was 7.7 cm (6.5-14.5 cm). Satisfactory results were obtained in 22 patients (88%) and unsatisfactory results in 3 patients(12 %). No major complications were encountered; There have been no refractures or loss of length. after a follow-up of 3,6 years (range 2.5 - 7 y). **Conclusions:** Competent mono-plane devices, combined with proper debridement can give a high success rate in achieving bone healing, eradication of infection and correction of shortening in tibial non-union associated with infection and long segment bone loss.

Abstract no.: 51834

TREATMENT OF MUSCULOSKELETAL INFECTIONS USING OZONE

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Ozone, being an antibacterial, has the tendency to kill any bacteria without an envelope. Used as an external application method called ozone bagging, it can heal an ulcer of the foot which is on the verge of gangrene or even help non healing ulcers heal with good skin coverage over a period of 45 days to 60 days. Heals without the need of skin grafting in certain cases, as our research has proven. Ozone can be the future antibacterial and will help reduce antibiotic abuse of used substantially all over the world.

Abstract no.: 51835

TEN YEARS POST-COMPRESSION ARTHRODESIS IN INFECTED DIABETIC CHARCOT ANKLE JOINT

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Background: Infected diabetic Charcot ankle joint is a real surgical challenge because of the resistance of infection, presence of deformity and instability that – in many instances - makes amputation inevitable. Patients and methods: 20 patients (44 – 69 y.) with actively draining sinus(es) from unstable, deformed diabetic Charcot ankle joints; were operated upon. All were giving a history of previous multiple drainage or soft tissue debridement procedures 2 to 5 times. All patients were treated by a one stage intervention as: radical debridement of the infected bone and soft tissues followed by ankle compression arthrodesis by a modified Charnley's device. Results: 12 patients (60%) showed solid (bone) union, with infection eradication in 9 (45%) of them. Five patients (25%) had stable (fibrous) nonunion with infection eradication in only 3 (15%) of them. Two patients (10%) showed complete failure of the procedure in the form of unstable nonunion with persistence of infection. The remaining one patient (5%) had no residual infection but still with unstable nonunion. Average time for bone healing was 14w. (12-23w.). Surgical wound (& sinuses) closure time was 4w. in average. Residual average limb length discrepancy was 2.5 cm. There was no late reactivation of infection after a follow up of 10 years (6 - 125 y.). Conclusion: this combined joint debridement and compression arthrodesis in infected diabetic Charcot ankle joints obtained a total satisfactory stable ankle in 85% of patients (with 60% solid union); and infection eradication rate of 65%.

Abstract no.: 51837

FUNCTIONAL OUTCOME OF OPERATIVE MANAGEMENT OF HUMERAL SHAFT FRACTURES

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OBJECTIVE: To determine the functional outcome of operative management of humeral shaft fractures. **MATERIAL AND METHODS:** This prospective study was conducted from 12th January 2015 to 11th January 2016. Inclusion criteria were acute diaphyseal fractures of humerus (within two weeks of injury) and patients older than 18 years. Standard posterior triceps-splitting approach to the humerus was used. Post operatively patients were followed up at 2 weeks, 6 weeks, 3 months and six months. At six months functional outcome was assessed using the American Shoulder and Elbow Surgeons Scoring System and Mayo Elbow Performance Score. Data analyzed using SPSS version 23. **RESULTS:** A total of 50 patients were included in the study. 34 patients were male while 16 female. The mean age of patients was 36.8 ± 10.9 . Major indication for surgery was humeral shaft fractures with multiple injuries accounting for 27 (54%) cases. 3 (6%) patients had iatrogenic radial nerve injury while none of the patient had post-operative infection. Patient self evaluation of pain severity using visual analog scale ranging from 1 to 10 showed that 25 (50%) patients had 0 and 16 (32%) had 1 rated on pain scale. The maximum pain severity reported was 6 out of 10 by one patient. The range of motion in 42 (93.3%) patients was characterized by an arc of motion $> 100^\circ$ and 41 (91.1%) had shoulder joint stability. On average shoulder functioning following surgery was good with a mean ASES score of 81.1 (SD 10.6). **CONCLUSION:** The results of this study indicate operative management of humeral shaft fractures results in good functional outcome with few complications.

Abstract no.: 51840

**IS BRACING REQUIRED AFTER OPEN REDUCTION INTERNAL
FIXATION OF FRACTURES OF THE TIBIAL PLATEAU?**

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Objective: To determine the difference in functional and radiographic outcome between bracing for 06 weeks and no bracing after open reduction internal fixation in Tibial plateau fractures. **Methodology:** This randomized controlled trial conducted for a duration of 03 years (5th January 2015 to 4th January 2018). All patients aged 18 years and above with tibial plateau fractures were classified according to Schatzker and OTA classification and those who underwent open reduction internal fixation (ORIF) were included in the study. Patients who had instability of fracture after reduction, unstable ligamentous injury, loss of extensor mechanism were excluded from the study. Patients divided into 02 groups, A and B. Group A in which brace applied for 06 weeks post-operatively while those in B no brace applied. Functional and radiographic outcomes measured at 2, 6, 12 and 24 weeks post-operatively. Data analyzed using SPSS version 23. **Results:** A total of 60 patients were included in the study, with 30 patients in each group. Mean age of patients in group A 36.18 years and 37.17 years ($p=0.84$). In group A, 15 patients had schatzker type II, 3 type IV, 8 type V and 4 type VI while in group B 10 had type II, 8 type IV, 5 type V and 7 type VI ($P>0.05$). In terms of post-operative range of motion ($p=0.49$) and radiographic union ($p=0.68$), there was no statistically significant difference between the 2 groups. 1 patient had joint collapse/malalignment in group B as compared to none in other group ($p=0.82$). **Conclusion:** Post-operative bracing after ORIF of tibial plateau fractures provides no advantage as compared to non-braced group in terms of functional and radiographic union.

Abstract no.: 51841

PATTERN OF PAEDIATRIC SUPRACONDYLAR HUMERAL FRACTURES

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Background: Supracondylar Humeral fractures are common in Children. They can be complicated with neurovascular injuries and compartment syndrome which if not quickly recognized and managed will be associated with morbidity which may last the entire life time of the Child. If these fractures are poorly managed residual deformities are common. **Aims and Objectives:** To determine the epidemiology and mode of management of Children who present with supracondylar fractures of the Humerus at the National Orthopaedic Hospital Igbobi Lagos, Nigeria. **Study Design:** It is a descriptive retrospective study of the characteristics of Paediatric patients with supracondylar Humeral fractures. **Setting:** The study was carried out in National Orthopaedic Hospital, Igbobi, Lagos, Nigeria. **Materials and Method:** All Paediatric patients who presented at the Hospital with supracondylar Humeral fractures over a four years period (1st of January 2014 to 31st of December 2017) were included in the study, data were collected from the patients case notes. The age, sex, side of injury, type of injury, Gartland classification and method of management were obtained. **Result:** A total of 56 patients were reviewed with a mean age of 5.67 +/-2.88 years (range 1 year to 12 years). Thirty nine were male (69.6%) and 17 female (30.4%) with a male:female of 2.3:1. Extension type was 55 (98.2%) while flexion type was 1 (1.8%). Of the extension type of supracondylar fractures 9 (16.4%) were Gartland type I, 3 (5.4%) were Gartland type II and 43 (78.2%) were Gartland type III. Twenty four (42.9%) patients had non operative management and 31 (55.3%) had surgery. **Conclusion:** Supracondylar Humeral fractures are common in Children and are more in boys than girls. Education of care givers can reduce the burden of this injuries.

Abstract no.: 51844

INCIDENCE OF VENOUS THROMBOEMBOLISM IN PATIENTS OF PROXIMAL FEMUR FRACTURES: A CROSS-SECTIONAL OBSERVATIONAL STUDY AT A TERTIARY CARE CENTRE

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Venous Thromboembolism (VTE) includes deep venous thrombosis (DVT) and embolisation to pulmonary circulation (PE). Proximal femur fractures may require prolonged immobilisation. This in turn is associated with increased risk of DVT and subsequent PE. The present study was initiated to identify the risk of VTE in isolated proximal femur fractures and identify the requirement of routine thrombi-prophylaxis in this subset of trauma patients. It was a prospective study conducted over a period of one and a half years. Patients having any other known risk factors associated with DVT were excluded, so that proximal femur fracture remained the only risk of DVT. A total of 66 patients with fracture proximal femur were assessed and studied out of which 42 were males with mean age of 48.1 years and 24 females with mean age of 58.3 years. A total of 9 cases of radiologically proved DVT were observed. Clinical DVT was seen in 5 of these cases (54%). In two patients doubtful lesion in proximal veins was seen in Colour Doppler. One patient who was on conservative treatment, had clinical sign for DVT like swelling in the leg, calf pain but was negative on routine radiological examination. All the 3 cases were diagnosed positive on CT venography. The provision of DVT screening both clinically and radiologically, should be made routine in all such patients.

Abstract no.: 51846

COMMON HIP CONDITIONS REQUIRING PRIMARY TOTAL HIP ARTHROPLASTY: A CROSS-SECTIONAL OBSERVATIONAL STUDY

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Primary osteoarthritis of hip has been widely reported to be the leading cause for total hip replacement (THR) in the world. The other common causes are Avascular necrosis of hip, inflammatory diseases and trauma sequels. We report the prevalence of these disease in the North Indian population as studied retrospectively at a tertiary healthcare centre and discuss the common age group and gender of these patients as compared to the West. Patients who underwent primary THR in our institute within 6 years were called and retrospectively analysed. Revision cases were excluded. All the surgeries were done by a single experienced arthroplasty surgeon. 118 hips in 99 patients (M:F- 3.2:1) with a mean age group of 43.22 years, were operated over a period of 6 years. Avascular necrosis of hip topped the list in our study with 42.4 % of cases, followed by post-traumatic conditions (30.5 %). These were followed subsequently by primary osteoarthritis (14.4%) and the remaining by inflammatory pathologies. In our part of the world, frequency of males undergoing hip arthroplasty is more than females and at a younger age as compared to the West.

Abstract no.: 51850

IMPROVED INFECTION ERADICATION RATE AND PATIENT-REPORTED OUTCOME WITH FUNCTIONAL ARTICULATING SPACERS IN TWO-STAGE REVISION OF THE INFECTED HIP

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Introduction: We hypothesized that patients treated with two-stage revision arthroplasty of an infected total hip prosthesis with the use of a functional articulating spacer achieved better patient related outcome while maintaining good infection eradication rate, compared to patients treated with prefabricated antibiotic-loaded spacers. **Methods:** This study retrospectively included all patients treated with a two-stage revision of their hip arthroplasty between 2003 and 2016. We contacted all patients to complete HOOS and EQ-5D scores to evaluate patient related outcome. Primary outcome was absence of infection at final follow-up. **Results:** Seventy patients could be retrospectively included in the study, of which fifteen were treated with a functional articulating spacer. Spacer dislocation occurred more frequently in patients treated with a prefabricated spacer. The functional articulating group achieved a significantly better HOOS score (66 vs 101, $p < 0.001$) and EQ-5D quality of life (84 vs 69, $p < 0.001$). Infection eradication rate was higher for the functional articulating (93 vs 79% treatment success, $p = 0.09$). Mean follow-up was 37 months. **Conclusions:** Functional articulating spacers are a safe alternative to prefabricated antibiotic-loaded spacers for infection eradication and provide improved patient reported outcome and less complications compared to prefabricated spacers.

Abstract no.: 51851

TWO-STAGE REVISION ARTHROPLASTY FOR COAGULASE-NEGATIVE STAPHYLOCOCCAL PERIPROSTHETIC JOINT INFECTION OF THE HIP AND KNEE

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Introduction: This study evaluated the infection eradication rate of two-stage revision arthroplasty for periprosthetic joint infection (PJI) of a hip or knee prosthesis caused by Coagulase Negative Staphylococci (CoNS). **Methods:** We retrospectively included all patients with CoNS PJI of the hip or knee treated with two-stage revision between 2003 and 2016. Patients with PJI of the hip were treated with a functional articulating spacer or a prefabricated spacer. Patients with PJI of the knee were treated with a dynamic or a static spacer. Primary outcome was absence of infection at final follow-up. **Results:** Forty-four patients were included, of which twenty-nine patients had PJI of the hip and fifteen of the knee. Six patients had a polymicrobial infection. Due to antibiotic resistance of the bacteria, twenty-three patients were treated with vancomycin and two patients with linezolid. The mean spacer interval was eight weeks. Infection eradication was achieved in twenty-two hip patients (76%). Of seven failures, six were treated with a prefabricated spacer. Infection eradication was achieved in eleven knee patients (73%). Six cases were considered as failure, of which three were treated with a static spacer. Mean follow-up was thirty-seven months. **Conclusions:** Polymicrobial infection did not influence infection eradication rate. Functional articulating spacers of the hip and dynamic spacers of the knee showed better outcomes compared to their more static alternatives. Although CoNS PJI of a hip or knee prosthesis can often be difficult to treat, acceptable infection eradication rates can be achieved with two-stage revision arthroplasty.

Abstract no.: 51854

A FORGOTTEN RETAINED DRAIN INSIDE A KNEE FOR TEN YEARS

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Introduction: Surgical drains are inserted into the wound after an arthroscopic knee procedure mainly to decrease fluid collection after the operation. The use of postoperative surgical drains remains controversial. Case presentation: This report presents a rare case of a forgotten retained drain that was accidentally found inside a knee 10 years after an arthroscopic procedure. The drain was removed without any complications. Discussion: A retained and broken drain during removal is a very rare and preventable complication that can be stressful for both the patient and surgeon. Most of the literature supports that retained drains in the soft tissues do not affect long-term outcomes, but if the drain fragment is in the intra-articular area, it might cause complications. Furthermore, there are several preventive measures to avoid retained surgical drains. Conclusion: By reporting this case of a forgotten drain retained inside a knee for approximately 10 years, we aim to illustrate the potential risk of leaving a drain inside the joint following an arthroscopic procedure. Furthermore, we advise that surgeons maintain a high index of suspicion for iatrogenic complications when a patient continues to complain about unexplained pain at the surgical site.

Abstract no.: 51858

PROSPECTIVE STUDY OF RADIOLOGICAL AND FUNCTIONAL OUTCOME OF ANTERIOR BRIDGE PLATING OF A SHAFT OF THE HUMERUS FRACTURE

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Anterior bridge plating through Minimally invasive plate osteosynthesis (MIPO) is biological in nature and received a wide acceptance for long bone fractures. Shaft of humerus fracture conventionally treated with open reduction internal fixation with plating. There are safe zones for anterior bridge plating of humerus which was proved through cadaveric study of relationship between plate and radial nerve. My study will show radiological and functional outcome of Anterior bridge plating of shaft of humerus fracture.

Abstract no.: 51859

DISTRIBUTION OF SKELETAL TRAUMA IN HIV-INFECTED SUFFERERS WITH POLYTRAUMA

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People infected with HIV, who are integrated into society and may receive a polytrauma are an important problem. The study is based on the analysis of 147 patients with polytrauma and verified HIV infection. Skeletal trauma among the affected of the main massive - 72 cases, which constituted 48.9 % of the massive. Among the recovered HIV-infected sufferers the most common skeletal trauma was a hip fracture. Such injuries were detected in 22.7 % of cases. In the group of the deceased, the victims of fracture of the shin have met most often. The fourth part of the victims with skeletal trauma had fracture of the shin. A fairly frequent injury among the HIV-infected affected both the group of recoveries and those of the deceased was a spine injury that was found in 18.2 % and 14.2 % respectively. The trauma of the shoulder was in 13.0 % of the array of the recovered ones and 7.7 % of the mass of the dead victims.

Abstract no.: 51861

PROSTHETIC ARTICULATING SPACERS MAY REDUCE THE NEED FOR SECOND-STAGE REIMPLANTATION IN PERIPROSTHETIC JOINT INFECTION

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Background: Management of periprosthetic joint infection (PJI) of the knee generally dictates removal of components and implantation of an antibiotic-loaded cement spacer, followed by reimplantation surgery. While infection eradication rates have been relatively high, the morbidity conferred by this temporary treatment is significant. The aims of this study were to compare the reimplantation and complication rates between prosthetic articulating and cement articulating spacers. **Methods:** A retrospective study was conducted on knee PJIs treated at our institution between 2013-2016. Patients presenting for their index resection arthroplasty procedure and implantation of a cement or prosthetic articulating spacer with minimum 1-year follow-up and documented range of motion (ROM) were included. Outcomes assessed included reimplantation, reinfection, reoperation and ROM. Analyses were performed using a logistic regression accounting for patient demographics, and Mann Whitney test for ROM. **Results:** There were 54 cement and 31 prosthetic articulating spacers. Patients who received prosthetic articulating spacers were significantly less likely to undergo a second surgery after spacer placement (odds ratio [OR] = 0.003, p=0.001). Although reoperation (OR=1.61, p=0.41) and reinfection (OR=1.55, p=0.56) rates were higher in patients with prosthetic articulating spacers, this was not statistically significant. Postoperative flexion was also not statistically different between cement (105.3°±2.7°) and prosthetic (108.0°±2.8°) articulating spacers (p=0.66). **Conclusion:** The majority of patients undergoing implantation of a prosthetic articulating spacer did not undergo reimplantation surgery, without increasing reoperation or reinfection rates. This may be due to improved knee function from a prosthetic articulating spacer that may discourage patients from undergoing second stage reimplantation.

Abstract no.: 51864

THUMB ULNAR COLLATERAL LIGAMENT: ANATOMICAL DESCRIPTION AND HOOK PLATE RECONSTRUCTION IN FRACTURE-AVULSIONS

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Introduction: Ulnar collateral ligament (UCL) injuries are among the most common injuries to the hand and the most common injury to the thumb the metacarpophalangeal joint (MCPJ). Acute injuries have been characterized in various sports. Incidence has been documented as high as 50 per 100,000 and as being involved in 86% of thumb MCPJ injuries, in one study. Even in their partial form, participation in athletics is compromised by pain and weakness Background: The purpose of this study is to evaluate outcomes of ligament repair with hook-plate osteosynthesis in acute thumb ulnar collateral ligament (UCL) injuries. Methods: Patients at least two years UCL tear were contacted for clinical evaluation, radiographs, and postoperative outcome questionnaires, including the Disabilities of the Arm, Shoulder, and Hand (DASH) questionnaire, visual analog scale (VAS) pain scale, and study-specific questions. Twelve of 15 (80%) patients were available, greater than 1 year follow-up (average 15 months, range 12-22). Results: Joint stability was complete in all cases. 2 cases had lost five degrees of flexion of metacarpophalangeal joint, but without pain. It was not necessary to remove any hook plate. The technique is shown in an anatomical cadaver dissection. Conclusions: Hook plate osteosynthesis may therefore allow an earlier return to forceful pinch activities and also provide a greater resistance to catastrophic failure in the early postoperative period for non-compliant or highly active patients.

Abstract no.: 51867

**ASSESSMENT OF CLINICAL AND RADIOLOGICAL OUTCOME OF
INTERTROCHANTERIC FRACTURES FIXED WITH PROXIMAL FEMORAL
NAIL IN ELDERLY OSTEOPOROTIC INDIVIDUALS IN RURAL INDIA**

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Introduction: Intertrochanteric femoral fractures constitute approximately 50% of all hip fractures. Reliable fixation of intertrochanteric hip fractures, particularly those with unstable patterns and cortical comminution, remains an unsolved problem. Recently popular modality is fourth generation of intramedullary nails like the Proximal Femoral Nails gave good results among rural population & elderly where squatting, sitting crossed leg were part of activities of daily living. Aim of the Study: To assess the clinical & radiological outcome of Unstable Intertrochanteric fractures treated with PFN in elderly & osteoporotic individuals. Materials & Methods: A prospective study done at the Department of Orthopaedics, Rajah Muthiah Medical College & Hospital, Annamalai University, Chidambaram. Elderly Patient (age >60years) with Intertrochanteric fractures were treated with PFN (short intramedullary nail) & Follow up done at regular intervals for a period of 36 months. Results & Conclusion: Fifty patients with unstable Intertrochanteric fracture were treated with PFN from June 2014 to August 2017. Mean age of the patients 65.07 years (35-92 years). Overall mean time of radiological fracture union was 15 weeks (range 13-18). Mean hospital stay was 13 days (range 12 to 18 days). The mean Modified Harris Hip Score of the PFN was 88.25. In our study, Patients with Unstable intertrochanteric fracture treated with proximal femoral nail had results that were comparable with that of other studies done elsewhere with good radiological and functional outcome.

Abstract no.: 51868

CLINICO-RADIOLOGICAL AND FUNCTIONAL EVALUATION BETWEEN PROXIMAL FEMORAL LOCKING COMPRESSION PLATE AND PROXIMAL FEMORAL NAIL IN UNSTABLE PROXIMAL FEMORAL FRACTURES

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OBJECTIVES: To Evaluate the Clinico-radiological and functional outcome of unstable proximal femoral fractures after managing them with Proximal femoral locking Compression plate (PF-LCP) or Proximal femoral nailing (PFN). **STUDY DESIGN:** prospective. **PATIENTS/PARTICIPANTS:** Total sixty patients with unstable proximal femoral fractures were selected for study. **INTERVENTION:** Thirty patients were treated by PF-LCP and Thirty patients were treated by PFN. **MAIN OUTCOME MEASUREMENTS:** Clinico-radiological assessment and comparison was done based on duration of surgery, total amount of blood loss (during surgery and drain output), radiological assessment for bony union, complications (intra –op and post-op). Modified schatzker –lamber score and Harris-hip score at the end of 6 months. **RESULTS:** Cases treated with PFN had higher rates of radiological union, less operating time, less no of days of hospital stay, less complications like non-union. In thirty cases treated with PFN, no complications occurred. In thirty cases treated with PF-LCP, 26 cases had no complications and non-union occurred in four cases treated with PF-LCP. Average Harris hip score in patients treated with PFN is 88.67 and in patients treated with proximal femoral locking compression plate PF-LCP is 80. Comparing with Modified Schatzker –Lambert score, PFN had 0(0%) failure, 15 (50%) excellent, 13 (43.3%) good, 2 (6.7%) fair results. PF-LCP had 4 (13.3%) failure, 2 (6.7%) excellent, 13 (43.3%) good, 13 (36.7%) fair results ($p < 0.001$). **CONCLUSION:** In unstable proximal femoral fractures, PFN is a better implant than PF-LCP.

Abstract no.: 51869

REDUCTION IN PROSTHETIC JOINT INFECTION AFTER INTRODUCTION OF PERIOPERATIVE WOUND IRRIGATION WITH CHLORHEXIDINE: A LARGE-SCALE EVALUATION OF A CHANGE IN STANDARD CARE

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Introduction: Consequences of prosthetic joint infections can be devastating. Perioperative application of chlorhexidine could provide a valuable additive to systemic antibiotics to reduce infection rates. However, it may cause cytotoxicity, and impair wound healing. The purpose of this study was to compare rates of infection and wound leakage before- and after introduction of perioperative chlorhexidine lavage. **Methods:** All 4494 patients receiving a primary hip or knee prosthesis between 2007-2013 in our hospital were retrospectively included. All underwent perioperative lavage before wound closure. Initially, wound irrigation with 0.9% NaCl was standard care (n=2304). In 2008, irrigation with chlorhexidine was gradually introduced (n=2190). The incidence of prosthetic joint infections and wound leakage, as well as relevant baseline characteristics and details from the surgical report were derived from medical charts. The effect of chlorhexidine on infection and wound leakage was determined using multivariate logistic regression models and corrected for baseline characteristics. **Results:** The prosthetic infection rate was 2.5% in the NaCl-group and 1.5% in the chlorhexidine-group, while wound leakage occurred in 15.9% of the NaCl-group and 19.0% of the chlorhexidine-group. Multivariate logistic regression revealed that chlorhexidine significantly reduced the risk of infection (OR=0.55, 95%CI=0.35-0.86, p=0.009) and did not significantly affect wound leakage (p=0.254). **Conclusion:** Implementation of chlorhexidine lavage before wound closure as standard clinical practice reduced the incidence of prosthetic joint infections. With an odds ratio of 0.55 after correction for potential confounders, chlorhexidine lavage seems more effective than NaCl irrigation in reducing infection after total hip and knee arthroplasty.

Abstract no.: 51870

A REPORT OF THREE CASES OF EXETER V40 STEM FRACTURE WITH EXPLANATION OF POSSIBLE CAUSES

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Introduction: The Exeter V40 stem is one of the most commonly used femoral components in total hip arthroplasty. Its design, material and finish have evolved significantly from the original model. With modern metallurgy, the rate of stem fractures has markedly reduced. This study highlights three different patterns of stem fractures. Methods: Retrospective analysis of the entire consecutive series, which comprised over 2000 primary cemented Exeter V40 stems performed by the senior author. We analysed data from the England, Wales, Scotland and Northern Ireland National Joint Registry latest update for 2017 and surgeon's local database Orthowave. Results: There were 7 revision cases following primary hip arthroplasty by the senior surgeon (1 infection, 3 stem fractures, 3 peri-prosthetic fractures). The overall risk of a stem fracture was estimated to be 0.26% (95% CI 0.0% to 0.55%). In contrast with the classic mid-stem fatigue fracture associated with cantilever loosening; we report three different patterns of stem fractures. All implants were well fixed and well functioning clinically. There was no associated history of trauma. The three patterns were: fracture through the insertion guide hole, mid-stem fracture in a well-fixed short (125 mm) stem, and fracture at the neck distal to the trunion. The cases were attributed to design plus combination of size selections. Conclusions: With the availability of implant variety in offset, stem designs and head sizes; surgeons must be aware of the risk of stem fracture. It is critical that the correct sized stem and geometry is individually selected in each case.

Abstract no.: 51872

UNCEMENTED CURVED SHORT STEM FOR ENDOPROSTHETIC RECONSTRUCTION OF DISTAL FEMUR: A NEW DESIGN OF FEMORAL STEM

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Introduction: The uncemented endoprosthetic knee replacement has become a mainstream treatment for malignant tumor in distal femur. Most of the femoral stems are straight-designed and mismatch with the anterior bow of femur. This study aimed at presenting and evaluating early-term outcomes of uncemented curved short stem used in the reconstruction of the distal femur. **Methods:** Forty-two patients underwent distal femur replacement with curved press-fit stem. Limb function was evaluated by using the scoring system of the Musculoskeletal Tumor Society (MSTS). To assess the osseointegrated interface, the axial length of press-fit area and the perpendicular distance of radiolucent area between stem and bone were measured by using the images obtained by digital Tomosynthesis with Shimadzu Metal Artefact Reduction Technology (T-SMART). Postoperative complications and oncological outcomes were monitored during each visit by X-Rays and T-SMART. **Results:** Of the 42 patients, two died, and one manifested local recurrence. The minimum follow-up time for survived cases was 24 months. No aseptic loosening or mechanical failure was observed. Three patients developed periprosthetic infection, and one underwent subsequent amputation. The mean MSTS score was 85.8%. The average effective contact-length of press-fit stem with bone was 74.0 mm, and there was nearly undetectable radiolucent gap between the implant and the bone in either medial/lateral or anterior/posterior planes. **Conclusion:** During early-term follow-up in knee endoprosthesis, an uncemented curved short stem provides a stable bone-prosthesis interface without any aseptic loosening.

Abstract no.: 51873

IMPROVEMENT IN FUNCTIONAL OUTCOME AFTER TOTAL KNEE ARTHROPLASTY

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Objective: To determine the functional improvement in patients with advanced osteoarthritis knee after Total Knee Arthroplasty. **Material & Methods:** This prospective, cohort study was conducted in the Department of Orthopaedics for 02 years from 6th August 2015 to 5th August 2017. All patients undergoing Total knee Arthroplasty (TKA) for degenerative osteoarthritis of knee were included in the study. Exclusion criteria were patients previously operated on the same knee, sepsis, post-operative complication, etc. Patients functional status assessed using Visual analog pain scale (VAS), range of motion (ROM) of knee and timed up & go test before and after (2 and 6 weeks of) TKA. All data recorded on a preformed questionnaire. Results analyzed using SPSS 22. **Results:** A total of 106 patients who met the inclusion criteria were included in the study. Of the total, 79 (74.5%) were male and 27 (25.5%) females. Average BMI of patients 24.583.92. Average age of patients was 59.348.21 years. There was a statistically significant improvement in the functional parameters before and after TKA, i.e. ROM (knee flexion; p-value=0.006, knee extension; p-value=0.004) and VAS score (p-value=0.008). While in case of timed up and go test the results were not significant before and after TKA(p-value=0.92). **Conclusion:** The functional outcome of patients significantly improved after TKA in patients with advanced osteoarthritis knee. Therefore, patients with this condition instead of opting for conservative approach should be made aware about the significant improvement in their functional status of knee that occurs after TKA, so that they opt for TKA.

Abstract no.: 51874

A CASE STUDY: ANEURYSMAL BONE CYST OF THE LATERAL END OF CLAVICLE IN A 16-YEAR-OLD BOY

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Introduction: Aneurysmal bone cysts are benign expansile tumour and mostly diagnosed in children and adolescents with common location includes the proximal humerus, distal femur, proximal tibia, spine, flat bone like pelvis and scapula. Besides, clavicle is a relatively rare site for this lesion thus found in very few literatures. So, the investigators were inspired to measure the outcome of intervention procedure through follow-up because of rare condition and difficult to diagnose. Materials and Methods: Aneurysmal bone cysts of lateral end of clavicle in a 16 years old boy was selected on purpose (consideration of exclusion criteria) and treated with curettage and bone grafting through close supervision by the surgeons as well as follow-up. The proper intervention procedure revealed that the patient has been followed up for one year with no evidence of recurrence. Result: This case report found, curettage and bone grafting were more effective intervention for benign tumor like lesions in clavicle which helped the patient to enrich the maximum functioning successfully. Recommendation: Curettage and bone grafting can be suggested as a specific treatment procedure for management of clavicle tumor specially for children and adolescents. Though the case report found better outcome but authors are recommending to do further study to analyse the efficiency of the curettage and bone graft.

Abstract no.: 51876

PSI FOR TUMOUR SURGERY

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Custom-made implants have been used for bone tumors for over 20 years. However, patient-specific instruments or templates (PST) are not repeatedly used for bone tumor surgeries. Fractures could happen in beginning tumors; and the fixation is usually challenging when it is close to the physis. This work explores additional benefits of computer-assisted orthopaedic surgical techniques. CT-based PST were used for benign tumor surgery. A 12-year-old child presented with an aneurysmal bone cyst (ABC) in skeletally immature lower tibia complicated with non-united fracture. CT scanning of the lower half of the tibia was done and the affected bone was 3D printed as a model (plastic bone). Then, preoperative simulation of surgery was done to determine the direction and length of the screws to avoid insertion into the tumor. The best plate was selected to fit onto the bone without bending the plate. It was possible to outline the upper and lower limits of the tumor preoperatively. It was possible to detect the trajectory of the screws keeping away from the tumor and the growing plate (physis). PST was applicable for benign tumor surgery and it appears the same principle can be applied for surgery of malignant tumors and fracture fixation. The use of computer-assisted surgery with PST is gaining more attention. The technique has shown high success rate in joint replacement, osteotomy and hip resurfacing. Thus, it has been now applied in more sophisticated surgeries such as pedicle screw fixation and tumour resection. The use of both patient-specific guides and implants can further enhance the use of computer technology in orthopaedic surgeries.

Abstract no.: 51879

OPEN REDUCTION ELASTIC STABLE INTRAMEDULLARY NAILING OF DIAPHYSEAL FRACTURE OF THE FEMUR AND TIBIA IN CHILDREN

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Introduction: ESIN is a method of endo-medullary fracture fixation using elastic nails for the surgical treatment of long bones diaphyseal fractures with fluoroscopic guidance. In the absence of sophisticated fluoroscopic techniques, open surgical procedures becomes indispensable. Objective: the main aim of this study was to evaluate the short and mid term outcomes of open reduction ESIN. Patients and methods: it is a retrospective study of data compiled in the trauma and orthopaedic surgical service over a period of 05 years running from January 2011 to December 2016. A total of 40 patients aged 5 to 15 years presenting with diaphyseal fracture were treated with open reduction ESIN. The treatment outcomes were evaluated using the Flynn criteria. Results: At an average follow up of 18 months (12-52 months), the results were excellent in 25 cases, good in 18 cases, and poor in 2 cases. The femoral segment was the most frequently involved 30cases. Kirschner wires (K-wires) were exclusively used. The average consolidation period was 12 weeks (7-16 weeks). The average duration of pin removal was 6 months. The main complications here were: delayed union (10 cases), skin pin irritation (08 cases), malunion (04cases). Discussion: Open reduction ESIN of diaphyseal fractures of the femur and tibia has showed satisfactory results. The use of K-wires is a cheap alternative to ESIN in resource limited settings like ours.

Abstract no.: 51882

3D COMPUTER MODELLING ANALYSIS OF THE COMMON SLIDING HIP SCREW: A NEW THEORY OF SCREW CUT-OUT

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Introduction: the sliding hip screw (SHS) is a tried and tested method used to treat intertrochanteric hip fractures and screw cut-out is a recognised complication. We aim to demonstrate a new biomechanical hypothesis of cut out using 3D reconstructive modelling. Method: the four commonly used SHS systems were CT scanned and the images processed and turned into 3D computer models for further analysis. The surface area (SA) and thread volumes (TV) of the of each lag screw was calculated. Results: there were notable differences between the SA and TV of the lag screws between manufacturers ranging from 67.0mm² - 347.4 mm² and 166.4mm³ - 225.7mm³ respectively. The surface area to thread volume ratio (SA: TV) ranged from 4.8 - 8.1. Conclusion: assuming the consistency of bone is equal, a larger SA of screw will correspond to a greater proportion of bone engaged and reduce the load per unit area. In addition, removing smaller volumes of bone (low thread volume) in elderly osteoporotic patients would provide a more favourable fixation. We propose that a lag screw with a greater SA:TV ratio would provide a more stable fixation and reduce the probability of lag screw cut out. Clinical outcome studies are needed to further evaluate this biomechanical analysis.

Abstract no.: 51883

**TREATMENT OF DEFECTS OF BONE TISSUE IN CHRONIC
OSTEOMYELITIS OF METAPHYSEAL SECTIONS OF LONG BONES
WITH BONALIVE® GRANULES**

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Chronic osteomyelitis of the metaphysis of long bones, accompanied by a defect in bone tissue (DBT) and arthritis of the adjacent joint is a big problem for surgeons. **METHODS AND MATERIALS:** 25 patients who underwent surgical treatment DBT with BonAlive® granules have been studied. The average age of 20 men is 41.5 years, 5 women-56.6 years. Etiology of the disease: 11-posttraumatic osteomyelitis; 6- hematogenous; in 6 postoperative; in 2 patient's post-injection. The pathological focus was located in the proximal part of the femur in 1 patient, in the distal part in 7 patients, in 8 patients in the proximal part of the tibia, in 4 in the distal part, in 1 patient the process was located both in the femoral and in the proximal part of the tibia bone, in 2 - in the talus bone, in 2 patients in the distal humerus. The operation consisted of trepanation of the bone, necroectomy, filling of the BonAlive® granules DBT. **Results:** in 20 patients, wounds healed by primary tension, in 5 secondary. The average follow-up period was 29.3 months. There were no recurrences of the disease. In the last 3 patients we used the sliding graft method to close the trepanation site. This avoids the migration of granules into soft tissues. **Conclusion:** this method of treatment DBT allowing not only to stop the infection but also minimizing the amount of surgical intervention in comparison with muscle plasty.

Abstract no.: 51885

CLOSED TIBIA INTERLOCKING NAILS WITHOUT IMAGE INTENSIFIER

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Background: Interlocking nails are commonly done with image intensifier. This is expensive and not readily available in the many countries. Aim: To achieve closed tibia interlocking nail without image intensifier. Patients and methods: This analyzed 33 consecutive patients with 35 tibia shaft fractures. Included were acute tibia fractures with injury to surgery time not more than 2 weeks. Fracture reductions and fixations were performed using SIGN interlocking nails and instrumentations. Closed reduction of the fracture fragments were achieved by careful and systematic palpation of surface anatomy of the tibia bone and without image intensifier. Results: Thirty- five limbs in 33 patients were studied. This included 15 females and 20 males. The mean age (years) of the patients was 36.40±12.62 and range of 18-80 years. The mean interval between injury to surgery (days) was 4.02±3.14 and range of 1-9 days. Closed tibia reduction was achieved in 100% cases. They were all diaphyseal tibial (42) fractures. Locations were OTA Spiral (42-A1) 2.9%, Oblique (42-A2) 25.7%, Transverse (42-A3) 54.3%, Spiral wedge (42-B1) 11.4%, and Bending wedge (42-B2) 5.7%. The close fracture was 74.3% while open fracture was 25.7%. All the open fractures were OTA Skin1, Muscle1, Arterial1, Contamination1, and Bone Loss1. The mean follow up period (years) was 1.40±0.78. Union time averaged 3 months. The observed complication was only screw loosening in 2/35 cases. Conclusion: Closed reduction and interlocking stabilization of the tibia can be achieved without image intensifier by careful patient selection and systematic palpation of surface anatomy of the tibia bone.

Abstract no.: 51888

THE STUDY OF BONE DEFECT REPAIRS IN DEPRESSED TIBIAL PLATEAU FRACTURE WITH THE USING OF STEM CELL SCREEN-ENRICH-COMBINE(-BIOMATERIALS) CIRCULATING SYSTEM (SECCS) TO PREPARE ACTIVE BONE SUBSTITUTES

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Purpose: To introduce the method of preparing bone marrow mesenchymal stem cells / porous β -tricalcium phosphate composites (MSCs/ β -TCP) by stem cell screen-enrich-combine(-biomaterials) system (SECCS) to treat bone defects in depressed tibial plateau fracture, and to evaluate the clinical results of MSCs/ β -TCP graft by comparing with β -TCP alone. **Methods:** Between July 2013 and January 2016, 39 patients with depressed tibial plateau fracture were studied retrospectively. Sixteen cases presented bone defects filled with MSCs/ β -TCP and the other 23 patients with β -TCP alone. The enrichment efficiency, and the cell viability after enrichment process were evaluated. The clinical results was assessed by imaging examination and the Lysholm score. **Results:** The SECCS could process by combining $82.9 \pm 5.3\%$ MSCs from original bone marrow to the porous β -TCP, without cell viability deteriorated. After 18 months postoperative, the average of new bone formation in the defect area of patients treated by MSCs/ β -TCP was up to $91.9 \pm 4.8\%$, compared with that of β -TCP particles alone was only $21.9 \pm 12.2\%$ ($P < 0.01$). Patients with MSCs/ β -TCP transplantation obtained better functional recovery ($P = 0.028$). Both methods could prevent the subsequent collapse of the articular surface ($P = 0.944$). **Conclusion:** MSCs/ β -TCP prepared by SECCS can be a better bone substitute in the treatment of bone defect in depressed tibial plateau fracture, with promoting bone regeneration and improving the joint function recovery.

Abstract no.: 51896

OUTCOMES OF ARTHROSCOPIC LATERAL CLAVICLE JOINT EXCISION FOR OSTEOLYSIS

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Introduction: Lateral clavicle osteolysis is not common and few studies have determined the efficacy of current treatment. Aim: The study aims to retrospectively review patient-reported outcomes of arthroscopic lateral clavicle excision for osteolysis. Methods: 16 patients underwent lateral clavicle excision over a two year period, by a single senior surgeon. All patients participated in sport and professional athletes accounted for 56% of the patient cohort. Patient outcomes were assessed using Constant and QuickDASH shoulder scores obtained at a mean 21 months following surgery (range 3-40). Results: Two years following lateral clavicle excision, a significant improvement in Constant score ($p < 0.001$) and QuickDASH scores ($p = 0.012$) was noted. Patient satisfaction increased from 3.7 ± 1.7 to 8.8 ± 2.5 on a 10-point visual analogue scale ($p = 0.0024$). 87% of patients were able to return to their former level of sporting activity. With 56% of patients being professional athletes, the average time taken for a full return to sport was 6.3 months. Conclusion: Lateral clavicle excision for acromioclavicular joint osteolysis is associated with significant improvements in post-operative shoulder outcomes scores, while providing pain relief and improving the range of motion of the affected shoulder.

Abstract no.: 51897

MID- AND LONGTERM FUNCTIONAL AND RADIOGRAPHIC RESULTS OF 13 SURGICALLY-TREATED ADOLESCENT CAPITELLUM FRACTURES

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Introduction: Capitellum fractures are rare in adolescents, and information in literature is still limited. The purpose of this study was to report the mid- and long-term functional and radiographic results of 13 surgically-treated adolescent capitellum fractures in a level I trauma center. **Methods:** This retrospective study included patients aged 10-16 years, who underwent surgery for a capitellum fracture and were followed up for at least 12 months. Fractures were classified according to the McKee modification of the Bryan and Morrey classification, and elbow arthritis was classified using the Broberg and Morrey system. Functional outcomes were assessed with the Mayo Elbow Performance Index (MEPI) and the Turkish language version of the shortened version of the Disabilities of Arm, Shoulder, and Hand (QuickDASH) scale. **Results:** The mean time to surgical intervention was 4.5 days. (range, 1-18 days). The mean flexion-extension ROM arc was measured as 115° (range, 45° - 150°). The mean restriction for extension and flexion compared to the uninjured side was measured as 10.7° (range, 0 - 45°) and 11.5° (range, 0- 45°) respectively. The mean MEPI was 87.7 points (range, 50 - 100 points) with 9 patients as excellent, 1 good, 1 fair and 2 poor results. The mean QuickDASH score was 11 (range, 0 - 57). Elbow joint contracture developed in 4 patients. Implant removal and open release of joint contracture was applied to 2 patients. Elbow arthritis of grade 3 was observed in 2 patients and grade 2 in 1 patient. **Conclusions:** Capitellum fractures may be easily missed on conventional radiographs, if not suspected. Delayed diagnosis may lead to a worsening of the functional outcomes. Computerized tomography is helpful in the determination of these fractures. Early diagnosis and well-performed surgery is essential for successful outcome. Level of Evidence: Level IV case series.

Abstract no.: 51915

COMPARISON OF THE OUTCOMES BETWEEN LOCKING PLATE AND CONVENTIONAL PLATE FOR INTRA-ARTICULAR CALCANEAL FRACTURE

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Background: The calcaneus is the commonly fractured tarsal bone and most of calcaneal fractures are intra-articular. Current literatures support that treating by open reduction and internal fixation for calcaneal fracture can achieve better reduction and stable fixation. Recently, kinds of locking plates were produced for better strength and stability. We reviewed all the intra-articular calcaneal fracture patients operated by single surgeon, and patients treated with non-locking or locking plate were enrolled. **Methods:** We reviewed all calcaneal fracture cases between 2011 and 2014. The inclusion criteria were as following: 1. Intra-articular calcaneal fracture 2. Treated by open reduction internal fixation with plating 3. single experienced surgeon 4. at least 6-month follow-up. All cases were dealt with open reduction and fixed by locking or non-locking plates. We used VAS score as pain outcome, and AOFAS and SF-36 scores as functional outcomes. SF-36 included physical component summary (PCS) and mental component summary (MCS). Bohler and Gissane angles were measured as radiographic outcomes. **Results:** Thirty one subjects were enrolled. There were 12 feet in non-locking plate group and 19 feet in locking plate group. All outcomes were not significantly different between two groups except MCS of SF-36 score. **Conclusion:** According to our result, there was no significant difference of outcomes between groups, except mental part of SF-36 score. Due to no significant difference in pain, radiographic outcome, AOFAS and PCS of SF-36, we concluded that the usage of locking system or not will not influence the outcome obviously in intra-articular calcaneal patients.

Abstract no.: 51923

A MOTOCROSS RIDER WITH WRIST PAIN: A CASE REPORT

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A 45 year old gentleman came off the bike during a motocross event and landed onto his outstretched right hand. The patient attended A&E the day after the injury with painful swollen wrist and numbness of the fingers. On Examination: The wrist was swollen and tender with reduced sensations over the thumb, index, middle fingers. X ray findings: 1) 'Piece of pie sign' – triangular shape of lunate 2) Interruption of arcs of Gilula (white dotted lines) 3) Fracture of radial and ulnar styloid processes (white arrows) 4) Spilled tea cup sign 5) The Diagnosis is volar lunate dislocation. Management: The options are 1) closed manipulative reduction and below elbow plaster cast 2) Closed manipulative reduction and percutaneous K wire fixation 3) Open reduction and ligament repair with internal fixation 4) Immobilisation of the wrist is maintained for three months, first six weeks in a below elbow plaster cast and a removable splint for another six weeks. Gentle range of movement exercises begun after the removal of plaster cast and K wires. Patient outcome: The Patient has pain free wrist movements with end range stiffness and has returned to manual work. The follow up radiograph shows increased scapholunate interval.

Abstract no.: 51924

CLINICAL AND RADIOLOGICAL OUTCOME OF PATIENTS THAT HAD DIRECT REPAIR OR LIGAMENT RECONSTRUCTION OF THE SCAPHOLUNATE LIGAMENT: A PRELIMINARY STUDY

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Introduction: This is a retrospective case series study to evaluate the long-term outcome of surgical treatment in a group of patients who underwent scapholunate ligament repair or reconstruction. Patients that had surgery from 2005- 2015 will be included. Our hypothesis is that ligament repair or reconstruction will result in an acceptable outcome. However, the literature indicates that if the ligament is not repaired traumatic arthritis is the result. **Methods:** The patients who have undergone either scapholunate repair or reconstruction will be identified using the electronic medical record system (Power Chart). These patients will have had their procedure done under the CPT code 25320. They will be contacted by phone or mail, if needed and scheduled for an appointment in the outpatient Hand clinic. There, they will be assessed by the P.I. and associates. A comprehensive Hand exam including grip strength, and range of motion of the wrist will be recorded and compared with the other hand. A DASH score standardized questionnaire and VAS will be filled out by the patient. Each patient will then undergo an x-ray of the wrist that will include 4 views, PA, PA Tangential (Moneim view), oblique and lateral view. Approximately 40-50 patients will be included. **Results:** Our preliminary results indicate that an acceptable clinical outcome will result, however the Xray may show a persistent widening of the gap between the Scaphoid and the Lunate.

Abstract no.: 51925

TRANSITORY STIFFNESS AFTER BICRUCIATE-RETAINING TKA

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Introduction: Bicruciate-retaining (BCR) total knee arthroplasty (TKA) restores knee kinematics better than other prosthetic designs but may result in stiffer knees. There is not yet any study that shows clear clinical differences between BCR and posterior-stabilized (PS) TKAs. Method: A prospective randomized control trial was conducted where 54 patients were randomized to have either BCR (32 knees) or PS (34 knees) TKA implanted using a spacer-based gap balancing technique. Knee range of motion measurements, Knee injury and Osteoarthritis Outcome Score (KOOS), as well as Knee Society (KS) knee and function scores were obtained at the preoperative visit and the subsequent postoperative visits up to 2 years and above and compared between groups and visits. Results: Maximum knee flexion was significantly higher for PS knees at 6 weeks, 6 months, and 12 months but not at 2 years. The KOOS and KS knee and function scores were similar at every visit between the groups, except for the KOOS score at 6 weeks that was significantly higher for PS knees. Discussion: BCR TKA seems to result in stiffer knees than PS TKA during the early postoperative period. However the difference in maximum flexion tended to resolve by the 2-year postoperative visit and did not seem to have an impact on the various clinical and functional outcome measurements that were collected after 6 weeks. Conclusion: Further investigation on the causes of this stiffening phenomenon is warranted.

Abstract no.: 51930

DERMABOND PRINEO: AN EFFECTIVE CLOSURE SYSTEM FOR KNEE ARTHROPLASTY SURGERY

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Introduction: Dermabond Prineo, a unique two-part skin closure system combining a topical skin adhesive (2-octyl-cyanoacrylate) and a self-adhering patch offers good skin holding strength and microbial protection. We hypothesize that it can replace sub-cuticular closure in knee arthroplasty surgery. This study summarizes our experience with the use of dermabond prineo. **Methods:** This is a retrospective single arthroplasty surgeon study from the Singapore General Hospital, collected in the year 2017. All patients underwent a standard knee arthroplasty procedure. Dermabond prineo was immediately applied after the sub-cutaneous closure. Range of motion was initiated on post operative day (POD) 1 and patients were evaluated on POD2, 1 and 3 months for wound dehiscence. Exclusion criteria include previous knee incision and revision surgeries. **Results:** 183 patients underwent surgery, of which 171 (or 181 knees) were closed with dermabond prineo. There were 129 single total knee arthroplasty (S-TKA), 10 bilateral TKA (B-TKA) and 32 unilateral knee arthroplasty (UKA). We reported 10 (5.5%) superficial wound dehiscence treated non-surgically, and 3 (1.65%) deep infections requiring surgery. In the S-TKA group, we saw 8 superficial wound dehiscence at 30-days and 1 deep infection at 90-days. In the B-TKA group, there were 2 superficial wound dehiscence and 2 deep infections at 30-days. There were no complications in the UKA group and no wound dehiscence on POD2 among all three groups. 90-days readmission was 3.3% (n=6). **Conclusion:** Dermabond prineo can be an effective closure system in knee arthroplasty surgeries. It's low wound dehiscence rate was comparable to current existing literature.

Abstract no.: 51937

HYDROXYAPATITE/GELATIN PARTICLES LOADED WITH STROMAL CELL-DERIVED FACTOR-1 FOR BONE REGENERATION

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A bone fracture is a damage in the continuity of the bone, which may be the result of high force impact or stress, osteoporosis, osteopenia, bone cancer, or osteogenesis imperfecta. Bone grafts or bone tissue engineering are the use of a combination of cells, engineering and materials methods to improve or replace biological tissues. For the bone grafts, there are three critical properties in bone tissue engineering, osteoinduction, osteoconduction, and osteogenesis. However, most of bone tissue engineering lacks osteoinduction. Stromal cell-derived factor-1 (SDF-1) is a well-characterized chemokine for attracting stem cells and thus a strong candidate for promoting regeneration. Otherwise, SDF-1 protein can attract not only mesenchymal stem cells but also osteoblastic cells, osteoblast progenitor cells (OPCs) and bone marrow-derived osteoblast progenitor cells (MOPCs). Therefore, the purpose of this study is to develop an osteoinductive bone graft, hydroxyapatite/ gelatin particles loaded with stromal cell-derived factor-1 for bone tissue engineering. In primary results, the particles size was between three hundred micro-meter to five hundred micro-meter, and the pore size of particle surface was three micro-meter. The component of particles, there are thirty-seven percent gelatin and sixty-one percent hydroxyapatite, which is similar to bone tissue. The loading efficiency was an approach to 94 percent. Cytotoxicity of the materials was no significant difference between the particles and control group, and relative gene expression was normalized to control group, indicated that stem cells differentiated or develop into preosteoblasts. In this study, osteoinductive bone grafts have been developed, which can attract cells and promote osteodifferentiation.

Abstract no.: 51939

SURGEON DIRECTED MONITORING IN PAEDIATRIC SPINAL CORRECTION SURGERY: VISUAL OBSERVATION OF LOWER LIMB VISUAL WAVEFORM PREDICTS INTACT NEUROLOGICAL FUNCTION

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Introduction: Spinal cord monitoring (SCM) is essential during paediatric correction of spinal deformity to prevent postoperative neurological complications. Surgeon directed monitoring (SDM) of Transcranial Motor Evoked Potentials (TcMEP) is a valuable tool for this purpose. While other authors have suggested quantitative amplitude % decreases as alarm points, this paper advocates that visual observation of any lower limb (LL) waveform indicates intact spinal cord function. Methods: Nimis Eclipse™ Medtronic SCM equipment utilised. In 142 paediatric spinal deformity correction surgeries, the operating surgeon used visual observation of amplitude waveforms to monitor spinal cord integrity. A true event (TE) was defined as a decrease in lower limb (LL) amplitude without concurrent decrease in upper limb (UL) amplitude. Primary outcome was persistent loss of LL signals despite anaesthetic and technical corrections. Results: Three cases had persistent visual loss of LL MEP signal, requiring staged correction. None had permanent postsurgical neurological deficit. Discussion: Retrospective analysis showed these three patients each had >95% decrease in LL amplitude signal. Aside from these cases, there were 27 left, 26 right and 15 bilateral TEs at >95% amplitude decrease threshold. It is likely that in these events, response to visual changes including re-stimulation, adjustment of anaesthetic, or reversed surgical action resulted in correction of signals and allowed continuation of surgery. Conclusion: Visual observation for LL waveform presence is a reliable surgical technique for monitoring spinal cord function. Recognition of persistent loss of LL signals by the surgical team allows appropriate adjustments to be undertaken to prevent neurological complications.

Abstract no.: 51948

COMBINATION OF GEMCITABINE AND NAB-PACLITAXEL INHIBITS UNDIFFERENTIATED SARCOMA GROWTH IN PATIENT-DERIVED ORTHOTOPIC XENOGRFT (PDOX) MODEL PROMISING A NEW THERAPEUTIC STRATEGY

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Nanoparticle albumin-bound paclitaxel (nab-PTX) is the first nanotechnology-based drug developed in cancer treatment which has been improved in terms of antitumor effect and toxicity compared to the other taxane-based drugs such as docetaxel (DOC), and widely used in other carcinomas in combination with gemcitabine (GEM). In the present study undifferentiated soft tissue sarcoma (USTS) from a striated muscle of a patient was grown orthotopically in the right biceps femoris muscle of nude mice to establish a patient-derived orthotopic xenograft (PDOX) model and was used to evaluate the efficacy of combination of GEM and nab-PTX. USTS PDOX tumors were randomized into the following groups: G1, control (n = 8); G2, doxorubicin (3 mg/kg, once a week for 2 weeks, n = 8); G3, DOC (20 mg/kg, once a week for 2 weeks, n = 8); G4, nab-PTX (10 mg/kg, twice a week for 2 weeks, n = 8); G5, GEM (100 mg/kg, once a week for 2 weeks) + DOC (n = 8); G6, GEM + nab-PTX (n = 8). Tumor size and body weight were measured. The tumor growth was most inhibited by GEM + nab-PTX treatment group (p = 0.002). Histopathological findings showed that lower tumor cell density with more degenerative change of cells and stroma were detected in the tumors treated by GEM + nab-PTX treatment. The mouse body weight of the treated mice was not significantly different from the untreated controls. These results suggest that combination of GEM and nab-PTX could be a promising therapeutic strategy in USTS treatment.

Abstract no.: 51949

UNI-PEDICULAR APPROACH FOR KYPHPLASTY AND FACTORS AFFECTING ITS OUTCOME IN OSTEOPOROTIC WEDGE COMPRESSION FRACTURES

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INTRODUCTION: Balloon kyphoplasty uses Orthopaedic inflatable bone tamps before bone cement injection in an attempt to correct vertebral deformity and control cement distribution. **OBJECTIVES:** Our primary objective was to find out safety and efficacy of uni-pedicular technique for balloon kyphoplasty and correct the vertebral deformity to similar degree as shown by bi-pedicular standard technique in published results, reducing complications in modified procedure due to lack of additional portal. **MATERIALS AND METHODS:** Our trust offers this service as a day case procedure and most the patients are discharged on the same day of admission. Patient's age, sex, the onset time of symptoms, number of vertebral levels affected by the fracture, mechanism and type of trauma, presence of concomitant or old fractures, medical history, medications taken currently, risk factors for osteoporosis and medications used for the treatment of osteoporosis were recorded. Radiological assessment included follow up X-ray and measurement of improvement in radiological parameters after kyphoplasty. We measured kyphotic angle, anterior vertebral height and wedge angle. **RESULTS:** we conclude that with unipedicular kyphoplasty approach, we were able to reduce the risk of complications and morbidity associated with kyphoplasty and able to restore deformity same degree as achieved by using Bipediculr approach for standard Kyphoplasty. All our cases were performed as day cases with no immediate complication. Our institution practise endorse the use of unipedicular kyphoplasty for all grades of vertebral compression fractures, with better outcome in patients, who underwent surgery earlier after the kyphoplasty.

Abstract no.: 51954

**TOTAL HIP ARTHROPLASTY FOR THE TREATMENT OF
OSTEOARTHRITIS SECONDARY TO ACETABULAR FRACTURES
TREATED BY OPEN REDUCTION AND INTERNAL FIXATION**

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Background: Acetabular fractures are associated with damage to the femoral head, acetabular cartilage and labrum and possible disruption of the femoral head blood supply. Treatment aims to provide the best opportunity for restoration of joint function and to prevent long-term complications. Surgical intervention, in the form of anatomic reduction and stable internal fixation, is often required. Our aim here has been to identify and highlight our experience with the key technical points associated with successful outcomes for this procedure. Methods: A single-centre retrospective review of patients with acetabular fractures treated with ORIF and subsequent THA over a 4-year period was undertaken. Demographics, mechanism of injury, complications, interval time between surgeries, intra-operative outcomes and post-operative outcomes were recorded. Particular emphasis is made to describe standard pre-operative and intra-operative protocols. Results: 25 patients were identified, with a mean age of 51.1 years at time of first ORIF. 60% presented following RTA. 80% of fractures involved the posterior wall or column. Mean time to eventual THA was 2.3 years. Mean THA duration was 1.52 hours, with mean intra-operative blood loss and length of stay of 585ml and 5 days respectively. 24% required intra-operative removal of metal, with only one patient suffering a complication post THA. Conclusion: Acceptable post-operative outcomes were demonstrated throughout the case series. In describing the pre-operative work up, intra-operative findings and intra-operative and post-operative complications encountered, common important technical points associated with a successful surgical strategy are described. Furthermore, potential pitfalls that may be encountered can be anticipated.

Abstract no.: 51960

THE TREATMENT OF SECONDARY LESIONS OF THE HIP: A NEW CLASSIFICATION FOR A COMMON LANGUAGE

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Because of the increase of survival of metastatic patients, orthopedic surgeons have to take into account not only the biomechanical aspect but the oncological aspect as well so, today, wide resection and prosthesis reconstructions are more common than in the past moreover in the femur. The aim of presenting paper is to identify a common language and to clear indication for surgery for tumor located at the hip joint. Four principal groups of lesions were identified basing on the structured involved; the capital letter "A" is used to for acetabular lesions, the capital letters "HN" for lesions located in the head or femoral neck, the capital letters "GT" and "LT" for lesions located in the greater and lesser trochanter, respectively. Every group is the specified basing on the risk of fracture and indicated with subscripted lower case letters "i", "ni" or "f", if the affected segment is a high risk of fracture (impending fracture), not a risk, or if the fracture already occurred, respectively. The further subscripted lower case "j" refers to a intraarticular involvement. The correct approach is based on three main factors: site of lesion, patient's survival and mechanical instability. Considering those factors, intramedullary stabilization, resection and prosthesis reconstruction with simple or very complex devices can be suitable. More efforts have to be done to better estimate survival and risk of factor to individuate the best treatment for patient affected by hip metastases.

Abstract no.: 51961

A FLOATING PHALANX: CONSERVATIVE MANAGEMENT OF A DOUBLE DISLOCATION OF THE THUMB

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Background: Double dislocation of the thumb at the metacarpophalangeal joint (MCPJ) and interphalangeal joint (IPJ) is a rare injury with only 6 cases previously described in the literature. Case Report: We report an interesting case of a 39 year old gentleman who presented with this floating thumb double dislocation. Outcome: He was managed conservatively with closed reduction and immobilisation followed by rehabilitation with the hand therapy team. An excellent functional outcome has been achieved. Discussion: Overview of literature analysing the presentation and management of the previous 6 cases of simultaneous IPJ and MCPJ dislocation.

Abstract no.: 51962

THE 'ILLUMINOSS FLUID NAIL' IN INTRAMEDULLARY STABILISATION OF THE HUMERUS: PRELIMINARY EXPERIENCE

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Metastases of the humerus are very commune lesions. They are usually treated conservatively: immobilization and radiotherapy are often sufficient because of the humerus das not have to support weight baring. Nevertheless, when the osteolysis is important surgery could be advisable to decrease the risk of fracture. Intramedullary nailing is considered the mainstay treatment for radiosensitive metastasis but unfortunately the presence of an electron dense material interferes with successive radiotherapy and with its effectiveness. The IlluminOss system consists in an intramedullary stabilization with a fluid monomer that exposed to UV polymerizes becoming harder, so that it can be drilled and locked with screws. We present the preliminary experience in treating fractures and impending fractures with this system. From October 2014 to January 2018, ten patients underwent intramedullary stabilization with IlluminOss system for metastatic osteolysis of the humerus. All surgeries were performed without problems and complications; a screw was used to lock the nail in metaphyseal lesions. Nine out ten patients completed adjuvant radiotherapy with a good consolidation/ossification with an easy identification of the target by the radiotherapists; in the last performed case radiotherapy is still ongoing. The presenting system is characterized by a low artifacts level allowing a safer postoperative treatment. Moreover it is inserted in a fluid status so that the access is minimally invasive and less obliged than that of traditional nails; it better adapts to the intramedullary shape of the bone even if those cases where a deformity is present. More studies are necessary to verify the effective advantages for the patients and possible problems in case of removal.

Abstract no.: 51963

CALCIUM PHOSPHATE CEMENT IN THE SURGICAL MANAGEMENT OF BENIGN BONE TUMOURS: MID- TO LONG-TERM RADIOGRAPHIC AND CLINICAL OUTCOMES

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Calcium phosphate cement (CPC) has been used for various applications in orthopedic surgery. However, scarce extensive clinical studies of the use of CPC to fill bone defects after curettage of benign bone tumors or lesions have been report. The aim of this study was to assess the mid- to long-term outcomes of CPC implantation in benign bone lesions surgery. Between 2000 and 2015, 130 patients (mean age, 31.6 years) underwent CPC implantation in benign bone lesions surgery. Histological types included bone giant cell tumors in 44, simple bone cysts in 28, enchondroma in 16, chondroblastoma in nine, etc. The mean follow-up period was 52 months. In these patients, radiographic findings and clinical outcomes were retrospectively evaluated. The CPC filling immediately after surgery was sufficient regardless of CPC amount used ($p = 0.06$) or the usage of adjuvant substances ($p = 0.14$), which resulted in 92% of the patients' radiological results being classified as good or excellent. Significantly more number of patients have better CPC filling among patients with less hemorrhage ($p = 0.02$) and patients with tourniquet ($p = 0.04$). The number of the patients with good or excellent CPC filling had significantly increased by final follow-up ($p < 0.001$). None of the patients reported pain at the surgical site or limited range of motion in the adjacent joints. In conclusion, CPC is a useful bone substitute for the benign bone tumor surgery providing excellent osteoconductibity and long lasting stability without internal fixation.

Abstract no.: 51964

COMPARATIVE ANALYSIS OF THE CONSERVATIVE VERSUS SURGICAL TREATMENT OF HALLUX VALGUS DEFORMITY

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OBJECTIVE: To investigate the effectiveness of both surgical and conservative treatments for patients with hallux valgus deformity and make recommendations regarding future clinical practice. **DESIGN AND SETTING:** Our study design is retrospective. Patient reported outcome measures (PROMS) data is collected preoperative, at week 26 and at week 52. Statistical package for social sciences (SPSS) software is deployed for all statistical analysis in the present study **PARTICIPANTS:** One hundred seventy nine patients (mean age, 60.89 years; 153 women) with a painful hallux valgus. **INTERVENTIONS:** Patients were randomly assigned to surgery (n = 135) or conservative treatment (n = 44). **MAIN OUTCOME MEASURES:** The MOxFQ outcome measure consists of 3 modules which are scored individually. These are foot pain (5 questions), walking and standing (7 questions) and social interaction (4 questions). The scores for each question are summed and converted to a value on a scale between 0 and 100, where 0 represents the best possible outcome in all modules. **RESULTS:** Follow-up rates at week 26 and week 52 were 100 % and 54 % respectively. At week 26 and week 52, pain intensity decreased significantly more in the surgical group than in the conservative group. Mobility in terms of walking and standing and social interaction also improved significantly in surgical group as compared to conservative group. Improvement in PROMs postoperatively was appreciated irrespective of gender, BMI, side and age . **CONCLUSIONS:** Surgical treatment is an effective treatment for painful hallux valgus. Conservative treatment provide short-term symptomatic relief.

Abstract no.: 51966

MANAGEMENT OF SPINAL INJURIES IN POLYTRAUMA PATIENTS: AN EXPERIENCE OF A TERTIARY CARE HOSPITAL

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Spine injuries, a common component in Polytrauma and is a major cause of morbidity and poses a significant health care expenditure and considerable threats to survival of life. We retrospectively assess the demographics, incidence, mode of trauma, associated spine injuries, complications, neurological improvement and mortality. Records of 1695 admitted patients, spinal injuries were 262 patients. Among them 30 (11.45%) patients were associated with polytrauma victims. Eleven patients (36.67%) were admitted through Ortho emergency dept, 14 (46.67%) patients through Intensive care unit (ICU), 5 (16.66%) patients through other department (CVS, Urology). Most (56%) of the patients were young in the age range of 16 to 40 years. Cervical spines were most commonly (44%) affected followed by lumbar (31%), thoracic (13%), thoraco-lumbar (9%) and Cervico-thoracic (3%) spines. RTA was the common cause (80%). 12 patients (40 %) had problems at various steps of management and maximum problems occurs in step III. 19 of patients (63.33%) management need co-ordination between various specialties. Significant number of patients (76.67%) required operative treatment ($p < 0.05$) and 13.33% were managed conservatively. Mortality rate (10%) was insignificant ($p > 0.05$). Of these patients, 73.33% had shown neurological improvement of at least one ASIA grade. The treatment of spinal injury in polytrauma patient should follow the principle of Advanced Trauma Life Support (ATLS). Once life and limb-threatening injuries have been identified and addressed, suspected spinal cord injury patients should be immobilized as early as possible to reduced the secondary injury as well as reduced the extend of permanent paralysis.

Abstract no.: 51974

DEFINING THE NORMAL PROXIMAL TIBIO-FIBULAR RELATIONSHIP IN CHILDREN: A SIMPLE RADIOGRAPHIC MEASUREMENT

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Background: Disruption of the normal relationship between the proximal tibia and fibula is seen in a number of different conditions such as skeletal dysplasias and post-infective deformity, as well as the consequence of lengthening procedures. Radiographic indices for the tibio-fibular relationship at the ankle have been described, but no similar measures have been reported for the proximal articulation. Aim: The purpose of this study was to investigate the normal radiographic relationship between the proximal tibia and fibula in children. Methods: 500 normal anteroposterior radiographs of paediatric knees were reviewed by a single observer. The distance from the corner of the lateral tibial plateau to both the proximal tibial (PT) and fibular physes (PF) were measured, and a ratio of the two calculated (PF/PT). The process was repeated with a sample of 100 radiographs by the same observer, and a second independent observer in order to calculate intra-and inter-observer reliability. Results: The age range of patients in this study was 4-16 years, with mean age 12.7. The mean PF/PT ratio was 1.7 (standard deviation 0.2, range 1.3-2.0). Intra-observer reliability was 100% and inter-observer reliability was 97.8%. Conclusion: The results of this study demonstrate that in the normal paediatric knee, there is a consistent relationship between the position of the proximal tibial and fibular physes, with a small range of variation. This ratio could be very useful in the diagnosis and planning of surgical management of a number of different causes of tibial and fibular deformities in children.

Abstract no.: 51978

THE TREATMENT OF LOW-GRADE CHONDROSARCOMAS: THE LITERATURE EVIDENCE

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Chondromatous lesions are quite common. In the majority of cases, we face benign lesions (chondromas); only a minor percentage are malignant (chondrosarcomas). Surgery represents the main approach for the latter, since they are radio- and chemo-resistant unless dedifferentiated. While resection is considered the gold-standard for high-grade tumors and for low-grade tumors located in the pelvis, there still is no consent in literature regarding the treatment of low-grade chondrosarcomas. This study's aim is to revise literature in pursuit of therapeutical evidences. 13 descriptive, retrospective and non-randomized studies that corresponded to selected criteria were chosen. A population of 471 patients was identified, with a total of 473 low-grade chondrosarcomas. 299 lesions were treated through curettage and 174 through wide surgery. In our opinion, due to the modest biological activity of low-grade chondrosarcomas, chondromatous lesions can be followed up over time. Biopsy must be performed according to suspicious clinical and radiological signs such as pain, cortical scalloping and increase in size or in case of a relatively high PET scan uptake. The studies published in literature does not sufficiently support curettage as the treatment for low-grade chondrosarcomas. Due to inadequate evidence, resection must be considered the general rule for all malignant lesions.

Abstract no.: 51984

MALNUTRITION AMONG TRAUMA PATIENTS AND EVALUATION OF SCREENING TOOLS

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Introduction: Disease-related malnutrition is a major healthcare problem and results in a weakened immune system, and is associated with postoperative complications, increased length of hospital stay (LoS), reduced mobility and a significantly higher mortality. **Aim:** To evaluate the current practice in assessing nutritional status using tools such as the mini-nutritional assessment and the ANA among hospitalised trauma patients in our unit. **Measure** the prevalence of malnutrition among trauma in patients in our unit. **Draw** recommendations on how to improve our assessment of malnutrition. **Methods:** We prospectively evaluated nutritional assessment records of 50 patients admitted to our unit at West Wales General Hospital between January and February 2014. The assessment included inspection of record keeping, appropriate referral, nutritional measurements and blood tests such as albumin. **Results:** 46% of our admissions were lower limbs related injuries. 66% of our cohort was females. The mean age on admission was 80 years and the mean MNA and ANA scores were 17.6 and 7.1 respectively. The mean LoS of our cohort was 19 days. Primary analysis showed strong correlation relationship between malnutrition and age, LoS, BMI, Hb and Albumin levels (P value <0.05). However Linear modelling showed strong relationship between malnutrition and LoS and Albumin levels (P-value<0.05). **Conclusions:** There is high percentage of trauma patients admitted suffered from albumin-related malnutrition or on high risk. There is a poor documentation of ANA screening tool forms, lack of timely referral to dietician and delays in intervention. Malnutrition in our cohort highly correlated to age on admission, length of stay, BMI and albumin levels. Our recommendation is that weekly nutritional MDT meetings will pre-empt and prevent deteriorating nutritional states.

Abstract no.: 51985

SURGICAL TREATMENT OF A SACROCOCCYGEAL CHORDOMA: A CASE REPORT

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Introduction: Chordomas are rare, slow-growing, locally aggressive bone tumors. The authors report a sacrococcygeal localization case. Methods: A 52-year-old woman who presented a gluteal mass which is firm, poorly limited and deep. MRI showed a sacrococcygeal tumor with extension to the ischial region and the posterior face of the right thigh. Pathological examination of the tumour biopsy confirmed the diagnosis of chordoma. The patient underwent a large tumour resection. Results: With a 24 months follow-up, there is no local or regional recurrence. Discussion: Chordomas are rare, low-grade, locally invasive primary bone tumors arising from the embryonic remnants of the notochord, around which the base of the skull and the vertebral column develop. The sacrum is the most common site of origin, accounting for 50% of all cases, followed by the skull base (30%) and the mobile spine (20%). Grossly, chordomas are soft, lobulated, gray masses that often hemorrhage and permeate and destroy bones. The therapeutic approach to chordoma has traditionally relied heavily on surgery. Indications for definitive radiation therapy are unresectable disease, inoperable patients, or neurologic impairment not accepted by the patient. Conclusion: Chordomas are very rare tumors arising from the remnants of the notochord in the sacrum (50%), skull base (30%), and mobile spine (20%); These tumors are low-grade, locally invasive malignancies. Large surgical excision is the most effective treatment

Abstract no.: 51987

**THE KEYBOARD POSITION: A MODERN-DAY FUNCTIONAL POSITION
PREDISPOSING PATIENTS TO SHOULDER PATHOLOGY**

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Aim: To identify a possible link between the keyboard position (45 degrees of abduction and forward flexion at the shoulder) and subacromial impingement syndrome. **Methods:** Over 50 patients who were referred for ultrasonography of a symptomatic shoulder (signs and symptoms suggestive of impingement syndrome) were randomly assigned for this study prospectively. Inclusion criteria consisted of an age under 60 years old and no history of previous shoulder pathology. Patients had ultrasound scans of the symptomatic side with documentation of findings, but also of the measurement of acromiohumeral distance at rest or neutral (shoulder at rest) and at 45 degrees of abduction and forward flexion (thought to be the position when sitting at a desk operating a keyboard). Results were tabulated and a correlation between reduction in acromiohumeral distance and ultrasound findings was sought. **Results:** In the cohort of patients enrolled in the study, all displayed a significant reduction in acromiohumeral distance between neutral and functional positions. Some were as little as 12% but a significant proportion had over 40% reduction in distance. A range of shoulder pathology was identified including subacromial bursitis, tendinopathy and rotator cuff tears. **Conclusion:** The ever-rising trend of computer use in an era of information poses new challenges to orthopaedic surgeons. We feel that not only is the reduction in the acromiohumeral distance significant in patients with pathology, but also the relative reduction from neutral to a functional position may provide a link to pathology with a cost and time effective method of measuring this.

Abstract no.: 51988

CHONDROSARCOMA OF THE STERNUM: A CASE REPORT

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Introduction: Chondrosarcoma is a cartilaginous malignant tumour, characterized by the absence of bone formation by the cartilaginous elements. The authors report a sternal localization case. Methods: We report the case of a 69-year-old male, who presented a sternal mass which is firm, painful and deep. X-rays, CT scans and MRI showed a large lytic sternal tumour. Pathological examination of the tumour biopsy confirmed the diagnosis of chondrosarcoma. The patient underwent a large tumour resection. Results: With a 12 months follow-up, there is no local or regional recurrence. Discussion: Chondrosarcoma is the second most common primary malignant spindle cell tumour of bone and most common malignant tumour of the sternum. The treatment of chondrosarcoma is surgical removal with no reports of effective adjuvant chemotherapy. Conclusion: Chondrosarcoma of the sternum is a rare localization. Complete removal of the tumor is the best treatment option.

Abstract no.: 51989

THE USE OF MULTIPLE EXTERNAL FIXATORS IN THE DEFINITIVE TREATMENT OF MULTIPLE FRACTURES IN A POLYTRAUMATISED PATIENT: A CASE REPORT IN AN AFRICAN SETTING

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Background: A polytraumatized patient usually presents with multiple injuries in which one may be life threatening. Most of these patients also present with one or more fractures. The surgeon is usually faced with the challenge of stabilizing the patient which usually is not done in isolation as stabilization of multiple fractures is also a priority. Successful surgical treatment requires an approach predicted on prioritization of injuries. One of such approach in this context is the use of external fixators because of the numerous advantages. Objective: To show the outcome and efficiency of the use of multiple external fixator in polytrauma in our setting. Observation: We present a 27year female graduate who was involved in a ghastly car crash and sustained maxillofacial injuries, closed comminuted diaphyseal fractures of both femurs and left humerus. She benefitted from Hoffmann external fixators on all the fractures. This was done percutaneously without image intensifier. This was immediately followed by physiotherapy. The fixators were serially removed with appreciable clinical and radiological evidence of fracture consolidation and patient started full weight bearing after 9 months. The outcome was quite satisfactory with no major complication. Conclusion: The use of multiple external fixators in our setting has shown to be fast, easy to apply, less traumatic with a good outcome and above all cost effective.

Abstract no.: 51991

MECHANICAL ANALYSIS OF CURVED UNCEMENTED FEMORAL STEMS WITH DIFFERENT BONE-DEFECT LENGTHS AFTER DISTAL FEMORAL RECONSTRUCTION: A FINITE ELEMENT STUDY

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Introduction: Comparison of finite element analysis (FEA) results for a straight stem against those obtained for a series of curved stems after distal femur reconstruction (DFR) is reported. It was hypothesized that curved stems lead to better mechanical effects compared to straight ones owing to femoral bowing of implantation regions (BIR). **Methods:** A standard-shape femur was selected to create three tumorous bone-defected FE models comprising 40% (Group A), 50% (Group B), and 60% (Group C) cut femurs. Radii of curvature (ROC) for the three models were chosen such that ROC (Stem A) < BIR, ROC (Stem B) = BIR, and ROC (Stem C) > BIR; additionally, one straight-stem FE-model (Stem D) was created. Joint contact and muscle forces were scaled as per body mass, and peak forces of gait cycles were applied. Stress distribution and micromotions were analyzed for each stem. **Results:** Across all groups, stresses were observed to be concentrated at the junction of the stem and shaft. Peak stresses of the straight stem were observed to be higher compared to those observed in curved stems across all groups. Lower resection percentage of femurs was observed to cause a reduction in peak stress as well as optimize stress distribution. With regards to micromotion, similar trends were observed in group A; however, significant differences were observed between stem B and stem D in group C. **Conclusions:** Compared to straight stems, femoral morphology based on curved stems demonstrated improved stress distribution, lower peak stress, and lesser micromotions.

Abstract no.: 51995

TREATMENT RESULTS OF 74 DEEP INFECTIONS AFTER TOTAL KNEE ARTHROPLASTY: EFFECTS OF INFECTION TIMING AND METHICILLIN-RESISTANT BACTERIA

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Purpose: This study aimed to investigate the differences in postoperative knee function and number of operations required to treat deep infection due to methicillin resistant or non-resistant bacteria following total knee arthroplasty (TKA). **Methods:** We included 74 patients with deep infections after TKA (47 females, and 27 males) who were treated at multiple centers, including one university or four arthroplasty centers between 2000 and 2015, and were followed-up for 2 years or longer. We defined early infections as deep infections occurring within a month of TKA, and late infections as deep infections occurring after 1 month of TKA. We compared differences between treatment results depending on presence or absence of resistant bacteria (resistant group, RG; non-resistant group, NG) for each infection period. **Results:** There were 19 patients with early infections (RG: 9, NG: 10), and 55 patients with late infections (RG: 14, NG: 41). In early infection cases, no significant differences were observed between RG and NG in preserved postoperative knee function (100% in each group) and number of operations (RG: 3.0±1.6 times, NG: 2.1±0.9 times). However, postoperative knee function in NG was significantly better than that in RG (RG: 28.6%, NG: 97.6%). Furthermore, the number of operations in NG was significantly lower than that in RG (RG: 3.5±2.0 times, NG: 2.4±1.5 times). **Conclusion:** In early infection cases, no significant differences were observed in postoperative knee function between RG and NG. However, in late infection cases, postoperative knee function in RG was significantly poor than that in NG.

Abstract no.: 51997

INTEROBSERVER AGREEMENT IN A MULTI-PROFESSIONAL TEAM FOR SCOLIOSIS SCREENING

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Introduction: We aim to determine the interobserver agreement on measurements, diagnoses and therapeutic decisions among a multi-professional scoliosis team. **Methods:** From a case-mix of 330 patients referred to our center for scoliosis screening (08/2016-03/2017), 100 (14±3 y.o.) were randomly selected. Patients' vignettes comprised age, menarche, neurologic exam, rib hump, back pain, medical and family history as well as spine x-rays. An orthopedic consultant(OC), a nurse(N), a physical therapist(PT), and a spine fellow(F) reviewed these vignettes, generated a diagnosis and a therapeutic plan. Interobserver level of agreement and comparison with actual decisions made at the clinic were assessed with percentage of agreement, kappa statistics and intraclass correlation coefficient. OC was set as a reference. **Results:** The Cobb angle measurement of the main curve reached excellent reliability (ICC = 0.964 [0.946;0.975]). Overall agreement for primary diagnosis (normal/non-clinically significant (NCSS), adolescent (AIS) or juvenile (JIS) idiopathic, congenital (CS) and neuromuscular scolioses) was substantial for all (N: 82% k=0.69, PT: 80% k=0.67, F: 80% k=0.67, p<0.001). Agreement was perfect for detecting spondylolisthesis (N and PT: 83% k=0.91, F: 100% k=1, p<0.001). Perfect agreement on therapeutic decisions and close follow-up occurred for bracing or surgical cases, but PT and F were more conservative on discharging AIS patients. For CS and JIS, all observers agreed on the therapeutic plan. Perfect agreement was found among N, F and OC on NCSS patients who could be discharged. **Conclusion:** Experience and high level of training ensure an adequate agreement among different practitioners to manage effectively a scoliosis screening clinic.

Abstract no.: 51999

**COMPUTER-ASSISTED PEDICLE SCREW PLANNING FROM
PREOPERATIVE CT: A QUANTITATIVE COMPARISON WITH
POSTOPERATIVE 3D RECONSTRUCTIONS**

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Introduction: This study presents a quantitative comparison between preoperative plans for the placement of pedicle screws obtained by a computer-assisted method based on computed tomography (CT) bone-density optimization, and actual pedicle screw placements on postoperative imaging. **Methods:** 25 patients with spinal deformity and instrumented pedicle screws were analyzed. All patients had preoperative CT and postoperative radiographs using the EOS system. The insertion point, the projection of the screws, the point of intersection at the pedicle, the sagittal and axial inclinations were extracted from the proposed computer planning and screws reconstructed postoperatively, and compared. **Results:** Two versions of the original computer-assisted method (C1) were developed: (C2) takes into account only the direct insertion technique, and (C3) takes into account both the direct insertion technique and insertion points following the curvature of the spine. A total of 204 pedicle screws were studied. The screw projection difference was significantly lower ($p < 0.05$) with the C2 (0.57mm) and C3 (0.28mm) methods compared to the actually inserted screws (1.97mm). In addition, the difference in sagittal inclination between the screws obtained by the C3 method (7.41°) and the screws actually inserted was significantly more reliable ($p < 0.05$) compared to the C1 methods (13.62°) and C2 (13.82°). **Conclusion:** The computer-assisted planning (C3) for pedicle screws, which takes into account the direct technique, and an insertion point respecting the curvature of the spine, makes it possible to obtain the highest agreement with the screws actually inserted. The difference in sagittal and axial inclination was, on average, 7.41° and 9.64° , respectively.

Abstract no.: 52002

CASE-MATCH CONTROLLED COMPARISON OF BONE TRANSPORT OVER THE NAIL AND BONE TRANSPORT OVER THE PLATE FOR THE SEGMENTAL BONE DEFECT OF TIBIA

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To compare the radiological results and risk of major complications after either bone transport over the nail (BTON) vs bone transport over the plate (BTOP) for the segmental bone defect of tibia. Thirty-six patients who underwent BTON (16 cases) or BTOP (16 cases) for segmental bone defect of tibia after treatment of traumatic osteomyelitis at a level I trauma center were retrospectively evaluated. Radiological parameters were compared, including union of docking site, healing of distraction, and external fixation index (EFI). Major complications associated with these procedures were assessed such as mal-union, nonunion, and recurred infection. EFI was significantly shorter in BTOP (12.5 days/cm), comparing to BTON (27 days/cm) ($P < 0.005$). An overall major complication rate of 39% (7 cases) was observed in the patients treated with BTON; one complication (6%) was identified in those managed with BTOP, a nonunion of distraction callus. Complications after BTON included 4 patients (22%) with mal-union, 2 patients with nonunion of docking site (11%), and 1 patient (6%) with deep infection. All of mal-union developed at the proximal tibia, which was either docking site or osteotomy. Statistical analysis revealed a significant between-group difference ($P = 0.041$) in the cumulative rate of major complications. This study suggests that BTOP for bone defect of tibia results in a significantly shorter time of external fixation and a significantly lower rate of major complication than those of BTON. Then, it should be considered an attractive option in those patients requiring bone transport for the treatment of segmental defect of tibia.

Abstract no.: 52003

**PATIENT-SPECIFIC TEMPLATE IS USEFUL IN THA FOR DDH PATIENTS
USING THE SHORT STEM**

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INTRODUCTION: Developmental dysplasia of the hip (DDH) has anatomical abnormality. Therefore, it is difficult to decide intramedullary fitting and sizing of short stem for DDH patients. The purpose is to investigate precise implantation and clinical benefit of short stem with patients specific template (PST) made by three dimensional (3D) printer. **METHODS:** One hundred DDH patients who were underwent THA with short stem were enrolled between 2013 and 2015. There were 84 females and 16 males. The average age at operation was 63 years old. The average body mass index was 24.0 kg/m². The average follow-up term was 30 months. Preoperative planning was performed by 3D template software. Intramedullary fitting and size of stem were decided at 3D planes adjusting leg length, femoral offset and anteversion. PST was made by 3D printer as surgical guide for reproduction of 3D planning. Precision of PST was estimated by comparing 3D planning and postoperative CT. Clinical hip score and radiographic findings were estimated. **RESULTS:** Harris hip score was respectively 39.6 at preoperation and 88.5 points at the last follow-up. Precisions of stem alignment were 1.9 degrees as valgus/varus alignment, 1.7 as flexion/extension and 3.8 as anteversion. Spot welds were observed in 99%. Stress shielding to the proximal femur were judged as none in 19% and the 1st degree in 80%. Stem migration, loosening and revision were not experienced. **CONCLUSION:** Good bony ingrown fixation and decreased stress shielding could be expected by precise short stem implantation combined with 3D template and PST.

Abstract no.: 52008

ENHANCED BONE REGENERATION WITH PLASMA SYNTHESIS OF CARBON-BASED NANOCARRIERS AS BIOACTIVE CARGO

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This study proposed an innovative strategy for developing the carbon-based nanocarriers as drug delivery systems. Differentiation of stem cells is an essential strategy for regeneration of defective tissue. Bone morphogenetic protein-2 (BMP-2) is a well-known osteogenic differentiation factor that stimulates stem cell signaling pathways. Nevertheless, BMPs have a very short half-life and may rapidly lose their bioactivity. Previously, BMP delivery has been designed and evaluated for osteogenic differentiation, focusing on carriers and sustained release system for delivery of BMPs. Also, insulin may stimulate osteoblast differentiation to produce more osteocalcin, which would then encourage more insulin production by the pancreas and higher insulin sensitivity of skeletal muscle. Here we show that carbon-activated plasma-polymerized nanoparticles (nanoP3) can be synthesized in dusty plasmas with tailored properties, in a process that is compatible with scale up to high throughput, low-cost commercial production. We propose for the first time that dusty plasmas can be tailored to produce multifunctional nanoP3 with unique functionalization capabilities. nanoP3 retain many of the favorable surface characteristics enabling a simple one-step surface immobilization of bioactive cargo with BMP-2 and Insulin. Also, ALP activity, the secretion of type I collagen, OC gene expression, and mineralized nodule formation were increased in the BMP-2 and insulin-treated group compared with control group. This study shows the unanticipated potential of carbonaceous plasma dust for bone regeneration, facilitating simultaneous imaging and cargo delivery on cost-effective, and scalable nanoparticle platform. We demonstrate the effect of the delivery mode on osteogenic differentiation potential to be used for bone regeneration applications.

Abstract no.: 52010

THE EFFECT OF CONTINUOUS PREOPERATIVE ANTIPLATELET MEDICATION ON OUTCOMES AFTER CEPHALOMEDULLARY NAILING IN ELDERLY PATIENTS WITH PROXIMAL FEMUR FRACTURE

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Purpose: This case-control study was conducted to analyze the effect of continuous preoperative antiplatelet medication on outcomes after cephalomedullary nailing (CMN) in elderly patients with proximal femur fracture. **Methods:** One hundred sixty six consecutive patients aged 65 years or older undergoing CMN for proximal femur fracture between January 2015 and January 2017 were recruited. Of the 166 patients, 47 (study group) taking antiplatelets preoperatively due to co-morbidities except 12 on warfarin medication were compared with 107 (control group) not taking antithrombotics. The change of hemoglobin (Hb) and hematocrit (Hct) level, hospitalization period, transfusion amount and estimated blood loss (EBL), occurrence of venous thromboembolism (VTE) and delirium, ICU admission, readmission, in-hospital and 1-year mortality in all patients were investigated and compared between the two groups. **Results:** More patients in the study group had concomitant cardiovascular ($p=0.006$) and endocrine ($p=0.004$) diseases. More patients in the study group received perioperative transfusion ($p=0.003$) and were admitted to ICU postoperatively for intensive care ($p=0.014$). However, there were no significant differences in the change of postoperative Hb and Hct, EBL, hospital stay including ICU stay, the incidence of VTE and delirium between the two groups. In addition, in-hospital and 1-year mortality, and occurrence of postoperative medical complications showed no significant differences between both groups. **Conclusions:** Early surgery in elderly patients with proximal femoral fracture receiving antiplatelet therapy preoperatively can be safely performed without discontinuing antiplatelets and a delay, although more cautions are demanded to transfusion and admission to ICU after surgery in these patients.

Abstract no.: 52017

COMPARITIVE STUDY BETWEEN TENSION BAND WIRING AND HOOK PLATING FOR LATERAL THIRD CLAVICLE FRACTURE

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Results: twenty five patients with unstable fractures of lateral third clavicle treated by open reduction and internal fixation with hook plates or tension band wires were retrospectively reviewed. The 25 patients were divided into two groups based on the method of treatment. The hook plate group included 15 patients and the tension band wire group included 10 patients. Both groups were similar in respect to injury mechanisms, compounding medical condition. However, hook plating had a significantly lower rate of complication and symptomatic hardware. In addition, hook plating better facilitated the return to work and athletic activity. In conclusion, if surgery of lateral third clavicular fractures is indicated, internal fixation with a hook plate has more advantages than with tension band wires.

Abstract no.: 52020

INFUSION THERAPY FOR CHRONIC LOW BACK PAIN

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Low back pain is the first cause of assent in the workplace in the world population and about 80% of the same charge at least one episode of low back pain during the lifespan. Low back pain is chronic specific when its duration exceeds 6 weeks. About 20-30% of the world's population is affected by chronic low back pain. Surely a prevailing role of the chronicity of the back pain is covered by arthritis of lumbar spine facet joints associated or not with vertebral instability. There are several options for conservative/non-surgical treatment: from pharmacological therapy (cortisone, anti-inflammatory, pure analgesics), to the use of orthoses, to physical therapy and infiltrative therapy. At our facility, the infiltrative therapy for the treatment of chronic back pain associated with arthritis of the lumbar facets joints is practiced through the use of the amplioscope and can provide the injection of different categories of drugs, possibly combined with each other: cortisones, anesthetics and hyaluronic acid. The infiltrative therapy can be repeated, possibly with cyclical cadence. On the basis of our experience it has been possible to find that the application of the infiltrative therapy, possibly associated with physical therapy, allowing to significantly pain reduction, with an improvement of the quality of life of the patients. In conclusion, we express ourselves favorably towards infiltrative therapy, as a conservative treatment, to be applied to those patients whose are not responsive to common pharmacological therapies and are not ideal candidates for a surgical treatment.

Abstract no.: 52021

OPEN-WEDGE FEMORAL VARUS OSTEOTOMY IN THE TREATMENT OF LEGG-CALVE-PERTHES DISEASE: A NEW TECHNIQUE WITH CONVENTIONAL LOCKING PLATE

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Femoral varus osteotomy (FVO) is a principle treatment in containable heads for Legg-Calve-perthes (Perthes) disease. This study introduces a new technique of proximal FVO with a Locking Compression Plate (LCP) system in Perthes disease, and reports the result and complication. Eighteen patients (male, 17; female, 1 and 5 right hip, 13 left hip) with Perthes disease were enrolled at our institute between 2006 and 2014. The patients were classified and graded according to Catterall (I, 1; II, 3; III, 7; IV, 7) and modified Herring (B, 14; B/C border, 1; C, 3) classifications. Open varus osteotomy was performed and the pre-bending LCP system was used. Radiographic outcome was assessed using the Stulberg classification to evaluate femoral head sphericity. Clinical outcome and complication were evaluated postoperatively. The average age was 7.4 years (5-11 years) and the mean follow-up duration was 70 months (23-110 months). The mean angular correction of the varus osteotomy was 24° (7°-32°). There were 8 class I, 2 class II, 3 class III, 2 class IV and 3 class V according to the Stuhlberg classification and no limitation of hip motion. One patient showed refracture after plate removal, but no mechanical failure of the screw or the plate was observed. The FVO with LCP system could be an alternative method to correct femoral head deformities in Perthes disease. This new technique is easy to perform and provide stable fixation in osteotomy site.

Abstract no.: 52023

**THE GREAT MASQUERADER: OSTEOARTICULAR TUBERCULOSIS
RARE PRESENTATION OF TUBERCULOSIS OF ANKLE JOINT IN AN
EIGHT-YEAR-OLD INDIAN BOY**

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8 year old boy came to the OPD with chief complaints of swelling of right ankle since one week. He gave a history of fall while playing. There was history of recurrent trauma to the same limb. EXAMINATION: The right ankle revealed no external injuries, minimal swelling as in comparison with the contralateral ankle. No tenderness or restricted movements. He was put on a posterior slab and anti inflammatory drugs. INVESTIGATIONS: CT scan report was suggestive of Osteochondritis Dissecans of the distal tibial epiphysis with adjoining myositis ossificans. He was treated conservatively as rest of the blood investigations turned out to be within normal range. At the end of three weeks he developed pain, the swelling worsened. MANAGEMENT: We decided to open the ankle joint through posterior approach. As soon as the joint capsule was opened there was frank pus and caseous material in the muscle proximal to the joint. Beneath the muscle, the bone was found to be scalloped harbouring caseous material. The reports came in favour of tuberculosis with mixed GPB infection. ATT was started but the child came back with recurrence in swelling at the end of one month. Joint aspirate as well as synovial biopsy were sent for GeneXpert. It was found that the M.tuberculosis was resistant to Rifampicin. Starting second line drugs showed dramatic results. CONCLUSION: Osteoarticular tuberculosis has remained a diagnostic enigma particularly when the disease affects unusual sites. It is imperative to perform an open biopsy to confirm as even culture and staining have not shown as high a yield in diagnosis as biopsy has.

Abstract no.: 52025

AN INNOVATIVE HYBRIDISATION TECHNIQUE IN COMPLEX DISTAL METAPHYSEAL HUMERUS FRACTURES AND NONUNION

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Background: Management of distal humerus fractures, especially at the junctional zone of shaft and columns of distal humerus are extremely difficult and poses a major challenge for the treating surgeons. The purpose of this study is to review the outcome of an innovative hybridisation plating technique in complex distal metaphyseal humerus fractures and non-union. Methods: Retrospectively 17 patients with 18 fractures treated between 2008-2013 were analysed. Of these 18 fractures, 12 were nonunions and 6 were acute fractures. Mean age of the patients was 43.5yrs(12-82yrs), 10 were males and 7 were females. Minimum follow up was 1yr. The innovation involved was stabilising the distal humerus column to shaft humerus with enders rod and plate fixation as derotation device and additional stabilisation. Results: All patients had good clinical and radiological outcome. Average time to union was 6.5 months (4-15 months). There were no infections or hardware failures. Only one patient had delayed union which was united on further follow up. In every case this Enders nail plate construct technique is found to be advantageous. Conclusion: This hybridisation plating technique is a simple, cost effective and extremely useful innovative technique that can be used in treating complex distal metaphyseal humerus fractures and nonunions with excellent clinical and radiological outcomes. We strongly recommend all orthopaedic surgeons to use this trick in their technical armamentarium.

Abstract no.: 52027

**COMMINUTED METADIAPHYSEAL INJURIES OF PROXIMAL TIBIA:
WHAT ARE MY OPTIONS?**

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Fracture proximal tibia constitute of about 6% of all injuries and due to increased incidence of high-velocity injuries, various different pattern of injuries are recognised. Severe comminution of the metadiaphyseal region often extending to half of the length of tibia are often noted and the treatment options in such injuries are often challenging with little help from literature if any. The impact of such injuries on the surrounding soft tissues should be considered while planning the treatment options. Sporadic case reports are found in literature with treatment guideline differing in each report. External fixator for 8-10 weeks followed by internal fixation is often advocated. Some literature recommends use of Locking plate on lateral side only. It is obvious that for a plate to be stable it has to span nearly twice the length of the fractured area which is often not possible in these pattern of injuries. Moreover an unstable implant could lead to malunion or even nonunion with breakage of the implant. Augmenting the fixation with medial support seems to be helpful and we report our series of 13 cases fixed with both medial and lateral plating - both by minimally invasive techniques, bridging the fracture. Results: all the fractures went on to union although the duration to union is prolonged (10-12 months). None of the cases had implant breakage or other implant related problems. We recommend this strategy to deal with these subtype of fractures with favourable outcomes.

Abstract no.: 52029

SHEPHERD'S CROOK: HOW TO SET IT STRAIGHT?

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Purpose: Fibrous Dysplasia (FD) of the proximal femur can result in severe deformity and disability. The results of surgical management in such situations has been reported to be poor. We present a novel surgical treatment to correct proximal femoral deformity in FD and the radiological and functional outcomes observed at two years post-surgery. **Material and Methods:** This study is a review of prospectively collected data of cases of proximal femur FD managed at our institute from 2012 onwards. We managed three patients with FD involving four femora (one patient had bilateral disease). Mean age of our patients is 16 years with an average follow up of 27.6 months. All the patients underwent thorough curettage, allograft in intramedullary region, lateral closing wedge valgus osteotomy and fixation with fixed angle devices. **Results:** The neck shaft angle was corrected from an average of 91.7 ° to 152.1° while the Harris Hip Score improved from an average of 59 to 95. There was no clinical or radiological evidence of recurrence of disease or deformity in any patient till the last follow-up. No loosening or failure of implant was noted. **Conclusion:** The triad of valgus osteotomy, intra-medullary cortical strut allograft and cortico-cancellous autograft provides good functional and radiological outcomes in the management of proximal femur Fibrous Dysplasia.

Abstract no.: 52032

JOINT-REPLACEMENT: AN EXCELLENT BAILOUT OPTION IN COMMUNITED PROXIMAL FEMUR FRACTURES OF A GERIATRIC POPULATION

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With increasing percentage of geriatric population fractures around hip are emerging as major health and financial burden to the society. Co-existing osteoporosis and other co morbidities make the management of communited proximal femur fractures even more challenging. Aim of the study was to evaluate the functional out come of cemented modular bipolar hip hemiarthroplasty in patients presenting with such fracture in geriatric age group with severe osteoporosis. Method: 40 patients were operated between march 2013 to march 2017. Average age was 88.5 years (78-104). All were suffering form proximal femur fractures (intertrochanteric fractures). Cemented modular bipolar hip hemiarthroplasty was done in all patients using long femur stem (200 mm). all patients were operated using modified transtrochanteric approach. Abductor mechanism was re-constructed in all cases using ethibond 5 suture. Follow up was done at 0, 2 weeks, 6 weeks, 3 months, 6 months and one year using Harris hip score. Results: in our study one patients was type 1 fracture, 13 patients were type 2 fractures, 7 were type 3 fracture and 19 were type 4 fractures. The average harris hip score at final follow up was 89.5. Excellent to fair outcome was obtained in 34 cases (89.5%). Poor result were obtained in 4 patients (10.5), 2 patients died during the course of follow up. There was no case of loosening of prosthesis, cement breakage or sinking of prosthesis.

Abstract no.: 52033

ANTIBIOTIC CEMENT SPACER AND INDUCED MEMBRANE BONE GRAFTING IN OPEN FRACTURES WITH BONE LOSS: A CASE SERIES

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Background: Open fractures are a difficult entity, often complicated by infection and nonunion. Bone loss further adds to complexity. Conventional techniques of bone defect management are mainly directed toward fracture union but not against preventing infection or joint stiffness. In this case series, we evaluated Masquelet's technique for management of open fractures with bone loss. Methods: Twenty seven open fractures with bone defect, which presented within 3 days of trauma, were planned for treatment by Masquelet's technique. Followup ranged from 21 to 60 months. Results: Average length of bone defect was 6 cm. Radiological union was obtained at a mean of 280 days since first stage surgery. Time for union was not related to the size of defect. Union was faster in metaphyseal region (265.6 ± 38.8 days) as compared to diaphysis (300.9 ± 58.6 days). No patient had residual infection after stage 1. All the patients were able to mobilize with full weight bearing after radiological union with a satisfactory range of motion of adjacent joints. Conclusion: This technique can be routinely applied in compound fractures with bone loss with good results. Chances of infection are reduced using antibiotic cement spacer as an adjunct to thorough debridement. Induced biomembrane revascularizes the graft. Union can be expected in most of the cases but long time to union is a concern. Technique is cost-effective and does not require special training or instrumentation. Although it is a two-stage surgery, requirement of multiple surgeries, as may be needed in conventional methods, is avoided.

Abstract no.: 52034

**PIN TRACT HEALING BETWEEN ILIZAROV WIRES VERSUS HALF PINS
IN PATIENTS TREATED BY THE ILIZAROV METHOD**

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Objective: To compare pin tract healing between wires v/s half pins in patients treated by Ilizarov method. **Methods:** This prospective study carried out from June 2014 to May 2016. Patients with long bone fractures stabilized with Ilizarov wire and half pins. Pin tract infection graded according to Paley's classification and treated accordingly. The pins and wires after removal creates a wound in skin and soft tissue that was assessed and compared between Ilizarov wires & half pins till the healing. **Results:** Total 100 cases selected, mean age found 42.8+/-8.2 years, ranges between 18 to 55 years. Tibia 60 (60.0%) bone involved, femur 23 (23.0%) followed by humerus and radius\ulna 14 (14.0%) and 03(03.0%) respectively. Total 980 wires and pins used. Out of 980, 720 Ilizarov wires and 170 were half pins. Half pins found more infected as compare to wires, out of 170 half pins 40 (23.52%) half pins infected, while out of 720 wires, 86 (11.94%) wire infected. According to Paley's grading system of pin tract infection, majority of wires infected 46 (53.48%) found in Grade I out of 86 infected wires. While majority of half pins infected 22 (55%) were found in Grade II out of 40 infected half pins. On the healing comparison, wires significantly healed in short time as compared to half pins p-value 0.001. Total wires healed within two weeks, while half pins healed within three to six weeks. **Conclusion:** We concluded that wires having significant low infection rate and low healing time as compare to half pins.

Abstract no.: 52035

THE EFFECT OF DIFFERENT FRACTURE LEVELS ON STRENGTH OF BONE-IMPLANT CONSTRUCTS IN SUBTROCHANTERIC FRACTURE MODELS: FINITE ELEMENT ANALYSIS

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Purpose: This study was conducted to investigate the stresses occurring at a short cephalomedullary (CM) nail and bone around the nail depending on fracture level and the presence of osteoporosis when nailing with a short CM nail in subtrochanteric fractures, and to suggest the fracture level suitable for the use of a short nail in these fractures. **Methods:** A three-dimensional femoral finite element model reconstructed with CT images of normal and osteoporotic bones was used in this study. A short CM nail used was gamma 3 nail model. Six finite element femur models were reproduced as a transverse fracture at 0, 10, 20, 30, 40 and 50 mm below the lesser trochanter in each bone model. Anatomical reduction and 1-mm fracture gap in the fracture site were assumed in all models. **Results:** Peak von Mises stresses (PVMS) at cortical bone was higher than the yield strength at the fracture site when the fracture level is at 40 and 50 mm below lesser trochanter in normal bone models, while that was higher when at 30, 40, and 50 mm below it in osteoporotic models. Meanwhile, PVMS within the nail was higher than the yield strength at the fracture site and distal locking screw site when the fracture level is at 40 and 50 mm below lesser trochanter in both normal and osteoporotic models. **Conclusions:** Usage of a short CM nail is recommended in subtrochanteric transverse fractures within 30 mm below the lesser trochanter under the assumption of anatomical reduction.

Abstract no.: 52036

FRACTURE OF A POLYETHYLENE TIBIAL POST IN AESCULAP COLUMBUS POSTERIOR-STABILISED KNEE PROSTHESIS: A CASE REPORT AND LITERATURE REVIEW

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We report the case of a polyethylene tibial post fracture in a 68-year-old man, 71 months after Aesculap Columbus posterior-stabilized (PS) total knee arthroplasty. The polyethylene wear was found around the fracture site of the post, especially over the antero-lateral aspect of the post base. After retrieval of the broken insert, fractographic analysis of the fractured surface was done under a scanning electron microscope to ascertain initiation and propagation of the failure. The failure mechanism of the post fracture in the present case was anterior impingement with excessive wear over the base of the antero-lateral aspect of the tibial post, which became a stress-riser of post and cam articulation. This is the first report of a polyethylene tibial post fracture of a Columbus PS prosthesis. Because the prosthesis appeared well-fixed and in good position, and there was no significant articular surface wear or asymmetry of the thickness of the two condyles, the broken polyethylene tibial insert alone was replaced with another polyethylene tibial insert. Patient had an uneventful recovery. Three months postoperatively the knee was stable on examination and motion was 0° to 120°. In this report, we wish to highlight mechanisms of failure of tibial post and how the prosthesis design and surgical factors contribute towards it. The surgeon should be aware that the cam-post interface is not an innocuous articulation, and manufacturers should be motivated to produce implants that maintain the function of the post while limiting wear and surface damage.

Abstract no.: 52038

EFFECT OF CONTRAST BATH ON LOWER EXTREMITY VENOUS FLOW FOR PROPHYLAXIS OF DEEP VEIN THROMBOSIS ASSOCIATED WITH LEG CAST IMMOBILISATION

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Introduction: Deep vein thrombosis (DVT) frequently occurs in patients with leg cast immobilization. However, the usefulness of DVT prophylaxis for these patients has not been established because of the high bleeding risk associated with anticoagulants and inapplicability of intermittent pneumatic compression devices or graduated compression stockings. This study aimed to examine the effects of contrast bath on venous flow in an immobilized leg. **Materials and Methods:** The right ankles of 10 healthy young adults were immobilized with a plaster splint. In a sitting posture, either leg received 4 sets of contrast bath, each set consisting of baths with water at 5°C above the body temperature for 4 min and 25°C below the body temperature for 1 min. We measured peak velocity (PV) in the right superficial femoral vein before and after the contrast bath, using pulsed Doppler ultrasonography. **Results:** The PV in the right, immobilized leg significantly increased after the contrast bath on the left, non-immobilized leg ($P=0.02$) but showed no significant change after the contrast bath on the right leg. The increase in PV in the right leg was significantly higher with contrast bath on the left leg than with that on the right leg ($P=0.02$). **Conclusions:** Contrast bath on a non-immobilized leg can enhance venous flow in the opposite, immobilized leg, and can be a useful prophylactic method for DVT in patients with leg cast immobilization.

Abstract no.: 52040

ASSOCIATION OF SYMMETRY OF PATELLA RESECTION IN TOTAL KNEE ARTHROPLASTY WITH MID-TERM OUTCOMES

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Asymmetric patella resection is thought to adversely affect the outcome after Total Knee Arthroplasty (TKA). It is a potential cause of patella instability and compromises bone stock, limiting reconstructive options at the time of revision. The current retrospective study was designed to investigate the effect of asymmetric patella resection on patient reported outcomes at mid-term. From an existing arthroplasty database, we identified 215 patients with TKA and Oxford Knee Scores (OKS) at mean of 7.5 years. Thirty-four patients were identified with skyline radiographs of patellae available for analysis. OKS scores were retrieved after measurements of the symmetry of patella resection were obtained for each patient. The association between OKS scores and the measured resection differences was statistically tested with Mann Whitney U test. Inter-rater reliability of measurements was tested between observers. The intraclass correlation coefficient indicated good inter-rater reliability (0.8) but the distribution of OKS scores was the same across both categories of patella resection - those with and those without asymmetry.

Abstract no.: 52042

A NOVEL TECHNIQUE FOR REIMPLANTING EXTRUDED BONE FRAGMENTS IN OPEN FRACTURES

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Extruded bone fragments are rare occurrence in high energy fractures. Generally, management is thorough debridement and managing the bone defect. Very few reports describe successful retention of free bone fragments. Disinfection of fragment is done by autoclaving or with antiseptic/antibiotic solution. Autoclaving kills viable cells and antiseptic/antibiotic solutions do not disinfect completely. In presented case, authors used an innovative technique of disinfecting and retaining the bone fragments with minimum compromise on biology. A distal femur fracture with 2 extruding bone pieces (6X3 cm and 3X2 cms) was managed by thorough debridement, external fixator and antibiotic cement spacer. The extruded bone fragments were rinsed in saline and diluted betadine and implanted in subfascial plane in healthy soft tissues in the thigh along with a few antibiotic beads for assuring disinfection. After 1 week, when no clinical signs of infection were found, site was opened, cement spacer removed, free fragments positioned anatomically and rigid internal fixation was done. Fracture united at 6 months with good functional outcome. The key points of this procedure are: 1) Viability of bone fragment maintained. 2) Traumatized soft tissues healed and prepared for accepting the free bone fragment. 3) Use of antibiotic cement counters any remaining chances of infection after thorough debridement. 4) Faster union with maintenance of bone length and alignment with use of anatomic fragments. Extensive search of literature was done and this procedure was found to be novel. A larger case series can help in determining the utility of this technique in compound fractures.

Abstract no.: 52044

INCIDENCE AND RISK FACTORS OF POSTOPERATIVE URINARY RETENTION AFTER HIP FRACTURE SURGERY IN ELDERLY PATIENTS

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Purpose: The aim of this study was to investigate the incidence and risk factors of postoperative urinary retention (POUR) in elderly patient who underwent hip fracture surgery, and to provide the evidence that can reduce the incidence of POUR after hip fracture surgery in elderly patients. **Methods:** From January 2010 to January 2015, 214 consecutive patients aged over 65 years who underwent hip fracture surgery, were recruited for this study. All patients underwent indwelling catheterization at admission. We collected demographic data, perioperative results, and postoperative duration of patient-controlled analgesia (PCA) and indwelling catheterization. Finally, the occurrence and risk factors of POUR were compared and analyzed between the two groups with and without POUR using logistic regression analysis. **Results:** POUR developed in 68 patients (31.8%), of whom 44 (64.7%) were female. Indwelling catheter was kept for the mean period of 3.4 days (range, 0-7 days) after surgery. Gender, comorbidities, and duration of indwelling catheterization revealed significant differences between the two groups with and without POUR on univariate analysis. Multiple logistic regression analysis revealed that the duration of the indwelling catheter (OR 0.31, $p=0.016$) and male gender (OR 2.22, $p=0.014$) were the independent risk factors related to the occurrence of POUR. **Conclusions:** The significant risk factors are early removal of indwelling catheter and male patients. In these elderly patients, more meticulous postoperative monitoring and appropriate management is demanded to reduce POUR after hip fracture surgery.

Abstract no.: 52045

THE CALCANEAL FRACTURES SECONDARY TO WORK ACCIDENTS: IS THERE A PARTICULAR EPIDEMIOLOGICAL PROFILE?

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Introduction: Secondary to a work accident, calcaneal fracture represents a real dilemma for both doctors and patients. Their cost of care, their impact on work performance and their long rest periods are problems that have not yet been solved around the world. The objective of this work was to study the epidemiological profile of patients with calcaneal fracture secondary to a work accident. Methods: This is a retrospective longitudinal study conducted from January 2015 to May 2017. A comparison between the epidemiological profile of two groups of patients those with an accident at work and those with another mechanism was carried out Results: 70 patients were treated for a calcaneus fracture in our institution in that period, 24 of which were secondary to a work accident and all were male with an average age of 38 years. Associated lesions were present in 38% of cases. The total rest period was on average 112.5 days with extremes of 60 and 210 days. Only one patient was required to change job and the recovery time was an average of 115 days. No statistically significant difference was found between the 2 groups in the epidemiological profile and the rest period. Conclusion: calcaneal fracture is recognized as serious by the sequelae that they cause especially if it occurs in the workplace. The profile of these patients does not differ from the rest of the population and it is recommended not to consider it as a risk factor for poor results, especially after surgery.

Abstract no.: 52053

GREEN ORTHOPAEDICS

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Over the last few decades orthopedics has seen huge progress being made. As a consequence of this and increasing populations the number of patients and procedures is on the rise across all hospitals. Paradoxically though, hospitals themselves are posing a threat to public health and the environment on account of the waste generated and environment unfriendly practices. This presentation aims to highlight the major sources of environmental threats from an orthopedic perspective and suggest possible corrective measures. These measures would not only prevent damage to the already fragile environment but also could be cost-saving in many instances, a point of great importance in developing nations. Suggested measures would begin from the Orthopedic Clinic where ideas like digital filmless radiographs, reusable fracture splints, reintroduction of pop instead of synthetic casts, recycling aids and splints from patients who have recovered etc. The OR is the major source of hazardous waste without doubt. Measures like reusable gowns and drapes, reuse drill bits and exfix devices etc. The principles can be summarised as the 6R's namely, Reduce, Replace, Rethink, Recycle, Reuse and Research.

Abstract no.: 52056

COST-EFFECTIVE ORTHOPAEDICS

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Orthopedic Surgery has progressed by leaps and bounds over the last few decades. The number of procedures being performed on orthopedic patients has seen a phenomenal rise and consequently the costs have also spiralled high. Treatment costs are of paramount importance in a developing country like India where most of the patients finance their treatment themselves. Any measure which can cut costs without compromising patient safety and adequacy of the care is welcome in any part of the world. This presentation will suggest measures which can be adopted in the Outpatient clinic, Wards and the biggest "culprit" the Operating Room. Apart from saving costs some of the suggested measures could avoid harming the already fragile environment to which each and every human bears a responsibility. The principles will be based on the 6R's namely, Reuse, Reduce, Recycle, Rethink, Replace and Research.

Abstract no.: 52061

A COMPARATIVE ANALYSIS OF THE RADIOLOGICAL AND FUNCTIONAL OUTCOME OF RING VERSUS RAIL FIXATOR IN INFECTED GAP NONUNION OF TIBIA TREATED WITH DISTRACTION OSTEOGENESIS

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Introduction: This is a prospective randomized study comparing the radiological and functional outcomes of ring and rail fixators, with an infected gap (> 3 cm) nonunion of the tibia. **Methods:** 70 patients with a posttraumatic osseocutaneous defect of tibia measuring at least 3 cm. Randomised in two groups of 35 patients each using lottery method. Group I, treated with a ring fixator and group II, with a rail fixator. The mean bone gap was 5.84 cm in group I and 5.78 cm in group II. The mean followup was 33.8 months in group I and 32.6 months in group II. Bone and functional results were assessed using the classification of the Association for the Study and Application of the Method of Ilizarov (ASAMI). **Results:** Bone result was excellent, good, fair and poor in 21, 12, 0 and 2 in group I; and 14, 15, 3, and 3 in group II, respectively. The functional results were excellent, good, fair, poor and failure in 16, 17, 1, 0 and 1 in group I; and 22, 10, 0, 3 and 0 in group II, respectively. Both fixator systems achieved comparable rates of union and functional outcomes. The rate of deep pin tract infection was significantly higher in the rail fixator group but, patients found it more comfortable. **Conclusion:** Ring fixator is recommended in patients with a bone gap of more than 6 cm. Patients with a bone gap up to 6 cm can be managed with either a ring or rail fixator.

Abstract no.: 52065

COCCYGECTOMY: A REVIEW OF LITERATURE AND OUR EXPERIENCE OF DAY CASE COCCYGECTOMY.

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Introduction: Coccygectomy post op. recovery and rehab varies and not much has been published to determine if this can be routinely performed as a day case surgery. Objectives: Our objective was to determine if coccygectomy can be performed as a day case procedure in all age groups and to assess the safety and efficacy of this procedure amongst all our patients. We had 2 surgeons performing this technique in our series and results were compared to other published results for this procedure. Methods: Our institution performed 40 cases of coccygectomy as a day case procedure and we analysed our complication rates for this procedure and patient reported outcomes measure scores after the procedure. We looked into factors like age, mechanism of injury, treatment received, and presence of coccyx hypermobility during manipulation to find out if post ODI and VAS score after the procedure was not affected by any of these confounding factors. Statistical analysis was carried out to find out if any additional factors has any significant impact on the delivery of coccygectomy as a day case procedure. Results: All of our patients except one was discharged on the same day. We had a follow up clinic to collect the patient reported outcome measures. Our study showed the coccygectomy can be performed safely as a day case procedure and this does not have an impact on outcome measures. There is no effect of age on making uneventful post recovery and follow-up patient satisfaction.

Abstract no.: 52070

BILATERAL BRACHYMETATARSIA: AN IMPROVEMENT IN PATIENT PERSPECTIVE

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Brachymetatarsia is a conditioned which has been described as abnormal short metatarsal bone due to premature closure of the epiphyseal growth plate. It usually involves a single metatarsal bone with the fourth metatarsal being the most common. It may be congenital or acquired. We here report a case in a 53-year-old lady who presented with bilateral foot pain with difficulty in wearing shoe. Examination revealed shortening of the bilateral fourth toe and the toes were tilted dorsally. She was diagnosed with metatarsalgia secondary bilateral brachymetatarsia. She underwent the operation to reduce the pain and to correct the deformity. Gradual lengthening with distraction osteogenesis was performed using a MiniRail external fixator (Orthofix) and K-wiring of the both fourth metatarsophalangeal joint. Adequate length of fourth metatarsal and good bony union were achieved at the end of treatment. Upon follow up, the pain have resolve and patient's able to wear proper footwear.

Abstract no.: 52078

3D KINEMATIC EVALUATION OF TIGHTROPE CCL IN AN EX-VIVO CRANIAL CRUCIATE DEFICIENT STIFLE MODEL

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Introduction: The impact of surgical correction of CCLR on 3D kinematics of the knee joint has been only sparsely evaluated in dogs. Several techniques have been reported to surgically correct the cranial cruciate deficient knee (CCDS). One of these, the Tightrope CCL, has been proposed to restore the baseline 3D kinematics of CCDS by using isometric points. Its kinematic impact has never been evaluated. The objective of this study was to evaluate the impact of Tightrope CCL on the 3D kinematics of the knee joint. We hypothesized that Tightrope CCL would restore physiologic 3D kinematics of the knee joint in our ex-vivo model. **Material and Methods:** Pelvic limbs (n=10) harvested from euthanized large dogs (27-34 kg) have been used for testing, using a previously validated apparatus. Three experimental conditions were evaluated: (a) intact knee; (b) cranial cruciate ligament transection (CCLt) through a limited medial arthrotomy which was sutured and (c) CCLt stabilized with Tightrope CCL. For each condition, limbs went through 5 gait cycles and kinematic data was recorded. **Results:** The impact of Tightrope CCL in CCDS was as follows: did not limit flexion; resulted in the neutralization of internal rotation without restoring baseline curves; did not restore abduction; could not neutralize nor restore cranial translation; restored latero-medial and proximo-distal translations. **Discussion/Conclusion:** Tightrope CCL for surgical correction of CCDS does not seem to restore physiologic 3D kinematics of the knee joint and could potentially result in high incidence of medial meniscal tears (cranial translation > 3 mm).

Abstract no.: 52086

COMPARATIVE STUDY BETWEEN DHS AND PFN IN MANAGEMENT OF EXTRACAPSULAR NECK OF FEMUR FRACTURE

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Introduction: Mechanization of the modern world has increased the Motor Vehicular Accidents. With increasing accidents, there is also rise in polytrauma with complicated musculoskeletal injuries and their post traumatic problems. Early restoration of joint motion, return to normal physiological function and minimal morbidity is now regarded as ideal fracture treatment. The extracapsular neck of femur fracture is one of the most common types of fractures that an orthopedic surgeon has to face during his everyday practice especially in geriatric population. Reduction in bone density is a strong risk for these fractures. The conservative approach has fallen into disrepute because of high complication rate. **Materials:** 50 patients diagnosed with extracapsular neck of femur fracture were treated using DHS in 25 patients and PFN in 25 patients. **Result:** The study involved patients above 60 years of age. The average age was 70.87 years. Domestic fall and motor vehicular accidents were the mode of injury in all patients. Shortening in PFN group was 5.2mm as compared to 10.9mm in DHS group. In the DHS group the one month Harris hip score was less than that of the PFN group, however this difference disappeared with the two group on the sixth monthly and yearly follow up. There was 2% case of implant failure in PFN group and 4% implant failure in DHS group. **Conclusion:** In very unstable fractures , PFN is superior to DHS in stability, elasticity of fixation, load sharing and early return to function with minimal operative trauma.

Abstract no.: 52090

COMPARATIVE STUDY OF HAMSTRING AUTOGRAFT AND BONE PATELLA BONE GRAFT IN ACL RECONSTRUCTION

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Introduction: ACL tear is the most common ligamentous injury in knee joint, resulting in recurrent injury and increased risk of intra-articular damage. Goals of ACL reconstruction are to restore stability of knee, allow the patient to return to normal activities and to delay the onset of osteoarthritis. Bone-patellar tendon-bone (Graft-A) and the hamstring tendon graft (Graft-B) are the most commonly used autografts. Graft-A has been widely accepted as gold standard for ACL reconstruction with a high success rate. Donor site morbidities and extensor mechanism problems are its disadvantages leading to popularities of Graft-B. This study is made on Graft-A and Graft-B for ACL reconstruction and results are evaluated. Material: It is a prospective study of 30 patients, between age 18-40 years, diagnosed clinically and confirmed by MRI and operated arthroscopically or open by using either of the two grafts. Post-operative evaluation done by, International knee documentation committee subjective/objective assessment score (IKDC), Tegner's score, Lysholm score. Results: Comparison of results within the same group of graft suggest improvement of all the scores post-operatively than pre-operative scores. There is no significant difference between the two groups of graft in terms of post-operative subjective satisfaction, activity levels and knee stability. Conclusion: Outcome in terms of clinical stability, ROM and general symptoms did not differ for the two types of graft. Graft-A had comparatively more mechanical strength and more kneeling pain and Graft-B had lower graft harvest site morbidity, less kneeling pain and slight extension lag.

Abstract no.: 52091

A PROSPECTIVE EVALUATION OF A NOVEL PLATING SYSTEM FOR FIRST METATARSOPHALANGEAL JOINT ARTHRODESIS

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BACKGROUND: Arthrodesis of the first metatarsophalangeal joint (MTPJ) is a well recognised treatment for osteoarthritis, rheumatoid arthritis and severe hallux valgus. The aim of this study was to prospectively evaluate a novel plating system which uses a cross plate partially threaded compression screw. **MATERIALS AND METHODS:** Thirty patients undergoing first MTPJ fusion using the Stryker Variax 2 CP plating system were prospectively evaluated. All procedures were performed by a single fellowship trained consultant foot and ankle surgeon between September 2016 and August 2017. Patient function was evaluated pre-operatively and at six months using the Manchester-Oxford Foot Questionnaire (MOXFQ). A paired t-test was used to assess changes in function. Post-operative union rates and complications were also recorded. **RESULTS:** MOXFQ scores significantly improved in all domains following surgery. Mean scores improved by 35, 27 and 17 points for pain, walking/standing and social interactions respectively, $p < 0.001$. All but one patient had satisfactory radiological evidence of union at six weeks post-operatively, and all had clinical evidence of union. Complications included superficial infection in one patient which was treated successfully with oral antibiotics, and soft tissue irritation in one patient which required plate removal. **CONCLUSIONS:** This evaluation study demonstrates that this novel cross plate compression plating system is safe, and provides high patient satisfaction, reliable union and low complication rates. Although our data suggest this new system is highly successful for first MTPJ arthrodesis, further multi-centre research is required to determine its effectiveness in comparison to established techniques.

Abstract no.: 52092

ANIMAL MODELS IN ORTHOPEDIC RESEARCH: WHICH IS THE BEST ONE ?

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The use of animal models in orthopedic research is necessary. However, their use must be justified and research conducted in a responsible manner. Animal welfare is of utmost importance and has to be considered and implemented. As researchers, we are frequently confronted with the same questions: Which is the best animal model? The selection of the best animal model is not a simple task and it necessitates our strongest consideration. This presentation will entice several aspects of the ethics of using animal models and will help the investigators choosing the most appropriate animal models. First, it will cover the ethics of animal use and welfare, will explain the role and duties of institutional ethics committees, will give researchers hints on how to fill research protocols to ethics committees, will guide investigators on key points of protocol submission. Then, it will provide hints on selecting the most appropriate model for orthopedic research, trying to use several questions to guide the investigators into existing models or looking into the development and validation of new models.

Abstract no.: 52093

ANIMAL MODELS FOR ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION: USING EX-VIVO AND IN VIVO MODELS

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The rupture of the anterior cruciate ligament (ACL) is a serious knee injury that affects a wide range of patients. There are several aspects of surgically correcting this disease that can be evaluated, and by several means. The use of computer models in orthopedic research has limited use: these predictive models cannot represent the complex integrative interactions of live beings. In vitro studies are useful when evaluating specific aspects of healing or integration. They provide essential preliminary results that lead to pursuing with in vivo proof of concept studies. The complex phenomenon of healing can only be reproduced and studied using animal models thus validating their use. Furthermore, for regulatory agencies, two points are of utmost importance: the safety/biocompatibility of an implant or device and their efficacy. Moreover, even if small animal models are adequate for safety and biofunctionality, issues only larger models such as dogs, sheep/goats and pigs can mimic the local healing/integrating capacities under physiologic loads. The quest for the perfect model in all domains of biomedical research is universal. As it doesn't exist, the best we can do is try to identify the best adapted models for our purpose. Our objective is to try to help researchers identify potential models to further investigate one or several aspects of their field of expertise. Hence, animal models play an important role in the endeavor for medical advances in the evaluation of ACL reconstruction, may it be in the pathobiology or in the evaluation of new techniques or devices.

Abstract no.: 52094

DIFFERENTIATION OF BONE TUMOURS USING DYNAMIC CONTRAST ENHANCEMENT AND CHEMICAL SHIFT MRI

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Introduction: Most of the bone tumours can be characterised as benign or malignant using plain radiographs. Further characterisation is possible with newer techniques in MRI such as dynamic contrast enhancement and chemical shift imaging. Aims of this study were to establish efficacy of these techniques in characterisation of bone tumours as benign or malignant. **Material and methods:** 35 patients with bone lesions were included in this study. Provisional diagnosis was made on plain radiographs. All patients underwent routine MRI sequences. Dynamic contrast enhancement (DCE) was done using contrast medium Gadopentate dimeglumine. Chemical shift imaging was performed using standard technique to obtain in-phase and out-of-phase imaging. Appropriate ROI were drawn to obtain the signal drop in chemical shift imaging and time intensity curves were obtained in DCE. All patients underwent biopsy after these imaging studies to establish the final diagnosis. **Results:** On plain radiographs, 31 were patients were diagnosed as malignant and 4 as benign. After dynamic contrast evaluation and chemical shift imaging, 27 lesions were diagnosed as malignant, 6 were diagnosed as benign and 2 were diagnosed as osteomyelitis. On histopathology, 26 lesions were found to be malignant, 6 were found to be benign, 2 were found to be osteomyelitis and 1 patient was found to be having healing fracture. **Conclusions:** Dynamic contrast enhancement and chemical shift imaging were found to be helpful in characterisation of bone lesions into benign or malignant with high rate of accuracy.

Abstract no.: 52095

RESURFACING OF HAND USING ISLAND PEDICLE FLAPS

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26 patients with faciocutaneous defects was covered using island pedicle flaps from the region of upper extremities. 18 of them by reverse flow posterior interosseous artery, 4 radial artery, 4 based on perforators of ulnar artery. Early resurfacing resulted with better functional outcome with improved possibilities of secondary reconstruction. Complications include marginal loss of flaps, persistent infection, unacceptable donor area scar formation, specially in radial artery flap. On conclusion always better to get early resurfacing, highly reliable flaps requires own learning curve to achieve optimal results.

Abstract no.: 52096

**COMPARATIVE STUDY OF DIFFERENT MODALITIES OF TREATMENT
IN SUPRACONDYLAR FRACTURE OF HUMERUS**

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Introduction: Supracondylar fractures of the humerus are the commonest paediatric elbow injury. Fall on outstretched hand is the most common mode of injury. Supracondylar fracture of humerus is known for complication and poor result if not treated properly. This fracture occurs in the area where the neurovascular structures are in close vicinity. If displaced fracture occurs in the above mentioned area, neurovascular structures are liable to get injured. These fractures may be associated with marked swelling, volkmann's ischaemia, nerve palsies and later on complications like stiffness of elbow and cubitus varus deformity. Goals of treatment are to achieve an excellent functional and cosmetic result without complication. Many methods are available for the treatment of these fractures. Modalities of treatment were planned after evaluation of the fracture type. Materials: 30 children of age 1-16 years of supracondylar fracture of humerus were studied. Gartland classification was used to classify the fracture after examining them clinically and radiologically. Result: In our study type III were more common (46.67%). Results of the present study of 30 extension type of supracondylar fractures of the humerus were judged according to the Flynn's grading. 96.66% had good to excellent result and 3.34% had fair result. 83.33% patients had post-operative restriction of movement $<5^{\circ}$. 96.67 cases had change in carrying angle $<10^{\circ}$. Conclusion: Close reduction and percutaneous Kirschner's wire fixation is the choice of treatment for displaced supracondylar fracture of humerus in children. When closed reduction is not possible then open reduction and k-wire fixation is mandatory.

Abstract no.: 52098

TIBIAL TUNNEL PREPARATION IN POSTERIOR CRUCIATE LIGAMENT (PCL) RECONSTRUCTION? A NEW TECHNIQUE TO LESSEN THE STRESS

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Purpose: To introduce a new technical point during preparation of tibial tunnel in PCL reconstruction to reduce the chance of popliteal artery injury and to decrease the duration of the surgery. **Method:** Twelve PCL reconstructions were done. In this method we inserted PCL tibial aimer from lateral portal and we put its tip 8-9 mm below shiny white fibers in PCL facet. Then smooth guide pin was inserted from antromedial tibial cortex and advanced to the posterior cortex but not through it. We stopped advancing the pin just when it touched the posterior cortex. Thereafter reaming was done over the guide pin. As the pin was engaged in the posterior cortex we were sure that it would not run before reamer to the popliteal fossa. We stopped reamer just when its head appeared in the PCL facet. Visualizing reamer is much easier and more predictable than visualization of the pin in PCL facet. Other steps of standard arthroscopic PCL reconstruction was done. **Results:** CT scan was done for all patients and dimensions of tibial tunnel were satisfactory in all patients. There was no neurovascular injury and duration of the surgery was much less compared to similar procedures that were done under C-arm fluoroscopy. **Conclusion:** Preventing penetration of guide pin through posterior tibial cortex before reaming can eliminate the chance of neurovascular injury in popliteal fossa and would decrease the duration of surgery by eliminating fluoroscopy during the process.

Abstract no.: 52099

MANAGEMENT OF STAGE I AND II A OR B IDIOPATHIC AVASCULAR NECROSIS OF HIP WITH CORE DECOMPRESSION USING CANCELLOUS BONE AUTOGRAFT AND PLATELET RICH PLASMA

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Introducton: AVN is a result of loss of circulation from numerous potential causes. In the end stage of disease, collapse of femoral head occurs and severe arthritic changes may be seen on both sides of the joint. The clinical presentation and management depends on age of the patient, size of the lesion and stage of disease. There are many operative treatments available. Structural bone grafting techniques after core decompression have been used with promising results. PRP plays a crucial role in normal healing response of connective tissues. This was done to study the epidemiology of AVN of femoral head and to testify the outcomes in terms of remission, limitation or progression of disease. **Materials:** The study consists of 30 patients of AVN of femoral head in stage I and II A/B (Ficat Arlet classification) who were treated by core decompression, autologus bone grafting and PRP. Age group of patients was between 20-60 years. **Results:** Maximum patients operated were in stage IIA disease. Average pre-operative Harris Hip Score was 56.8 and average post-operative HHS was 79.73 after one year of follow-up. 27/30 Hips showed improvement in HHS after one year. **Conclusion:** Adding PRP to the conventional core decompression and bone grafting showed good to excellent results at a short term follow-up in pre-collapse of osteonecrosis of hip but long term follow-up is awaited. Newer techniques of decompression with arthroscopy and PRP can be used to help in reducing post-operative rehabilitation and reduce loss of work hours.

Abstract no.: 52100

TOTAL KNEE REPLACEMENT IN VARUS KNEE: WHAT MEASUREMENT REALLY MATTERS? INTRODUCING A NEW CLASSIFICATION SYSTEM

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Background: Varus deformity is one of the challenges in many patients before TKA, and in various studies, different surgical techniques have been proposed. Our purpose in this study is to present a new classification and surgical technique patients with Varus deformity Candidate for TKA. Method: 81 patients (including 81 knees) were studied. 68% of patients were female and the rest were male. After the initial pre-op planning, Patients were operated based on the medial defect and lateral laxity (opening the lateral of knee more than 5 mm and/or lateral strust) and finally classified. Then cut-off size of the lateral tibia was determined based on new classification. Result: In the present study, Varus varies in the range of 9 to 42 degrees. According to the new classification system, 13 % of patients were in group 1 (without defect -without laxity) , 18 % in group 2 (without defect - with laxity) ,.27 % in group 3 (with defect - without laxity) , 42 % in group 4 (with defect - with laxity). 13 % of patients needed medial release. all patients were placed under the TKA with PS system. The size of the liner in 78% of patients was 10 mm, 17%, 8 mm and Other were larger sizes. Conclusion: The presented classification of Varus knee and surgical technique algorithm is a good method to reduce need of extra medial release and also of high thickness of polyethylene. A new classification may modify TKA for varus knee.

Abstract no.: 52102

LATE GENU-RECURVATUM AFTER TOTAL KNEE REPLACEMENT: TWO CASES REPORT AND REVIEW OF LITERATURES

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Background: The goal of performing TKA is to obtain a functional ROM. However, sometimes this goal can not be achieved and the patient has one of two complications of flexion contracture or genu-recurvatum. Method: Two patients who were under primary TKA and After a period with a proper function (4 year in a patient and 1 year in another patient), have a genu-recurvatum. A re-operation was performed for both patients, and due to wear posterior of the cam of liners, liners was replaced with larger size. In the follow-up of one year in both patients, the knee is stable and functionally good. Discussion: The genu-recurvatum is a rare condition and in less than 1 % of patients, and early after surgery, can occur due to a number of reasons, for example, a history of neuromuscular diseases or technical mistake during surgery. Until now, genu-recurvatum is not reported late after TKA in English literature, but in presented paper, two patients who were under primary TKA and After a long period with a proper Have a genu-recurvatum. The only important point in both patients that presented is ligamentous hyperlaxity. Conclusion: ligamentous hyperlaxity can be one of the predictor factors of Late genu-recurvatum after total knee replacement.

Abstract no.: 52105

**MANAGEMENT OF NONUNION IN HOFFA FRACTURE: A CASE REPORT
AND REVIEW LITERATURES**

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Background: Hoffa fracture is one of the rare occurring fracture of distal femur which can be seen only on coronal plane. Nonunion of Hoffa fracture is very rare and even literature has very few reported cases. Case presentation: A 62 years old male sustained Hoffa fracture 3 years ago and developed nonunion of fracture site with pain and restricted ROM of Knee. He was treated with TKA. Discussion: Due to very few reported cases of nonunion Hoffa fracture accurate treatment protocol does not exist and revolves around many controversies. Many studies showed that surgeons have adopted different kinds of surgical interventions to treat this type of nonunion. Conclusion: An important question here is which surgical intervention should be implemented? Conservative treatment mostly does not yield favorable outcome and may lead delayed surgical intervention. In patient with good bone density treatment of choice should ORIF and in those with osteoporosis better treated with knee arthroplasty.

Abstract no.: 52106

OXYGEN APPLICATION IN THE TREATMENT OF THE SHOULDER IMPINGEMENT SYNDROME

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At the basis of the pathogenesis of the impingement syndrome lies the space reduction for rotator cuff tendon of the shoulder. Despite the variety of medical techniques in modern orthopedics, the search for the most effective ones continues. The purpose of the work was to study the possibility of intra-articular oxygen injection for decompression of tendons of the rotator cuff of the shoulder. In the department of traumatology, RCH#1, from 2016 to 2017, 125 patients (82 males and 43 females) were treated with an impingement syndrome of varying severity without a complete rupture of the rotator cuff tendons. The average patients age was 52 years (from 40 to 65). To all patients were performed oxygen insertion into the shoulder joint, a sub acromial bursa and a subdeltoid space in a volume of 50, 20, 30 ml, respectively. The procedure was repeated 3 times within 4 days interval. After each oxygen insertion, performed physical procedures for develop movements in the shoulder joint. Results were evaluated 1 month after last administration: in 84 patients (67%) was observed complete pain syndrome with movement range restoration of up to 90%. 34 patients (27%) noted a significant pain reduction with range of movements recovery from 80 to 90% with the opposite. In 7 patients there was a slight pain decrease associated with significant osteophytes growth in subacromion area. They underwent surgical treatment. Conclusions: The use of oxygen in impingement syndrome for decompression of rotator cuff tendons creates conditions for effective treatment of this pathology.

Abstract no.: 52107

A PROSPECTIVE RANDOMIZED COMPARATIVE STUDY OF INTRA ARTICULAR INJECTION OF AUTOLOGOUS CONDITIONED SERUM AND UNCONDITIONED SERUM AND ITS CHONDROPROTECTIVE EFFECTS IN KNEE OSTEOARTHRITIS.

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OBJECTIVES: To compare the efficacy of intra articular injection of Autologous Conditioned Serum (ACS) and Unconditioned Serum (UCS) in treating knee osteoarthritis
METHODS: This was a single blinded randomized control trial with three groups receiving 3 lines of treatment with one group serving as control. The subjects were assessed by VAS, WOMAC scoring, GPA) before the treatment and 3 times post treatment at 1.5 months, 3 months and at 6th month. The sample size studied was 120 knees that had knee osteoarthritis (grade 1 and grade 2) as diagnosed by American college of Rheumatology Criteria and staged as per Ahlback's radiological grading system. The three groups UCS, ACS, and saline control received three injections of 8 ml 2 weeks apart. The patients in the three groups were blinded using a mask. **RESULTS:** The benefits from the baseline in terms of pain, stiffness, physical function and total WOMAC score were greater in the group ACS and UCS than the control group ($p = 0.000$). The minor difference in the percentage benefit between the group ACS and UCS was not statistically significant ($p = 1.000$). Also in MRI studies reduction in the cartilage thickness due to ACS was less than the reduction due to UCS and the saline group ($p = 0.000$). **CONCLUSION:** The results of our study support the effectiveness of ACS over UCS for relieving pain, stiffness and improving knee functions in OA knee.

Abstract no.: 52110

**SURGICAL MANAGMENT OF ACROMIOCLAVICULAR JOINT
DISLOCATION COMPARITIVE STUDY**

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Introduction: The acromio-clavicular joint is a diarthrodial joint. The severity of an acromioclavicular joint injury is dependent upon the degree of ligamentous injuries. Acromio-clavicular joint injuries are seen especially in competitive athletes, such as rugby or hockey players and occur most frequently in the second decade of life. The most common mechanism of injury is a direct force applied to the superior aspect of the acromion, usually from a fall with the arm in an adducted position. Less commonly, an indirect force may be transmitted up the arm as a result of a fall on outstretched hand. Injuries to the acromioclavicular joint are common and may lead to instability or degenerative changes. Most injuries are the result of direct trauma to the acromioclavicular joint. The purpose of this study is to compare the results of two different surgical methods i.e. K wire fixation vs K wire and coracoclavicular suture fixation. **Materials:** In this study 30 patients diagnosed with acromioclavicular joint dislocation were divided into two groups, first group treated with K wire only and second group with K wire and coracoclavicular suture fixation. **Result:** The percentage of excellent functional outcome is more in the second group which were treated with K wire and coracoclavicular suture fixation. **Conclusion:** K wire fixation or K wire and coracoclavicular suture fixation had almost similar outcome. However individuals with high level of functional demand respond well with K wire and coracoclavicular suture fixation.

Abstract no.: 52111

BILATERAL DISTAL RADIUS FRACTURES WITH BILATERAL SINGLE FINGER METACARPOPHALANGEAL (MCP) JOINT DISLOCATION: A RARE CASE REPORT OF POST TRAUMATIC INJURY IN A PIANIST AND REVIEW OF LITERATURE ON ASSOCIATED INJURIES WITH BILATERAL DISTAL RADIUS FRACTURE

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Introduction: Bilateral distal radius fractures are rare injuries and only a handful of case reports exist. No case is yet reported in the English language medical literature with respect to bilateral distal radius fracture and associated bilateral single finger MCP joint dislocation. The purpose of this paper is to not only report such a rare case but also discuss the role of radial distractors as definitive management and review the literature of associated injuries in bilateral distal radius fractures. **Case Report:** We report a posttraumatic case of bilateral distal radius fracture with MCP joint dislocation right index finger and MCP joint dislocation left thumb in a professional pianist. Patient underwent surgery in the form of closed reduction and wrist spanning radial distractor application bilateral wrist. Closed reduction was done for the MCP joint dislocation left thumb and open reduction for the MCP joint dislocation right index finger. Postoperative check roentgenographic images were satisfactory. Patient was on strict occupational therapy and hand physiotherapy regime from the early postoperative period. All the injuries healed well with union of both the distal radius fractures by three months with satisfactory DASH scores. **Conclusion:** High energy traumas to the hand and wrist can result in ipsilateral or even bilateral injuries of the distal radius, ulna, carpals, metacarpals and phalanges. Hence, it is important not to miss any associated injury when there is a major bony fracture. Initiation of an early and intense rehabilitation program requires urgent and stable fixation of the fractures and dislocations.

Abstract no.: 52113

SURGICAL TREATMENT OF SEVERE BICONDYLAR TIBIAL FRACTURES USING COMBINED ILIZAROV AND INTERNAL FIXATION TECHNIQUE

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This study was done by analysis of 44 clinical patient's observation with bicondylar fractures were classified according Schatzker: V type - 26 (59.0%) and type VI - 18 (41.0%). The clinical, radiological and statistical methods used. Long-term results were studied in 3, 6, 12 and 18 months. To evaluate the outcomes we used a scoring system of Rasmussen. The Ilizarov device was used to improve the reduction techniques intraoperative joint visualization; intra-articular treatment principles such as congruency restoration, osteoplasty and stable fixation, use LC-DCP plates for synthesis the most damaged condyle with impression component and use antiglide plates for fixation condyle without impression. Subchondral fixation with Kirschner wires was supplemented Plates fixation. For V type osteosynthesis with LCP plates was used in 27.8%, LC-DCP plates - in 72.2% of cases. For VI type LCP plate as monotype used in 7 patients (15.9%), three patients (6.8%) was performed by two support plates; full Ilizarov device was performed in 8 (18.1%) patients. Excellent results 38.4%, good - 31.9%, satisfactory - in 15.1%, unsatisfactory - in 14.1%. Among the complications secondary displacement was 7.7%, joint contractures - 12.1%. Local inflammatory processes occurred in 1 (2.2%) patients with severe injuries such as Schatzker V using a median approach. In the long-term follow-up 5 (3.5%) patients were diagnosed instability of the knee. We hereby acknowledge the support of the Ministry of Science and Education of the Russian Federation, in accordance to the decree of the Government of April 9, 2010, №218, project number 03.G25.31.0234.

Abstract no.: 52115

**FUNCTIONAL SELF-REPORTED OUTCOMES ARE SIMILAR AT 1 YEAR
BETWEEN OUTPATIENT AND INPATIENT TOTAL KNEE REPLACEMENT**

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Introduction: Outpatient total knee replacement (TKR) is becoming more popular in North America. The purpose of this study was to evaluate and compare our first cohort of consecutive outpatient TKR matched to traditional inpatient group for a minimum of 1 year to evaluate the self-reported outcome measures. Methods: An outpatient TKR protocol was established in multidisciplinary fashion and prospective follow-up of patients was permitted to ethics submission and approval. The first 94 consecutive patients from this outpatient TKR program were evaluated prospectively and case-matched to 94 inpatients based on age, sex, BMI and ASA. Results: Forty-eight males and 46 females with a mean age of 64 ± 6.8 and age range 50.4-86.3 were captured in our outpatient cohort. The case-matched cohort of inpatients consisted of 43 males and 51 females with a mean age of 64.5 ± 8.9 and an age range of 38.3-79.3. ASA grades and BMI were also similar between groups. All subscales of the KOOS score showed improvement. There was no significant difference between any KOOS scores between inpatients and outpatients. Conclusion: Patients who undergo outpatient TKR can expect to have functional outcomes at 1 year that are similar to the typical inpatient cohort. Continued efforts to properly select patients and ensure safety will ultimately determine how common this pathway will be.

Abstract no.: 52116

ANALYSIS OF SPATIO-TEMPORAL PARAMETERS DURING GAIT ON A DOUBLE BELT INSTRUMENTED TREADMILL IN NORMAL AND HAPTIC MODES IN HEALTHY ADULTS

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OBJECTIVE: The main objective of this research study is to evaluate the ability of a treadmill, working in an haptic mode, to generate a normal gait. For this purpose, we compared three different gait conditions: walk in a corridor, walk on a treadmill under a fixed speed and finally walk on an haptic treadmill. **METHOD:** 15 healthy participants took part in this study during which different gait characteristics were measured mainly the spatio-temporal parameters and their variability. An MVN Biomech; XSens, Inc system with 19 inertial sensors was used in three gait conditions: normal gait along a corridor, walk on a treadmill in a fixed speed mode and walk on a treadmill in an haptic mode. **RESULTS:** The coefficient of variation (CV) was used to determine the variability of the spatio-temporal parameters. In average, the CV of the step length ranges between 3.82%, 2.98% and 5.04% for the three conditions respectively. These results lead us to affirm that the behavior during the self-paced mode tend to be closer to the gait in the corridor. **CONCLUSION:** Further analyses are being held specially the entropy measure at a variable scale in order to describe the dynamic behavior of the participants during gait.

Abstract no.: 52118

COMPARISON OF PROSTHETIC REPLACEMENT VERSUS OSTEOSYNTHESIS IN INTERTROCHANTERIC FRACTURE FEMUR IN ELDERLY: A PROSPECTIVE RANDOMIZED BLINDED STUDY

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Despite plethora of treatment options available, the treatment of intertrochanteric femur fractures in elderly is still a matter of debate. This study aims to compare clinico-radiological and functional outcome of intertrochanteric femur fracture in elderly patient treated with prosthetic replacement with bipolar hemiarthroplasty and osteosynthesis with proximal femur nailing. Elderly patients aged more than sixty years with intertrochanteric femur fracture were randomized into two groups, bipolar hemiarthroplasty group and osteosynthesis group and were followed up clinico-radiologically. Various operative and postoperative data like duration of surgery, amount of blood loss, day of ambulation, total duration of hospital stay, day of independent ambulation and day to return to daily routine activities were collected and functional score like Harris hip score, visual analogue scale and elderly mobility scale were calculated. Radio-logical union score for hip score was calculated for osteosynthesis group. Bipolar group had higher mean Harris hip score, higher elderly mobility score and lower Visual analogue scale score and complication rate was lesser in bipolar group. Bipolar hemiarthroplasty was found to be better modality of treatment in elderly people with intertrochanteric femur fracture with early mobilization and better functional score and lower morbidity. However overall long term functional outcomes are almost similar for two groups.

Abstract no.: 52121

HEMIARTHROPLASTY RELATED COMPLICATIONS IN A UK DISTRICT GENERAL HOSPITAL: A RETROSPECTIVE STUDY COMPARING CEMENTED VERSUS UNCEMENTED IMPLANTS

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Introduction: Femoral neck fractures are an important source of morbidity and mortality in the elderly. Intracapsular fractures are often managed with hemiarthroplasties. Current UK guidelines suggest optimum results with cemented implants, however cement complications remain a concern. This study has assessed peri-operative complications in hemiarthroplasty patients managed in a district general hospital. Methods: This retrospective case series assessed all hip fractures managed with a hemiarthroplasty over a 1 year period. The National Hip Fracture Database and patient records were evaluated for patient demographics and post-operative outcomes including periprosthetic fracture, hip dislocation and return to theatre. We also compared our results with those published from our unit from 2013-14. Statistical analysis was performed using Chi-squared tests. Results: 90 patients were treated (46 cemented, 44 uncemented); the gender ratio, ASA grade and type of anaesthesia utilised were equivalent. Our results showed equivalent rates of periprosthetic fractures between groups (0 and 2 patients, $p=0.144$), return to theatre (4 and 1 patients, $p=0.197$) and dislocation rate (2 and 1 patients, $p=0.58$) respectively. Periprosthetic fractures and return to theatre were lower in our group compared to 2013-14 (4.5% vs 10.6%, $p=0.28$ and 2.3% vs 12.8%, $p=0.06$ respectively) but were not statistically significant. Conclusion: In this study the complication rate is equivalent between the cemented and uncemented groups. There is a trend toward reduced rates of periprosthetic fracture and return to theatre in our uncemented group compared to previous results possibly due to greater awareness in our unit and using higher ODEP scoring implants.

Abstract no.: 52126

HIP HEMIARTHROPLASTY: INCIDENCE AND PREDICTORS OF MODES OF FAILURE

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Introduction: Hip hemiarthroplasty (HA) is a common surgical intervention for lower demand, elderly patients with displaced femoral neck fractures. This study was undertaken to determine the incidence of, and identify clinical predictors associated with HA failure. Methods: A retrospective study was initiated to identify patients who underwent a HA in the Province of Manitoba, in Canada, over an 11 year period (2005-2015) that required subsequent orthopaedic procedures, including closed reductions, on the ipsilateral hip. Charts of identified patients were scrutinized for clinical factors associated with, and the incidence of, modes of HA failure. Results: Of 4693 HA patients, 154 (3.3%) were noted to have subsequent procedures relating to their index HA. Periprosthetic fractures (30.3%) and dislocations (28.4%) were the main causes of failure of the index HA. Absence of dementia ($p<0.01$), and younger age at index surgery ($p<0.001$), were strong predictors of revision for acetabular wear versus other modes of failure. Presence of dementia ($p<0.001$), non-compliance with hip precautions ($p=0.012$), increased risk of falls ($p=0.017$), and older age at time of index surgery, were associated with higher rates of revision for dislocations. Presence of seizure disorder ($p=0.017$) was associated with higher rates of revision for infection, whereas diabetes ($p=0.146$), smoking ($p=0.637$) and presence of inflammatory arthritis ($p=0.723$) were not. Conclusion: Small cohort of patients with HAs go on to require secondary procedures. Clinical factors such as patient age, presence of dementia, and seizure disorder were noted to be valuable in predicting mode of failure of the index HA.

Abstract no.: 52127

SUCCESSFUL OUTCOME OF A NOVEL PULLEY SYSTEM FOR SEGMENTAL DISTRACTION OSTEOGENESIS.

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Introduction: Open fractures of the long bones resulting in bone loss cause multiple problems. Providing an ideal mechanical and physiological environment is challenging. Following mechanical models testing and collaboration with industry, a novel pulley system for bone transport in the management of patients with bone loss following open fractures. **Methods:** Four patients with bone loss secondary to open fractures of the femur underwent pre operative counselling and fully informed consent prior to selection. The intramedullary pulley system consisted of a cancellous screw, a non locking screw, a plate and 3 passes of a cable which was then attached to a proximally sited external fixator. A low energy corticotomy was carried out proximally, compressed for 1 week prior to commencement of bone transport. Patients underwent 4 times a day adjustments of the transport system after careful instruction and checking their competence for the process. **Results:** The cable system for segmental distraction osteogenesis remained in situ for a mean of 32 weeks. Mean regenerate length was 150mm. Deep infection was not found in any patients. All patients reported some knee stiffness. **Conclusion:** Preliminary results of this novel technique show positive results for bone regenerate and low infection rates.

Abstract no.: 52143

FEMORAL REVISION WITH LONG UNCEMENTED FEMORAL STEM : A SHORT TO MID TERM FOLLOW UP STUDY

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Background: It is difficult to achieve a successful revision total hip replacement when a patient has severe proximal femoral bone loss. With availability of newer prosthesis designs the Proximal femoral revisions have become common nowadays. Long stem uncemented femoral prosthesis remains one of the sheet anchor in reconstruction. Materials and methods: We review 65 cases of Primary and Secondary revisions and reconstruction of proximal femur using two different Long Uncemented Femoral stem designs. Also we'll discuss various indications for use of the same. Results: The mean duration of follow up was 3.7 years (1.3 years to 6.4 years). 5 stems required a revision surgery. The mean Harris Hip Score improved from 38.39 (16.1-65.9) to 86.02 points (53.3-96). Conclusion: Long uncemented stem femoral component shows good results in various revisions situations. Follow up X-rays shown excellent bone integration and healing of ETO with circlage wire technique. Though short term results are encouraging, Long terms follow up is required to check longevity of prosthesis and long term complications.

Abstract no.: 52148

LONG TERM RESULTS OF METAL ON METAL HIP ARTHROPLASTY IN YOUNGER PATIENTS (<55 YRS)

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Objectives: Metal on Metal (MoM) hip arthroplasty saw a new era of popularity in the first decade of this century. However, by the end of last decade, concerns had been raised due to metal debris related complications. We aimed to determine the survival of MoM stemmed hip replacement in the younger population. We also studied the rate of revision related to adverse reaction to metal debris (ARMD) along with reviewing the clinical and radiological progress of MoM hip arthroplasty in younger age (<55yrs) group. **Methods:** This is a retrospective cohort study of patients 55 yrs old or younger, who had metal on metal (MoM) hip arthroplasty for osteoarthritis. We had 109 procedures performed on 90 patients with a mean follow up of 10 years. **Results:** Survival of implant in our younger cohort was 88.1% at a mean age if 10 years, with revision for any cause as an endpoint. Mean Oxford hip score was 43. Altogether, there were 12 revisions, 7 of these were for metallosis and associated symptoms. Average time to revision was 7 years. Other analysis revealed mean acetabular cup inclination angle to be 49 degrees, but no significant correlation was found between this angle and serum metal ion levels. Serum Chromium and Cobalt levels were significantly higher in revision group. **Conclusion:** In younger population, although revision rates are higher, the surviving implants give a very good outcome in terms of patient satisfaction. Most of the patients report a desired outcome of 'forgotten hip'.

Abstract no.: 52149

PRE-PERITONEAL PELVIC PACKING VS ANGIOGRAPHY AND TRANS-ARTERIAL EMBOLIZATION FOR HAEMODYNAMICALLY UNSTABLE PELVIC FRACTURES: A SYSTEMATIC REVIEW

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Pelvic injuries are common in trauma patients and associated with a mortality rate of 40-60% in haemodynamically unstable patients. Objective: To conduct a systematic review to examine the effectiveness of both trans-arterial embolization TAE and pre-peritoneal pelvic packing PPP in improving survival and controlling haemorrhage in haemodynamically unstable patients. Evidence Review: A literature search using Embase, Medline and Cochrane databases yielded 624 references of which 18 studies met the inclusion criteria. One study was a quasi-randomised controlled trial and the remaining studies used case series design. Of those, 4 were comparative studies comparing PPP to TAE. Six studies conducted a pre/post intervention analysis. Five had independent control group and the remaining studies were non comparative. Findings: Two studies found TAE improved survival when compared to a control intervention ($p=0.02$ and $p<0.009$) and one study showed improved survival in the PPP group ($p<0.009$). The four studies comparing PPP to TAE reported no significant difference in survival ($p=0.449, 0.107, 0.197$ and 0.48 respectively). Haemorrhage control was assessed by reviewing studies that examined the number or transfused packed red blood cells RBC. Three studies show less transfused RBC in the TAE groups ($p=0.01, 0.02$ and 0.001) and two studies demonstrate improved outcomes in the PPP group ($p=0.006$ and 0.044). There was no significant difference in the number of RBC that were transfused post PPP when compared to TAE ($p=0.124, 0.243$ and >0.05). Conclusions: Pre-peritoneal pelvic packing and trans-arterial embolization seem both effective in controlling haemorrhage and improving survival in haemodynamically unstable patients with severe pelvic fracture.

Abstract no.: 52152

VALIDATION OF A NEW SI JOINT-SPECIFIC DISABILITY QUESTIONNAIRE: THE DENVER SI JOINT QUESTIONNAIRE

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The sacroiliac (SI) joint is an increasingly appreciated source of pain for many patients. However, there is no validated SI joint-specific outcome instrument available. Thus, the purpose of this study was to develop and validate a questionnaire focused on the common disabilities of patients with SI joint pain. A 10 item questionnaire was developed by a panel of spine surgeons and clinical researchers. A validation study was then undertaken in 24 patients with diagnosed SI joint pain. Patients completed the Denver SI Joint Questionnaire (DSIJQ) and Oswestry Disability Index (ODI) at baseline, +2 weeks, and +6 months. Patients also underwent physical capability testing at +2 weeks and +6 months as part of the criterion convergent validity testing. DSIJQ showed good test-retest reliability (ICC=0.87), internal consistency (Cronbach's alpha=0.842), and content validity (<30% floor/ceiling effects). Criterion convergent validity was established through correlation of the DSIJQ and ODI ($r=0.89$; $p < 0.001$). Furthermore, the DSIJQ was correlated with performance on two of the physical capability tests: Timed Up and Go ($r = 0.53$; $p= 0.008$), and 5 Minute Walk ($r = -0.52$; $p=0.009$). The DSIJQ also showed better responsiveness than the ODI (SRM, ES: 1.14, 1.45 for DSIJQ and 0.75, 0.81 for ODI, respectively). Scores on the DSIJQ were correlated with patients' ability to complete several tests of physical functioning, and the questionnaire performed well on tests of validity. The DSIJQ can be used as a tool to evaluate SI joint disability and assess changes in disability after treatment.

Abstract no.: 52155

EARLY COMPLICATIONS IN TOTAL HIP ARTHROPLASTY IN OBESE PATIENTS USING ANTEROLATERAL SUPINE APPROACH.

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The aim of this study was to evaluate the outcomes and early complications of obese patients who underwent total hip arthroplasty for osteoarthritis via an anterolateral approach in the supine position (ALS-THA) and compare these outcome with of a matched control group of non-obese patients. Thirty-one hips in 28 patients with obesity (BMI ≥ 30 kg/m²) were included in this study. As a control group, 31 hips of 31 patients with a normal weight (BMI between 20 and 25 kg/m²) were matched based on age, sex, and laterality. Clinical evaluations using the Merle d'Aubigne and Postel hip score, radiological evaluations and perioperative complications were compared in two groups. There were no significant differences between the groups in the operative time, period of hospitalization, clinical hip score, or cup positioning, although the position of the cup tended to deviate from the optimal safe zone in the obese compared with non-obese group (32.3 and 16.1%, respectively). There was no infection, dislocation, nerve palsy, or life-threatening event in either group. The rate of avulsion fractures of the greater trochanter in the obese group was 3 times higher compared to that in the non-obese group. As the clinical outcome of ALS-THA for the obese group is not inferior to that for the non-obese group, obesity is not considered to be a contraindication for ALS-THA. However, obesity increases the risk of intraoperative greater trochanteric fracture. Thus, surgeons should be particularly careful when manipulating the femur in this class of patients.

Abstract no.: 52156

**BRITISH SPINE REGISTRY A MORE RELIABLE RESEARCH TOOL.
EXPERIENCE OF A TERTIARY SPINAL CENTRE.**

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INTRODUCTION: The British Spinal Registry (BSR) set out to provide a strategic solution to meet the objectives of BASS. Since it was established in May 2012, the success of the BSR strategy is evident. Bluespier International was the successful company and has worked with the BASS registry committee to design and launch the BSR on the Amplitude platform. **OBJECTIVES:** The objective of this study was to compare the capture rate of two different methods of data collection from spinal patients and in a tertiary spinal center and assess its utility for research and Audit purpose. **METHODS:** We are tertiary spinal referral center and our patients include trauma, degenerative and deformity and spinal tumour cases. We were using Clinical data management system to record outcomes of our surgeries. Since 2002 we have started using British spin registry to capture patient data. In this study, we want to assess the efficacy and data capture rate of data of British Spine registry. We would compare the two systems used in the hospital to find out if BSR really made a difference. **RESULTS:** Our results showed statistically significant improvement in data capture rate. We think this is due to increased ease of data input by researcher and patient-friendly proformas. Our data capture rate increased from 56% to 76% as we move to BSR for our data collection.

Abstract no.: 52159

EPIDEMIOLOGY OF PROXIMAL HUMERUS FRACTURES IN ALGERIA

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Introduction: Proximal humerus fractures (PHF) are the seventh most frequent fracture in adults, and the third in patients over 65. Methods: All the patients managed in the emergency unit of Mustapha Bacha University Hospital, Algiers between January 2016 and December 2017 for PHF were included in this retrospective study. Initial management of each patient was noted in the medical file. Each fracture was classified according to the Neer classification. Patients responded to a medical questionnaire for the follow-up. Results: The population included 174 women (72%) fractures and 67 men (28%). The mean age was 70 (16—97). The fractured shoulder was on the right side in 53 % of cases. Analysis of the distribution of fractures throughout the year showed that most of these fractures occurred during the “cold” season with 60% between October and March. According to the Neer classification, 43 % of the fractures were Neer type 3 and 24 % Neer 4. Fractures were managed by conservative treatment in 75% of the cases (181 patients) and surgery in 25%. Discussion: This epidemiological study shows that most PHF are osteoporotic fractures in people over the age of 65. It occurs mainly in women. We identified Neer type 4 fractures in 24% of the patients in our study. The treatment is non-operative in 75% of cases. Conclusion: PHF is now usually an osteoporotic fracture in women over the age of 65. It is frequent and its prevalence is increasing.

Abstract no.: 52165

A CASE OF INSIDIOUS KNEE PAIN IN A YOUNG PATIENT

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Chondrosarcoma is a malignant chondrogenic lesion. Typically found in older patients (40-75 yo), with a slight male predominance. The most common locations include the pelvis, proximal femur and scapula. Soft tissue condroma represents a rare benign tumor. More often between 30-60 yo, with no sex prevalence. Characterized histologically by the lack of connection between the tumor and the adjacent structures such as periosteum, joint capsules or bone. With a slow growth and clinical course often asymptomatic, the most affected areas are mainly upper limbs (72%), lower limbs (24%), head and neck (2%) and other areas of the body (2%). The differential diagnosis should be considered with other tumors with similar characteristics, but different clinical behavior such as chondrosarcoma. Clinical case: Female, 26 yo. Symptoms of right posterior knee pain with irradiation and paraesthesias in the external popliteum sciatic nerve pathway of insidious evolution. R-ray of the right knee showed irregular calcifications of the superior inter-tibial-peroneal region. Ultrasound described "a nodule of inter-tibial-peroneal soft tissue, well delimited with calcifications". A CT Scan revealed "multiple calcifications associated with soft tissue nodular formation adjacent to the tibio-peroneal joint ". MRI suggests the diagnosis of synovial sarcoma. A CT Scan guided biopsy was performed showing a cartilaginous tissue with increased cellularity suggesting condroid neoplasia, whose graduation was not possible". Patient was submitted to surgery by posterior Trickey surgical approach with tumor resection and peroneus upper extremity inner cortical resection. Anatomicopathological diagnosis revealed a soft tissue condroma. After 15 years FUP she is cured.

Abstract no.: 52166

POSTERIOR DISLOCATION OF THE SHOULDER WITH IPSILATERAL ELBOW DISLOCATION: A CASE REPORT

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Introduction: Posterior dislocation of the shoulder joint associated to an ipsilateral elbow dislocation is a very rare injury. Authors report a case of this rare lesion. Methods: A 49-year-old female patient presented to our Emergency department after a domestic accident. Clinical examination showed a swollen and deformed left arm. There were no open wounds and no neurovascular deficit. Radiographic evaluation showed a posterior dislocation of the shoulder, associated with an ipsilateral posterior dislocation of the elbow. Patient was taken up under general anaesthesia. Closed reduction of the two dislocations was performed successfully. Results: With a nine months follow up, good evolution. Function of the upper limb was achieved at two months follow up. Discussion: Posterior dislocation of the shoulder joint associated to an ipsilateral elbow dislocation is a rare injury. It usually occurs as a result of a major trauma. The management is always challenging in cases with shoulder dislocation along with ipsilateral elbow dislocation as the traction force applied to reduce the shoulder is not effectively transmitted to the dislocated joint. Conclusion: Posterior dislocation of the shoulder joint associated to an ipsilateral elbow dislocation is a rare injury. With prompt treatment and a diligent rehabilitation protocol, near normal function was restored.

Abstract no.: 52174

COMPARATIVE GENOMIC HYBRIDIZATION ANALYSIS FOR THE GIANT CELL TUMOR OF BONE

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Giant cell tumors of bone (GCT-B) is a benign aggressive bone neoplasm characterized by abundant multinucleated giant cells with stromal cells. We studied the cytogenetic instability by the array based comparative genomic hybridization (aCGH). GCT-B were divided into two groups: 4 cases were genetically unstable group, and another 3 cases were stable group. Clinically, tumor recurrence was observed in 3 of 4 (75%) of genetically unstable group. Six clones showed high-level amplification in above genetic unstable 4 cases: MYC (8q24), CREBBP (16p13.3), BRCA1 (17q21), THRA (17q11.2), D19S238E (19qtel), TNFRSF6B (DCR3; 20q13). Ten clones of NRAS (1p13.2), D2S447 (2qtel), D3S1274; ROBO1 (3p12-13), D4S114 (4p16.3), PIMI (6p21.2), MOS (8q11), HRAS (11p15.5), GLI (12q13.2-13), AKT1 (14q32), D17S1670 (17q23) were commonly low in genetic instability cases. In the telomeric area, loss of D2S447 (2qtel), and gain of WI-6509 (11qtel) and D19S238E (19qtel) were observed. Our results of gain of MYC (8q24) gene was supported the findings of c-myc gene over-expression. Gambri, et al has already reported c-myc mRNA was over-expressed in 38% of GCT. The loss of NRAS was observed in 5 cases (71.4%) out of 7 GCTs. NRAS mutations have detected prostate cancers before. However, there was no report the relationship between GCTs and NRAS. Our present aCGH analysis indicated that 16 genes showing genetic instability are suspected the target gene of GCTs. Further detailed studies are necessary to clarify genetic pathways of GCT-B.

Abstract no.: 52176

EARLY DECOMPRESSION STRATEGY IS EFFECTIVE IN THORACOLUMBAR TRAUMATIC SPINAL CORD INJURY WITH LOWER GRADE RESIDUAL SPINAL CANAL AND MEDULLARY COMPRESSION

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The objective of this study is to determine the influence of surgical timing on neurological recovery in relationship with the residual spinal canal and medullary compression documented after tSCI. Methods: A prospective cohort of 42 patients that had sustained a tSCI from T10 to L2, and consecutively admitted to a single Level 1 SCI-specialized trauma center between April 2010 and September 2016 was evaluated for recovery of at least one grade on the ASIA scale at 6 months. Patients were stratified in subgroups of surgical timing (<24h or >24h post-trauma). Maximum Canal Compromise (MCC) and Maximum Spinal Cord Compression (MSCC) were on CT-scans and MRI, respectively. Non-parametric tests and multivariate analysis were applied to assess for difference in prevalence of neurological recovery in different subgroups. Results: There was no difference in neurological recovery between patients operated < 24 h and patients operated > 24 h from trauma. MCC and MSCC alone did not influence neurological outcome. When operated < 24 h, patients that had a lower level of MCC (< 50 %) showed comparable neurological recuperation with patients with higher level of compression (> 50 %). Similar results were obtained when repeating the analyses with timing, MCC and MSCC as continuous variables. Conclusion: With demonstration of similar neurologic outcomes at 6 months, patients with low grade residual spinal canal and medullary compression benefit from early decompression strategy alike patients with higher grade residual compression, regardless of stratification for level of MCC or MSCC.

Abstract no.: 52177

AUDIT OF CARBAPENEMASE - PRODUCING ENTEROBACTERIACEAE SCREENING (CPE-S)

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Introduction: Carbapenemase producing Enterobacteriaceae screening(CPE-S) plays an important role in infection prevention and control. Each CPE outbreak costs an NHS hospital approximately £1 million, therefore strategies need to be in place to ensure patients are managed as per the guidelines of Public Health England. Aim: To investigate and identify if patients admitted to hospital are CPE-S and managed as per protocol. Methods: A retrospective audit of hospital admissions between April 2015 to March 2016. Patient information, number of CPE-S, timings of samples and results were collected from the hospital informatics department and analysed. Results: There were 4370 patient admission episodes with 7986 CPE-S. Timing of CPE-S after admission was from 0-8 days(median=3). Results were available from 0-10 days(median=4). Number of samples per patient episode was 1-24(median=3). There were 130 patients with 373 positive CPE-S(1-4 admission episodes), of which thirty patients had repeat admissions. Nine CPE-positive patients were allocated side-rooms, however the other 21 CPE-negative patients were admitted to general ward beds. Discussion: A significant proportion of CPE-positive patients(21/130,16%), at subsequent admissions were deemed negative and admitted with no contact precautions. Due to significant variations in collected data, and guidance from infectious diseases department, changes made included CPE-S in Casualty, rapid result CPE-S, alerts on patient records and staff education. The re-audit showed improvements in test result timing, reduced repeat testing and early institution of contact precautions for CPE-positive patients. Conclusion: Effective and timely CPE-S of patients admitted to hospital is essential for improving patient safety and reducing economic burden.

Abstract no.: 52178

THE STATE-OF-THE-ART ANIMAL MODELS FOR ORTHOPEDIC IMPLANT PERFORMANCE TESTING

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Following biocompatibility testing, new orthopedic implants must be evaluated for efficacy and performance in order to demonstrate superiority or equivalence against an approved control device (predicate). This efficacy testing is in constant evolution as new animal models and new analyses are continually being developed. The main objective for the study program of implantation tests is to select the appropriate orthopedic implantation model with an established contact period that correlates to the intended clinical indication. Typically, this involves a large animal model and follows the guidance of ISO and/or ASTM standards, which state that the local pathological effects of biomaterials will be evaluated on surrounding tissues utilizing performance testing in a similar environment, organ and tissue in order to mimic the corresponding human use. For a regulatory submission, implantation tests may include clinical pathology and organ histopathology. Systemic toxicity testing with full organ histopathology may be combined with the performance test, but the systemic toxicity tests are possibly more relevant and cost-effective if conducted separately in rodent species as they must include daily or weekly health evaluations, body weight measurements, histopathology of the explanted biomaterial and organs, as well as clinical pathology at termination. If the orthopedic medical device study is submitted to a regulatory institution, it is generally performed in compliance with Good Laboratory Practices (GLP), with the entire study being audited by the quality assurance unit. Some of the most recent surgical models for efficacy and performance testing for regulatory testing in the orthopedic field will be presented.

Abstract no.: 52179

CHALLENGES IN RESTORING STABILITY IN ADVANCED LUMBOSACRAL TUBERCULOUS SPONDYLODISCITIS: PROPOSED TREATMENT STRATEGIES.

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Introduction: Surgical reconstruction in advanced lumbosacral tuberculosis is technically demanding due to the complex local anatomy, unique biomechanics and difficult fixation in the surrounding diseased bone. We have analysed the difficulties in surgical reconstruction of the lumbosacral junction in order to describe an effective strategy for tuberculosis with extensive destruction of lumbosacral spine. **Methods:** We retrospectively reviewed 32 patients with advanced lumbosacral tuberculosis (L3 to S1) who underwent surgical reconstruction according to the following protocol. Patients with L5 tuberculous spondylitis (Type 1) were treated with posterior stabilization involving L3, L4, S1 (with supplemental iliac screws if anchorage in S1 was inadequate). In L5-S1 spondylodiscitis with extensive destruction of sacral promontory with disease free sacral alar (Type 2), lumbosacral spine was reconstructed by spinopelvic stabilization using alar screws with supplemental iliac screws. In extensive L5-S1 spondylodiscitis with destruction of both sacral promontory and sacral alar (Type 3), stability was achieved with spinopelvic stabilization using the iliac screws as distal anchors. Additional anterior reconstruction was performed in cases where there was a significant anterior column deficiency and additional restoration of lordosis within physiological limits was needed. **Results:** Average follow-up was 35.2 \pm 8.3 (26 – 64) months. All patients showed good bone healing at a mean of 9.5 \pm 1.6 months, significant improvement in neurology, VAS scores, ESR and CRP, $p < 0.05$. ODI scores showed significant improvement at final follow-up ($p < 0.05$). **Conclusions:** The proposed classification and the corresponding treatment strategies have proved to be effective in addressing the various scenarios of lumbosacral tuberculosis with extensive destruction of lumbosacral spine, in a systematic way. It helps reconstruct the lumbosacral spine, restore stability and physiological lumbar lordosis as evidenced by the good radiological and functional outcomes at a mean follow-up of 35.2 \pm 8.3 months.

Abstract no.: 52180

**REPAIR OF COMPLEX BONE AND SOFT TISSUE DEFECT OF LIMBS
WITH FREE FIBULA COMPOSITE TISSUE FLAP**

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Objective: This study is to report the method of repairing complex bone and soft tissue defects of extremities with vascularized fibula composite flap and to observe the clinical effect. **Methods:** There were 13 cases suffering from massive bone defect and exposure of the tibia reconstructed with vascularized double barrel fibula composite flap. The length of the tibial defect ranged from 6cm to 10cm. The size of the skin and soft tissue defect was 4cm×5cm to 7cm×18cm. There were 2 cases suffering from skin and soft tissue defect with metatarsus and cuneiform bone defect reconstructed with vascularized double barrel fibula composite flap. 1 case was reconstructed with vascularized fibular head composite tissue flap to repair the skin and soft tissue defect and the lateral malleolus defect. The design of the skin flap was taked, Osteotomy of both ends of the periosteum, expose the peroneal vessels, and dissected to the peroneal artery origin from the distal end to confirm bone flap has good blood supply after pedicle, continuity of periosteum, the fibula folded or bone defect after dressing, block fixation, anastomosis blood vessel to reconstruct blood circulation. **Results:** All flaps survived well. The patients were followed up from 12 to 26 months postoperatively. Postoperative X-ray showed bone union was reconstructed well. The repaired limbs started weight-bearing at the third to fourth postoperative month. **Conclusion:** Free fibula composite tissue flap is reliable and effective method to repair the limbs of complex bone and skin and soft tissue defect.

Abstract no.: 52181

EVALUATION OF PELVIC INCIDENCE (PI) CONSTANCY AT DIFFERENT PHYSIOLOGIC POSTURES, AND ASSESSMENT OF CONFOUNDING FACTORS THAT MAY AFFECT STABILITY OF THIS PARAMETER

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PI has been considered a static parameter. It was hypothesized that PI is a stable parameter without significant changes from flexion to extension. Recent studies have shown that PI can change with age and after spinal procedures. Changes in PI based on position have not been investigated. Seventy-two patients who had obtained flexion and extension radiographs of the lumbar spine were identified using following main inclusion and exclusion criteria: age >20 years old; male and female; no previous spinal trauma, spinal surgical intervention, inheriting, acute or severe chronic diseases. PI, along with pelvic tilt (PT), sacral slope (SS), and lumbar lordosis (LL) were measured in both flexion and extension by 2 independent measurers. No inter-reliability measurement difference was present. PI changed significantly from flexion to extension with general tendency to decrease: mean (-0.94°), $P < 0.044$. However, these changes might had opposite vectors, and exceeded $|6^{\circ}|$ (measurement error) in 20% of cases; with the maximum, 12° . Inconsistencies in changes of SS, as opposed to PT from flexion to extension were found to be the major factor determining changes in PI ($P > 0.001$). Obesity significantly contributed to differences in PI between flexion and extension ($P = 0.003$). PI is a dynamic parameter that changes between flexion and extension. Changes in SS are the main factor involved in these changes, implicating movement through the sacroiliac joints as the cause. Obese patients have greater changes in PI from flexion to extension. Radiographic test with flexion and extension can be used for evaluation of sacroiliac joint mobility.

Abstract no.: 52182

PATIENT SPECIFIC SPINE RODS (PSSR) DECREASE RATE OF MECHANICAL COMPLICATIONS (MC) AFTER CORRECTION OF ADULT SPINE DEFORMITY (ASD)

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The applied contour of PSSR based on the preoperative plan for correction of ASD was developed around 10 years ago. However, postoperative outcomes of this method have not been studied well. The purpose of the current study was to compare the risk of postoperative MC and rate of corresponding revision after correction of ASD with PSSR versus use of conventional rods contoured at the time of surgery. Inclusion criteria: age >20 years-old; male and female; ASD; long instrumented spinal fusion with or without osteotomy and anterior interbody fusion using PSSR (case-group) or conventional rods (control- group) with 2-year follow-up or revision. Rate of MC such as: vertebral fracture at any spinal level, rod and/or screw fracture; screw loosening, and disassociation of the device were studied. ANOVA and the Fisher exact test were applied for defining significance ($P \leq 0.05$) of inter-group differences. There were included 121 patients: mean age, 62.9(SD, 18.3); male, 36%; number of levels fused, 4-17; osteotomy, 89%; cases, 81; and controls, 40. Demographic, preoperative clinic, surgical technique, and perioperative complication characteristics did not show significant differences between the studied groups. Rate of postoperative MC was less in the case-group (27%) versus the control-group (43%), $P=0.1$; and rate of reoperations caused by MC was significantly less in the case group (21%) than that of in the control group (40%), $P=0.02$. The use of PSSR decreases risk of MC which require revision versus conventional technique during 2 postoperative years after correction of ASD.

Abstract no.: 52183

OSTEOINDUCTION AND OSSEOINTEGRATION EVALUATION OF Si3N4 IMPLANTS USING RABBIT ECTOPIC BONE FORMATION AND OVINE BILATERAL LONG-BONE INSERTION MODELS

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For decades, both coated and non-coated ceramic devices have been incorporated into various prostheses either for osseous-fixation or articulation clinical applications. Silicon nitride (Si3N4) is a non-oxide abiotic ceramic biomaterial that was originally developed in the early 1980s. Unlike synthetic apatites, it is considered to have the strength and stability to be used in structural applications. In addition to its biocompatibility and appealing imaging properties such as partial radiolucency, the surface chemistry of Si3N4 is hypothesized to be conducive to osteogenesis, and to increase bone-to-implant contact, resulting in improved osseointegration. Because of this unique combination of material properties, Si3N4 is used as spinal fusion implants and is being considered for bearing components in prosthetic hip and knee joints. In this development program, an ectopic bone formation study was designed to evaluate the osteoinduction and heterotopic bone formation potential of a particularly bioactive form of porous Si3N4 compared to titanium implants in non-osseous sites, following implantation in rabbit paravertebral muscles. Additionally, an ovine long-bone study was performed in a bilateral femoral medial condyle model in order to establish its osteoconductive behavior against porous titanium (Ti) implants: histomorphometry results showed that the mean maximal linear penetration of new bone formation within the implant was higher in the Si3N4 compared to porous Ti regardless of implantation time. Histopathological evaluation of these two studies revealed that both implant types exhibited excellent safety and biocompatibility as evidenced by the mild inflammatory and tissue reaction, without evidence of adverse effects.

Abstract no.: 52184

**PROXIMAL FIBULAR OSTEOTOMY IS SAFE SURGICAL PROCEDURE
WITH PREDICTABLE OUTCOME FOR MEDIAL COMPARTMENT
OSTEOARTHRITIS**

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Background: primary OA of knee is one of the most common degenerative conditions associated with disability. With more of varus knee medial compartment OA is most common and early presentation. HTO is technically demanding and associated with major complication like neurovascular injury, iatrogenic fracture, nonunion. Practically HTO is associated with longer bed immobilization and difficult to take bilateral condition. Method: we treated 38 patients 54 knees with proximal fibular osteotomy for primary medial compartment OA excluding other condition like secondary and inflammatory from January 2017 to February 2018. Pre operative assessment of patients done on standing AP X-ray, VAS, AKSS score and skyline view to rule out patellofemoral OA. Post operative assessment done on opening of medial joint line space on standing AP X-ray, VAS and AKSS. Result: patients treated with PFO, there was change in the weight bearing axis, opening of the medial joint space, improvement in pain, functional outcome assess with VAS and AKSS. Conclusion: PFO is simple, cost effective and can be surgical treatment option for primary medial compartment OA irrespective of age, though more number of patients with longer follow is needed but initial results are very promising. Patient's satisfaction was very high as weight bearing was allowed on first post-operative day.

Abstract no.: 52185

CORRECTION OF ADULT SPINE DEFORMITY (ASD) WITH PATIENT SPECIFIC SPINAL RODS (PSSR) AND POSTOPERATIVE SAGITTAL SPINOPELVIC ALIGNMENT (SSA)

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Optimal SSA criteria includes: sagittal vertical axis (SVA), $\pm 50\text{mm}$; pelvic incidence–lumbar lordosis mismatch (PI-LL), $\pm 10^\circ$; and pelvic tilt (PT), $< 15^\circ$. Historically these improved to optimal in 24%-54% of ASD patients and 11%-24% had thoracic compensation after conventional rods. The purpose of this study was to assess the correspondence between planned and real postoperative SSA, level of correction, and rate of complications after ASD surgery with PSSR (UNiD, MEDICREA, NY). Inclusion criteria: age > 20 years-old; ASD; surgical spinal correction using PSSR and preoperative planning; radiographic evaluation: preoperatively and at 3-, 12-, and 24-months follow-up. Parameters studied: SVA, PI-LL, PT. Statistical analysis: ANOVA and χ^2 -test. Thirty-four patients were included: age, 61.9(SD, 15.3); male, 12(40%); previous spinal operations, 26(81%); osteoporosis, 5(15%); number of levels fused, 4-17; osteotomy, 22(65%). Preoperative positive SVA, $> 5\text{cm}$, had 17 patients; preoperatively planned, 11(65%); postoperatively optimal, 15(88%) at 3-months ($P=0.001$); and 12(75%) at 12-months ($P=0.12$). Non-optimal preoperative PI-LL had 24 patients; 15(62%) planned; 17(71%) postoperatively optimal at 3-months, and 16(67%) at 12-months. Thoracic compensation was planned in 5 of 10 patients with normal index; real compensation was in 4(40%) at 3-months, and in 3(30%) at 12-months. Non-optimal preoperative PT had 18 patients; 13(72%) were planned; 14(77%) postoperatively optimal at 3-months, and 6(33%) at 12-months. Compensation was planned in 1(6%) of 16 patients with optimal PT. Real compensation was observed in 3(19%) at 3-months and in 4(25%) at 12-months. Twenty-two patients had complications. Use of PSSR allows accurate planning of postoperative SSA with general treatment effect 10%-20% better than conventional rods.

Abstract no.: 52187

CODING ERRORS IN PRIMARY TOTAL HIP REPLACEMENT

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Introduction: Payment by results is a financial strategy adopted by the NHS, with the aim of improving efficiency by delivering treatment through fair coding practice. Incorrect coding of hip replacements (cemented, uncemented, hybrid or reverse hybrid) lead to wrong payments and losses. Aim: To identify and investigate the number of incorrectly coded primary Total Hip Replacements (THRs). Methods: Between January 2015 and December 2016, all THRs in the unit were identified. Complex primary THRs, bilateral THRs and associated implant removal were excluded. Data was collected from electronic patient records, Picture Archiving and Communication System (PACS) and Office of Population Censuses and Surveys (OPCS) codes. Comparisons were made between operation title, post-operative radiographs and OPCS codes. Errors were identified, and Chi-squared test was performed to identify significance of source of error. Results: Of the total 587 THRs, after exclusions, 545 were included. Although 119/545 had incorrect operation titles (surgeon error), 36 were coded incorrectly (6.7%). Only 3 were wrongly coded (coder error) despite correct operation title (0.5%). Total number of errors were 39/545 (7.1%). Chi-squared test between the two errors had $p < 0.0001$ in favour of surgeon error. Most surgeon errors were due to inaccurate listing which were not changed by surgeons in operation notes. Discussion: Payment by results is reliant on accurate coding and operation notes. This study shows that despite wrong operation titles, coders managed to correctly identify implants used. Surgeon education regarding importance of accurate operation title was undertaken during audit and sub-specialty meeting. Conclusion: Overall coding error rate was 7.1%, with surgeons contributing to the majority of errors (36/39).

Abstract no.: 52189

**BIOCOMPATIBILITY EVALUATION OF NEW ORTHOPEDIC DEVICES
FOR REGULATORY TESTING**

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Biomaterials emerging from new manufacturing techniques must first be evaluated for safety via biocompatibility testing prior to initiating performance studies. This goal of this series of safety screening tests is to demonstrate an appropriate biological reaction as a prerequisite and de-risking strategy to gain access to market. Biomaterials are screened via a battery of tests to demonstrate their innocuity and safety depending on their clinical indication, implantation time and location. First, implant extracts are developed under in vitro conditions using the implant's final finished medical device form, including all manufacturing processes, packaging and sterilization. The implants are incubated in a semi-physiological medium of either polar or non-polar constituency for 24-72h at 37°C or higher temperatures; following incubation, the extract solutions are decanted into sterile glass containers and then used for the series of biocompatibility tests. For orthopedic biomaterials, this includes cytotoxicity, genotoxicity, sensitization, irritation, acute systemic toxicity, as well as subacute, subchronic and chronic toxicity testing. Additionally, degradation testing, reproductive and developmental toxicity (teratogenicity), pyrogenicity, and carcinogenicity testing may be performed depending on the implant composition and clinical use. The biocompatibility testing has significantly evolved over the years in order to adequately evaluate the latest biomaterials, including porous, bioresorbable, and combination products. This battery of tests serves to detect biocompatibility issues while utilizing fewer research animals, thus following recommendations to replace, reduce and refine (the "3R's"). When the biocompatibility is determined to be favorable, short-term or long-term implantation studies can then proceed for performance testing.

Abstract no.: 52190

PRE-INCISION TRANEXAMIC ACID (TXA) INFUSION IN PATIENTS UNDERGOING COMPLEX SPINE SURGERY REDUCES RISK OF ANEMIA, ICU ADMISSION AND NEED OF STAGED PROCEDURES

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TXA administration is advocated as a standard of care in adult surgical procedures to minimize blood loss. Major spine population consists primarily of elderly, frail, adults requiring multilevel procedures or staged procedures. This study retrospectively examines the effect of pre-incision TXA infusion on blood loss measures, ICU stay, and the need to abort procedures in elderly adults undergoing multilevel spine surgeries. Inclusion criteria: ≥ 65 years-old and ≥ 3 levels complex spine procedure. Two groups: 1) TXA (1gm bolus plus 100mg/hour) prior to incision; or 2) no-TXA prior to incision. Both groups received TXA during surgery. Patient variables included comorbidities, surgery, aborted procedure, and surgical time. Primary outcome was hemoglobin (Hb) at discharge from hospital. Secondary outcomes included ICU stay and transfusion features (i.e., units, lowest Hb). TXA-group (N=15) and non-TXA-group (N=5) demographics were respectively similar: 72 ± 5 vs 69 ± 3 years-old; 8 vs 5 females; comorbidities, 1.9 ± 1.2 vs 1.2 ± 0.9 ; spine levels, 7.7 ± 4 vs 7.6 ± 4 ; osteotomy, 60% vs 40%. Significantly different: surgical time (min), aborted/staged procedures and ICU admission were respectively 386 ± 138 , 13% and 60% in the TXA-group, vs 279 ± 161 , 80% and 80% in the non-TXA-group. Patients receiving pre-incision TXA were discharged with an Hb value 1.1 g/dL greater, and had no patient with a value < 7.0 vs 40% in the non-TXA-group. The outcomes in this pilot study all support using pre-incision TXA infusion to improve postsurgical anemia, ICU stays and reduce staged procedures despite undergoing longer surgical procedures with equivalent surgical blood loss. An expanded study is needed to validate these findings.

Abstract no.: 52191

TANTALUM RODS IN OSTEONECROSIS OF THE FEMORAL HEAD

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Background: Osteonecrosis of the femoral head (ONFH) is a debilitating condition responsible for a significant portion of total hip arthroplasties and detrimental functional capacity of patients. Core decompression is the gold standard of treatment for ONFH, however, tantalum rod implantation can provide structural support in the “pre-collapse” stages of ONFH. This study compares the results of tantalum rod implantation to the current literature. Methods: A prospective study surveyed patient radiographs, clinical notes, and operating room reports from a level I trauma center with a minimum of 2 years of follow-up. Inclusion criteria were skeletally mature patients with a diagnosis of ONFH with MRI evaluation, and treatment with core decompression with tantalum rod implantation. Primary outcome measures were Harris Hip Score and conversion to total hip arthroplasty (THA). Secondary outcomes measures were operation time and surgical complications. Results: 25 patients presented with ONFH were treated with core decompression with tantalum rod implantation. Harris hip scores at 6 months of follow-up had a mean of 97.52, improved from 72.72 at time of presentation. 1 patient (4%) developed a surgical complication of superficial infection. No other patients had surgical complications and no patients underwent conversion to THA. Mean operation time was 53 minutes. Conclusion: Core decompression with tantalum rod implantation can be effective in treating early stage ONFH. Harris hip scores and the low rate of THA conversion are more favorable than what is currently seen in literature. Increasing length of follow-up time will improve validity of the results.

Abstract no.: 52193

NEGATIVE PRESSURE WOUND CARE IN OPEN SPINE SURGERY: A NOVEL APPROACH

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INTRODUCTION: Vacuum assisted closure (VAC) is effective at promoting blood flow and pro-healing signals, removing excess fluid and potential pathogens and reducing the frequency and total number of dressing changes throughout the post-operative course. However, it has yet to be combined with deep drains or embraced as a primary therapy for uncomplicated wounds in patients following open spine surgery (OSS). Continuous negative pressure wound therapy (CNPWT) with integrated deep drains for 7-14 days postoperatively offers safe and effective wound management following OSS and will reduce the incidence of post-operative wound complications. **METHODS:** Study data was obtained through retrospective review of medical records from patients who underwent OSS and combined CNPWT at University of Colorado Hospital from 2/2017 through 5/2017. The surgery and combined CNPWT device placement was performed by a single surgeon. Patients were assessed for complications associated with wound healing for at least 6 weeks postoperatively. Patient demographics, surgical characteristics and surgical wound outcomes assessing presence of infection, post-operative antibiotic therapy and seroma or abscess formation were recorded and summarized. **RESULTS:** Twenty-three contiguous patients were evaluated. The average incision length was 21.7cm. Two patients (8.7%) were treated for superficial infections. One patient (4.3%) developed a postsurgical seroma and was noted to have a dural tear intra-operatively. There were no complications associated with CNPWT placement or deep drain removal. **CONCLUSION:** Combined CNPWT is safe and effective for primary surgical wound management following OSS. A prospective cohort study is needed to determine if combined CNPWT is superior to conventional dressings.

Abstract no.: 52200

SHOULDER STABILIZATION TECHNIQUE USING THE MEDIAL GLENOHUMERAL LIGAMENT IN PATIENTS WITH BUFORD COMPLEX: A REPORT ON THREE CASES.

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Introduction: The Buford complex is an anatomic variation defined as the association of a cord-like middle gleno-humeral ligament (MGHL) and an absent antero-superior labrum. It is challenging to identify on preoperative imaging and remains mostly an arthroscopic diagnosis. It may however lead to problematic situations when encountered during an arthroscopic soft tissue stabilization procedure, as the treatment of choice in such cases is a bone block. Moreover, reattaching the MGHL to the anterior border of the glenoid rim has traditionally not been recommended, as it theoretically leads to severe restriction in external rotation. **Methods:** This case series includes three patients who underwent arthroscopic stabilization for anterior traumatic gleno-humeral instability associated to a Buford complex. We describe a novel technique consisting in using the chord-like MGHL to reconstruct a neo-labrum, associated with an antero-inferior gleno-humeral ligament plicature. **Results:** At one year postoperative, there was no new episode of gleno-humeral dislocation or subluxation. All three patients went back to their previous level of sports and work activities with full range of motion. **Conclusion:** Gleno-humeral stabilization using the chord-like MGHL of the Buford complex may be an efficient alternative to a bone-block procedure, with satisfactory outcome at one year. More studies are needed to confirm these findings in a larger population.

Abstract no.: 52201

COMPLEX TIBIAL SHAFT FRACTURE WITH MINIMALLY INVASIVE PLATE OSTEOSYNTHESIS

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Introduction: To evaluate the clinical and radiological results of the treatment of complex tibial shaft fracture (AO/OTA type 42-C) with minimally invasive plate osteosynthesis(MIPO). Materials and Methods: Twenty patients diagnosed with complex tibial shaft fracture without extension to the articular surface and treated with MIPO, including 9 cases of AO/OTA type 42-C2 and 11 cases of AO/OTA type 42-C3, 6 of which were open fractures. External fixation was used for open fractures until the soft tissue damage had healed; then, 2nd stage operation with MIPO was performed to stabilize the fracture. Each patient was followed up for a minimum of 12 months. Results: The mean time to union was 20.1 weeks. Delayed union was observed in 4 cases. Angular deformity, length shortening and non-union were not observed. Conclusion: Severely comminuted and open fractures of the tibial shaft may benefit from temporary external fixation prior to performing MIPO.

Abstract no.: 52204

**ALENDRONATE-LOADED POLY(CAPROLACTONE) POROUS
SCAFFOLDS FABRICATED BY 3D PRINTING METHOD ENHANCE NEW
BONE FORMATION IN RAT TIBIAL DEFECTS.**

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The aim of this study was to evaluate the in vitro osteogenic effects and in vivo new bone formation of three-dimensional (3D) printed alendronate (Aln)-releasing poly(caprolactone) (PCL) (Aln/PCL) scaffolds in rat tibial defect models. 3D printed Aln/PCL scaffolds were fabricated via layer-by-layer deposition. The fabricated Aln/PCL scaffolds had high porosity and an interconnected pore structure and showed sustained Aln release. In vitro studies showed that MG-63 cells seeded on the Aln/PCL scaffolds displayed increased alkaline phosphatase (ALP) activity and calcium content in a dose-dependent manner when compared with cell cultures in PCL scaffolds. In addition, in vivo animal studies and histologic evaluation showed that Aln/PCL scaffolds implanted in a rat tibial defect model markedly increased new bone formation and mineralized bone tissues in a dose-dependent manner compared to PCL-only scaffolds. Our results show that 3D printed Aln/PCL scaffolds are promising templates for bone tissue engineering applications.

Abstract no.: 52206

THE EFFECT OF IBUPROFEN-LOADED POROUS MICROSPHERES IN MONOSODIUM IODOACTATE-INDUCED OSTEOARTHRITIS RAT MODEL.

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The objectives of this study were to fabricate ibuprofen-loaded porous microspheres (IBU/PMSs), to evaluate the in vitro anti-inflammatory effects of the microspheres using LPS-induced inflammation in cultured synoviocytes, and to evaluate the in vivo effect of the IBU/PMSs on the progression of monosodium iodoacetate (MIA)-induced osteoarthritis (OA) in a rat model. A dose-dependent in vitro anti-inflammatory effect on pro-inflammatory cytokine markers (matrix metalloproteinase-3 (MMP-3), matrix metalloproteinase-13 (MMP-13), cyclooxygenase-2 (COX-2), a disintegrin and metalloproteinase with thrombospondin motifs-5 (ADAMTS-5)), interleukin-6 (IL-6), and tumor necrosis factor (TNF- α) was observed by confirming with real-time PCR analyses. In vivo, treatment with IBU/PMSs reduced MIA-stimulated mRNA expression of MMP-3, MMP-13, COX-2, ADAMTS-5, IL-6, and TNF- α in rat synoviocytes. In addition, we demonstrated that intra-articular IBU/PMSs suppressed the progression of MIA-induced OA in the rat model via anti-inflammatory mechanisms. In conclusion, IBU/PMSs are a promising therapeutic material to control the pain and progression of OA.

Abstract no.: 52207

COMPARISON OF CLINICAL OUTCOMES OF INTRAMEDULLARY NAILING AND MINIMALLY INVASIVE PLATE OSTEOSYNTHESIS OF PROXIMAL AND DISTAL TIBIA

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Introduction: In this randomized prospective study, we aimed to compare minimally invasive plate osteosynthesis (MIPO), locking intramedullary nailing (IMN) for extra-articular proximal or distal tibia fractures. **Material:** 85 patients with meta-diaphyseal shaft fracture in the proximal or distal tibia who had undergone IMN or MIPO were enrolled. Group A included 42 patients who had undergone IMN. Group B consisted of 43 patients who had been treated by MIPO. Each clinical outcome was assessed; operative time, time to radiographic union, union status, infection and the incidence of re-operation and complications of malunion, nonunion, angulation, and shortening. Each patient was followed up at least 1 year postoperatively. **Result:** There was no significant difference ($P>0.05$) in hospital stay, time to radiographic union and the incidence of union status among the two groups. As for postoperative complications, two cases of nonunion, four cases of malunions in group A, whereas three cases of delayed union, one case of neuropathy, and one case of surgical wound infection were observed in group B. There was no difference in functional evaluation between the two methods after operation ($P>0.05$). **Conclusion:** We consider that the minimally invasive plate osteosynthesis and locking intramedullary nail stabilization are all efficient methods for treating proximal or distal tibia shaft fractures. However, when the fracture is associated with the meta-diaphyseal junction, IMN with combination techniques as additional polar screws or small plate can help prevent secondary collapse of the fracture.

Abstract no.: 52210

OUTCOMES OF CEPHALOMEDULLARY NAILING IN BASICERVICAL FRACTURE

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Purpose: We evaluated the result of treatment of basicervical fracture of femur which was treated by intramedullary nailing. **Materials & Methods :** We did a research of 15 patients who treated with intramedullary nail, among 50 cases who were diagnosed with basicervical fracture of femur, from July 2012 to May 2015. The 15 patients were classified with a 2 part Basicervical fracture. In radiological study, we researched the state of reduction, the location of the lag screw, Tip apex distance (TAD) & sliding distance of lag screw and bone union and femur neck-shaft angle. Clinically, we performed the assessment of the degree of ambulation at the time of final follow-up. **Results:** In postoperative radiological assessment, we achieved good or acceptable reduction rate in all patients. Mean Tip-Apex distance (TAD) was 17.3 mm (11-21.1 mm), which showed insertion point below 25mm in all cases. The sliding distance of the lag screw was 5.1 mm (0.1-16 mm) in average at the time of the final follow-up. Mean bone union period was 4.8months (3-10months) and we could achieve bone union in all cases. In clinical assessment, harris hip score (HHS), VAS score and womac score were all significantly improved postoperatively ($p<0.05$). Also, the 13 (86.7%) of 15 patients recovered their preoperative ability of ambulation. **Conclusion:** In elderly patients with Basicervical fracture of femur, the treatment with intramedullary nailing showed satisfactory result if performed with skilled technique.

Abstract no.: 52211

RADIOLOGIC ASSESSMENT OF POSTOPERATIVE STABILITY IN UNSTABLE INTERTROCHANTERIC FRACTURE USING LATERAL RADIOGRAPH

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Purpose: The purpose of this study was to compare the sliding distance of lag screw in patients with unstable femoral intertrochanteric fractures treated with intramedullary fixation using a cephalomedullary nail with a fixed angle between the neck and shaft of the femur in relation to reduction type by lateral radiographs. **Materials and methods:** Between January 2009 to October 2013, 86 cases (86 patients) with unstable femoral intertrochanteric fractures were treated with cephalomedullary nail and followed for at least 6 months. We used AO/OTA classification, and all cases were unstable fractures. Twenty cases were 31-A22, 54 cases were 31-A23, and 12 cases were 31-A3. We classified reduction types into three groups as postoperative lateral radiologic findings. Group 1 showed no displacement, group 2 showed anterior displacement of the femur neck, and group 3 showed posterior displacement of the femur neck. The radiologic assessment compared the sliding distance of the lag screw between postoperative X-ray and last follow-up X-ray. **Results:** Forty-two cases were in group 1, 22 cases were in group 2, and the other 22 case were in group 3. There was no significant difference in the patient characteristics of each group. The sliding distance of the lag screw were $4.9\pm3.2\text{mm}$, $4.6\pm3.6\text{mm}$, and $8.5\pm4.9\text{mm}$, respectively, and group 3 showed a significant result ($p<0.0001$, $p=0.024$). **Conclusion:** Incases treated with intramedullary fixation using a cephalomedullary nail with a fixed neck-shaft angle, appropriate reduction with a lateral radiograph before screw fixation is needed to prevent excessive lag screw sliding.

Abstract no.: 52221

MESENCHYMAL STEM CELL COMPARED WITH TIGECYCLINE FOR THE METHICILLIN-RESISTANT STAPHYLOCOCCUS EPIDERMIDIS VASCULAR GRAFT INFECTION IN RATS: AN EXPERIMENTAL STUDY

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Aim: In this study, the effect of strong chemotactic properties of mesenchymal stem cells (MSC) on infection control was investigated for the first time in the literature. MSC was tested by in vivo graft infection model using methicillin resistant staphylococcus epidermidis (MRSE) strain in rats, and MSC was evaluated as an alternative of antibiotherapy. **Material and Method:** 56 rats were divided into 8 groups. Pouches were formed on the back of the rats. PTFE or Dacron grafts were placed in pouches. MRSE was inoculated on grafts and soft tissue. Grafts and soft tissue specimen were taken 13 days after surgery. Histopathologic evaluation and colony counts of peri graft tissue were performed. All samples were evaluated by ELISA method with markers of TNF- α , TGF- β , IL-1, PDGF, FGF, VEGF and caspase 3. **Results:** Histopathologic findings were evaluated in terms of treatment, there was a significant difference between Group 1 and Group 2. The difference between group 1 and group 2 was significant, while the difference between group 1 and group 7-8 was not significant. Dacron grafted groups 3-4 and PTFE grafted groups 5-6 were similar in terms of histopathological findings. ELISA results were significant in all cytokines except two parameters. **Conclusion:** MSC was considered as an alternative and current approach for infection control instead of Antibiotherapy.

Abstract no.: 52223

GERIATRIC FRACTURE CARE PROGRAM FOR HIP FRACTURES IN A SECONDARY CARE CENTRE – AN ASSESSMENT OF CLINICAL OUTCOMES

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Background: Hip fractures in the elderly population are on a rise in India, especially with the ageing urban population. India lags behind in the care of elderly hip fractures with hardly any established fracture care programs. Our study aims to assess the clinical outcomes following geriatric fractures in the setting of an urban secondary care hospital with a established fracture care programme. **Patients & Methods:** We reviewed the clinical outcomes in patients who sustained hip fractures between the years 2010 – 2013. Patients above 60 years with fragility fractures of the neck and inter-trochanteric region of femur were included. Post operative outcomes measured were ambulatory status, functional status using Barthel score, readmission rates and mortality rate. Univariate and multivariate analysis was performed to determine factors influencing outcomes. **Results:** 112 patients were available for review. The average waiting time for surgery 32 hrs, with more than 70% patients operated within 3 days. The mean duration of stay was 6 days. 104 patients (93%) were reviewed by Home care therapists. 76% of patients returned to Pre-op ambulatory status by 1 year. Readmission rate was 14%. The 2 year mortality rate was 22% (24 patients). 82 patients (45%) were independent in their activity of daily living, as measured by Barthel score. The predictors of favourable score were surgery done within 36 hours, absence of dementia and good pre-operative ambulatory status. **Conclusion:** Establishing a geriatric fracture care program tailored to local community, using available resources offers good outcomes.

Abstract no.: 52225

INTRARTICULAR AUTOLOGOUS CONDITIONED SERUM IS SUPERIOR TO PLACEBO AT SHORT TERM IN THE TREATMENT OF EARLY OSTEOARTHRITIS KNEE- A RANDOMISED CONTROL TRAIL.

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OBJECTIVES: 1) To compare the efficacy of intra articular injection of Autologous Conditioned Serum (ACS) versus placebo in treating knee osteoarthritis. 2) To demonstrate the chondroprotective effect of ACS. **METHODS:** Our study was single centre; single blinded randomized control trial with two groups. Autologous conditioned serum group and Placebo group. The sample size studied was 120 knees that had early knee osteoarthritis (grade 1 and grade 2) as diagnosed by American college of Rheumatology Criteria and staged as per Ahlback's radiological grading system. Both the groups received three injections of 8 ml 2 weeks apart. The patients in the were blinded using a mask. We assessed WOMAC scoring; VAS in the patients before treatment and at 1.5,3 and 6 months post treatment. **RESULTS:** Both group patients were comparable in terms of age, height, weight, BMI, Ahlback's stage and WOMAC scores. The percentage benefits from the base line in terms of pain, stiffness, physical function and total WOMAC score were greater in the group ACS than placebo group ($p < 0.005$). In MRI studies also reduction in the cartilage thickness due to ACS was less than the reduction due to placebo. **CONCLUSION:** At 6 months follow up, Autologous Conditioned Serum is found to be far superior to placebo for relieving pain, stiffness and improving knee functions in early OA knee.

Abstract no.: 52226

A MULTI-INSTITUTIONAL STUDY: COMPARING TECHNICAL VARIANTS OF CAUDAL EPIDURAL TECHNIQUES, THE VOLUME USED AND PATIENT-REPORTED OUTCOMES.

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Introduction: Use of caudal Epidural injection is prevalent in the spine practice. Different techniques are currently in use with including Caudal Epidural, Lumbar epidural, and selective nerve root blocks. **Objectives:** We compared two different institutional techniques of epidural injections. We hypothesize that small volume of solution could achieve similar outcome if delivered using a catheter in the epidural space. We aimed to analyze the immediate complication after injection and patient-reported outcomes at follow up an appointment at 6 weeks. **Methods:** We compared using Tuohy needle with 18G PEBA catheter (polyether bloc amide) with the radiopaque line, open distal tip Markings every centimetre from 5 to 20cm from the distal tip with catheter connector Easy-lock type and injected 7mls of solution (steroid and LA) to use of Quincke needle and delivering 20mls of the solution. Both techniques used epidurograms to confirm needle position. Post op follow up was done using the telephone or clinic visits. We measured ODI And VAS score. **Results:** Both techniques appear to have a satisfactory outcome and low-risk profile. Duration of pain relief and functional outcome were comparable with both techniques. The volume of solution injected does not have much impact on the longevity of beneficial effect of injection.

Abstract no.: 52227

IMPROVEMENT IN FUNCTIONAL OUTCOME WITH VITAMIN-D SUPPLEMENTATION IN PATIENTS PRESENTING WITH LOW BACK PAIN

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Objective: To estimate the no. of patients presenting with low back pain having low serum Vitamin-D levels and to determine the clinical efficacy of Vitamin-D supplementation on Visual Analog Pain scale(VAS) and Modified Oswestry Disability Questionnaire(MODQ) scores. **Methodology:** This prospective,cohort study was conducted for 02 years (10th February 2016 to 9th February 2018). All patients presenting with low back pain for more than 12 weeks duration and aged between 18 to 55 years were included. Patients with Disc prolapse, Spinal stenosis, Degenerative pathologies of spine,any signs of neurological involvement, Metabolic bone disease (Hypo- or Hyperparathyroidism), Pregnant women excluded. Serum Vitamin-D levels measured after an overnight fast. If levels between 30-100ng/dL – Normal, 20-30ng/dL – Insufficient and <20ng/dL – Deficient. Patients first with deficient Vitamin-D levels given Oral 50,000 IU Vitamin-D3 daily for 05 days, then once weekly for 08 weeks while with insufficient levels given Oral 50,000 IU Vitamin-D3 once weekly for 08 weeks. After that patient put into maintenance phase, i.e. Oral Vitamin-D3 – 50,000 IU once monthly for 06 months and stopped if level > 60 ng/dL. Vitamin-D levels measured and VAS and MODQ score done at 0,2,3 and 6 months. **Results:** 590 patients included in study with mean age = 42.39 ± 10.84 years. Of the total,332(56.27%) males and 258(43.73%) females. After supplementation Vitamin-D levels improved from a baseline 13.32 ± 6.10 to 37.18 ± 11.72 ($p < 0.01$). VAS scores declined from 81 (at baseline) to 36 (at 6months) ($p < 0.01$) and MODQ scores improved from 46 (at baseline) to 25 (at 6months) ($p < 0.01$). **Conclusion:** Improvement in pain & functional disability with Vitamin-D supplementation in patients presenting with low back pain.

Abstract no.: 52229

DYNAMIZATION OF EXTERNAL FIXATOR IS SINGLE STAGE DEFINITIVE PROCEDURE FOR OPEN FRACTURES BOTH BONE LEG

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Background: Open fracture both bone leg is a common fracture present in orthopaedic causality. Treatment consists of I. V. antibiotics, debridement and external fixator. Judicious selection of the patients on basis of Gustilio and Anderson classification leads to external fixator as a definitive and single stage procedure with dynamization. It reduces the risk of infection at time of definitive procedure and number of hospital stay and surgery. **Methods:** In school of medical sciences and research, We treated 68 patients with open both bone fracture (Gustilio and Anderson type 2 and 3b) with debridement and external fixator. All patients underwent dynamization depending upon fracture pattern. Majority of our cases were road traffic accident involving male. Average duration of union was 22 to 26 weeks. There was no need for any major plastic surgery procedure. Removal of external fixator and Patellar tendon brace (PTB) was given for the period of 4 to 6 weeks at the time of clinical and radiological union. **Results:** Eighty eight percent of our cases united well. This reduces the burden of secondary definitive procedure, infection and cost of treatment. So careful selection of the patients and dynamization of external fixator hold the place for definitive surgical option for open both bone fractures. **Conclusions:** External fixator is simple effective surgical procedure for open fractures both bone leg. Staged dynamization of external fixator add in the better union with functional outcome and cost effective.

Abstract no.: 52235

**MANAGEMENT OUTCOMES OF EXTRA ABDOMINAL FIBROMATOSIS
AMONG ADULT PATIENTS TREATED AT A TERTIARY CARE HOSPITAL
– OUR CLINICAL EXPERIENCE**

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Introduction: Aggressive fibromatosis is a soft tissue neoplasm which is non-metastatic in nature. Among all soft tissue tumors, it comprises of 3% cases. **Objective** of our study was to evaluate the treatment outcomes of extra abdominal fibromatosis in patients who were treated in our setup and determine the recurrence patterns. **Methodology:** It is retrospective cohort of 15 patients that were treated in section of Orthopedics, department of surgery, Aga Khan University hospital, Karachi from January 1990 to December 2015. It included all adult patients of age >18 years with biopsy proven extra abdominal aggressive fibromatosis. **Results:** Out of 15 patients, there were 7 males (46.7%) and 8 females (53.3%). Median age was 22 years. Majority of patients [10 (66.6%)] had upper limb lesion. On initial biopsy we had 11 (73.3%) cases of primary fibromatosis while 2 (13.3%) were recurrent and 2(13.3%) were spindle cell carcinoma. The median (IQR) follow-up time of the participants was 3(2-3) months. Out of 15 patients, 10 (66.7%) had no 2nd surgery, only 5(33.3) had 2nd surgery and complications occurred in 8 (53.3%) patients. A significant difference was observed in the hemoglobin levels before and after surgery with a mean difference of 2.74 (1.36) (p value = <0.001). Recurrence of disease occurred in 4(26.7%) patients and all of of these patients who had recurrence underwent 2nd surgery versus 1 of the participant who had second surgery without recurrence and this was a significant difference (p value < 0.004).

Abstract no.: 52236

PLANT THORN SYNOVITIS OF KNEE- UNCOMMON DIFFERENTIAL DIAGNOSIS

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Synovitis following a penetrating injury from plant thorn is uncommon but should be considered in the differential diagnosis of monoarticular arthritis. It can mimic an acute septic arthritis. A history of penetrating injury may not be readily available or may be overlooked. We present a case of a chronic knee swelling in a 14 year boy following an initial thorn injury to the medial aspect of the knee. He presented to us 2 months following the initial thorn injury with persistent painful swollen knee. Culture of the joint aspirate revealed *Pantoea agglomerans*. Ultrasound of the knee did not reveal any retained thorn tip. He underwent arthrotomy and knee debridement followed by 6 weeks of antibiotics which resulted in complete resolution of his symptoms.

Abstract no.: 52237

BILATERAL ANTERIOR HOFFA FRACTURE OF THE LATERAL CONDYLE IN AN ADOLESCENT- A CASE REPORT

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Intra-articular coronal fractures of the femoral condyle are uncommon injuries especially the anterior part of the condyle. We report a rare case of bilateral anterior Hoffa fracture (33-B3.1, AO-OTA classification) in a 14 year old poly-trauma patient who had a road traffic accident and sustained injury to both knees in semiflexed position. CT images confirmed the diagnosis of anterior Hoffa fracture of both lateral femoral condyles with proximal femur shaft fracture of right side. The patient was treated with Femur interlock nailing on right side with 4mm anterior to posterior cannulated cancellous screws for both the anterior Hoffa fracture. Union was seen at the end of 3 months and final follow-up at last follow up showed good clinical outcome bilaterally. The various aspects of this rare injury have been discussed.

Abstract no.: 52238

INTERNAL HEMIPELVECTOMY IN PEDIATRIC PATIENTS, A TERTIARY CARE HOSPITAL EXPERIENCE

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Introduction: Pelvis is not a common site for bone and soft tissue sarcomas in children. There are 5%-10% cases reported for primary malignant bone tumors. Our present study aims to share our experience of hemipelvectomy in pediatric patients who were treated at tertiary care hospital. Methods: A retrospective review was conducted from January 2005- December 2017 which included all the patients who underwent internal hemipelvectomy with a minimum follow up of 5 months. Medical record files were reviewed for collecting data of patients. Results: Out of 16 patients, there were 11 (68.8%) males and 5 (31.3%) females. Mean age of patients was 13.81 years and mean follow up of patients was 25 months. Ewing's sarcoma was found to be the most common diagnosis, 14 (87.5%) followed by osteosarcoma and synovial sarcoma. Type I hemipelvectomy was performed in 4 (25%) followed by type II & III in 3 (18.8%) patients. In reconstruction, free suspension reconstruction was done in 10 (62.5%) patients. In soft tissue reconstruction, flap was harvested in 5 (31.3%) patients and 11 (68.8%) had no flap. On final histopathology 15 (93.7%) patients had negative margins. Complications occurred in 12 (75%) patients. Wound infection occurred in 4 (25%), nerve injury in 5 (31.3%) patients while 2 (12.5%) had local recurrence and 1 (6.3%) had flap necrosis. There were 8 (50%) patients who were expired and out of them 1 had local recurrence, 2 had metastatic disease, 1 died of chemo induced complication. The median overall survival in our patients was 33 months and survival rate was 50%.

Abstract no.: 52239

IRRITABLE HIP IN YOUNG CHILDREN- INCLUDE NEOPLASM IN DIFFERENTIAL DIAGNOSIS WHEN PRESENTATION ATYPICAL.

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Hip pain in a child may be due to infective, inflammatory, traumatic or neoplastic process. It can present as a diagnostic challenge especially in a very young child because of the barriers in communication. We present a case of a 3 year boy who presented with 2 days history of refusal to weight bear on the right leg. Initial examination revealed irritability of the hip. Ultrasound scan of the hip did not reveal any fluid. On further questioning the mother gave a history of intermittent fever, loss of appetite and weight loss in the 2-3 weeks preceding the hip symptoms. Abdominal examination did not reveal any positive findings. Ultrasound scan of abdomen revealed a heterogeneous mass in the retroperitoneum. Subsequent MRI scan confirmed it to be neuroblastoma with metastasis to the pelvis and proximal femur. Hip pain, in the absence of radiographic or ultrasonographic abnormalities and the presence of non-specific symptoms of loss of appetite and weight loss complemented by anaemia should prompt the clinician to look for more sinister causes including neoplasm. Neuroblastoma and haematological malignancies are more common in children under five.

Abstract no.: 52243

REVIEW OF SURGICAL TRATMENT OF MALIGNANT DISTAL FEMUR TUMORS IN CHILDREN: OUTCOMES OF 31 PATIENTS

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Introduction: Malignant musculoskeletal tumors in children are mostly comprised of Osteosarcoma and Ewing's sarcoma This study examined the surgical management outcomes of pediatric patients (<18 years) presented in our setup with malignant distal femur tumors. Methodology: We retrospectively reviewed the medical records of patients diagnosed with malignant sarcomas of distal femur and younger than 18 years of age who underwent limb salvage surgery during June 2009-June 2017. Results: There were 31 pediatric patients who had distal femur malignant tumors and out of them 20 patients were selected who underwent limb salvage as a primary surgery. The mean age (range) of patients was 11.90 (6-17) years. Seventeen (85.5%), had osteosarcoma and three (15%) had Ewing's sarcoma. Patients were treated with surgery and neo-adjuvant and adjuvant chemotherapy. In surgery all patients were offered reconstruction. The reconstruction method used were: vascular fibula with plating (single, double fibula) in 13 patients, mega prosthesis insertion in 2 patients, autoclave bone in 4 and allograft from parental fibula in 1 patient. Post-operative complications were observed in 10 (50%) patients while other 10 patients had no complications. Wound infection occurred in 3 patients (15.0 %), 1 patients had flap necrosis (5.0%), 5 had broken plates with non-union (25%), while 1(5.0%) had recurrence of disease. Revision surgery was performed in 10 patients out of 20 patients. Amputation as a revision surgery option as a result of complications was done in 4 (20%) patients while 16 (80%) had other revision surgeries.

Abstract no.: 52245

ROLE OF DENOSUMAB IN THE MANAGEMENT OF GIANT CELL TUMOR

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Introduction: Giant cell tumor of bone is a benign lesion which is characterized by presence of multinucleated osteoclasts type giant cells. The present study aims to show the role of denosumab along with surgery when given as neo-adjuvant drug to patients of GCT for their treatment. Methodology: A total of 11 patients diagnosed with GCT were included in this study from 2016-2017 and all of these patients had received neo adjuvant denosumab dose of 120 mg SC on day 0, 15, 30 & 45. All patients were treated at the section of Orthopedics, department of surgery, Aga Khan University hospital, Karachi. Results: Out of 11 patients we had 6 (54.5%) males and 5 (45.5%) females. The mean age of the patient was 37.7 (19-65) years. There were 4 (36.4%) primary cases of GCT while 7 (63.6%) were recurrent cases. In 4(36.4%) of the cases primary site of lesion was proximal tibia followed by 3(27.3%) cases of distal femur. In surgical procedure 9(81.8%) patients underwent wide margin excision and only 2 (18.2%) had intralesional curettage. Reconstruction was performed in 10 patients which consist of bone grafting in 5 (45.5%) patients and mega prosthesis insertion in other 5 patients. Only one patient had no reconstruction because lesion was on sacrum. On final histopathology, there was no residual GCT and we observed no denosumab induced adverse effects or complications after treatment completion. On follow up we had 2 cases of recurrence that were offered revision surgery.

Abstract no.: 52250

THREE-YEAR CLINICAL OUTCOMES AND SURVIVORSHIP OF TOTAL KNEE REPLACEMENT USING THE NEW GENERATION FHK PROSTHESIS

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Introduction: The FHK total knee replacement (TKR, FH Orthopaedics, Quimper, France) is a 3rd generation implant. The femoral component has a single radius of curvature, which achieves uniform tension and joint stability in extension and flexion. There is also a 6° anterior slope, which allows a better pressfit, with the flexion/extension axis more posterior in order to increase the length of the patello-femoral moment arm. This study aimed to report the outcomes of this implant in a single centre at 3 year follow up. **Methods:** A retrospective review of a consecutive series of FHK TKRs performed from March 2013 to March 2015 in a single orthopaedic unit was undertaken. Demographic information, patient reported outcomes, and complications, including the need for revision surgery, was assessed. **Results:** Eighty-two TKRs were performed (cemented n=21, hybrid (cementless femoral and cemented tibial component) n=10, fully uncemented n=51) in 44 male (mean age 57.3 (± 23.3) years old) and 38 female patients (mean age 59.8 ± 15.6 years old). The mean Oxford Knee score pre-operatively was 13 and postoperatively it was 37 at 36 month follow up. At 3 years, n= 4 patients were deceased, with 3 patients undergoing revision (infection n=1, aseptic loosening of tibial component n=2), giving a Kaplan Meier survivorship probability of 0.951 (95% CI 0.87-0.98). **Conclusions:** The FHK prosthesis demonstrates excellent short term survivorship in this cohort. There is a continuing role for the use of innovative implants for patients with degenerative knee arthritis.

Abstract no.: 52253

HIRAYAMA DISEASE MIMICKING CUBITAL TUNNEL SYNDROME IN YOUNG ADOLESCENT - CASE REPORT

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Introduction: Cubital tunnel syndrome is one of the most common peripheral nerve entrapment syndrome in the young adult. Hirayama disease also known as Juvenile muscular atrophy disease is associated with epidural venous engorgement and spinal canal narrowing. It represents a motor deficit and muscular atrophy typically progressed before the stabilization phase. Materials and methods: We present a case report of 16 year old male presented with 4th and 5th finger motor weakness that had developed over a 5 months. On Physical examination he had muscle wasting in the 1st web space and hypothenar muscles and clawing of 4th finger. And on electromyographic (EMG) test shows incomplete ulnar neuropathy around elbow. On these clinical features we diagnosed it as cubital tunnel syndrome. And he underwent anterior transposition of the ulnar nerve. At 6 months after operation, he complained about progressive muscular atrophy with worsening of symptoms. Flexion cervical spine magnetic resonance imagings (MRIs) showed anterior displacement of dorsal dura from C4 to C7 with spinal compression. Based on these features a diagnosis of Hirayama disease was made. Conclusion: Hirayama disease is a rare self-limiting disease. It can be missed in patients who have upper extremity motor weakness. Like this case, it also can be misdiagnosed as cubital tunnel syndrome. It is diagnosed only on flexion cervical spine MRI. For prevention, upper extremity surgeons should also know this disease and do the examinations for differential diagnosis for upper extremity weakness disease such as Hirayama disease.

Abstract no.: 52256

**JOINT ARTHROPLASTY AS TREATMENT FOR FRAGILITY FRACTURES
AMONGST TERTIARY HYPERPARATHYROID PATIENTS**

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Osteoporosis is one of the leading epidemics in the world today and over 200 million people suffer from it. It is estimated that 40% of women and 30% of men will sustain one or more fragility fractures in their lifetime. The most common cause of osteoporosis is menopause. However, hyperparathyroidism can also cause osteoporosis. Tertiary hyperthyroidism is one of the subtypes of hyperparathyroidism caused by continuous overproduction of parathyroid hormone even when calcium levels have normalized. This increases bone reabsorption leading to osteoporosis, increasing the risk of sustaining fragility fractures and complicated internal fixation. Joint replacement surgery shows a promising option into treating fragility fractures without the worry of these complications.

Abstract no.: 52263

RECURRENT INFLAMMATORY MYOFIBROBLASTIC TUMOR OF THE POSTERIOR NECK IN A 53 YEAR OLD MALE- A CASE REPORT

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Inflammatory Myofibroblastic Tumor (IMT) was first described by Brunn et. al. and defined by World Health Organization (WHO) as an intermediate spindle cell soft-tissue tumor comprised by myofibroblast and numerous inflammatory cells. This is most common in the young and is observed in the lung. There are also extrapulmonary sites commonly in the gastrointestinal tract. Head and neck IMTs are rare. Available information about this tumor recommends corticosteroid administration (local or systemic) and/or resection of tumor as the main modalities for treatment. Recurrence of head and neck IMTs after attempts at surgical excision approaches 10 to 20% thus alternative treatments include radiotherapy, small molecule inhibitors, and immunoglobulin. We present a case of recurrent inflammatory myofibroblastic tumor of the posterior neck in a 53 year old male 1 year after resection.

Abstract no.: 52268

A REVIEW OF CURRENT HISTOPATHOLOGY EVALUATION SYSTEMS FOR ORTHOPEDIC BIOMATERIALS

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Following necropsy, one of the primary objectives is to determine if the biomaterial represents a safety concern or has triggered adverse events during the in-life portion of the study. Thus, a full necropsy is performed to assess the overall health of the animal via macroscopic evaluation of the thoracic and abdominal cavities with subsequent histopathological evaluation of any gross lesions and, occasionally, main organ histopathology. Another main objective is to grade the safety and biological response at the local implantation site surrounding the orthopedic biomaterial. Qualitative macroscopic scoring can be performed, depending on the implant location and application. For example, for rabbit posterolateral spinal fusion studies, grading for a qualitative range of motion through manual palpation can be made at the time of necropsy. Explanted biomaterials and adjacent tissues can then be fixed in neutral buffered formalin and processed for histology. Using light microscopy, stained histology sections are evaluated and semi-quantitatively graded by the pathologist according to the overall inflammation, inflammatory cell type, tissue response (fibrosis and neovascularization), and other parameters following a modified version of ISO 10993-6. Other commonly assessed parameters are new bone growth, osseointegration, intervening non-calcified tissue, necrosis, presence of debris, and capsule thickness. Following slide scanning, histomorphometry can be performed to quantify new bone growth and bone-to-implant contact (BIC) in the region surrounding the orthopedic biomaterial.

Abstract no.: 52269

SYMPTOMATIC ISCHIO PUBIC SYNCHONDROSIS POSING A CLINICAL DILEMMA: 2 RARE CASE REPORTS AND A REVIEW OF THE LITERATURE.

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Van Neck Odelberg disease (VND) is a benign skeletal ossification at the Ischiopubic Synchrondrosis (IPS) in pre-pubescent and pubescent children. There is limited literature surrounding IPS and a paucity of long term follow up data and diagnosis. Due to its rarity, clinicians may not be aware of the condition or lack confidence in diagnosing VND. Common differential diagnoses are tumour and infection, which understandably cause anxiety and concern in the select patient groups and their families. Often a child presenting with hip pain and a limp gives rise to a number of differential diagnoses and it is important to rule out the sinister pathologies first. This case report draws attention to 2 cases of this rare condition outlining our approach to a difficult diagnosis, specifically highlighting routine investigations and diagnostic radiological findings which aid in the diagnosis of VND. A subsequent review of the literature has been conducted discussing the limited evidence base currently published on VND. The aim of this report is to increase awareness of VND and increase confidence in clinicians to diagnose the condition in appropriate cases.

Abstract no.: 52270

ARTHROSCOPIC DEBRIDEMENT AND MICROFRACTURE FOR OSTEOCHONDRAL LESIONS OF ANKLE

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Ankle (talar dome and distal tibial) osteochondral lesions can be a cause of significant morbidity and functional impairment in patients with residual symptoms after ankle injuries and impact their quality of life. Natural history of these lesions not well understood. Arthroscopic techniques allow precise location with direct visualisation through minimal access in dealing with this condition. We report our experience with 42 patients from a major referral trauma centre with chronically symptomatic ankle lesions (predominantly talar dome) in whom excision, curettage and microfracture was done using senior authors technique describing the various tips and tricks used depending on the type and size of lesion. Berndt and Harty classification was used to define the talar lesions. All patients had MRI scan prior to their operations. There were 25 males and 17 females. Average age 38.9yrs (Range 19yrs to 62yrs). One patient had distal tibial lesion. Two patients needed arthroscopic lateral ligament repair in addition. One patient required posterior ankle arthroscopy to deal with the lesion. All patients were initially non weight bearing and had standard physiotherapy rehabilitation. Follow-up ranged from 6mths to 5 yrs. Significant improvement was noted with functional AOFAS and subjective pain scores. 3 patients required further surgery due to progression of lesion. All cases were done as day surgery and had early functional recovery with minimal morbidity.

Abstract no.: 52271

PRE-CLINICAL EVALUATION OF EXPLANTED ORTHOPEDIC BIOMATERIALS: HISTOLOGY CHALLENGES AND TROUBLESHOOTING

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Histological preparation and histopathological analysis of orthopedic implants can be challenging due to unique biomaterial features such as shape, composition, degradability, surface treatment, porosity and biologic combinations. Consequently, histology has considerably evolved over the past few decades, with many advances in processing, sectioning, and staining techniques. In order to avoid introducing implant-tissue interface artifacts, the explanted biomaterial should not be removed from the implant site prior to sectioning. Tissue harvesting, preparation, and staining methods need to be adjusted to the type of implant and surrounding tissue. After explantation, it is often recommended to use high-resolution radiography and micro-computed tomography along with 3D reconstruction to properly identify the implant location and to determine the best orientation of the bone sample at trimming and the subsequent plane of sectioning; in addition, histologic marking dyes and/or radiopaque markers are useful for marking the intended sectioning plane. Then, the explanted biomaterial will be processed for either decalcification and paraffin histology or non-decalcified plastic histology, depending on the hardness and composition of the implant. When mechanical testing needs to be conducted, separate samples should be devoted to histology. Lately, range-of-motion and micro-indentation testing have been introduced as parallel methods for performance testing. Although these are believed to be non-destructive, one must exercise caution to avoid introducing artifactual microscopic changes that could be misinterpreted as treatment-related by the pathologist following mechanical testing.

Abstract no.: 52272

LIPOMA ARBORESCENS OF THE KNEE: DOES IT EXIST AS 'TERRIBLE TRIAD'?

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A 63 year old man developed massive knee synovitis which failed to respond to non operative methods of treatment. There was also evidence of osteoarthritis in the knee along with a large psoriatic patch on the anterior aspect of the knee. Histopathological examination of the synovium showed features suggestive of 'Lipoma arborescens'. A review of literature revealed little evidence of predisposing factors. However, some authors have suggested an association with osteoarthritis. In a case series of Lipoma arborescens, the authors noted 'psoriasis' in two out of five patients. We believe that Lipoma arborescens exist as a triad. There should be a high index of suspicion for associated conditions such as psoriasis and osteoarthritis with lipoma arborescens. The treatment involves extensive synovial resection and effective medical and/or surgical management of psoriasis and osteoarthritis.

Abstract no.: 52273

ARTHROSCOPIC TREATMENT OF PATIENTS WITH KNEE OSTEOARTHRITIS

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Introduction: Untimely diagnostics and unjustified methods of treatment of patients with damage to the intra-articular structures of the knee joint leads to the emergence and progression of degenerative-dystrophic changes in the joint, which, in turn, leads to partial or complete disability and, in some cases, disability of the patients. **Methods:** 32 patients were examined. Patients were divided into three groups. In the first group, mosaic chondroplasty was performed, in the second group, the closure of the defect with collagen matrix gel was used, in the third group osteoperforation of the defect of the articular surface was performed. The indications for mosaic chondrografting were: a defect with an area of 2.0 cm², a depth of 1.0-1.5 cm. The indications for defect replacement with the collagen matrix were: defect area up to 3 cm², depth of defect to 1 cm. In all three groups damage to the surrounding cartilage was not more than 2 items. Outerbridge, there were no damage to the link and meniscus. The indications for osteoperforation of the defect were: the area of the defect more than 2.5 cm², damage to the surrounding cartilage 2-3 times. for Outerbridge, the presence of damage to the connective tissue and meniscus. **Conclusions:** Using collagen matrix allows to achieve rapid reconstruction of the structure in the early stages of gonarthrosis. The use of osteoperforation in large areas of lesion of the cartilage tissue gives a short-term effect and requires further treatment.

Abstract no.: 52275

INTRA-ARTICULAR DISLOCATION OF THE PATELLA: A RARE VARIANT TO AN UNCOMMON INJURY

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Horizontal intra articular dislocation of patella is a very rare traumatic entity. We present an unusual case of horizontal intra-articular dislocation in which the patellar articular surface was facing upward besides having avulsion of quadriceps tendon from superior pole. There was associated posterolateral knee subluxation, which has not been described with intra-articular dislocation of patella. A 20 year old male presented with open patellar dislocation and locked knee after road side accident. Patient was managed successfully by open reduction and repair of quadriceps tendon. There was buttonholing of medial femoral condyle through medial retinaculum which led to irreducible dislocation. Special reduction manoeuvre was employed to bring knee to its normal alignment. Knowledge of this injury pattern is of utmost importance for proper recognition and appropriate allocation of surgical technique.

Abstract no.: 52278

UNICONDYLAR ARTHROPLASTY IN SURGICAL TREATMENT OF KNEE OSTEOARTHRITIS

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Introduction: Knee joints osteoarthritis remains an important matter for modern orthopedics. 5-20% of patients, who underwent total joint replacement, had disorders of only a single part of a joint, mostly the medial one. Nowadays unicondylar joint replacement is the method of choice for older patients with insulated degenerative-dystrophic disorders of the medial part of femoro-tibial joint. Methods: From 2009 to 2015 we implanted 37 unicondylar endoprotheses. All operations applied less-invasive approach. In 25 cases surgical treatment begun with diagnostical arthroscopy. Results have been studied during the period from 6 month till 5 years using WOMAC and KSS scales. Excellent results were in 11 (29.7%) cases, good in 20 (54.0%), satisfactory in 6 (16.3%); no cases of pathological process in adjacent part of a joint or due to the component's aseptic instability was observed. Single case of wound edges' surface necrosis, not affected the final functional result of treatment, was the only complication. Conclusion: Unicondylar joint replacement is the method of choice for patients with isolated disorder of a knee joint's single part; activity level could be preserved at reasonably high level. Unicondylar joint replacement, if applied as indicated, is not worse than total one, and promotes more versatile recovery of knee joint's functions.

Abstract no.: 52279

DIFFERENTIAL APPROACH TO KNEE ARTHROPLASTY IN DIFFERENT STAGES OF OSTEOARTHRITIS

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Introduction: Among all localizations, the proportion of knee osteoarthritis is from 24.7 to 67.7%. Methods: We performed 324 knee replacement procedures in patients with knee osteoarthritis, aged 62 ± 14 years, of which women accounted for 82.5%, and men - 17.5%. In cases where the size of the defect of the medial tibia exceeded 10 mm, bone grafting and implantation of knee prosthesis with a tibial extension were performed. In determining the complete failure of lateral stabilizers, patients underwent total prosthetics of the knee joint with linked prosthesis. Results: Operated patients were observed for 3 years after surgical intervention. With endoprosthesis of the knee joint system without preservation of the posterior cruciate ligament, a good result was obtained in 84%, satisfactory in 16% of 113 patients. In the endoprosthesis of the knee joint with the preservation of the posterior ligament, good result was obtained in 54%, satisfactory in 46% of 183 patients with gonarthrosis. When applying a tibial extension, knee replacement is a good result in 100% of patients. Conclusions: In the presence of flexural contracture in the knee joint more than 10 degrees or the presence of sagittal instability, it is expedient to implant the endoprosthesis without preserving the posterior cruciate ligament. If there is a defect greater than 10 mm, it is expedient to use bone grafting and endoprosthesis with a tibial extension. In patients with significant damage of the side stabilizers, the recommended total endoprosthesis with a linked endoprosthesis.

Abstract no.: 52282

PRIMARY JOINT REPLACEMENT IN A COMPLEX HIP

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Background: although total hip arthroplasty is now a classic procedure done by many orthopedic surgeon, some cases remain challenging and difficult due to co-morbidity, obesity, skin and muscular problems and neurological disease or associated morphological bone deformities. Objectives: to evaluate functional outcome of a complex hip treated by primary joint replacement and to determine surgical difficulties associated with each entity and proper surgical plan. Methods: this study of 54 patients with a complex hip (dysplastic 9), (ankylosis due to rheumatoid 3, infection 2 one post tuberculosis and other by fungal infection, one ankylosing spondylitis), (previous proximal femoral Osteotomy 8 cases) through a period of 5 years follow up in Al- wasity teaching hospital lead. All patients were treated with a primary hip implant by anterior approach in 53 cases and one by posterior one. Harris hip score (HHS) is used to assess clinical outcome. Results: patients mean follow up of 43,4 months. Mean hip score preoperatively was 66.8 while postoperatively is 85.2, which indicates that our patients disabilities improved with marked pain reduction and marked improvement in daily living activity. Conclusion and recommendations: using a primary hip components in the treatment of a complex hip can be achieved if proper experience and patient selection is available. We recommend that these kind of surgeries must be done in a high specialized centers in addition to the high surgeon and team experience.

Abstract no.: 52285

SCIATIC NERVE PALSY DUE TO HEMATOMA AFTER HEMIARTHROPLASTY FOR FEMORAL NECK FRACTURE

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We describe a case of a patient who developed an extensive hematoma after a hip hemiarthroplasty and was successfully treated with hematoma removal. An 87-year-old woman was referred to our hospital with a right intracapsular hip fracture after a fall while walking. She was previously receiving apixaban for myocardial infarction treated with catheter, left brain infarction and this had been discontinued prior to surgery. She was neurological normal before surgery. A cementless hemiarthroplasty of the right hip was performed 11 days after injury through a posterior approach. On the evening following surgery, she complained of severe pain and swelling in the right buttock and became acutely unwell and hemodynamically unstable overnight. Her hemoglobin level rapidly decreased from 9.6 g/dl to 6.4 g/dl postoperatively. She was transfused sum of 12 units of red cell concentrates for 3 days. Second days after the operation, we were aware of right sciatic nerve palsy. On the third postoperative day, the same approach was used to evacuate the hematoma and explore the sciatic nerve. Though we found a significant hematoma, no active bleeding was identified. The nerve was in continuity with no evidence of trauma other than compression from overlying hematoma. Six weeks after the second operation, she was able to walk a short distance with a T-cane. Eight months later, muscle testing revealed full strength regained and numbness in the right leg was improved. Eventually in our case, sciatic nerve palsy due to the significant hematoma was fortunately fully recovered by early hematoma removal.

Abstract no.: 52289

OSTEOGENIC DIFFERENTIATION PROPERTIES OF STEM CELLS ISOLATED FROM HUMAN NEWBORN FORESKIN TISSUE

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Because of potential source of stem cells which derived from different sources can be used in the cell-based therapies. Cells isolated from the circumcised tissues can remain after the circumcision thought to have stem cell properties. In our study we investigate the osteogenic differentiation properties of the stem cells from foreskin of newborns to use for treatment. Newborn human foreskin tissue obtained following routine circumcision. The mucosa, skin and mucosa/skin part of the foreskin were collected. After enzymatic dissociation, they were cultured in DMEM supplemented with 10 % FBS, 1 % PSA 25 µg/mL amphotericin B. They were cultured for 14 days and distribution of CD44 and CD90 were analyzed using immunocytochemical staining for characterization. For osteogenic differentiation, cells were incubated using standard kits according their protocols for 2 weeks. The characterization of cells were analysed using Alizarin Red staining for their routine protocol. Distribution of anti-osteonectin was also analysed by immunohistochemically. The cells were attached and proliferate in all parts of the foreskin. However, the number of mucosal cells was more than others. The cells were also positively stained both CD44 and CD90. Osteogenic differentiation of these cells was performed after 2 weeks culture condition and they were positively stained with hictochemically and immunohistochemically. Stem cells from newborn foreskin were isolated and characterized in our laboratory. Osteogenic differentiation potential of the cells has to be analyzed. Foreskin is easily obtainable and utilizable than the other stem cell sources for stem cell therapy in osteogenic problems.

Abstract no.: 52292

THUMB BASAL JOINT ARTHRITIS AND SURGERY OUTCOME

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Basal joint arthritis is a common disease which affects up to 40% in women above the age of 75 years. The diagnosis is based on the level of pain and limitations which are evaluated by questionnaires like the disabilities of the arm, shoulder and hand (DASH), radiographical findings and range of motion. Treatment options vary from conservative to operative ones. This study aims to develop a protocol of treatment for the indication of surgery and how patients profit from it. A prospective database was established in 2007 to include all patients older than 18 years who received a questionnaire (DASH since 2014) when they first presented during office hours. In total, 85 patients were included where surgery for basal joint arthritis was indicated. The mean age of patients was 69.1 years (S.D. 11.3) and especially female (69.4%) and both carpometacarpal joints were affected (40.0%). In further 33 patients the left side was affected followed by the right side in 18 cases. The DASH score was assessed in mean 58.6 days before surgery (range from 0 to 22) and 104.8 days in mean after surgery (range from 426 to 11 days). Overall the DASH score improved from 43.8 to 39.4 (P-value 0.226), whereas in female a slightly better improvement could be observed (46.2 to 40.7, P-value 0.188). According to the DASH score there is no significant difference between pre- and post-surgery. This may be related to the low sensitivity and specificity of the DASH-score in terms of the basal joint arthritis.

Abstract no.: 52294

PULMONARY CRYPTOCOCCOSIS PRESENTING AS SUBCUTANEOUS SUPRAPATELLAR SOFT TISSUE MASS: A CASE REPORT

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Cryptococcosis affects more than 1 million individuals and leads to up to 625, 000 deaths per year. This opportunistic infection is caused by yeast-like fungi and generally presents in immunocompromised patients; however, only 12% of non-HIV patients and 3.8% of those without history of immunosuppressive conditions have been seen to develop cryptococcal infection. We present the case of a previously healthy 57-year old male with recurrent subcutaneous suprapatellar mass on the right. Work up was done to check for other foci of infection wherein pulmonary nodules were seen. The patient was negative for HIV testing but was diagnosed with common variable immunodeficiency disease as per flow cytometry. He was started on anti-fungals for which the largest of the pulmonary nodules was seen to have decreased in size upon completion of antibiotic therapy. Cryptococcosis may veer from the usual and, although uncommon, present as a subcutaneous mass prompting work up. Careful examination of non-HIV infected patients prompts healthcare workers to check the immune status and investigate other possible areas of affectation. Proper antibiotic therapy and close follow up are essential in managing these patients.

Abstract no.: 52300

CRUSH FRACTURES OF THE ANTERIOR END OF THE CALCANEUS

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The anterior end of calcaneus fractures can present as inversion injuries, stress fractures or as a part of displaced intraarticular calcaneus fracture. Rarely, these may occur due to abduction injury from a laterally directed force that crushes the anterior calcaneus instead of the cuboid, and has associated medial column injuries which are unrecognized. Compression fractures of the anterior calcaneus are actually lateral column shortening injuries with poor Outcomes in the few published reports. We describe three patients with compression fractures of the anterior end of calcaneus resulting from foot abduction injury which were managed by reduction and column length restoration via distraction by external fixator All three fractures showed good to excellent outcomes using the American Orthopedic Foot and Ankle Society midfoot score at followup >1 year. Awareness of this injury pattern is important, and appropriate measures to reduce and maintain the fracture reduction are needed to avoid long term disability.

Abstract no.: 52301

SHORT- AND LONG-TERM OUTCOMES OF TRAUMA PATIENTS WHO UNDERWENT INTERNAL FIXATION IN TABARRE HOSPITAL, HAITI

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Introduction: Since 2012, Médecins Sans Frontières offers specialized trauma care including procedures of internal fixation (IF) in Tabarre hospital, Port-au-Prince, Haiti. We assessed the short- and long-term outcomes of patients underwent IF. Methods: This was a cohort study of patients with closed fracture underwent IF in January, June and September 2016. Patients were followed by phone 1, 3, 12 months after IF, to collect information on visible signs of surgical site infection (SSI), functional recovery (self-assessed) and pain scale. Results: Out of 267 patients underwent IF during the study period, 148 were followed up (FU) by phone after 1 month. Of 148, 103 (70%) were male with median age 25 years (IQR 11-44); 62% had lower limb (LL) fracture; 51% had red and orange triage colour (SATS system); 27% arrived to ER > 6 hrs after trauma; and 85% received antibiotics after IF. The median physiotherapy sessions received after 3 months of IF was 6 [IQR 2-12]. Of 148 reached by phone after 1 month, 134 and 125 were reached after 3 and 12 months, respectively. Of all, 13 (9%) reported symptoms related to SSI only during the first FU. FRS of LL evolved from 18 [IQR 14-28] at initiation of physiotherapy to 42.5 [IQR 33.5-50] at 3 months ($p<0.001$), and for UL from 31.5 [IQR 18-46] to 50 [IQR 18.5-50] ($p<0.001$). Conclusion: Overall, there was a good recovery and low prevalence of SSI, this holds promise for the provision of specialized trauma care in humanitarian settings by humanitarian actors.

Abstract no.: 52302

THE 'OPEN-ENVELOPE' APPROACH: A LIMITED OPEN APPROACH FOR CALCANEUS FRACTURE FIXATION

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Background: Minimally invasive surgery (MIS) has a significant and evolving role in the treatment of displaced intra-articular calcaneal fractures (DIACFs), but there is limited literature on this topic. The objective was hence to assess the clinikoradiological outcomes of DIACFs fixed with an innovative open-envelope MIS technique. **Materials and Methods:** This study included 42 closed Sanders Type 2 and 3 DIACFs which were selected from 169 calcaneus fractures who presented. The Open-envelope approach was developed, which is essentially a limited open, dual incision, modified posterior longitudinal approach allowing excellent visualisation and direct fragment manipulation. The main outcome measures were American Orthopaedic Foot and Ankle Score (AOFAS) hindfoot score and preoperative and postoperative radiological angles. **Results:** The Bohler angle improved from a preoperative mean of 14.3° (range 0°–28°) to a postoperative mean of 32.46° (range 22°–42°). The Gissane angle improved from a preoperative mean of 135.83° to a postoperative mean of 128.33°. The postoperative improvement in Bohler and Gissane angles was highly significant ($P < 0.001$). The AOFAS scores at 6 months were excellent in nine patients, good in 15 patients, and fair in six patients. Three patients had residual valgus deformity of the heel. **Conclusions:** Open-envelope technique minimized soft tissue complications and achieved acceptable radiological reductions with good clinical outcomes.

Abstract no.: 52303

VISCOSUPPLEMENTATION FOR EARLY KNEE OA: FIVE-YEAR RESULTS

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Viscosupplementation is an accepted form of management for Knee OA, but it is full of controversies, as to determine if it is really beneficial. We aim to study that. 40 patients with grade 2/3 arthritis were recruited and WOMAC scoring was done for pre injection, 6 months, 1yr, 2 yr, 3yr, 4th yr and tabulated in spreadsheet, results were studied and significance was tested. 40 patients with Grade 2/3 osteoarthritis were prospectively followed up for 5 yrs, from an index year of giving viscosupplementation. 57% were with acceptable symptoms for 3 yrs. 25% tolerated it up to 4 yrs. The rest of them needed conversion to Total Knee replacement at 2 yrs. The patients who were well for three years wanted a repeat injection. The recovery of symptoms were significant at 2 yrs. Thus in conclusion, viscosupplementation is an acceptable form of treatment for short term relief. Though a good number of patients needed to be converted to Total Knee replacement at two years whose average age was 54.

Abstract no.: 52305

SUBCUTANEOUS ANGIOFIBROLIPOMA OF THE WRIST: A CASE REPORT

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Angiofibrolipoma, first described in 1986, is a variant of lipoma consisting of a mixture of mature adipocytes, vascular tissue, and fibrous connective tissue. It is considered rare, with very few cases reported in literature. Our reference search yielded only one case of angiofibrolipoma of the upper extremity, which presented as a tendon sheath mass. We present the case of a 53 year-old female with a 15-year history of a slow-growing, painless, well-circumscribed mass on the dorsum of the left wrist with no associated skin changes. On ultrasonography, a fairly marginated 0.4 cm x 1.62 cm x 2.7 cm subcutaneous lesion with heterogenous echogenicity overlying the tendons of the third and fourth dorsal compartments between the ulna and proximal extension of the Lister's tubercle was seen. Excision biopsy was done under local anesthesia yielding an aggregate of 3 cm x 1.3 cm reddish-yellow fatty tissue revealing fibrolipomatous areas with areas of vascularity consistent with angiofibrolipoma. The patient is currently well with no recurrence of the said mass.

Abstract no.: 52306

THE 'FORGOTTEN RUBBER BAND' SYNDROME: A SYSTEMATIC REVIEW OF A UNIQUELY 'DESI' COMPLICATION WITH A CASE ILLUSTRATION

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Background: Once an exceedingly rare entity, multiple cases of forgotten rubber band syndrome or the so-called 'dhaaga' syndrome have now been reported in the literature. Objectives: To conduct a thorough and systematic review of the literature for all articles reporting a chronic type of rubber band syndrome and to present an additional similar case as an illustration. Methodology: Databases were searched for relevant articles using different combinations of the keywords till 20th June 2017. All articles reporting cases of chronic rubber band syndrome with a discharging sinus were included. Data from these reports were collected on pre-defined forms and the results were analysed. Results: A total of 15 cases have been reported in the literature so far and all cases are from India. Thirteen of these have been reported in the wrist region. Median duration of presentation is 7.6 months after the application of band. Characteristic clinical signs are a circumferential linear scar with discharging sinus. 'Soft tissue constriction sign' on plain radiograph is pathognomonic for this condition. Rate of missed/misdiagnosis is very high (46.7%) and it has been confused with tubercular osteomyelitis which is endemic in India. All cases responded to surgical debridement of circumferential fibrous tissue and foreign body removal with good functional outcomes. Conclusions: A high index of suspicion must be maintained for this 'syndrome' in chronic osteomyelitis cases presenting with a linear, circumferential scar and discharging sinus in India. Soft tissue constriction sign on plain radiographs are pathognomonic. Level of Evidence: IV.

Abstract no.: 52308

OSTEOMYELITIS VARIOLOSA: FORGOTTEN COMPLICATION OF AN ERADICATED DISEASE

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Orthopedic manifestations and sequelae of small pox disease are largely forgotten. Presenting features in the modern era are not only the classical deformities but also includes precocious arthritis, pathological fractures and joint instability. To conduct a thorough and systematic review of the literature for all articles reporting osteomyelitis variolosa and its sequelae post eradication and to present an additional case as an illustration. Methodology: Databases were searched for relevant articles using different combinations of the keywords till 20th June 2017. All articles reporting cases of osteomyelitis variolosa following small pox eradication were included. Data from these reports were collected on pre-defined forms and the results were analysed. Results: A total of 8 cases have been reported in the literature so far post-eradication of small pox and all cases are from India. These cases have predominant involvement of elbow followed by hands, feet and ankle. Characteristic clinical signs in the present era are secondary arthritis, pathological fractures, joint instability and some cases even have incidental presentation. The diagnosis is further confirmed by plain radiograph which show pathognomonic features of this condition. Rate of missed/misdiagnosis is very high due to rarity of this condition. All cases in the published literature were managed conservatively except those presenting with pathological fracture. Conclusions: The purpose of this study is to remind clinicians of an easily recognised sequelae of an eradicated disease and make them aware of its complications.

Abstract no.: 52314

AUTOMATIC 3D SPINE RECONSTRUCTION IN A SUSPENSION WORKFLOW FOR SCOLIOSIS

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The flexibility analysis in adolescent idiopathic scoliosis (AIS), an essential information for preoperative planning, can be done using a suspension framework where the patient is raised through a harness and his spine stretched using his weight. In this context, two 3D spine reconstructions can be obtained using standing position and suspension biplanar radiographs in order to compute the flexibility. The aim of this project is to automate the suspension 3D reconstruction by considering the patient standing position 3D reconstruction and the vertebra rigidity hypothesis, clinically acceptable due to a short time between the two acquisitions. A fully automatic algorithm for the standing position 3D spine reconstruction using biplanar radiographs was developed at the LIO. It combines two machine learning techniques (i) a CNN regression approach used to detect characteristic points in the radiographs and (ii) a Statistical Shape Model used to statistically infer, based on the CNN results, the geometrical parameters of a 3D model. This algorithm was adapted to our problem by adding the available information (the rigidity hypothesis and the standing position reconstruction). Moreover, the harness hooks visible in the images add a new constraint requiring a major modification of the current algorithm. The proposed algorithm was tested on 57 AIS. Regarding the current algorithm, the vertebrae positions was improved. The mean (std) 3D error's norm decreases from 7.74 (8.40) mm to 4.69 (3.21) mm. Including the patient standing position reconstruction information improves the automatic 3D reconstruction algorithm accuracy. A further study including the clinical parameters is planned.

Abstract no.: 52315

MAJOR TRAUMA IN OLDER PATIENTS: AN UP-TO-DATE REVIEW

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Background: Studies indicate that injuries in older patients are often severe and disproportionate to the mechanism of injury, often in the context of multiple comorbidities and a poor physiological reserve. Frailty, independent of age, has a significant impact on the management and outcomes. Major trauma in older patients is associated loss of function and independence. Methods: This retrospective study reviewed 839 patients with an Injury Severity Score over 15 (2014-2017) aged over 60 years using the Trauma Audit and Research Network data. Primary outcomes included frailty, according to the modified Frailty Index (mFI) and comorbidities, according to the Charlston Comorbidity Index (CCI). Secondary outcomes included discharge mortality, length of stay (LOS), management discharge destination and treatment cost. Results: Low frailty (mFI < 0.18) was associated with reduced age (mean 68.2 years) and a lower CCI. Intermediate (mFI 0.18–0.35) and high (mFI > 0.36) frailty groups had comparable mean ages but there was a sequential increase in the CCI as the mFI increased. The mean LOS was 18.4 days with a mean LOS on ITU of 3.4 days. Increasing frailty was associated with a lower operative rates, higher mortality and loss of independence, with fewer discharges to pre-admission abode. There are also significant cost implications with increasing frailty. Conclusions: Major trauma in older patients is associated with significant mortality and loss of independence. Frailty plays a major role in the outcomes. It is important to recognise the differences in these patients compared to younger patients to optimise healthcare provision.

Abstract no.: 52316

SIMULTANEOUS BILATERAL HIP REPLACEMENT: EXCELLENT CLINICAL OUTCOME

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Bilateral Hip arthritis is a real disabling condition which leads to secondary changes in spine and makes the patient bedridden and dependent. Conditions afflicting both hip joints presents a dilemma whether to operate simultaneously or in stage. Simultaneous hip replacement not only reduces the recovery period but also the cost of treatment. Aim of this study is to evaluate complications and functional outcome following simultaneous bilateral THA. In this study 20 cases (12 male, 8 female) operated from 2013 to 2015 and followed till March 2018 were included. All the patients were operated in lateral position using posterior approach. Mean patient age was 58.3 years. Mean total surgical time was 190(170-240) minutes. Average blood loss was 150 ml. Mean hospital stay was 5.3 days. LLD improve from average preoperative 10 mm to 0.5 mm postoperative. Ninety percent of patients were able to ambulate on postoperative day 1. Follow up was done at 0, 2 weeks, 4 weeks, 3 months, 6 months and 1 year using Harris hip score. Results: In our study Harris hip score improved from 48 preoperatively to 93 postoperatively. There were no major intra or postoperative complications. Only 2 patients required blood transfusion. There was an early improvement in gait pattern. Conclusion: Simultaneous bilateral THA is a safe and effective option for patients with significant arthritic disease of both hip having age less than 70 years in reducing recovery period and early return to independent active life.

Abstract no.: 52318

KNOCKOUT P16 PROTECTS UNLOADING-INDUCED INTERVERTEBRAL DISC DEGENERATION BY INHIBITING OXIDATIVE STRESS AND CELL SENESENCE

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Intervertebral disc degeneration (IVDD) is an integral part of age-related multi-organ aging. The p16 is not only a biomarker, but also an effector for aging, however, the role of p16 in the process of IVDD has not been investigated. In this study, we first examined alterations of p16 expression levels in degenerative human disc specimens and found that p16 expression at both mRNA and protein levels had a positive relationship with the degenerative severe degrees. Then we isolated nucleus pulposus (NP) cells from human discs, in which p16 was overexpression or knockdown, respectively. Our results demonstrated that p16 overexpression inhibited the proliferation of NP cells and induced the senescence of them, in contrast, p16 knockdown played an opposite actions on NP cells. Next, we asked whether p16 knockout could rescued tail suspension-induced IVDD in mice. The phenotypes of lumbar intervertebral discs were analyzed in WT and p16^{-/-} mice with or without tail suspension (TS) for 4 weeks. Results revealed that disc height index and expression levels of matrix proteins of the discs were reduced significantly in TS mice compared with ground control, and were largely rescued by p16 deletion. ROS levels, senescence cells and SASP were increased, the expression levels of Sirt1, SOD1/2, CDK4/6, pRB and E2F1/2 were down-regulated in TS mice compared with ground control, and were largely rescued by p16 deletion. Our results indicate that p16 deletion can protect unloading-induced IVDD by stimulating cell proliferation, inhibiting oxidative stress, cell senescence and SASP.

Abstract no.: 52325

LUMBOSACRAL SPINE JUNCTION ANATOMICAL VARIATIONS IN PATIENTS WITH LOW BACK PAIN

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Anatomical variation of the lumbosacral junction is not an uncommon condition in patients with low back pain. This junctional anatomical variation may be in the form of Lumbarization of S1 vertebra or Sacralization of the L5 vertebra and termed as Lumbosacral transitional vertebra (LSTV). This variable anatomy was first noted by Mario Bertolotti in 1917 and he first described its association with back pain. The reported incidence vary a lot from 5 to 30 % in the literature. Depending on the morphological characteristics of the lumbosacral junction Castellvi et al described 4 different types of LSTV. This study was conducted at Hayatabad medical complex Peshawar Pakistan. Study duration was 6 months from July 2017 to Dec 2017. In this prospective case series all those patients were included in whom lumbosacral spine radiographs were done for low back pain. LSTV was identified according to Castellvi classification. A total of 500 patients radiographs were examined with 10.6% having LSTV. Mean age of the group with LSTV was with minimum of 13 and maximum of 64 years. The overall incidence of lumbarization was 1.88% and of Sacralization was 8.74%. According to Castellvi classification distribution of various type of LSTV in the group was type I 22.6% type II 44.9% type III 25.1% type IV 7.3%. LSTV is very common condition with prevalence of 10.6 % in our study and reported as high as 30%. It may be the cause of chronic back pain and can lead to wrong level identification during spine surgery.

Abstract no.: 52329

INFLUENCE OF NECK SHAFT ANGLE, LATERAL BOWING AND HIP KNEE SHAFT ANGLE ON STRAINS WITHIN THE FEMUR TO DETECT PATIENTS AT RISK OF DEVELOPING AN ATYPICAL FEMUR FRACTURE

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Introduction: Atypical femur fractures (AFF) are characterized as fracture of the femoral shaft or subtrochanteric region, which occur in the absence of trauma. The AFF etiology is not clearly understood. Variations in geometrical parameters, such as neck shaft angle (NSA), lateral bowing (LB) and hip knee shaft angle (HKSA) have been associated with increased risk of AFF and may explain in part why AFF always initiate on the lateral cortex of the femur diaphysis. This paper aimed to evaluate the influence of these geometrical parameters variation on the femoral strains in order to detect patients at risk using traditional radiography. **Methods:** Based on a Sawbones geometry, a parametric model of a femur has been developed. 3 parameters have been varied: NSA from -5deg (valgus) to +5deg (varus); LB from 0deg to 10deg and HKSA from 0deg to 1deg. FEA was carried out for the loading conditions simulating walking. Materials were defined as non-linear isotropic homogeneous. Average and maximum principal strains (tensile strains) within the diaphysis and the trochanteric region were extracted and compared with the reference model (Sawbones). **Results:** NSA and HKSA have no influence on the principal strains within the area of interest unlike LB. Indeed, an increase of LB from 0deg to 10deg increases the average principal strain within the area of interest of 12% and the maximum principal strain of 21%. **Discussion:** This study shows that lateral bowing appears as an important parameter that can be associated with AFF and merits further investigations.

Abstract no.: 52331

TEMPERATURE LEVEL REACHED DURING PREPARATION OF TRABECULAR BONE SAMPLES FOR EX VIVO STUDY

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Introduction: Sample preparation is a crucial step prior to bone culture. Extraction, cutting and milling generate high temperature that can be harmful to culture success. Evidence has been reported that elevate temperature induces cell death leading to bone necrosis. Therefore the objective of this study is to determine the temperature reached on bovine trabecular bone during extraction, milling and cutting of the sample. Methods: Eight oxtail vertebrae were used to extract trabecular bone samples. The vertebrae were divided into two groups: preparation without and with cooling (water at 4°C). The extraction was performed using a press drill and a hole saw. Milling and cutting of the samples were carried out using a manual rotary tool (Dremel). A thermal camera (Fluke Ti9) was used to measure the temperature during sample preparation. The temperature reached during each step was analyzed with Smart View software (Fluke, Canada). The maximal temperature reached was compared between the two groups. Results: The eight cylindrical bone samples were sized $13.90 \pm 0.3\text{mm}$. The maximum temperature reached was 73.8°C during milling of the sample without cooling. Cooling reduced the temperature encountered for all situations. A decrease of 4.3°C, 50.3°C, and 37.9°C was obtained for extraction, milling and cutting respectively. Conclusion: The results reveal a noteworthy contribution of cooling to reduce the temperature reached during sample preparation. A temperature above 47°C maintained during 1 minute is known to cause bone necrosis. Therefore, cooling is confirmed to be important during bone preparation and eventually affect the success of bone culture.

Abstract no.: 52345

THE RELATIONSHIP BETWEEN ANTERIOR CRUCIATE LIGAMENT INTEGRITY AND EXTERNAL ROTATION REQUIRED FOR OPTIMAL ROTATIONAL ALIGNMENT IN INDIAN KNEES: A COMPUTER NAVIGATION-BASED STUDY

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Chronic ACL deficient knees can lead to progressive knee dysfunction with accelerated degeneration and are predisposed to postero-medial wear of the tibial plateau. Femoral component rotation (FCR) is one of the important factors dictating the long term outcome in total knee arthroplasty. Multiple intraoperative landmarks such as the Posterior condylar axis (PCA), Transepicondylar axis and the Whiteside's line have been identified to obtain optimal FCR. The aims of our study were to assess the correlation between PCA Whiteside angle and the integrity of the ACL using CAS. Materials and methods: This was a CAS based study of 106 consecutive varus osteoarthritic knees undergoing primary TKA. The CAS software (Orthopilot 5.1 in Femur first mode) allows identification of the combined Whiteside PCA angle as a measure of external or internal rotation from 90 degrees. The competency of ACL was documented in each case. Results: The mean varus deformity was $12.21^{\circ} \pm 6.9^{\circ}$ (95% CI). The mean femoral component external rotation with respect to the PCA was $4.25^{\circ} \pm 2.2^{\circ}$ (95% CI). 56 knees had an intact ACL whereas 50 knees had an incompetent ACL. The mean varus deformity and the Whiteside PCA angle were higher in cases with an incompetent ACL. There was a statistically significant association between the ACL status and the PCA Whiteside angle. Conclusion: ACL deficiency alters the biomechanics of the knee with increased Whiteside PCA angle and increased mean values of varus deformity. So in a deficient ACL knee combined PCA Whiteside angle could be a more reliable guide for FCR than PCA alone.

Abstract no.: 52349

USE OF ANTIBIOTIC-IMPREGNATED CEMENT SPACER IN THE TREATMENT OF RECALCITRANT VERTEBRAL OSTEOMYELITIS: AN EFFECTIVE TECHNIQUE TO TREAT RESISTANT POST-OPERATIVE SPINAL INFECTIONS

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Introduction: Postoperative spinal wound infection (PSI) is a potentially devastating complication, presenting a nightmare to the patient and the surgeon alike. Despite the use of prophylactic antibiotics and advances in surgical technique and postoperative care, wound infection continues to compromise patients' outcome after spine surgery due to the risk of pseudoarthrosis, instability, deformity, adverse neurologic sequelae and death, with a long-term recurrence rate of 20% to 30%. We describe an effective technique to treat recalcitrant PSI following instrumented spine surgery. **Methods:** We describe two patients with recalcitrant PSI following spinal stabilization, corpectomy and cage reconstruction for post-traumatic L3 AOA4 injury. Both patients presented to us, eight months after the initial surgery, with neurodeficit, instability, persistent infection and sinus with discharge, even after multiple debridements and prolonged antibiotic therapy. Patients underwent implant removal, sinus tract excision, radical debridement of infected tissue, anterior column reconstruction using gentamicin (2g) impregnated PMMA (Polymethyl Methacrylate) spacer and L2 to L4 posterior stabilization. Appropriate culture-specific antibiotic (Staphylococcus aureus/Linezolid) was administered intravenously (6 weeks) and orally (6 weeks). Antibiotics were stopped when the clinical and laboratory parameters were consistent with resolution of infection (normalization of ESR and CRP). After 7 months, spacers were removed and replaced with fibular strut graft through retroperitoneal approach. **Results:** At 63 months follow-up, both patients showed good clinical and functional outcomes (improvement in ODI scores), neurological improvement and radiographic evidence of bony fusion, with no signs of recurrence of infection. **Conclusions:** Antibiotic-impregnated PMMA spacer offers immediate structural support by filling the defect created by radical debridement, restores and maintains spinal stability, while simultaneously releasing antibiotics in high local concentrations for prolonged periods. Gentamycin loaded bone cement has shown greater effectiveness in reducing the biofilm formation, with minimal systemic toxicity.

Abstract no.: 52350

RESULTS OF USE OF METAPHYSEAL ANCHORING IN SHORT CEMENTLESS STEM IN YOUNG PATIENTS

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There has been an introduction of short femoral stems with the aim of conserving bone. We present the short term results of short metaphyseal anchoring cementless stem ('Metha stem'®, Aesculap). 25 patients in age group (25-40yrs), 15 males, 10 females were implanted with a short metaphyseal anchoring cementless stem ('Metha stem'®, Aesculap) and cementless acetabular cup. The average follow up was 3 years (2- 5 yrs). Clinical evaluation using Harris Hip Score and radiological evaluation was done at 2 weeks, 6 months, 12 months and yearly thereafter. The mean Harris Hip score improved from 44 to 90 at final follow up. There was no evidence of any radiolucent lines or osteolysis around the stems. All the stems showed evidence of osseointegration at one year follow up. The Short Metaphyseal anchoring cementless femoral stem is a bone conserving as well as bone preserving option for young patients.

Abstract no.: 52354

DO SUBJECTIVE AND OBJECTIVE IMPROVEMENT IN OUTCOME EVALUATION OF TOTAL KNEE ARTHROPLASTY MAKE A PATIENT SATISFIED?

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Objective: To evaluate the end result of primary total knee arthroplasty (TKA) using The New Knee Society Score (PROM), Performance Based Activities and compare its correlation with Patient Reported Fulfilment of Expectation (PROFEX). **Method:** 62 patients who underwent total knee arthroplasty were evaluated preoperatively and postoperatively (minimum follow up six months) using the New Knee Society Score, PROFEX score and performance based activities which included Six-Minute Walk Test (6MWT), SPWT (Self-Paced Walking Test), Timed Up and Go Test (TUG), Stair Climbing Test (SCT) **Results:** 110 knees from 62 patients were followed up for a mean 6.44 months. The NKSS improved from 82.99 preoperatively to 186.94 post operatively. The SPWT and TUG decreased from 70.17 seconds to 44.37 seconds and 32.01 to 22.86 seconds respectively. The 6MWT distance improved from 142.58 to 328.16 meters. There was no significant improvement in the time taken to climb stairs postoperatively when compared to the preoperative levels. The PROFEX reports were classified as two groups. 52 out of the 62 felt their expectations were fulfilled and classified as “satisfied” while the remaining 10 out of the 62 felt their expectations were not fulfilled and were classified as “unsatisfied”. The magnitude of change in all three parameters the PROM, Performance based activities and PROFEX scores were not statistically co related. **Conclusion:** The fulfillment of a patient following a TKA is independent of the subjective and objective outcomes. To evaluate the true success of a TKA from a patient’s perspective, the expectation-fulfillment evaluation should also be included independently.

Abstract no.: 52360

PLATELET-RICH PLASMA COMBINED WITH LOW MOLECULAR WEIGHT HYALURONIC ACID INJECTION FOR EARLY OSTEOARTHRITIS KNEE

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Platelet Rich Plasma (PRP) is an emerging treatment therapy called "Orthobiologics", also labelled as "Tissue Engineering". Alfa granules in platelets contain numerous growth factors which enhance tissue recovery dramatically. On the other hand, the role of Hyluronic acid as visco-supplimentation is well documented as a nourishing character for the cartilage, "fountain of youth". If combined together, it can be a lasting cure for osteoarthritis knee. The work is being conducted with the aim to provide the biological, non-surgical and cost effective management for osteoarthritis knees so that the basic problem of cartilage degeneration is targeted in a dual manner. It is an observational study where patients of early grades of bilateral knee osteoarthritis were selected. 100 knees of 50 consecutive patients were the subject of study. PRP was prepared from 100 cc of patient's blood, double centrifuged in the refrigerated blood component separator centrifuge in the blood bank giving about 15 cc of buffy layer. Both the knees were injected with autologous PRP and 2ml of Hyluronic acid injection under aseptic conditions. Results were documented as per VAS scale at 3, 6 and 12 months and need for analgesics was also recorded at these intervals. It was observed that VAS scale started improving within few days of giving injection and kept a crescendo. Even at the last follow up after one year majority of the patients were showing excellent results. There was need to take analgesics rarely and that too. The procedure is simple and economical too.

Abstract no.: 52361

MICRO-CT FOR QUALITATIVE AND QUANTITATIVE EVALUATION OF EXPLANTED ORTHOPAEDIC MEDICAL DEVICES

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Micro-computed tomography (micro-CT) is a high-resolution imaging modality in which computed tomography (CT) is performed to reconstruct explanted tissues in great detail for both qualitative and quantitative purposes. Explants and their apposed bone tissues can be imaged by micro-CT using a high accelerating voltage varying between 70-225kV with a variety of filters to best highlight density differences. During scanning, the long axis of each explant is typically aligned perpendicularly to the X-ray beam axis. Typical image resolutions of 1-20 μ m/voxel can be obtained. Individual series of images from bone and implant biomaterials are first stacked and reconstructed in order to generate a 3-dimensional (3D) view of the explant location and adjacent hard tissues. Then, qualitative 3D animations and quantification measurements of bone and scaffolding regions of interest can be obtained from the reconstructed volume using state-of-the-art software and thresholding provided that significant density differences exist between the biomaterial and various adjacent tissues. Also, new bone formation, residual implant material and bone-to-implant contact (BIC) can be quantified in a specified region of interest (ROI) within the original implant site. Additionally, for bioresorbable materials, the residual implant volume (IV) and void volume (VV) can be measured. These quantifications are then correlated with histomorphometry data and discussed in the pathology report. In comparison to histomorphometry, though both modalities provide valuable information, micro-CT allows to quantify a much greater volume, as opposed to a single histology slide, and thus represents a valuable tool for analyzing the bone response to the entire implanted device.

Abstract no.: 52363

OSTEOTOMY IS A VIABLE ALTERNATIVE TO REPLACEMENT IN KNEE OSTEOARTHRITIS IN ASIAN COUNTRIES

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Introduction: Osteoarthritis is an age related degenerative arthritis. Knee joint arthritis usually presents with medial compartment involvement. The author is presenting a study of medial open wedge high tibial osteotomy. **Material and Methods:** 113 patients of osteoarthritis of knee joint were treated with open wedge high tibial osteotomy from April 2005 to March 2017. There were 28 male and 85 female. 33 patients had both side osteotomy. Their age ranged from 46 to 89 years (average 57.5 years). All patients presented with classical features of OA along with varying degree (6 to 19°) of varus deformity. Deformities were corrected with medial open wedge osteotomy. An appropriate size iliac graft was placed at the osteotomy site. The osteotomy was fixed with tibial head buttress plate in 9° valgus. The patient was mobilized with progressive weight wearing form next postoperative day. **Results:** Arthritic pain disappeared soon after surgery. All except 2 patients regained the preoperative range of motion. All osteotomies healed. Five patients developed infection. Plate had to be removed in two patients. 90% patients were satisfied with the procedure. Poor results were seen in joints which were having associated ligament laxity, under correction, post-op loss of correction and infection **Discussion:** Osteotomy (MOWO) is technically a simple procedure and financially a significantly cheaper option and a viable option as compared to replacement surgery as viable alternative to total knee joint replacement surgery in selected cases of OA, particularly in Asian countries where squatting and cross legged knee activities are commonly required.

Abstract no.: 52365

MEDIUM-TERM RESULTS OF ARTHROSCOPIC ASSISTED MEDIAL PATELLOFEMORAL LIGAMENT RECONSTRUCTION

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Aim: To assess the results of arthroscopic assisted reconstruction of Medial Patellofemoral ligament (MPF) in Patellofemoral instability (PFI). **Material & Methods:** An ongoing prospective study since January 2015. 50 consecutive patients, with PFI diagnosed clinically and deficient MPFL confirmed on MR scan, had ligament reconstruction using hamstring tendon Autograft after failed more than 3 months of non operative treatment including VMO exercises or previous other surgical treatment. The patients were treated as day cases, Post-operative protocol included No brace, full weight-bearing, dressings reduction in 48 hours, free range of motion exercises and physiotherapy. Stitches removed in 2 weeks later by the practice nurse and no strenuous or sports activity for 3 months. Follow ups at 6 weeks and 3 months for clinical examination. Pre- and post-operative scores at 3 and 12 months were obtained using the Tegner-Lysholm Scoring scale (TLS) for function and grading of severity of symptoms. Most patients were discharged at 3 months with no significant complications and 12 months' review arranged for all. One patient had Patellofemoral replacement for severe arthritis of patella after one year. **Results:** As per TLS grading there were 44(88%) Excellent; 4(8%) Good and 1 (2%) Fair and 1(2%) poor. Although bearable anterior knee pain persisted in few patients due to PFJ arthritis of variable degree but they were still satisfied due to improvement in their knee functioning and activity level. **Conclusion:** Medium term results of MPFL reconstruction are very encouraging and it should be considered in selected cases of PFJ instability.

Abstract no.: 52367

FUNCTIONAL OUTCOME OF J-NAIL TECHNIQUE IN FRACTURE OF THE SURGICAL NECK OF THE HUMERUS

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Introduction: Displaced and unstable fractures of proximal humerus can lead to malunion, non-union or restricted motility of shoulder joint. Fixation by locking compression plating requires extensive soft tissue dissection and can lead to occasional devascularisation of small head fragment and implant extrusion. J-nail fixation being a closed method involves minimal invasion of soft tissues. Objective: To evaluate functional outcome in Two/ Three part fracture of surgical neck of humerus managed by J-Nail technique. Methods: This retrospective study was carried out over 10 years (2007-2016) on 60 patients of two/ three part humeral surgical neck fracture. Radiologic evaluation was done according to Neer's Classification. Mean age was 60 years (35 – 90 years). Closed reduction and internal fixation with J-nail locking technique was done in all patients. Patients were followed-up for a minimum of 2 years. Clinical assessment was done at 3 months, 6 months, 1 year and 2 years and was graded according to the Neer's shoulder scoring system. Results: Mean angle of active forward elevation was 145 degrees (80-180 degrees) and abduction was 142 degrees (80- 170 degrees) at 2-year follow-up. According to Neer's scoring, functional outcome was excellent in 36 patients (60%), satisfactory in 19 (31.6%), unsatisfactory in 4, and failure in 1. Conclusion: J-nail fixation being a closed method, provides 3-point fixation. As the entry point for nail is at deltoid insertion, shoulder and elbow function is not impeded. The procedure reduces length of stay, provides reliable and effective fixation, avoids surgical devascularisation of fragments and pin back-out.

Abstract no.: 52371

A SIMPLE PROPHYLACTIC TECHNIQUE TO PREVENT A DISASTROUS COMPLICATION OF KNEE INJURIES

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Introduction: Fractures around knee are caused by high energy mechanism and they may be associated with many complications. Review of literature revealed the incidence of compartment syndrome from one-fourth to one-third of complex intra-articular fractures around knee. Compartment syndrome could be caused by pressure within leg from bleeding and edema, or from outside pressure like cast, or from both. Acute compartment syndrome develops rapidly over hours or days. Materials and methods: Authors are presenting a study of 19 cases of intra-articular fractures around knee with impending compartment syndrome. The study was performed from April 2011 to December 2017. Percutaneous negative suction drain was put in knee joint under sedation and local anesthesia in emergency room under all aseptic conditions. Discussion: Negative suction, not only sucks the blood from joint but also from the compartment where blood is going to be collected. Ultimately the negative suction will reduce compartment pressure and will prevent damage to the surrounding muscles and nerves, which is the usual complication of compartment syndrome. It could be disastrous, if impending compartment syndrome is not treated properly in time. Conclusion: Percutaneous negative suction drainage technique is a safe, simple and effective technique to prevent disastrous complication of compartment syndrome after intra-articular knee injuries.

Abstract no.: 52372

**CARPAL TUNNEL RELEASE USING WIDE AWAKE SURGERY
TECHNIQUE**

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Introduction: Carpal Tunnel Syndrome has a high incidence among different age group with higher incidence in females. Diagnosis based mainly on history and clinical examination. Surgical release of carpal tunnel has been developed over years till it reached the great innovation "Wide Awake Surgery". Methods: Prospective evaluation of 65 patients who underwent carpal tunnel release using wide awake technique by injecting 8 CC of 2% lido- caine HCL + 1 CC of 0.25mg/1ml adrenaline to the affected hand. Results: None of the patients needed 2nd dose of local anaesthesia, sedation or shift into general anaesthesia. No patients needed postoperative hospital stay or took time to recover from anaesthesia. Anxiety was not experienced from any of the patients. Conclusion: Surgical release of carpal tunnel syndrome by wide awake technique showed excellent results with reduced time for surgery and minimal or no bleeding during surgery with no further need for using tourniquet and it's complications mainly compressive pain during surgery. It also can be used for more than one procedure in the same hand.

Abstract no.: 52373

FULLY AUTOMATIC 3D POSE ESTIMATION VIA CO-TRAINED CNN REGRESSION MODELS

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Introduction: in pre-operative surgical planning such as total knee arthroplasty surgery, constructing patient-specific three-dimensional geometric model of bone structures based on 2D bi-planar X-rays with sub millimetric precision is essential to manufacture patient-specific cutting block. The 3D model reconstruction crosscuts two stages: 3D-2D rigid registration (3D pose estimation) and shape deformation. The accuracy and robustness of intensity-based 3D-2D rigid registration methods suffer from 1) local optimum due to non-convex optimization and 2) need for pose initialization close to optimum. Objective: in this project, we aim to improve the accuracy and robustness of intensity-based 3D-2D rigid registration by automatically estimating seven 3D pose parameters including scaling, three rotations, and three translations using a multi-view convolutional neural network (CNN) regression framework. Multi-view CNN is trained to capture direct map from intensity residuals between source and reference images to transformation parameters. Methods: we designed co-trained CNN model for the 3D-2D rigid registration of a 3D generic model to bi-planar EOS X-rays. In preliminary experiments, we estimated two parameters, rotation and translation regarding axis "X." Results: we automatically generated 180 bi-planar digitally reconstructed radiographs of a 3D generic model of the left femur by different 3D transformations, 150 for training and 30 for testing. As regression accuracy, on the test dataset, percentage of acceptable predictions were %0.98 and %0.98 for rotation and translation respectively with error margin of 1 degree for rotation and 1 mm for translation. Conclusion: preliminary results allow estimating the rest of pose parameters via CNN with the required precision.

Abstract no.: 52374

TISSUE ENGINEERING IN ORTHOPAEDICS

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Tissue engineering using PRP, involves concentrating human body's own regenerating powers & infusing those at the desired areas. I have been using orthobiologics in different orthopaedic conditions such as osteoarthritis knees, AVN of femoral heads, partial tears of ligaments, non-union of fractures, wound healing, non-specific restrictive shoulder arthropathy & tendinopathies. Patient's 100 cc blood is taken in triple bag and double centrifuged to have about 15 ml of PRP and injected at the desired area. PRP dressing was used in diabetic foot ulcers. Release and activation of the growth factors from platelets occurs when it comes in contact with the collagen in the injured tissue area. In cases of non unions of fractures, autologus bone graft impregnated in PRP was used along with PRP. Over the last five years I have used this procedure in more than 1500 osteoarthritic knees of different grades, 25 cases of fracture non unions, 20 cases of nonspecific restrictive shoulder arthropathy, 5 cases of partial tears of ACL, 12 cases of partial tears of rotator cuff, 3 cases of AVN femoral head and 20 cases of diabetic foot ulcers and other chronic wounds. I achieved excellent to good clinical results in all the cases except in higher grades of osteoarthritis knees. Union was enhanced by 3-4 wks in fracture non unions when compared to use of bone graft alone. AVN patients fared well. In diabetic foot ulcers PRP dressing showed very fast and excellent healing after two such dressings at a weekly interval.

Abstract no.: 52376

OUTCOME OF LIMB RECONSTRUCTION SYSTEM IN TIBIAL INFECTED NONUNION AND OPEN TIBIALDIAPHYSIAL FRACTURE WITH BONE LOSS

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Introduction: Infected non-union of long bones poses a great functional and financial challenge to the patient. The treatment is usually prolonged and involves multiple surgeries, disability and social stigma. Limb reconstruction system is less bulky with better compliance, easy to apply and remove with advantage of allowing dynamisation. In this study, we assess outcome of Limb reconstruction system in tibial infected non-union and open tibial diaphysial fracture with bone loss. Aims And Objectives: To evaluate the efficacy and functional results of limb reconstruction system in achieving Union in open diaphysial tibial fractures with bone loss and infected non union fracture of tibia. Material And Methods: A prospective study centered at our centre, patients included were compound fractures of tibia with bone loss, infected non union tibia fractures with bone loss or requiring resection of bone leading to bone defect. Fifteen patients. All cases were treated by limb reconstruction system. On final followup all patients were evaluated using ASAMI scoring system into bone results and functional results. Results: Union occurred in all patients and time ranges from 4 – 11 months but maximum union was achieved in 7-9 months in 8 (53.33%). Excellent bone results were obtained in 73.33% cases. Excellent functional results were observed 46.67%. Conclusion: Limb reconstruction system is a safe and effective tool for treating compound fractures with bone loss, achieve union and infection control in a single stage.

Abstract no.: 52377

EXTENDED THROMBOPROPHYLAXIS IN NECK OF FEMUR FRACTURES

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Introduction: Patients with Neck of Femur (NOF) fractures are at higher risk of developing thromboembolism. National Institute for Health and Care Excellence (NICE) guidelines recommend that these patients should have an extended thrombo-prophylaxis (four weeks post-operative). Our aim was to assess compliance with NICE guidelines and identify patients who were given enoxaparin (Clexane) at a higher dose than recommended while diagnosed with Chronic Kidney Disease (CKD). Method: NOF fracture patients over a period of 2 months (September & October 2016) were included. NOF national database was accessed together with their discharge summaries and drug charts. The same was followed to look at patients over January 2017 after educating the clinical teams including junior doctors. Results: In the initial study, there were 86 NOF fracture patients. 4.6% of patients were discharged on extended thromboprophylaxis (n=4). 14% of patients were given 40mg of Enoxaparin (Clexane) while they had CKD (n=12). In the second study, there were a total 23 patients. 78% of patients were discharged on extended thromboprophylaxis (n=18). None of the patients had an inappropriate dose of enoxaparin while they had CKD (n=0). Conclusion: Extended thrombo-prophylaxis in fracture NOF patients is vital as they are more at risk when compared to elective patients. There was a significant increase in compliance to NICE guidelines after educating the clinical teams. It is vital to check the kidney status (estimated glomerular filtration rate) of patients prior to prescribing enoxaparin.

Abstract no.: 52384

IT'S NEVER TOO LATE TO START: ROLE OF A COMPREHENSIVE REHABILITATION PROGRAMME IN NEGLECTED TRAUMATIC SPINAL CORD INJURIES

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Introduction: Rehabilitation constitutes an important element of management of traumatic spinal cord injuries. However due to lack of resources and awareness this aspect is often neglected in developing countries. This results in poor functional outcome. Aim: This study investigates the role of comprehensive, multipronged rehabilitation program in improving the functional outcome in patients of chronic neglected traumatic spinal cord injuries. Methods: This study was a prospective case series undertaken at a tertiary level teaching hospital. 16 patients with traumatic spinal injuries (14 = paraplegia, 2 = quadriplegia) were prospectively enrolled after informed consent and due ethical clearance. 7 patients had incomplete and 9 had complete cord injury. Barthel index and spinal cord independence measure (SCIM) were performed for each patient before starting them on a multipronged rehabilitation program designed to specifically improve functional outcome and activities of daily living. At the completion of the rehabilitation program the scores were recalculated and compared with the initial scores using statistical tools. Results: The mean age of patients was 36.7 years (range :18- 60 years). The patients presented to us 3- 12 months (mean- 8.6 months) after injury. All patients showed improvements in functional outcome. Barthel index score improved significantly following rehabilitation ($p= 0.00047$). Similarly, the SCIM improved by a mean of 34 (95% CI= 22.84 - 45.16) which was again statistically significant ($p<0.0001$). Conclusions: A structured and comprehensive rehabilitation program improves the functional outcome in patients with traumatic spinal cord injuries even if its started after a delay.

Abstract no.: 52386

A CATASTROPHIC INFECTION AFTER TOTAL KNEE REPLACEMENT: A CASE REPORT

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A 74-year-old male patient was admitted to our clinic with a complaint of extensive tissue defect. About 2 months ago in the hospital, total knee arthroplasty was performed in another center. There was a huge skin defect on the knee and the prosthesis could be seen. The patient's knee prosthesis was removed and the antibiotic-ready spacer was placed and vacuum wound closure was applied. Following the wound of the patient continued to grow. The patient's space was removed and debridement was performed again. The wound was then closed by the plastic surgery department by sliding the flap and the leg was stabilized with the external fixator. Appropriate antibiotic treatment was given according to the result of tissue culture obtained from the patient. After successful treatment of the tissue defect and infection knee arthrodesis was performed on the patient using arthrodesis nail. There is no problem during 2 years follow up.

Abstract no.: 52392

PREDICTING AND PREVENTING POST-TUBERCULAR CERVICAL KYPHOSIS IN PAEDIATRIC AND ADOLESCENT PATIENTS

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INTRODUCTION: There is not enough evidence in literature to predict and prevent Post Tubercular Cervical Kyphosis in Pediatric and Adolescent patients with or without neurological deficit. If so, then there is no definite criteria to define and differentiate this group of children. In our study, we try to establish a criteria that tries to differentiate these children and the need for a kyphotic deformity prevention surgery in them. **MATERIALS AND METHODS :** 34 paediatric and adolescent patients with tuberculous spondylodiscitis of the cervical spine underwent anterior cervical decompression, stabilisation and fusion. All the patients were given 6wks of AKT before the surgery and were either neurologically intact, had functional neurological deficit (Motor Power > grade 3) or improved to Grade 3 Power on AKT. We divided patients based on MRI and X-ray Findings into 3 groups. **RESULTS:** Our observations from the study state that paradiscal lesions heal without significant deformity, single vertebrae with a contiguous paradiscal involvement heals without significant deformity, vertebral body involvement with intact posterior elements heals with insignificant kyphosis, involvement of all 3 columns heals with significant kyphosis, involvement of 2 level heals with significant kyphosis and involvement of > 2 levels leads to an inherently unstable spine. **CONCLUSION :** Trying to establish a criteria that predicts the potential for development of a significant kyphosis, will help us achieve a better functional outcome.

Abstract no.: 52393

PREVENTION AND TREATMENT OF PYOGENIC COMPLICATION AT HIP ARTHROPLASTY

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Hip arthroplasty from year to year widely uses in orthopedic clinics. Operations of hip arthroplasty connected with increased risk of pyogenic complication development. Pyogenic septic complications at hip arthroplasty are the most important factors, influencing to operation outcomes. Purpose: Improvement hip replacement results by developing prevention measures of pyogenic complications development, workout diagnostic criteria and active surgical tactics for implant preservation at infection process. In our observation was 148 patients: 96 females, 52 males. Most of them was aged from 25 to 55 years (capable age). During operation patients was to divide on 2 groups: first group – with antibiotics insertions for four times: before operation, 2 times during operation and at the end of surgery – 78 patients; second group without antibiotics insertion during and at the end of operation. Examined antibiotic concentration in blood in 80 patients at different operation stages. Studied treatment results of both groups. In patients of first group with antibiotics insertion, a good result received in 60 (78%) patients, tolerable – in 16 (20%) and unsatisfactory – in 2 (2%). In second group a good result received in 41(58%) patients, tolerable – in 24(34%) and unsatisfactory – in 5 (8%). Thus, treatment results and prophylactics of pyogenic complications in hip arthroplasty depends from antibiotics insertion for 4 times: before, 2 times during operations and at the end of surgery. Conclusions: antibiotics insertion at hip arthroplasty for prevention of pyogenic complications, receive a good results in 78%.

Abstract no.: 52395

**STRESS FRACTURE OF THE TIBIA AFTER ANKLE ARTHRODESIS
NAILING**

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Here we present an interesting case of stress fracture of the tibia after Ankle arthrodesis nailing. 70 years old women had been operated for the ankle arthrodesis by arthrodesis nail. She was operated in another centre for the ankle fracture but healing did not occur. After she walk her ankle was deformed and ankle arthrodesis has been decided and applied. After 6 months stress fracture has been seen on the proximal end of the tibia. Conservative treatment was enough. We would like to report a long term complication of the arthrodesis nail of the ankle by this case.

Abstract no.: 52396

SPONTANEOUS SPINAL EPIDURAL HAEMATOMA DUE TO CLOPIDOGREL: A CASE STUDY AND REVIEW OF THE LITERATURE

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INTRODUCTION: SSEH associated with anti-platelet drugs is rarely seen and there are less than 10 cases of clopidogrel induced SSEH being reported in the literature. We hereby report a case of clopidogrel induced SSEH and discuss what literature has to say on anticoagulant induced SSEH. **CASE PRESENTATION:** We report a case of SSEH in a 76 year-old hypertensive female who was on Clopidogrel post angioplasty done 1 year back and presented with sudden onset paraplegia preceded by severe back pain. MRI was done which revealed a space occupying lesion at D9 - D10 level, suggestive of an epidural haematoma. Emergent Decompressive Laminectomy was done within 8 hours of the presentation with excellent clinical outcome. **RESULTS / DISCUSSION:** Patient underwent emergency Decompressive Laminectomy from D9 to D11 level and evacuation of an extradural space occupying lesion, which was later histologically proven to be a hematoma. After surgery there was a significant sensory recovery, 1 week after surgery her weakness improved with muscle power of hip and knee flexors was 3/5 and 1 month postoperatively, she could walk without any assistance. **CONCLUSION:** SSEH is a rare neurosurgical emergency and with the growing trend of anti-platelet prescriptions for prophylactic use, clinicians should be aware of this serious complication especially when other risk factors like uncontrolled hypertension are present. Correct diagnosis and urgent decompressive surgery with evacuation of the hematoma is imperative for successful recovery if severe neurological deterioration is present.

Abstract no.: 52397

REICHEL SYNDROME MASQUERADING AS FACETAL ARTHROSIS: A RARE CAUSE OF RECALCITRANT LUMBAR RADICULOPATHY

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Introduction: Synovial osteochondromatosis, also known as Reichel syndrome, is a benign chondro-proliferative, arthropathy of major weight-bearing joints such as knee, hip and elbow. Synovial chondromatosis of the apophyseal joints is a rarely reported entity. Frequently affecting the cervical spine there are only four cases of lumbar synovial chondromatosis being reported in literature. **Methods:** We present a 56-year-old female patient who presented with severe low back pain and right L4 radiculopathy, who was treated with decompression and excision of a suspected facet cyst at L3-L4 level. Five months later, the patient presented again with unrelenting back pain, right L4 radiculopathy and sensory blunting over the right L3,L4 dermatomes, with intact motor function. Repeat MRI revealed a T1/T2 hyper intense cystic lesion indenting the thecal sac visualized in right posterolateral epidural space at L3-L4 level. The patient was surgically treated with excision of the facet lesion and instrumented posterolateral fusion. Histopathology of the lesion confirmed synovial chondromatosis. **Results:** The patient had complete resolution of symptoms with maintained neurology and good radiological and functional outcomes (Oswestry Disability Index and SF-12 scores). There was no recurrence of the lesion, at 28-months follow-up. **Conclusions:** Though rare, synovial chondromatosis should be considered as one of the diagnosis of facet lesions of the spine. Known for its recurrence these lesions require detailed radiological evaluation to determine the extent of lesion and complete clearance at the time of surgery. Radical excision of the involved facet with stabilization and fusion is ideal to avoid recurrence.

Abstract no.: 52399

AUTOMATIC DETECTION OF ANATOMICAL LANDMARKS FOR THE QUANTIFICATION OF SPINE BALANCES AND SPINOPELVIC PARAMETERS FROM BIPLANAR X-RAYS

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In orthopedics, the quantification of clinical parameters from radiographs, such as the pelvic incidence or distances from sagittal vertical axis (SVA), requires that the surgeon picks some anatomical landmarks in PA and LAT images. This identification process is time consuming and requires image interpretation to count the vertebrae and to find the structures in images. Moreover, this task depends of the image quality and is prone to inter-user variability. A new method was developed to detect automatically the landmarks locations in both radiographs allowing a fast-automatic quantification. The detection method integrated statistical priors from a database of 470 patients to model the geometrical relationships between the pelvis and the vertebra (C7 to S1), as well as their appearances in x-rays using deep learning for objects recognition. For the validation, a set of 72 patients (mean age 15.7y) was used to calculate the differences between the clinical parameters automatically calculated and the measurements from one expert. For angular values, the absolute mean errors (°) were 2.5, 0.8, 1.2 and 0.7 respectively for the lordosis L1/S1, the sacral slope, the pelvic incidence and tilt. For distance values (mm), the absolute mean errors were 1, 1.3, 0.8 and 0.8 respectively for the pelvis obliquity, the frontal and sagittal balances and the C7-SVA distance. The fast detection method (mean computational time of 11 seconds) provides an accurate set of parameters by automatically identifying the key landmarks in X-rays images and allows automatic quantification of spine balances and spinopelvic parameters from radiographs.

Abstract no.: 52403

MASQUELET TECHNIQUE IN COMPOUND SHAFT TIBIA WITH BONE LOSS

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A 25 year male sustained injury in leg and head injury following RTA on 2/9/10 . After initial stabilisation and treatment of head injury , at 3 weeks after injury Vanco Nailing of tibia with Antibiotic Spacer was done. Gastrocnemius Flap cover was also done. Cement Spacer and Nail was removed. Periostium like membrane was formed around spacer. Fixation was done with LCP and autologous bone grafting also done. In 4 months fracture united. Conclusion: The technique of delayed bone grafting after initial placement of a cement spacer provides a reasonable alternative for the challenging problem of significant bone loss in extremity reconstruction. This technique can be used in either an acute or delayed fashion with equally promising results. The bioactivity of the membrane created by filling large bony defects with cement leads to a favourable environment for bone formation and osseous consolidation of a large void. As this technique becomes more widely applied, the answer to which graft substances to place in the void may become clearer.

Abstract no.: 52404

PERIPROSTHETIC FEMORAL NONUNIONS: RELIABLE HEALING AFTER DEBRIDEMENT, REVISION OF FIXATION AND BONE GRAFTING

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Periprosthetic femoral nonunions (PPFN) have a reported incidence of 3-9%. Literature on PPFN management is scarce. We reviewed the combined results of two academic teaching hospitals using comparable PPFN treatment strategies. Additionally, available literature on PPFN treatment was reviewed. A retrospective review was conducted of patients treated for a PPFN between February 2005 and December 2016 by the authors. All patients treated with internal fixation for a PPFN with complete clinical and radiological follow-up until healing were included. Nineteen patients were identified (mean age 71.2 years, range 49-87). Treatment consisted of failed hardware removal, debridement, reduction, and rigid internal fixation with or without bone graft. For revision PPFN surgery, use of dual-plating and bone graft augmentation was common. Embase, Medline, Cochrane and PubMed were searched with a search algorithm to identify all available literature on treatment of PPFN. Eighteen of 19 patients (94.7%) progressed to osseous union. One patient was converted to a total femoral prosthesis. No patients were lost to follow-up. All were ambulatory at last follow-up (mean follow-up 39.8 months). Fourteen patients (73.7%) united after our index nonunion surgery at mean 9.8 months. Five patients (26.3%) required revision surgery after our index nonunion treatment and in 4 of these cases union was achieved at mean 18.0 months. Our results suggest debridement, revision of fixation and liberal use of bone grafting leads to reliable healing in the majority of PPFNs. For those PPFNs that do not heal following initial treatment, good healing potential persists with an additional procedure.

Abstract no.: 52405

CREATING A BLUEPRINT FOR 'INTELLIGENT' ROBOTS IN KNEE ARTHROPLASTY

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Artificial Intelligence and Robotics are likely to herald "fourth Industrial revolution" impacting every sphere of human lives. Use of Robots in medicine especially in the GI, Urology, Gynecology and Oncologic surgery are well established, however robotic in orthopaedic had a slow start and even today they are considered at best a functional arm that at best act as a precision tool. They are surgeon driven and function as per directive using almost zero intelligence of its own. Technical success of Knee Replacement surgery in most cases is determined by just one parameter - the restoration of mechanical axis. This uniplanar acceptance of success reflects the limitation of human understanding and capability. With current developments, the computer can rapidly process multitude of data point and deliver patient specific outcomes that reflects the multi dimensional multiplayer function of the knee joint. In our study we identified 10 crucial data set that are vital to establish the first layer of the artificial neural network for artificial intelligent robots. These 10 data sets helped predict mechanical axis, component rotation, medial lateral collateral ligament tensioning, patellar tracking, joint line restoration, patellar tendon - quad counter balancing and contact stresses at patellofemoral and Medial and lateral articulating surfaces. An accurate model was thus established for an ideal knee replacement that can be used by intelligent robot to deliver the expected outcome.

Abstract no.: 52407

EFFICACY OF ESTABLISHED SAFE PERI-OPERATIVE PRACTICES IN ORTHOPAEDIC SURGERY: A META-ANALYSIS OF CONTEMPORARY LITERATURE

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Aims & Objectives: The Objectives of this study were to analyze the Perioperative practices Routinely Followed during Orthopaedic Surgery, by a Meta Analysis and Suggest Safe and Recommended Practices. We analyzed the 5 routine Perioperative Practices routinely followed in Orthopaedic Surgery by doing a meta analysis of available literature. 1) Establishing Correct Surgical Side of the Patient 2) Preparing for Anticipated Hemodynamic instability 3) Methods to minimize Post Surgical Infections 4) Practices to Prevent retention of Instruments and other Surgical Materials inside Wounds 5) Established Practices for Interpersonal Communication between Surgical Teams Results: The Recommendation of Side Identification, Site Marking and 'Time Out' were found to have Statistically Reduce the incidence of Wrong Side and Wrong Level Surgeries. For Anticipated Blood loss of more than 500 ml in Adults or 7ml/Kg in Children, 2 large Bore Accesses to the Venous system is Mandatory. The use of one Unit of Fresh Frozen Plasma to 1or 2 units of packed cells reduces the incidence of Coagulopathies. The Use of Perioperative Antimicrobial Sterilisation solutions as per their efficacy to reduce microbial count rapidly and consistently through out the surgery, Redosing of Antibiotics 4 hrs after the incision, establishing effective and safe sterilisation practices and encouraging clipping of hair 2 hrs prior to surgery rather than shaving may reduce the incidence of Peri-operative infections. A Full recorded Sponge and instrument count, methodical exploration of wounds and the use of Automated Validated systems of Barcoding and radio labeling of Sponges is recommended .

Abstract no.: 52409

BILATERAL TRANS-SCAPHOID PERILUNATE DISLOCATION WITH GALEAZZI FRACTURE

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In the literature there are not many reports of wrist dislocation associated with Galeazzi fracture. The mechanism of the injury occur after high energy trauma with outstretched hand and hyperextension of the wrist. We report the case of 27 year-old man that complains pain in both wrist and left forearm after fall of the roof. Distal neurovascular was intact. Initial radiographs (anteroposterior and lateral) showed bilateral perilunate dislocation with scaphoid fractures and galeazzi fracture in left forearm. Urgent closed reduction and immobilization was performed. The radial fractures was treated with open reduction and internal fixation with plate and the bilateral scaphoid fractures was fixed with Herbert screws. Early reduction of perilunate dislocation helps in the surgical treatment and a better functional outcomes.

Abstract no.: 52415

MULTIPLE SPINAL PATHOLOGY: WHICH ONE IS THE SYMPTOM GENERATOR (PROBLEM-BASED LEARNING)?

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More than one pathology may appear after investigating symptomatic patients, sometimes the clinical picture is not straight forward, so for the junior spine surgeon, probably it is not easy to specify the symptom generator. I shall present several examples, like patient with disc prolapse and tumour in the same level. Spinal stenosis and dorsal meningioma degenerative cervical and lumbar in the same patients, lymphoma and disc prolapse L5-S1, exostosis in L3 and big central disc in L4, cervical and lumbar tuberculosis and many other examples. These are a lessons to learned, the first lesson is whole spine screening and the second is through physical examination and the third lesson is to hit the target so that patient suffering will be abolished.

Abstract no.: 52418

RECURRENCE OF GIANT CELL TUMOUR IN FIBULAR GRAFT USED FOR TREATMENT IN PRIMARY GIANT CELL TUMOUR OF DISTAL END RADIUS: A CASE REPORT AND SURGICAL TREATMENT WITH EXCISION OF TUMOUR WITH PROXIMAL ROW CARPECTOMY WITH ULNOCARPAL FUSION

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Introduction: Distal End Radius GCT have relatively aggressive nature and higher recurrence rate and malignant transformation than their other counterparts [4,5]. There is no case reported till now of GCT recurrence in grafted fibula used for reconstruction in managing primary distal end radius GCT. The purpose of the study is to report recurrence of Giant Cell Tumor in Fibular graft used for treatment in primary giant cell tumor of Distal End Radius (DER). Case Report: A 40 yr female was diagnosed Campanacci type 3 GCT DER 7 year back. Patient was operated and treated by excision and reconstruction with contralateral fibular grafting with K-wire fixation of distal end radius 7 year back and biopsy of growth was sent. After 7 years patient again developed swelling over right wrist and radiological diagnosis of giant cell tumor Campanacci grade 3 is made. She is managed by resection of tumor tissue by volar approach to distal end radius with proximal row carpectomy with ulnocarpal fusion with retrograde K-wire fixation of 3rd metacarpal resulting in centralisation of ulna. Discussion: Recurrence in GCT also occurs at donor fibula used in reconstruction for primary treatment and could be safely managed by wide excision and centralization of ulna with good results.

Abstract no.: 52419

RALSTONIA PICKETTII ASSOCIATED WITH PROSTHETIC JOINT INFECTIONS: IS IT A NEW CHALLENGE?

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Introduction: *Ralstonia pickettii*, a Gram-negative bacilli, an opportunistic pathogen. PJIs caused by *R. pickettii* are rarely reported in literature. Methods: We report our experience with 4 cases diagnosed after sonication of the retrieved implant. Results: 1st case: 83-years-old Caucasian male patient, that underwent a right cemented THA for osteoarthritis in 2014. Early PJI with no isolated microorganism – DAIR. Beginning of 2016 - two-stage exchange with long interval - July 2016 a shift a three-stage exchange. February 2017, a reimplantation of a revision prosthesis is performed. The retrieved spacer is sonicated, and after 4 days of incubation of the SF, *R. pickettii* is isolated. 2nd case: 66-years-old Caucasian female patient, with bilateral THA, 6 years after the right THA a revision of the acetabular component is performed. Retrieved components are sonicated. After 2 days of incubation, *R. pickettii* is isolated. 3rd case: 64-years-old Caucasian male patient, with bilateral TKA, 10 years after the right TKA, a revision surgery is performed. After 8 days, *R. pickettii* is isolated. 4th case: 50-years-old Caucasian male patient, with left THA, after 7 years a revision of the acetabular component is performed. After 11 days, *R. pickettii* is isolated. The antibiotic therapy prescribed in all cases was p.o. cotrimoxazole 3x2tb/day, initiated during hospitalization, and administered for a total duration of 12 weeks. All cases with remission of the infection at a mean follow-up period of 12 months. Conclusions: Bacteria culture of SF remains the gold standard. *Ralstonia pickettii* remains an extremely rare cause of PJI.

Abstract no.: 52425

RESULTS OF SURGICAL TREATMENT FOR DEGENERATIVE CERVICAL MYELOPATHY BY ANTERIOR CERVICAL CORPECTOMY AND STABILISATION

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Objectives: This study was conducted to determine the indications, efficacy, and complication rate associated with performing corpectomy to achieve anterior decompression of neural elements or for removing anterior lesions. **Methods:** Twenty-six patients with degenerative cervical myelopathy who had surgical treatment and average 30 months (range, 24–52 months) follow up were included. The mean age was 64.9 years (range: 55–74 years) and average period between myelopathic symptoms and surgery was 2.8 years (range: 6 months–5 years). Preoperative evaluation of every patient consisted of anterior–posterior, lateral, bilateral oblique, flexion and extension radiographs, computed tomography reconstructions and magnetic resonance imaging of the cervical spine. **Results:** Mean sagittal Cobb angle (C2–C7) was 9° (range, 0–23°) before surgery, 17.1° (range, 11–22°) on the third postoperative month, and 16.9° (range, 10–22°) at last follow-up. The difference in sagittal alignment on the third month and last follow up was not statistically significant. Average preoperative Nurick score was 3.5 (range, 2–5) and JOA score was 7 (range, 1–14). Major and statistically significant neurologic recovery was within the first 3 months, and average Nurick and JOA scores at 3 months were 2 (range, 0–3) and 8 (range, 8–17) respectively. **Conclusions:** Anterior decompression provides good neurologic recovery in patients with degenerative cervical myelopathy. Tricortical bone graft from iliac crest or titanium cage impregnated with cancellous bone provides good structural support, and solid fusion can be achieved with and anterior cervical plate.

Abstract no.: 52426

PATIENT SATISFACTION IN SPINAL PRACTICE

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Satisfaction can be described as a patient's reaction to several service experiences. Patients thereby evaluate the health-care services as well as the providers from their own subjective point of view. Probably spinal practice is one of the complicated anatomical structures and the fine technique required to achieve satisfactory outcome. Hence the importance of perfect treatment is not always leading to satisfaction; sometimes satisfaction was broken because of minor issue. The art of communication and handling probably of vital importance. Handling flow chart, start from the first visit discharge back home and proper follow up. US hospitals waste more than 12 billion dollar annually from communication in efficiencies among care providers. It is vital to probe patient's brain and to stabilize the personality before using the knife, specifying the symptom generator and hitting the target if more than pathology was detecting is another vital points, proper handling and kindness in seriously ill patient is mandatory. Pinpoint diagnosis and specific technique will help in achieving cure. So achieving cure is probably easier than achieving satisfaction, which is the real target.

Abstract no.: 52427

THE ASSOCIATION OF PEGYLATED INTERFERON ALFA-2A AND RIBAVIRIN THERAPY WITH SPONDYLODISCITIS: IS IT RANDOM?

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The treatment with pegylated interferon and ribavirin of chronic hepatitis C infection is well evaluated in terms of benefits versus side effects. A possible association of spondylodiscitis in patients treated with this combination, was not mentioned in the literature. We present two cases of spondylodiscitis, one of them being a tuberculous spondylodiscitis, both occurring after treatment was ended, in patients with sustained virologic response. We evaluated 14 cases of patients with spondylodiscitis, in terms of etiology, comorbidities, and previous treatments. Two of the cases with spondylodiscitis were at patients previously treated with pegylated interferon alfa-2a and ribavirin therapy for chronic hepatitis C infection, patients with undetectable viremia. One case of thoracic spondylodiscitis, a T7/T8 level, with the presence of a paravertebral abscess, caused by *Mycobacterium tuberculosis*, associated with pleuropulmonary tuberculosis. The second case is of a lumbar spondylodiscitis, with an unknown etiology. The staphylococcal etiology of spondylodiscitis represents only half of it. The most common level is the lumbar one. The occurrence of cases at patients treated with pegylated interferon alfa-2a and ribavirin therapy for chronic hepatitis C infection, requires a close long-term monitoring of the patients.

Abstract no.: 52429

RESULTS OF POSTERIOR SURGERY IN THORACOLUMBAR SPINE INJURY

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Objective: To see the surgical outcome of Thoraco-lumbar spine injury with neurological deficit by posterior approach. Materials and Method: It is a prospective study. Study period is April-2012 to December-2017. The study is done in NITOR and Private Hospital in Dhaka. Total patients are 166 in number, among them 141 are male and 25 are female. 2 patients has fracture D6, 10 patients has Fracture D10, 15 patients has D11, 30 patients D12, 75 patients L1, 20 patients L2, 10 patients L3, and 4 patients has fracture L4. 136 patients have ISCI among them 10 patients has ASIA-E, 25 patients had ASIA-D, 73 patients were ASIA-C, 28 patients had ASIA-B and 30 patients were ASIA-A (complete spinal cord injury). Results: After surgery Neurological Improvement occurred in ISCI patients, ASIA-B and ASIA-C become ASIA-D or ASIA-E. No improvement in complete spinal cord injury patients. All most all patients were pain free after operation and mobilized immediately after surgery. 15 patients are lost from follow-up. Complication: Dural tear occurred in 2 cases during decompression, managed by repaired. Implant failure that is screw breakage occurred in 4 patients. Revision surgery was done in 2 cases. Bed sore developed in 2 cases in complete spinal cord injury. Conclusion: Posterior surgery in thoraco-lumbar spine injury is easier approach. Better correction of spinal deformity and wide decompression that is 360° decompression of spinal cord is possible by this approach. Three column stability can achieved by transpedicular screws and postero-lateral fusion by bone graft.

Abstract no.: 52431

ROLE OF ILIZAROV TECHNIQUE IN COMPLEX AND POST-TRAUMATIC DISORDERS IN THE INFERIOR EXTREMITY: RECONSTRUCTION VERSUS AMPUTATION

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Introduction: Complex open fractures or post-traumatic conditions (aseptic and infected nonunion) of the inferior extremity is a big challenge for the orthopaedic and reconstructive surgeon who often need to choose if a reconstruction procedure is possible rather than an amputation. The Ilizarov method of bone resection and lengthening helps to stabilize fracture and to rebuild bone, muscle and skin defect. The surgical procedure starts with a surgical toileting of damaged soft tissue and necrotic bone followed by bone resection and lengthening by Ilizarov technique. **Patients and Method:** From 1995 to 2017 we have treated 186 patients with leg open fractures or post-traumatic conditions with huge bone, muscle and skin loss. 122 were males and 64 were females, mean age was 52 years. **Results:** At minimum follow up of 3 years, functional results have been excellent in 170 cases, sufficient in 16 cases. Minimum healing time has been 8 months. We had 8 cases of deep infections in the resection site or in the proximal osteotomy site; no cases of nonunion or residual axis deformity were observed. In 12 cases we observed ankle stiffness. Bone defect restored by gradual lengthening, we observed a progressive recovery of skin and soft tissue defects. **Discussion and Conclusion:** Ilizarov Technique of Bone resection and lengthening is a treatment option to save a limb from amputation in complex inferior limb fractures or post-traumatic conditions. A good evaluation of patients psychology needs to be assessed to propose this long term treatment.

Abstract no.: 52433

PERIPROSTHETIC FEMORAL NONUNIONS: RELIABLE HEALING AFTER DEBRIDEMENT, REVISION OF FIXATION AND BONE GRAFTING

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Periprosthetic femoral nonunions (PPFN) have a reported incidence of 3-9%. Literature on PPFN management is scarce. We reviewed the combined results of two academic teaching hospitals using comparable PPFN treatment strategies. Additionally, available literature on PPFN treatment was reviewed. A retrospective review was conducted of patients treated for a PPFN between February 2005 and December 2016 by the authors. All patients treated with internal fixation for a PPFN with complete clinical and radiological follow-up until healing were included. Nineteen patients were identified (mean age 71.2 years, range 49-87). Treatment consisted of failed hardware removal, debridement, reduction, and rigid internal fixation with or without bone graft. For revision PPFN surgery, use of dual-plating and bone graft augmentation was common. Embase, Medline, Cochrane and PubMed were searched with a search algorithm to identify all available literature on treatment of PPFN. Eighteen of 19 patients (94.7%) progressed to osseous union. One patient was converted to a total femoral prosthesis. No patients were lost to follow-up. All were ambulatory at last follow-up (mean follow-up 39.8 months). Fourteen patients (73.7%) united after our index nonunion surgery at mean 9.8 months. Five patients (26.3%) required revision surgery after our index nonunion treatment and in 4 of these cases union was achieved at mean 18.0 months. Our results suggest debridement, revision of fixation and liberal use of bone grafting leads to reliable healing in the majority of PPFNs. For those PPFNs that do not heal following initial treatment, good healing potential persists with an additional procedure.

Abstract no.: 52438

FEMORAL FRACTURE COMPLICATED AFTER INTRAMEDULLARY NAILING WITH LATE FAT EMBOLISM SYNDROME: A CASE REPORT

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Introduction: Symptom of fat embolism is manifested by simultaneous damage to several organs and is a complication of traumas associated with fractures or surgical interventions in orthopedic surgery. It most commonly occurs after femoral fractures and evolves with pulmonary dysfunction, hypoxia, mental status changes, petechial eruption, fever, tachycardia, anemia and thrombocytopenia. **Case report:** The case presented is of a 20-year-old male patient diagnosed with fracture in the right femur following a trauma with a direct impact on the thigh. The biological samples collected at the time of presentation were close to normal for the complete blood count (Hgb 14.8 g/dl, PLT-245*103/μl, WBC 12.5*103/μl), while biochemical determinations showed moderately high levels of muscle enzymes, explained by significant muscle contusion. Pulmonary and pelvic radiographs showed no pathological changes. The medical team opted for surgical intervention within 12 hours after trauma, achieving centromedular osteosynthesis with the interlocking anterograde nail. The patient's clinical appearance changed abruptly on the fifth post-traumatic day when he showed a fever rise (38 ° C), then mental status deterioration and confusion, accusing bilateral chest pain followed by respiratory dysfunction, requiring oxygen administration. The patient was diagnosed with fatty embolism syndrome. **Discussions:** The particularity of the case is the late post-traumatic installation of this potentially fatal complication which fortunately was diagnosed when the patient was still hospitalized and made possible the rapid introduction of specific therapeutic measures that ensured patient survival and complete remission of symptoms, without sequelae.

Abstract no.: 52442

OUTCOME OF PERCUTANEOUS VERTEBROPLASTY FOR OSTEOPOROTIC COMPRESSION FRACTURE AT DORSOLUMBAR SPINE

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Background: Introduction of Polymethylmethacrylate (PMMA) cement in to the vertebral body can increase mobility, correction of vertebral height, decrease narcotics needs and prevent further vertebral collapse. Once osteoporotic fracture has occurred, there is a fivefold rise of a second fracture; once two fractures has occurred, risks increases up to twelve folds. Materials and method: This study was done in different private clinics in Dhaka, from Jan 2010 to June 2017. Total number of patients was 65. Among them 59 were osteoporotic, 4 were Multiple myeloma, 2 were Haemangioma and one was Non-Hodgkin's lymphoma vertebra compression I fracture. Among them 62 were female and 3 were male, age ranges from 55 to 85 years, mean age 67 years. Maximum follow up was 5.5 years to 3 months. Clinical outcome was assessed by VAS and ODI regarding pain and disability. Results: All the patients of Osteoporotic and Haemangioma got substantial relief of acute low back pain, back related disability immediately and improvement of ADL in 3rd day after the procedure , five patients, who were bed ridden, able to perform all activities. But Multiple Myeloma and Nonhodgkin lymphoma's patient has got some relief of pain, There is one incidence of cement leakage to epidural vein and perforation one pedicle per operatively. Conclusion: Minimally invasive percutaneous method has been proven to be the most effective modality in treatment for the spinal compression fracture providing successful pain relief in patients.

Abstract no.: 52446

**OUTCOME OF TRANSFORAMINAL LUMBAR INTERBODY FUSION IN
LYTIC AND DEGENERATIVE SPONDYLOLISTHESIS**

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Introduction: Transforaminal approach for lumbar interbody fusion is an alternative to the traditional posterior approach and gaining popularity worldwide. About 90% of patients who have TLIF operation are satisfied with their surgery and recovery. TLIF surgery has advantages of increased fusion rate and decreased morbidity and mortality in comparison with ALIF & FLIF . Purpose: To evaluate the clinical outcome of this surgical procedure. Materials and Methods: This prospective interventional study was performed from July 2006 to June 2017 included 107 patients (male 35, female 72), within an age range of 20-60 years. Seventy six cases were lytic and 31 cases were degenerative and 81 patients had preoperative neurological involvement. Follow up ranged from 1 year to 10 years and clinical outcome assessed by VAS and ODI regarding pain and disability and overall functional outcome assessed by modified Macnab criteria. Achievement of fusion and complications were documented accordingly. Results: Predominantly female patients [n=72, 67.29%] were affected. All patients improved neurologically and achieved fusion. Pain and disability improved significantly and 81 (75.70%) patients returned to their previous level of activity. Preoperative mean VAS score 7.33 and ODI score 69.33, after 1 year it became 2.01 and 11.23 respectively and Overall functional outcome is satisfactory in 97.06% cases. Three (2.80%) patient developed superficial wound infection which was managed conservatively, hard wire failure in two cases managed by re operation and one patient develop post operative pneumonia which was managed with ICU support. Conclusion: Transforaminal Lumbar Interbody Fusion is an effective surgical procedure for the treatment of spondylolisthesis.

Abstract no.: 52448

A PAINFUL SWOLLEN KNEE COULD BE THE FIRST PRESENTATION OF METASTATIC BONE CANCER

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70 years old male retired patient presented to the ER department of Al Hada Armed Forces in the evening of a weekend with painful swollen Knee with inability to mobilise. The initial lab results showed raised inflammatory markers and accordingly referred to the orthopaedic department as a case of septic arthritis. The patient attended his local hospital 2 to 3 weeks prior to this and an X-ray of his knee was passed as normal. An X-ray of his knee on Admission showed large osteolytic lesion involving the whole patella.

Abstract no.: 52450

RESULTS OF MODIFIED (ANTEROLATERAL TROCHANTERIC SPLIT) ETO APPROACH IN REVISION OF ASEPTIC FAILED CEMENTED TOTAL HIPS

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Introduction: In aseptically failed cemented total hips, component and cement extraction further damages the weakened thinned out cortices, and jeopardise fixation of revision implants. Extended trochanteric osteotomy (ETO) simplifies exposure, extraction and implantation. We report results of the modified (anterolateral trochanteric split) ETO approach in our consecutive case series of revisions. **Methods:** Over a 8-year period (Oct 2008 to Sep 2016), we revised 54 consecutive patients with aseptic failed cemented total hips using modified (anterolateral trochanteric split) ETO approach. All patients underwent cementless distal-fixation femoral stem revision with cerclage wiring. All were permitted immediate mobilization and tolerated weight bearing ambulation for the first 6 weeks, progressing to full weight bearing over next 6 weeks. Results were obtained by analysing clinicoradiological data collected at 3 monthly intervals upto 12 months, and yearly thereafter. Intra-operative issues, post-operative complications and clinical and functional scores were specifically charted. **Results:** At average 12 months post-op, 45 patients had good hip function. 2 continued to complain of limp and pain (failures). We had two cases of distal fracture propagation (needing additional cerclage wiring and delayed rehabilitation). One stem secondarily subsided, loosened and the hip dislocated recurrently (possibly inadequate initial distal purchase), and was eventually revised. **Discussion:** The modified (anterolateral split trochanteric) ETO approach improves exposure, cement mantle and femoral implant extraction, with minimal soft tissue disruption, and permits easy insertion of distal-fixation cementless femoral stems. Good functional results can be seen, and we would recommend this modified approach for hip revision.

Abstract no.: 52451

ASSESSMENT OF COMPLICATIONS OF FRACTURE OF THE ACETABULUM

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Purpose: To evaluate the complications of acetabulum fractures and the effect of various factors on the outcomes at a tertiary institute with a high fraction of complex injuries. **Material:** 120 patients with acetabular fractures were enrolled. 81% of these were males, with average age of 39.95 ± 15.87 with road traffic accidents being the predominant mode of injury. Posterior wall fractures were the most common followed by transverse fractures. Associated limb (n=52) and pelvic injuries (n=21) were common. 70 of these were operated on basis of hip instability or hip incongruence. Average time duration from injury to surgery was 8.32 days. **Results:** The complications were assessed in the immediate and short term period. Mortality was reported in 5 patients, 4 patients had DVT/PE and sciatic nerve injuries were seen in 12 patients of which 4 were iatrogenic. 8 patients had infection of which 4 required multiple debridements. 4 cases developed heterotopic ossification while 2 cases had a loss of reduction. Quality of reduction was assessed as per Mata's criteria as anatomical (n=29), congruent (n=31) and incongruent (n=10). We observed that timing of surgery and associated fractures had an effect on the quality of reduction ($p < 0.05$) while age, gender, mode of injury or individual fracture pattern had no such effect. **Conclusion:** Proper radiological assessment and evaluation of fracture configuration is important for acetabulum fractures. This should be followed by early open reduction and internal fixation when indicated along with management of associated injuries for better outcomes.

Abstract no.: 52453

**PRIMARY PS TKR AND ASSOCIATED RECONSTRUCTION TECHNIQUES
IN CHALLENGING KNEE ARTHRITIS CASES**

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Primary TKR is a reliable procedure with reproducible long-term results, but may be difficult by either conditions related to the patient or local conditions of the knee. AIM: analyzing the conditions that were behind the difficult TKR, focusing on bone pre-existential defects, that could influence prosthetic alignment and outcome. METHOD: Retrospective study 2011-2017, enrolling 21 knees, 4 lost out from study, decided in 2 subgroups - 11 segmental defects, 6 coronal/ cavitar defects. Mean KSS preoperative: anatomic 46/ functional 42. RESULTS: Evaluation of functional outcome and mechanical perspective. KSS postoperative encased to 94 anatomic/ 90 functional. All PS TKR cases for difficult primaries were stable and free of pain. CONCLUSIONS & DISCUSSION: Using of primary TKR PS prosthesis combined with these reconstructions techniques might conduct to good results in well-selected cases, without disregarding the necessity of a more constrained prosthesis as back-up. Ritter "medial screw" plus cement augmentation might be a solution to segmental defects larger than 0.5 cm² till 2,5 cm², in association with a stemmed tibial component. The success of such primary TKR reconstruction techniques depends on both patient condition (local condition) and surgeon experience. Well-done preoperative planning and a systematic approach is the key on the best arthroplastic attitude decision – prosthetic constrain degree selection & associated reconstruction techniques (Ritter – cement, Sculco – allo/auto bone graft).

Abstract no.: 52454

EXTRAOSSEOUS ANEURYSMAL BONE CYST IN A PATIENT OVER 40 YEARS OLD: CASE REPORT AND REVIEW OF THE LITERATURE

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Background: Aneurysmal bone cyst (ABC) is a common benign, osteolytic lesion that usually occurs in the metaphysis of long bones and vertebral bodies of children and teenagers. Aneurysmal bone cyst that arises in soft tissue (or extraosseus ABC) is significantly rarer, even more so in an older adult demographic; only eight cases of patients over the age of 40 have been reported in the literature to date. Case Report: We report a case of a 59-year-old male presenting with extraosseus ABC. Discussion: Extraosseus ABC may present as a mimicker of other more prevalent benign or malignant diagnoses in this age group. The tendency to confuse this aggressive-looking diagnosis with potentially malignant entities more common to this age demographic highlights the necessity of correlating clinical, radiological, histological and cytogenetic findings to arrive at an accurate diagnosis we offered a discussion of the differential diagnosis and literature review of patients over 40 years old diagnosed with extraosseus ABC.

Abstract no.: 52460

**CASE PRESENTATION OF A DIFFICULT ASYMMETRICAL
HARTOFILAKIDIS TYPE B HIP DYSPLASIA**

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We present the case of a 52 years old woman with asymmetrical left hip dysplasia, Hartofilakidis type B and 6 cm shortening, managed through a primary THR with the reestablishment of the hip centre of rotation without reconstruction. Results were assessed on the base of HHS, prosthetic mechanical stability and presence or not of any complications related to the surgery. Evaluations were provided at every 3 months on a follow-up of 18 months.

Abstract no.: 52466

OPEN REDUCTION AND INTERNAL FIXATION OF DISPLACED SUPRACONDYLAR FRACTURE OF THE HUMERUS IN CHILDREN: COMPARISON OF MEDIAL VERSUS POSTERIOR APPROACH

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Introduction: Supracondylar fracture of humerus account for 50% to 70% of all pediatric elbow fractures and represent approximately 17% of all paediatric fractures. Open fractures, fractures with vascular injury and an irreducible fracture require open reduction. We aimed to compare the outcome of posterior versus medial approach in the surgical management of displaced supracondylar fracture of humerus. **Methods:** A retrospective review of 35 children with posterior approach (group 1) and 28 children with medial approach (group 2) was made. Bauman's angle was compared for radiological outcome. Cosmetic and functional outcome was assessed and compared using Flynn's criteria. **Results:** There was no significant difference between group 1 and group 2 with regards to age, sex, side and displacement. The mean of Bauman's angle was $18.31 \pm 3.41^\circ$ and $16.96 \pm 4.59^\circ$ in group 1 and group 2 respectively which was insignificant ($p=0.186$). According to Flynn's criteria the cosmetic results was excellent in 25 patients (71.4%) in group 1 whereas excellent in 23 patients (82.1%) in group 2 which did not differ significantly ($p=0.321$). The functional outcome was good to excellent in 28 patients (80%) in group 1 and good to excellent in 27 patients (96.4%) in group 2 which was statistically insignificant ($p=0.063$). **Conclusion:** Radiological and cosmetic outcome were similar and insignificant between posterior and medial approach. Functional outcome did not differ significantly but it was more satisfying with medial approach which had the advantage of unsightly scar.

Abstract no.: 52467

OSTEIOD OSTEOMA ON PROXIMAL PHALANX OF THE SECOND TOE

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Osteoid osteoma is a well known, small painful, benign tumor, mostly on long bones. Cases on the phalanxes of the toes are very rare. Pain takes up nearly all the clinical presentation. We report on the case of a 10-year-old boy with an atypical location of osteoid osteoma on the proximal phalanx of the second toe. CT guided radiofrequency ablation was enough for treatment in our case.

Abstract no.: 52469

SHOULDER ARTHROPLASTY: OUR EXPERIENCE

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Introduction: Shoulder arthroplasty surgery is an increasingly common procedure with 5657 being performed in 2014, with an increase of 31% from the year before. They are most commonly performed on females (72%), and for osteoarthritis (57)%. It was the aim of this project to determine the New Cross Hospital experience, by recording our findings about this procedure. Method: Data was collected retrospectively to include patient demographics, comorbidities, peri-operative complications, and post-operative outcomes. This data was then analysed and compared with the NJR, and recent literature. Results: In the 75 month period between 6/1/11 and 3/5/17, 208 arthroplasty cases were performed by 5 upper limb consultants, 55 were anatomic total shoulder replacements, 44 were shoulder resurfacing procedures, 102 reverse shoulder replacements, and 7 hemiarthroplasty. Mean drop in haemoglobin was 21 g/l, 23 patients required post operative blood transfusion, whilst 11 patients suffered an acute kidney injury. 4 patients suffered wound issues, whilst a further 4 experienced axillary nerve neuropraxia. 92% of patients were discharged after a one night stay in hospital, the main delay in discharge was analgesia control and acute kidney injury. Conclusion: Shoulder arthroplasty is increasing in frequency, and is not without complication. We found that in our practice, 11% of patients required blood transfusion and 5% required medical management for acute kidney injury. 2% of patients experienced axillary nerve neuropraxias which self resolved within 6 months.

Abstract no.: 52474

IN VITRO AND IN VIVO TNF α -KNOCKDOWN BY PEGYLATED DIETHYLAMINOETHYL CHITOSAN NANOPARTICLES

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Introduction: In this study, a pegylated derivative of diethylaminoethyl chitosan (PEG-CHDEAE) was synthesized and characterized by H-NMR and GPC techniques. Nanoparticles containing siRNA-TNF- α were prepared and characterized by dynamic light scattering (DLS) and gel retardation assay. The polymer and its nanoparticles were tested by the cell viability assay (MTS) and their cytotoxicities were verified by lactate dehydrogenase release (LDH) assay, on macrophage cells line (Raw 264,7) and human monocytes. In vitro transfection was carried out with Raw 264,7 and the TNF α -knockdown effect was quantified using ELISA test for nanoparticles prepared at increase N/P ratios. In vivo study was carried out in a murine collagen antibody-induced arthritis (CAIA) model. **Results and Discussion:** The degrees of substitution by DEAE and PEG were 15% and 2,6% respectively and GPC analysis showed a MW of 136,5 kDa and polydispersity of 3.3. DLS measurements revealed the polyplexes sizes ranging from 150 nm to 300 nm and zeta potentials ranging from -14 mV to +11 mV. MTS and LDH tests demonstrated cell viabilities of 85-100%. In vitro transfection efficiency showed that nanoparticles mediated TNF- α siRNA knockdown of 80%. The in vivo study showed a decreased inflammation, as demonstrated by improved clinical scores and lower TNF- α protein concentrations in the joints and decreased articular cartilage destruction. **Conclusion:** The results indicate that PEG-CHDEAE is a safe and effective carrier for siRNA delivery.

Abstract no.: 52477

NON-TRAUMATIC SPINAL FRACTURES: AN UNCOMMON COMPLICATION FOLLOWING THE FIRST EPISODE OF AN IDIOPATHIC CONVULSIVE SEIZURE

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Introduction: Non-traumatic vertebral fractures that occur solely as a consequence of the muscle forces that develop during a convulsive seizure, in a healthy individual is a rare entity (0.3%). **Methods:** We present two young male patients who presented with severe back pain following the first episode of a convulsive seizure which occurred while sitting in bed, with no antecedent or associated traumatic event. Clinical and radiological evaluation revealed compression fractures of the thoracic spine(D4,D5,D6,D7) in the first patient and an unstable burst fracture of L1 in the other. A detailed neurological work-up revealed no organic cause for seizure. Their bone mineral density, hormonal and metabolic profiles were normal. The first patient was treated symptomatically along with a thoracolumbosacral orthotic support, while the second patient with L1 burst fracture was treated with instrumented posterior stabilization. **Results:** Both patients had good pain relief after 3 weeks, when rehabilitation was started. At 28-months follow-up, both patients had good functional outcomes, with normal neurology. Radiographs at follow-up showed no further loss of vertebral height or progression of kyphosis. There was no recurrence of seizure till date. **Conclusions:** Forceful muscle contractions that develop during a single episode of a convulsive seizure can cause a vertebral fracture even in a healthy individual. These fractures can appear clinically asymptomatic, and can easily be overseen, especially in the absence of overt signs of external trauma and possible post-ictal consciousness disturbance which fail to provide clue to early diagnosis. A high index of suspicion, a systematic musculoskeletal examination and thorough radiological evaluation is needed in patients presenting with back pain after a tonic-clonic seizure even in the absence of significant trauma.

Abstract no.: 52482

THE PFNA-II IS NOT BEST SUITED FOR THE TREATMENT OF UNSTABLE INTERTROCHANTERIC FRACTURES IN AN ELDERLY INDIAN POPULATION: RESULTS AND CONCERNS IN A SERIES OF 178 PATIENTS

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Introduction: Unstable intertrochanteric femoral fractures in the elderly are complicated by posteromedial comminution, osteoporosis, and associated medical comorbidity. Proximal femoral nail (PFN) scores over dynamic hip screw (DHS) by providing intramedullary support, permitting early ambulation & weight bearing. However, the PFNA-II design also causes complications. We present results of 178 fractures operated using Synthes PFNA-II, describing key concerns. Methods: 199 consecutive patients (mean age, 79 years) with unstable intertrochanteric fractures were operated using the short Synthes PFNA-II system, from Dec 2009 to Nov 2017. Patients having fracture extending into subtrochanteric region/shaft were excluded. Clinico-radiological data (fracture reduction, lateral wall thickness, tip-apex distance (TAD), late collapse leading to coxa vara/retroversion, thigh pain and abductor lurch) was recorded. Follow up visits were conducted at least till fracture union, and data analyzed. Results: 84 fractures were available for final evaluation. Complications included fracture malreduction (3), prominent/painful hardware causing trochanteric/thigh pain (8), abductor lurch (2), superficial infection following hematoma (1) & late varus collapse (1). 2 patients had screw cutout, 1 penetration into the joint. These 3 were considered failures. All the rest united at a mean of 3.5 months (range, 3-6 months). Discussion: The PFNA-II is an efficient implant in the very elderly patient with unstable intertrochanteric fracture, permitting early return to weight bearing and function. However, this PFN design causes painful proximal hardware prominence and persistent abductor lurch (more so in short Indian female population) and needs careful selection.

Abstract no.: 52484

**THE HINDFOOT NAIL IN TIBIOTALOCALCANEAL ARTHRODESIS:
RESULTS IN A SERIES OF PATIENTS WITH POST-
TRAUMATIC/NEUROPATHIC ANKLES**

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Introduction: Advanced ankle arthritis is managed surgically by arthroplasty or arthrodesis. Tibiotalocalcaneal (TTC) arthrodesis is an option in limited conditions: painful post-traumatic ankle/subtalar arthritis in the young, and neuropathic (destroyed) joints in the elderly. We report results in a small consecutive case series the hindfoot nail used for TTC arthrodesis. **Methods:** 13 patients with post-traumatic or neuropathic ankle/subtalar joints presenting to our institute over a 3-year period (Mar2013-Feb2017) were operated using the Smith & Nephew Trigen™ hindfoot fusion nail. Pre- and post-op X-rays; and AOFAS ankle hind foot scores were charted, along with pain & quality of life scores (visual analogue scale). **Results:** We used the hindfoot fusion nail for TTC arthrodesis after corrective osteotomy on 7 young (age, 24-40 years) with severely destroyed/malunited lower tibial/talar fractures (with secondary ankle/subtalar arthritis) & 6 elderly patients with neuropathic ankle/subtalar joints over the study period. All cases showed union of the arthrodesis with improved quality of life and pain scores at last followup of 6 months. 1 patient complained of hardware impingement necessitating removal of screws/wires at 9 months. AOFAS scores improved providing satisfactory outcomes in all our patients. **Conclusions:** The hindfoot fusion nail used judiciously provides reliable union of TTC arthrodesis within 6 months, even in neuropathic ankles. Intramedullary implantation permits adequate mechanical support allowing early weight bearing, and should be considered as an implant of choice in difficult situations.

Abstract no.: 52486

FLOATING HIP (BICOLUMNAR FRACTURE ACETABULUM WITH FRACTURE NECK FEMUR) MANAGEMENT: A CASE REPORT

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Introduction: Objectives of treatment of articular fractures are articular block anatomic reduction, limb length & axial alignment restoration. Fractures around the hip need particular attention to prevent AVN, nonunion and arthritis. This is a report of a young adult female with a floating hip injury (bicolumnar fracture acetabulum with fracture neck femur) treated successfully. Methods: A 40-year old female presented to us 24 hours after fall from a height. X-rays and CT scan confirmed a floating hip injury (bicolumnar fracture acetabulum with displaced fracture neck femur). She and her family were counseled for possible surgical options. She was finally operated in 2 stages, with aggressive post-op rehab. She was discharged 3 days later, with regular clinicoradiological follow-ups. Result: At 3 months, adequate callus was seen around the acetabular fracture site, and the patient was permitted full weight bearing walking. Hip ROM was near normal. Patient had resumed her pre-fracture life and activity within 3 months. Patient and her family were satisfied completely with the result at final follow up (Dec 2017). Conclusion: Anatomical reduction and internal fixation of bicolumnar acetabular fractures is essential to prevent secondary arthritis. With associated fracture neck femur, the risk of AVN and nonunion are high, so alternative surgical treatment need to be considered. Articular block fixation, limb length & axial alignment restoration, and early mobilization remain keys to success.

Abstract no.: 52488

VALGUS KNEE OSTEOARTHRITIS COMPLICATED WITH REPEATED TIBIAL SHAFT STRESS FRACTURES: A CASE REPORT

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Introduction: Advanced knee osteoarthritis (OA) usually present with varus deformity, and these knees are often associated with tibial stress fractures. This is a case report of a middle-aged adult female with a valgus OA knee (prior rheumatoid arthritis) with repeated stress tibial shaft fractures with missed/delayed diagnosis. Materials: A 59-year old female presented to us with insidious onset gradually progressive right knee pain for 12 years, worsening (without any obvious/apparent trauma) over 3 weeks. Initial x-rays confirmed advanced right knee valgus OA. Subsequent x-rays taken at 3 weeks showed a co-existing tibial shaft stress fracture. TKA with fracture stabilization (long-stemmed tibial component and buttress plate) was carried out. Aggressive post-op rehab (active knee bending, quads strengthening & full-weight bearing walking) followed. At 12 months, she presented again with insidious onset pain and gradual difficulty in walking. The first set of X-rays confirmed a lower fibula stress fracture. However, repeat X-rays taken at 3 weeks showed an additional lower tibial stress fracture. This was managed surgically (distal tibial locked plate). Result: Wounds healed well. At 3 months, adequate callus was seen around the upper tibial stress fracture site and the patient regained full weight bearing walking. Patient had resumed her pre-fracture life and activity within 3 months. However, repeat stress fractures insidiously developed necessitating surgical intervention. The cause of these repeated stress fractures could not be ascertained. Conclusion: Rheumatoid arthritis patients with severe genu varus or valgus deformities can develop insidious stress fractures. These must be suspected, anticipated and treated.

Abstract no.: 52489

THE TRAUMA CT: TIME TO REPORT - THE IMPORTANCE OF INTEGRATED RADIOLOGY AT A MAJOR TRAUMA CENTRE

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Introduction: Timing within surgery is critical, and no more so that for patient who have suffered major trauma. The ATLS (Adult Trauma Life Support) guidelines were established in 1976 to improve care of critically injured patients. In current trauma practice CT (Computerised Tomograph) scans have become established aid within the primary survey. The accuracy and speed of the report for these often-complex scans is essential, so as not to delay definitive or lifesaving care. This is particularly important in guiding surgical decision making. Method: We conducted a retrospect review of all major trauma admissions requiring primary survey CT scanning. From the PACS (Picture Archiving and Communication System) software we ascertained the time of scan, initial report and final report, along with the reporting clinician details for each scan. Statistical frequency analysis was subsequently performed. Results: 58 primary survey, and 52 CT head scans were performed during the review period. Demonstrating an average time to initial report of 70.5 minutes and 60.4 minutes, and a final consultant report average time of 206 minutes and 511.2 minutes respectively. In 33% of primary survey and 19% in CT head reports, an amendment was recorded, with 2 critical finding on final report, after 18 hours. Discussion: These findings highlight the importance of early consultant review of these complex scans. The delay to final report, beyond 1 hour recommendation of the Royal College of Radiologists, is a clear area we can improve trauma care. We believe that integrating radiology within the trauma team will improve trauma care and outcomes.

Abstract no.: 52490

KYPHO-IORT: CLINICAL UPDATE AND PHASE II RESULTS

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Introduction: Spinal metastases are on the increase due to better systemic tumor therapy and a longer survival with tumors. About 40% will suffer from bone metastases, mostly located in the spine, causing severe pain, immobility and neurological deficit. Multiple different treatments options exist with a range of maximal invasiveness (e.g. en-bloc-spondylectomy) to non invasive treatment at all, like radiation-treatment. Kypho-IORT is a new developed but already widespread combination-therapy of intra-operative-radiation through the pedicle combined with cement-augmentation. We performed a phase I/II-trial to find the best appropriate radiation dose and will report on the ongoing phase-III-trial (prospective randomized), which compares Kypho-IORT with standard EBRT in terms of pain management and local tumor control. Methods: Patient characteristics of 102 consecutive cases will be shown, including the patients enrolled in the above trials. Characteristics as pain-response, local-tumor-control and over-all-survival will be carved out. Results: The phase-I/II-trial could be finished successfully. No adverse event or severe side effect could be noticed, even in the highest dose level. The local tumor-control of 94% at one year was far better than conventional EBRT and comparable to new irradiation methods like SBRT (stereotactic body radiation therapy). The pain-reduction was eminent on day 1, the multicenter randomized trial comparing Kypho-IORT vs. EBRT is still recruiting. Kypho-IORT is a promising new treatment-method with excellent tumor-control and is also very effective in terms of pain-reduction.

Abstract no.: 52492

AUTOMATIC RECOVERY OF EOS IMAGES' ORIENTATION VIA A CONVOLUTIONAL NEURAL NETWORK

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Stereoradiography-based 3D reconstruction of bone models is essential in orthopaedic applications such as surgery planning and follow-up. The EOS imaging system uses standard face/profile (0/90°) acquisitions for lower limb reconstruction. In many cases, organ superimposition on profile radiographs complicates the reconstruction task, and thus alternative oblique acquisitions (45/45°) are required. Nevertheless, the reconstruction process is strongly influenced by patient posture: we can benefit from automatic 3D reconstruction methods for 45/45° images, whereas manual initialization is needed for 0/90° images. Therefore, we aim to automatically differentiate 0/90° from 45/45° images in order to calculate the pose of the 3D generic model and initialize the reconstruction process. More specifically, our goal is to classify radiographs among 4 categories describing image orientation: 0° face images, 90° profile images, 45° face images, and 45° profile images. This could be used to scan through images on the PACS without the need for a clinician to identify the patient's posture. To perform this classification task, we use a convolutional neural network (CNN) with a database containing 200 training images and 100 validation images. The images and their class labels are fed to the CNN, which learns the features that characterize them, and then output is one of the four categories. We obtained a classification rate of 100% which demonstrate the accuracy of the proposed approach. We plan to integrate our algorithm in clinical routine as a way to decide which lower limb 3D reconstruction method to apply depending on the patient's posture during acquisition.

Abstract no.: 52494

CRITERIA FOR CHOOSING SURGICAL APPROACHES DURING VERTEBROPLASTY

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Introduction: Vertebroplasty is an effective method for treatment of severe back pain, caused by vertebral hemangiomas and other osteolytic spinal lesions. Anterior approach for the cervical spine, transpedicular and parapedicular approaches for the thoracic and lumbar spine are classic. The placement of needles through transpedicular and parapedicular approach to the body of the superior thoracic vertebrae is difficult and involves a high risk of damage to nearby anatomical structures. Purpose: to study the criteria for choosing surgical access during vertebroplasty. Methods: 35 patients aged from 24 to 70 with symptomatic vertebral hemangiomas were operated on using an vertebroplasty. Vertebroplasty of cervical vertebrae was performed in 3 cases, vertebroplasty of thoracic vertebrae in 28 cases (Th3-Th4 - 2 cases, Th5-Th12 - 26 cases), vertebroplasty of lumbar vertebrae in 17 cases. For needle placement we used fluoroscopic guidance and in many cases computer-assisted system. In all cases venospondylography was performed for the prediction of cement pathways in the vertebral body. Results: We observed 4 errors in the installation of needles, confirmed by intraoperative venospondylography. In one case, we have made an unsuccessful attempt to install a needle in the Th3 vertebral body from the posterior approach. 2 patients with aggressive symptomatic T3 and T4 hemangiomas were operated on using vertebroplasty under video assisted thoracoscopic control from anterior thoracoscopic approach without any complications. Conclusion: The choice of approach to the vertebral body during vertebroplasty is dependent on the localization and spread of the pathological process, anatomical parameters of the vertebrae.

Abstract no.: 52497

DISTAL RADIUS FRACTURES: DOES THE TYPE OF VOLAR LOCKING PLATE AFFECT OUTCOMES?

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Introduction: Fixation with volar locking plates is a common method of treatment for distal radius fractures. Plates are beneficial in many types of fracture including in osteoporotic bone and intra-articular fractures. However, there are few studies directly comparing types of plates. Method: Retrospective review of two years of all consecutive patients who underwent open reduction internal fixation (ORIF) with distal volar locking plates for fractured distal radius. Patient demographics, pre-, intra- and post-operative radiographs and clinical notes were reviewed. Fractures were classified according to Frykman Classification. Trauma theatre register was used to identify patients and implant used. Results: 82 patients with 84 distal radius fractures were identified. Three types of volar locking plates were used at discretion of operating surgeon. Mean age was similar across all three groups. DVR plates were used in 31 operations, VA-LCP in 19 and Variax in 34. Variax had a mean follow up time of 9.2 weeks (2.6 appointments), 13.2 (3.4 appointments) for DVR and 17.3 (3.3 appointments) for Va-LCP. In DVR group we identified poor radiological outcomes in 6 of 26, 4 of 34 in the Variax group and 2 of 17 with Va-LCP ($p = 0.432$). Those with poor intra-operative reduction had worse outcomes, regardless of plate used. Conclusion: Radiological outcome is determined more by the quality of reduction of the fracture than the type of plate in our cohort. We cannot support use of any particular design, the surgeon should use the plate in which they are most experienced.

Abstract no.: 52498

15 YEARS OF BROKEN ARMS: A POPULATION-BASED NATIONWIDE STUDY OF UPPER EXTREMITY TRAUMA IN SWEDEN

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Epidemiological data of upper extremity fractures is important to identify risks and trends in the population. However, currently available epidemiological data about upper extremity fractures and their treatment are scarce. No nationwide study describing upper extremity fractures has ever been done. The aim of this descriptive epidemiological study is to describe the incidence and characteristics of patients with upper extremity fractures between 2002 and 2017 in Sweden as well as to identify trends in treatment during this period. Data for all patients with a diagnosed upper extremity fracture between 2002 and 2017 were identified from the National Swedish Patient Register. Risk analysis and specific incidences were calculated according to age, sex, geographic region, and surgery. Fracture frequency per age group and sex are calculated as well as type of treatment. Trend changes along the years are described. Regional variations as well as type of hospital differences are observed. No data have hitherto been published including all patients with upper extremity fractures, treated both surgically and non-surgically. Such baseline epidemiologic data are crucial to be able to validate and judge the generalizability of results from procedure registers and clinical studies.

Abstract no.: 52501

A NOVEL REPORT OF HETEROTOPIC OSSIFICATION FOLLOWING ANTERIOR SHOULDER DISLOCATION

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Heterotopic ossification (HO) is the abnormal growth of extra-skeletal bone. Joint involvement is characterised by a reduced range of movement and stiffness, leading to a poor quality of life. Most commonly described in the hip, knee and elbow it often occurs as a complication of trauma or joint replacement surgery. HO affecting the shoulder joint is rare and very little is known about its aetiology or treatment. We report the first ever case of HO affecting the shoulder joint following anterior dislocation. A seventy year-old gentleman sustained his first shoulder dislocation following a fall onto his outstretched hand, resulting in a rotator cuff tear and subsequent HO. Once relocated, the patient was seen in an orthopaedic clinic where he complained of residual stiffness and a reduced range of movement. CT and MRI scans were performed which confirmed the diagnosis. He was treated conservatively with physical therapy and analgesia leading to an improvement in his symptoms. At one year follow-up the patient maintains a good functional outcome. A literature search was conducted which revealed this to be the first report of this complication following an anterior dislocation. This case highlights the importance of specialist orthopaedic follow-up in all patients who have had a shoulder relocation in the emergency department.

Abstract no.: 52505

BEYOND OSTEOARTHRITIS: SOCIOECONOMICS AS OUTCOMES OF TREATMENT FOR MUSCULOSKELETAL CONDITIONS - A POPULATION-BASED STUDY OF CRUCIATE LIGAMENT INJURIES

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Objective: Since it has been demonstrated that the choice of treatment for cruciate ligament (CL) injuries is not associated to the development of osteoarthritis, we aim to evaluate the use of alternative outcomes by investigating the association between choice of treatment and patient's income and assess the effect of several covariates. **Methods:** This population registry-based cohort study included all patients with a CL injury in Sweden during a span of three years and who were active in the workforce (n=13,662). The exposure was treatment choice (operative versus non-operative). Outcome was average 5-year yearly income after injury, adjusting for the following eight covariates: sex, age, comorbidities, type of work, region, calendar year, education and income. **Results:** No association was found between any of the treatment choices and average yearly income. However, within people living in large cities, those who had operative treatment had a 12% greater average yearly income after injury (95% CI 1.01 to 1.24). Delayed surgical treatment (>1 year) was no different than non-operative treatment while early surgical treatment (<1 year) was associated with higher average yearly incomes (13 to 17%) but only among females, ages 20 to 50, large residence areas and patients with partial university education. **Conclusions:** Early surgical treatment (within one year of injury) is associated with higher average yearly incomes after injury in four subgroups of working patients, namely those with ages 20 to 50, females, living in large cities and with high level of education. Delayed surgical treatment was no different than non-operative treatment.

Abstract no.: 52507

SKIN PLASTIC AND TRANSOSSEOUS OSTEOSYNTHESIS IN ONCOLOGICAL HAND SURGERY

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Introduction: The most important stage of reconstructive and restorative surgeries after remove the tumor of the hand is the closure of wound. **Objective:** Demonstration of the possibility to combine skin plasty and transosseous osteosynthesis for treatment of hand tumours. **Materials and Methods:** The material for the analysis were 512 medical records of the patients who underwent treatment between 1992 and 2018 in the Center of hand surgery with tumors of the hand. All these patients carried dermepentthesis due to the presence of postoperative tissue defects. Primary skin plasty was used in 428 and the secondary one in 84. Depending on the condition of hand soft tissues, we use determin the version of plasty. **Results:** The analysis of short-term (less than 12 months) and long-term (up to 26 years) outcomes showed that in cases of commonly accepted techniques of skin plasty positive results were obtained in 73,4% and in the cases where transosseous osteosynthesis was used the success rate was 91,7%. The use of the combination of skin plasty and transosseous osteosynthesis provided a 1,5-fold reduction of the number of disability outcomes. **Conclusions:** The reduction of the treatment period for the patients with hand tumours that is achieved when primary reconstructive surgeries are performed in combination with transosseous osteosynthesis proves the efficiency of this trend in oncology and hand surgery.

Abstract no.: 52513

OUTCOME OF SURGERY WITH INTRAMEDULLARY NAILS IN PATIENTS WITH METASTATIC DISEASE OF LONG BONES

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The purpose of stabilising long bones with metastatic disease is to improve pain and mobility. We assessed the improvement in pain and mobility after intramedullary nailing as well as 30-day mortality. All patients who had intramedullary nail for metastatic bone disease between 2014 and 2016 were included. We also recorded the pain and mobility before and after surgery, complications, 30-day mortality and survival following surgery. 28 cases were included. The primary cancers were lung (10), breast (8), renal (4), prostate (4) and rectal (2). There were 12 males and 16 females. Prior to surgery 86 % of patients had severe pain and 14% had moderate pain. At the time of discharge 29% patients had no pain, 36 % had mild pain and 35 % had moderate pain. Mobility was assessed depending upon patients' need for mobility aids. Before surgery 14% had no aid, 21 % used stick, 28 % were mobilising with frame and 37% were non-mobile. 20 patients were discharged to their own home, 2 patients to intermediate care and 4 to nursing home. Eight patients (28 %) died within 30 days of surgery. These eight patients had multiple visceral metastasis. The average survival time from surgery was 5 months (0.5 to 48 months) The results indicate that intramedullary stabilisation of pathological fractures in long bones improve pain and mobility. However, there is high 30-day mortality rate. One should carefully consider the life expectancy of the patients with multiple visceral metastasis before intramedullary nail of long bone.

Abstract no.: 52514

KYPHO-IORT: DOSE CALCULATION AND DISTRIBUTION

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Introduction: Spinal metastases are on the increase due to better systemic tumor therapy and a longer survival with tumors. About 40% will suffer from bone metastases, mostly located in the spine, causing severe pain, immobility and neurological deficit. Multiple different treatments options exist with a range of maximal invasiveness (e.g. en-bloc-spondylectomy) to non invasive treatment at all, like radiation-treatment. Kypho-IORT is a new developed but already widespread combination-therapy of intra-operative-radiation through the pedicle combined with cement-augmentation. Still unclear is the dose distribution within the metastases. A new dose-distribution simulation based on a Monte Carlo model could be used to solve to perform a post-planning of the treated vertebra and visualize the dose-distribution within the metastases. Methods: 10 consecutive Kypho-IORT treatments were used for the study. Intraoperative cone-beam-ct-data-sets were used for the exact localization of the applicator. The localization was transferred into a planning ct, the dose distribution calculation was carried out with the new monte-carlo algorithm for low-kV radiation (Radiance, GMV Spain). Results: We could show that we treated in about 80% of the cases at least 80% of the tumor area with 8Gy or more. In no case a toxic dose to the myelon was delivered. In osteoblastic or mixed type metastases the dose distribution is lesser than expected. This study shows that there is a large security margin for organs at risk, also an individual dosing for the patient could be of benefit. A navigated placement of the applicator could further increase the accuracy of the treatment.

Abstract no.: 52517

TECHNIQUE OF EXTENSOR MECHANISM RECONSTRUCTION FOR FAILED PRIMARY REPAIR OF QUADRICEPS TENDON

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Introduction: A compromised knee extensor mechanism is devastating for patients. Different techniques have been described to reconstruct the extensor mechanism. Here, we present a modified technique of repair with a synthetic mesh graft to reconstruct the failed extensor mechanism. Materials and Methods: We discuss the case of an elderly female on hemodialysis who suffered from bilateral chronic disruptions after failed primary repair of her quadriceps tendons. A synthetic mesh graft was utilized to reconstruct one knee at a time. The technique is modified from that described by Mayo clinic for patellar tendon reconstruction. Results: At one year follow up, the patient could independently mobilize without assistance and had an active range of motion (10-125 degree) with intact and functional extensor mechanisms of both knees. No signs of infection, failure of graft or other complications were noted. Conclusion: This case demonstrates a viable and cost-effective alternative to allograft reconstruction for a difficult problem.

Abstract no.: 52519

TALAR PROCESS FRACTURES: PATIENT OUTCOMES FOLLOWING SURGICAL AND CONSERVATIVE MANAGEMENT

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Introduction: Posteromedial and lateral process fractures of the talus make up less than 10% of all talar fractures. They can be caused by high-energy trauma, or low-energy sprains. The literature demonstrates that the management of these fractures is controversial, with poor case numbers and few randomized controlled trials. It was the aim of our study to investigate our experience in a level 1 trauma centre, of these fractures. Method: A retrospective analysis of these cases was performed, recording; patient demographics, mechanism of injury, definitive management, complications, and a Olerud and Molander patient score was filled out at latest follow-up. Results: Between 2009 and 2018, we encountered 9 posteromedial and lateral process fractures of the talus in 8 patients, all diagnosed on computed tomography. 3 patients suffered posteromedial fractures, 4 experiences lateral process fractures, 1 patient experienced both in the same talus. The mean age at presentation was 47 years, 3 were male, 5 were female, 6 were following high energy trauma, and 5 were treated operatively at a mean of 7 days post injury. At mean follow-up of 48 months, the mean Olerud and Molander score was 60. 3 patients required further intervention following initial treatment, 3 requiring arthroscopic release of the lateral gutter, and 1 requiring a subtalar injection. Conclusion: Conservative and early surgical management of these fractures can both achieve satisfactory patient outcomes, patients should be counseled on the potential for further surgical intervention.

Abstract no.: 52520

SAFETY OF PRESCRIBING ANTIBIOTICS DELIVERED LOCALLY VIA ANTIBIOTIC CARRIER IN BONE AND JOINT INFECTIONS

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Local release of antibiotic has advantages in the treatment of chronic osteomyelitis, infected metalwork and open fractures. They aim to target the residual organisms present after debridement and wash out by delivering much higher local antibiotic concentrations compared with systemic antibiotics alone. There are currently few commercially available antibiotic carriers licensed for the treatment of osteomyelitis. Stimulan (Biocomposites, Keele, UK) does not contain antibiotics and is mixed with antibiotics at the time of implantation. The addition of antibiotics to Stimulan is considered off-label usage in Europe. We describe a consecutive series of 199 patients who had Stimulan as part of their management of bone and joint infections. We assessed how safely the added antibiotic was prescribed by looking at percentages of notes that included the type and dose of antibiotic. Of 199 patients 143 (72%) had the antibiotic type included in the operation note, with a smaller percentage actually having the dose of each antibiotic included. None of the patients had the local antibiotics prescribed on the drug chart. In one patient there was documentation of teicoplanin allergy where it was given locally intra-operatively. Our study suggests that there is vast room for improvement in the safety of local Stimulan prescribing intra-operatively. We suggest that all antibiotics given locally intra-operatively should be documented in the operation note & also on the drug chart. Further studies are needed to examine which antibiotics would be the most effective option to be delivered locally depending on the common causative organisms and sensitivities.

Abstract no.: 52521

OSTEOARTHRITIS: KNOWLEDGE AND ACCEPTABILITY OF TOTAL JOINT REPLACEMENT

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Objectives: To study of the awareness and acceptance of total joint replacement surgery among patients suffering from severe osteoarthritis. **Methods:** A five year prospective study of 81 patients who presented in the outpatient clinic of the department of Orthopaedics and traumatology in University of Calabar Teaching Hospital. A well structured questionnaire was administered requiring information about their biodata, educational level, the joint affected by osteoarthritis, pain assessed using numeric rating scale (NRS), awareness of total joint replacement, acceptance total joint replacement, reasons for not accepting the it, radiological classification. Informed consent was obtained from the patient and ethical approval granted by the institution's ethical committee. **Results:** A total of 81 patients were recruited for the study. The age ranged 13-88 years with mean age 48 years \pm SD 18.2 years; male and female ratio of 1:1.7. Of the 81 patients recruited for the study 50 (61.7%) were aware of the role total joint replacement in the treatment of osteoarthritis and among these 35 (70%) accepted the procedure while 15 (30%) of them rejected it. 31 (38.3%) patients had no knowledge of but 21 (67.7%) rejected the surgery. There was relationship between educational level with the knowledge and acceptance of joint replacements in the treatment of osteoarthritis with p-value of 0.001. **Conclusions:** The level of education of patients affect their level of knowledge of disease condition and treatment. Hence, the government should ensure quality education for all to enhance patients' quest for quality health care.

Abstract no.: 52522

ARTIFICIAL DISC M6-C VERSUS ANTERIOR CERVICAL FUSION: A RETROSPECTIVE TRIAL, RANDOMISED STUDY WITH TWO-YEAR FOLLOW-UP ON 90 PATIENTS, IN A PROSPECTIVELY COLLECTED DATA

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Introduction: M6-C disc replacement is unique as it includes a nucleus pulposus in its implant - polycarbonate urethane and a woven fiber annulus - polyethylene. To restore same motion segment characteristic of human joint. Till date no study to compare its outcome either to anterior cervical decompression fusion or other disc replacements. Our study compare its outcome radiological and clinical to fusion. Method: 90 patients were incorporated in study randomly using theatre data. Two groups were created fusion and disc replacement 45 patients each group. Inclusion criteria was single level cervical spine surgery in patients with at least 2 years follow up. Post operative assessment of clinical outcome was compared using pre and post op Neck disability Index (NDI), Visual Analogue Score (VAS) and EQ5D-5L health assessment. Radiographic evaluation was based on degree of correction of segmental lordosis, subsidence and retention of ROM on lateral cervical spine X-rays taken pre operatively, immediately post operatively, 6 months and at two years follow up. All data been prospectively collected. Radiographic evaluation was done by two experienced spinal surgeons periodically. Statistical analysis done comparing the two data set. Results: Both groups demonstrated better outcome clinically in terms of improvement of NDI, VAS and EQ5D-5L health assessment compared to preoperatively and almost comparable to each other without statistical significance. Radiographic evaluation was better in disc replacement group in terms of subsequent subsidence and loss of segmental lordosis. Long term prospective trials are required to confirm the outcome and its relevance clinically.

Abstract no.: 52523

**TREATMENT OF HIP OSTEOARTHRITIS BY HUMAN AUTOLOGOUS
MICRO-FRAGMENTED ADIPOSE TISSUE INTRA-ARTICULAR
INJECTIONS**

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Aim: evaluate safety and therapeutic use of human autologous micro-fragmented adipose tissue as potential disease modifying treatment option in patients with hip osteoarthritis. **Material and Methods:** Ten patients with osteoarthritis in one or both hips were enrolled in this study and were treated by human autologous micro-fragmented adipose tissue intraarticular fluoroscopic guided injection and followed-up for 12 months. Human autologous adipose tissue injectable graft was obtained by adipose tissue micro-fragmentation obtained using a minimal manipulation technique in a closed system. **Results:** patients were clinically assessed pre-operatively and followed at 3, 6 and 12 months follow-ups using HHS, WOMAC and VAS scores. All scores showed significant improvements. No serious adverse event has been reported. **Conclusions:** Human autologous micro-fragmented adipose tissue intra-articular injections were safe, effective, well tolerated and rapidly improved pain and articular function of the hip joint, making them a promising novel treatment for hip osteoarthritis. Prospective randomised controlled clinical trials are needed.

Abstract no.: 52536

DISTAL RADIUS FRACTURES: TOO MANY PLATES?

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Introduction: Fixation with volar locking plates is a common method of treatment for distal radius fractures. Plates are beneficial in many types of fracture including intra-articular fractures. The DRAFT study advocated increased use of Kirschner-wires (K-wire) in distal radius fractures. Method: Retrospective review of two years of all consecutive patients who underwent open reduction internal fixation (ORIF) with distal volar locking plates for fractured distal radius. Patient demographics, pre-, intra- and post-operative radiographs and clinical notes were reviewed. Fractures were classified according to Frykman Classification. Trauma theatre register was used to identify patients and implant used. Independent review of radiographs determined cases that could have been treated with K-Wire. Results: 82 patients were identified with 84 distal radius fractures treated with volar locking plates. Independent review of pre- and intra-operative radiographs found 22 extra-articular fractures that were potentially amenable to K-Wire insertion. 1 out of this cohort of 22 had a poor radiological outcome, compared with 11 of 55 poor outcomes in cases where K-Wire could be used ($p=0.136$). This may be due to simple fracture patterns. Conclusion: We found that 28.5% of all cases undergoing fixation in our cohort could potentially have been managed with K-Wire insertion. 5% of this cohort suffered poor radiological outcomes compared to 20% in those where K-wire was not possible. A small sample size impacts the significance of our findings.

Abstract no.: 52539

KNEE FUSION TAKE DOWN AND CONVERSION TO TOTAL KNEE ARTHROPLASTY: IS IT WORTH THE EFFORT?

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Introduction: Knee fusion is an excellent salvage procedure and allows the patients to maintain a functional lower extremity. However, it can become bothersome if the ipsilateral hip joint, spine or contralateral lower extremity joints become symptomatic due to long standing alterations in gait mechanics. A fusion take down may be an alternative in such situations. We discuss the pre-operative work up, technique and post-operative management of such patients. Material and Methods: We discuss two patients who were symptomatic and had lived with a knee fusion for more than 2 decades. The older patient (64 years) had no patella and underwent a rotating hinged knee arthroplasty and the younger patient (38 years) underwent a varus valgus constrained knee arthroplasty. Results: At a minimum of one year follow up both patients were very pleased with the functional outcome with an average flexion of 102 degree (range 85-120) and full extension. One patient developed an early wound healing complication that was managed with a gastrocnemius rotation flap and skin grafting. No deep joint infection or mechanical loosening has occurred. Conclusion: The decision for knee fusion takedown is challenging and requires good patient education, multidisciplinary team availability, and meticulous planning. These results are promising for patients who are symptomatic and have exhausted non-operative means of treatment.

Abstract no.: 52541

SINGLE- VERSUS MULTI-STAGED INTRAMEDULLARY NAILING FOR SYNCHRONOUS MULTIPLE LONG BONE INVOLVEMENT IN METASTATIC BONE DISEASE

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Introduction: The purpose of this study was to investigate whether single stage multiple long bone intramedullary fixation for metastatic disease is as safe and effective as multi-staged operations. **Methods:** Out of a total of 144 intramedullary nails were placed for impending or pathologic fractures in long bones of patients with metastatic bone disease, 14 patients (33 nails) had 1 surgery (single-stage [SS]-group) and 16 patients (40 nails) had 2 surgeries during the same hospitalization (multi-staged [MS]-group). **Results:** The SS group had 17 impending and 16 pathologic fractures, that most commonly affected the femur (n=14), humerus (n=12), radius (n=4), ulna (n=2), and tibia (n=1). The 40 nails placed in the MS group were placed for 31 impending and 9 pathologic fractures: femur (n=29), humerus (n=9), radius (n=1), and tibia (n=1). There was no difference in total blood loss, blood transfusion rates, and medical complications between the 2 groups. There were 3 surgical complications in the MS group (one periprosthetic fracture requiring ORIF at 10-weeks, one quadriparesis from cervical spine involvement requiring decompression and stabilization at postoperative day 1, and one intraoperative humeral nail cutout requiring conversion to a plate). There were 2 deaths in the SS and 4 deaths in the MS groups. **Conclusion:** The present study demonstrated that patients can undergo single stage intramedullary nailing of multiple long bones without significant higher risk for adverse outcomes. This could potentially decrease the morbidity associated with having to undergo anesthesia multiple times.

Abstract no.: 52543

LATE TIBIA FRACTURE ARISING FROM A STEINMANN PIN INSERTION SITE

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Case report: A 32 year-old male patient presented with intense pain below the knee and unable to bear weight after a simple jump. He referred dull tibial pain 4 weeks before the presenting fracture, but did not seek care at the time. On plain radiograph, an isolated transverse metaphyseal tibial fracture was seen, arising from an anterior cortical defect. The patient had a history of ipsilateral acetabular fracture and had been on traction with a tibial Steinmann pin for six weeks, ten months before the presenting fracture. His tibial fracture was treated with open reduction and internal fixation with a compression plate, and the fracture went on to healing. Discussion: Steinmann pin insertion for traction is a very common procedure performed for the treatment of diverse hip and knee pathology. Some complications are relatively common with this procedure, namely infection and pin loosening; both are more common with longer duration of pin insertion, which is seldom the case nowadays. A late presenting fracture arising from the pin insertion site has been very rarely described in the literature, and in the cases described they occurred between four months to three years after pin removal. We hypothesize that a too anterior pin placement, and the tension forces on the anterior tibia might be a factor on the non-healing and the stress-fracture like characteristics this fracture presented. Monitoring these defects until closure and earlier intervention might have allowed resolution without the morbidity of a complete fracture.

Abstract no.: 52546

DISTAL RADIUS FRACTURES: DOES ANGULATION IMPACT OUTCOME?

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Introduction: Distal radius fractures are a common injury, often requiring fixation with volar locking plates. Plates are beneficial in many types of fracture including in osteoporotic bone and intra-articular fractures. There are few studies comparing plates directly, and the impact of volar and dorsal angulation on outcomes. **Method:** Retrospective review of two years of all consecutive patients who underwent open reduction internal fixation (ORIF) with distal volar locking plates for fractured distal radius. Patient demographics, pre-, intra- and post-operative radiographs and clinical notes were reviewed. Fractures were classified according to Frykman Classification. Trauma theatre register was used to identify patients and implant used. **Results:** 82 patients with 84 distal radius fractures were identified. Three types of volar locking plates were used at discretion of operating surgeon. 7 of 27 in the DVR group had volar angulation on pre-operative radiograph, 7 of 17 with Va-LCP, and 13 of 34 in the Variax group. In those with volar angulation, 6 of 27 suffered a poor radiological outcome, compared with 8 of 50 in those with dorsal angulation ($p=0.394$). **Conclusion:** Type of angulation of distal radius fracture has no significant impact on patient radiological outcome in those who are treated with volar locking plates in this cohort. Quality of intra-operative reduction has greatest impact on radiological outcomes, with choice of plate determined by surgeon preference and experience.

Abstract no.: 52547

**DOES SHOULDER FRACTURE TREATMENT INFLUENCE
SIMULTANEOUS HIP FRACTURE MANAGEMENT IN ELDERLY
POPULATION?**

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Introduction: Proximal humerus fracture in Geriatric population is second most common upper limb injuries when considering concomitant upper limb associated fracture with incidence of 5% in patients with hip fractures. With adaptation of NICE guidelines, the patients who sustained shoulder fracture receiving treatment is often delayed. With recent focus in increasing incidence of proximal humerus fracture in aging population, with female preponderance, studies have shown increase mortality and health care resource utilisation. To understand the burden of this problem in this unique cohort of patients who have sustained Shoulder fracture with simultaneous hip fracture, we have done a four year retrospective study among the patients admitted with Hip fracture in geriatric population (> 60 years) during period of 5 years at Leicester Royal infirmary, Leicester. Results: Out of 2823 Hip fractures screened in log, 46 patients identified. 30 patients sustained Intracapsular fractures and 16 patients had extracapsular fractures. 43 had shoulder fractures same side and 3 had shoulder fractures on opposite side. Majority of proximal humerus fracture were 2 part and 3 part. 40 Patients have been treated conservatively and 6 required internal fixation. 2 patients underwent simultaneous fixation at the time of hip fracture and remainder 4 in varied period of time with in 2 weeks of surgery. Median age is 83.5 years, 80 % population is female. Median duration acute hospital stays 22.45 days. 30-year mortality rate and 1 year mortality was 6.7 % and 30.43%.

Abstract no.: 52553

USE OF THE TRANEXAMIC ACID IN TOTAL KNEE ARTHROPLASTY AND TOTAL HIP ARTHROPLASTY

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Objective: Demonstrate that the use of Tranexamic Acid reduces perioperative and thereby bleeding in the number of transfusions in patients who underwent total knee arthroplasty and total hip arthroplasty. The safety of the medication. Materials and methods will also be evaluated. Randomized, observational, controlled and prospective study in which the efficacy and safety of Tranexamic Acid was observed as an alternative to reduce perioperative bleeding and the number of blood transfusions. The present study included 50 patients operated in the Hospital Español de Mexico by the same surgeon during the year 2017. This group was divided into two separate groups depending on whether they had received or not acid tranexamic. The variables that were present in this study were: presurgical hemoglobin, at 24 and 48 post-surgical hours, pre-surgical hematocrit and 24-hour post-surgery and the amount of blood collected in the drainages at 12, 24 and 48 hours. **Results.** In the group that used tranexamic acid, it was observed that hemoglobin levels and postsurgical hematocrit did not decrease as much compared to those that did not receive tranexamic acid. In terms of blood transfusions, the group where tranexamic acid was administered, no patient required transfusion, compared to those who did not receive tranexamic acid, 68% of these patients required at least one globular package. **Conclusions:** The use of tranexamic acid proved to be a safe and effective medication to reduce perioperative bleeding and the number of transfusions

Abstract no.: 52554

SUBJECTIVE AND OBJECTIVE OUTCOMES OF MULTI-LIGAMENT KNEE RECONSTRUCTION FOR TRAUMATIC DISLOCATION

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Multi-ligament reconstruction is the standard of care for traumatic knee dislocations. However, the timing, sequence, and techniques of reconstruction remain controversial. 18 dislocated knees treated with multi-ligament reconstruction were evaluated retrospectively. Average patient age at time of injury was 33 years, with an average follow up of 9 months (minimum 2, maximum 20), and subjective outcomes averaging: overall function 60%±8, Lysholm score 63±7.5, Tegner activity score 4.2±0.8, IKDC scores 52.6±5.2. KOOS scores at latest follow up averaged 69.5 ± 5.6 symptom score, pain score of 70.2±7.5, activities of daily living (ADL) score of 71.6±7.1, sports activity score of 46.3±9.5, and a quality of life (QOL) score of 40.6±6.9. There were 2 instances of peroneal nerve palsy, 3 popliteal artery injuries, and 2 instances of compartment syndrome. Objective stability was grade 1 to 2 in all reconstructed ligaments, with range of motion within 10 degrees and stress radiographs with less than 20% laxity compared to the contralateral. Average outcomes reached classification of “average” to “good”, and return to work/activity averaged 8 months. With small cohorts available in the literature, and subjective outcomes, this cohort provides objective data to support the author’s timing and technique. Multi-ligament reconstruction of traumatic knee dislocations resulted in good subjective outcomes and objective measures of stability and function comparable to the uninjured knee, despite limited follow-up.

Abstract no.: 52558

ADOLESCENT IDIOPATHIC SCOLIOSIS AND THE LIKE: THREE-DIMENSIONAL CLASSIFICATION

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Objective: To create a new classification for adolescent idiopathic scoliosis and similar, comprehensive, three-dimensional and application. Methods: The Three-Dimensional Classification was created, with three components: The first denominated of quantitative factor, that divided in three types according to number of curves; the second, the localizer factor shows the most structured point of the curve and the third and the sagittal factor that evaluates the sagittal plane globally. To test the new Classification, we studied the images of 99 patients comparing the intra and interobserver agreement and reproducibility index of the Three-Dimensional Classification with that of Lenke. Classificação Tridimensional com a de Lenke.

Abstract no.: 52563

BACK PAIN: A MYSTERY MEDICAL ENIGMA

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No medical problem of the human body matches in mysteriousness of the back pain, leading to so many fallacies, folktale, fears, and mysterious remedies. Back pain is medical enigma; the more common it is, the less understood it is with certainty. The history of back pain goes back to the recorded history of the mankind. Hundreds of etiological factors were suspected in the history including even Devil's involvement. Similar numbers of remedies were advised and practiced ranging from simple assurance to heroic and novel surgery, that suggests neither we know the exact cause nor its treatment. The modern diagnostic modalities have made the situation more confusing, making the physicians more dependent on modern technology and imaging and less of clinical capability. A brief overview of early theories and ways of treatment are discussed bringing up to the present management. The way forward is left open for the audience to think and explore the definite management instead of treating back pain myopically. Biological option should also be explored instead of relying on surgical management alone.

Abstract no.: 52570

EFFECTS OF PATIENT-SPECIFIC INSTRUMENTATION ON SURFACE KINEMATICS IN PATIENTS AFTER MINIMALLY-INVASIVE TOTAL KNEE ARTHROPLASTY DURING ISOLATED KNEE EXERCISES

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Patient-specific instrumentation for TKA (PSI-TKA) has thus been developed to accurately restore the knee axis in minimally invasive surgery TKA (MIS-TKA). However, the efficacy of this new approach in restoring joint contact patterns has not been determined. The current study thus aimed to compare in vivo the surface kinematics of MIS-TKA and PSI-TKA during isolated knee exercise using 3D fluoroscopy technology. Ten patients with MIS-TKA (posterior stabilized design) and ten with PSI-TKA participated with informed written consent. Each subject performed quiet standing to define joint neutral positions and then isolated knee flexion and extension at seated posture while under the surveillance of a bi-plane fluoroscopy system. Kinematics the TKA for each subject were obtained by registering to the fluoroscopy image at each image frame via a validated 2D-to-3D registration method. During isolated knee flexion/extension, MIS-TKA and PSI-TKA showed similar general patterns of the contact point trajectories but with different magnitudes for the medial and lateral compartments. Compared to MIS-TKA, PSI-TKA showed anterior translations of about 5 mm in the medial compartment and posterior translations of about 5 mm in the lateral compartment both throughout the knee flexion range. Compared to MIS-TKA, patients with PSI-TKA showed more posterior contact trajectories in the lateral compartment while less anterior in the medial, which may be related to a more accurate restoration of the knee rotation axis with PSI-TKA. In conclusion, the PSI-TKA may have a better long-term performance because of a better reconstruction of the knee contact patterns.

Abstract no.: 52571

BIPLANAR OPEN-WEDGE HIGH TIBIAL OSTEOTOMY WITH LOCKING PLATE FOR TREATMENT OF OA VARUS KNEE

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Aim: To introduce modified biplanar opening high tibial osteotomy with rigid fixation to treat varus knee in young and active patients. **Patients and Method:** 48 patients (19 females) with monocompartmental degeneration of the knee combined with varus malalignment of the leg. Mean age of 53 years treated and followed between June 2012 to May 2016). Biplanar opening high tibial osteotomy technique used and fixed with LCP System. Pre-operative mean varus 16.5° (9°~19°). We utilized Lysholm score and Knee Society Score for evaluation of preoperative and follow-up data. **Results:** average correction angle 11.50 ± 2.50° Preoperative posterior tibial slope was 9.15 ± 1.60° and at last follow-up 8.04 ± 1.30°, respectively. The joint space increased from 4.05 ± 1.30mm to 4.83 ± 1.33 mm average time to complete union 14.69 ± 1.5 weeks. There were no cases of delayed or non-union. No major complications like broken plate, nerve injury, or blood vessel injury occurred. The mean score on the Lysholm-Gillquist knee functional scoring scale was 45.5 ± 21.7 preoperatively, and it improved to 77.0 ± 23.9 (P < .001). There was no obvious difference in the range of motion before and after operation. The average knee score improved from 51.19 ± 11.82 to 93.49 ± 5.10. **Conclusion:** Biplanar opening high tibial osteotomy fixed with locking compression plate gives good results for symptomatic genu varum. Also this technique can be applied for medial compartment degeneration of the knee without deformity with good functional outcomes.

Abstract no.: 52572

PARTIAL HIP REPLACEMENT IN TREATMENT OF FEMORAL NECK FRACTURES ON THE HEMIPLEGIC SIDE

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OBJECTIVE: To study the effect of hemi-prosthetic replacement in treatment of femoral neck fractures on the hemiplegia side in the elderly. **METHODS:** From June 2014 to June 2017, 18 patients with femoral neck fractures were treated and followed with prosthetic replacement in our hospital. Eighteen hemiplegia patients, who suffered from stroke previously, had Garden type III and type IV femoral neck fractures on the hemiplegia side. The criteria of selection in this study that all patients had old stroke, but all were able to walk independently before the fracture. **RESULTS:** All the patients survived the preoperative period. hospitalization days, operation time, blood loss and blood transfusion and long-term complications ($P>0.05$). **CONCLUSIONS:** Prosthetic replacement is a reliable method in treatment of Garden type III and type IV femoral neck fractures on the hemiplegia side in the elderly, and patients are safe during perioperative period. Analysis of prosthetic replacement in treatment of femoral neck fracture on the hemiplegia side in the elderly.

Abstract no.: 52574

CRITERIA FOR SURGICAL REDUCTION OF HIGH-GRADE L5-S1 SPONDYLOLISTHESIS TO OPTIMISE QUALITY OF LIFE

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Introduction: The guidelines for surgical reduction of slip grade and/or lumbosacral angle in young patients with high-grade (slippage of 50% or more) L5-S1 spondylolisthesis remain unclear. In particular, previous studies have not analyzed the influence of surgical reduction on quality of life (QOL). **Methods:** A prospective cohort of 61 patients (14.4±2.7 years; range: 8-21 years) with high-grade lumbosacral spondylolisthesis was followed for a minimum of 2 years after surgery. QOL was assessed using the SRS-22 questionnaire before surgery and at the latest follow-up. Multivariable linear regressions were performed to identify specific criteria for surgical reduction of slip severity and lumbosacral angle associated with postoperative QOL, while taking into account potential confounding factors such as age, preoperative QOL, pelvic balance, preoperative slip severity and lumbosacral angle. **Results:** Surgical reduction from a high-grade to a low-grade slip (less than 50%) was associated with improved function, mental health and total QOL score, and with a tendency for improved self-image. There was also a tendency for improvement in QOL scores when the lumbosacral angle was more than 80 degrees postoperatively. **Conclusion:** Reduction to a low-grade of slip should be given strong consideration in the surgical treatment of high-grade spondylolisthesis, in order to optimize QOL in terms of function, self-image, mental health and global QOL. Reduction of lumbosacral angle is not as important as the reduction of slip severity, but preservation or improvement of the lumbosacral angle to more than 80 degrees can be attempted to optimize the QOL in selected patients.

Abstract no.: 52575

EXTRA SPINAL CAUSES OF SCIATICA AND A CAUSES ALGORITHM

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Sciatica is a very well known medical issue. Some use it to describe a symptom rather than a specific disease to mean any pain starting in the lower back and going down the leg. Other use the term more specifically to mean a nerve dysfunction that may be caused by general compression and/or irritation of one of five spinal nerve roots that give rise to each sciatic nerve, or by compression or irritation of the left or right or both sciatic nerves. Pain is felt in lower back, buttock, and/or various parts of the leg and foot and in addition to pain, which is sometimes severe; there may be numbness, muscular weakness, tingling and difficulty in moving or controlling the leg.

Abstract no.: 52579

SURGICAL CORRECTION OF DEFORMITIES IN CEREBRAL PALSY

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Introduction: Cerebral Palsy (CP) is a non-progressive upper motor neuron disease due to injury to the immature brain and is one of the commonest neuromuscular disorders seen in children. As age advances, this disorder can lead to loss of muscular balance with a mixture of spasticity and contracture of affected joints. Materials and methods: This is a study of 158 CP patients treated by us from January 2004 to December 2015. There were 94 male and 64 female. Their age ranged from 2 to 49 years. The common presentation was spastic gait. Scissoring and equinus are common deformities in lower limb and pronation and wrist flexion deformity in the upper limb. Lower limbs were operated in 122 patients and upper limb in 36. Surgical procedures included soft tissue release, tendon transfer, corrective osteotomy and arthrodesis. 37 patients who presented with rigid deformities were treated with Ilizarov external fixator. Results 19 patients were lost in follow up. All patients improved significantly. Discussion: CP is quite common in developing countries like India due to poor socio-economic conditions. Surgical treatment indicated when deformities and/or contracture interfere with activities of daily living. In early stages, most of the deformities and contracture can be corrected with soft tissue release to tendon transfer. At a later stage when deformities are rigid, they can be safely corrected with Ilizarov Fixator. The results were better in younger patients. It is concluded What surgery can achieve in hours, physiotherapy cannot in years.

Abstract no.: 52583

GAP BALANCING AND ROTATIONAL PLACEMENT IN TOTAL KNEE ARTHROPLASTY: THE ROLE OF THE LIGAMENT BALANCER LBS II SYSTEM

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Accurate varus/valgus alignment is achieved through pre-operative planning, reliable instrumentation and carrying out of bone cuts. Balance in extension (axial) is essential prior to determining the rotational position of the femoral component. Rotational alignment is achieved through meticulous ligament balancing and proper referencing. Flexion and extension balancing techniques based solely on bony landmarks often fail to recognize variability in anatomy, bone loss and gap symmetry and, as a result, inconsistently produce a rectangular flexion space. Also, techniques using anatomic landmarks do not consider the proximal tibial resection plane or the status of the collateral ligaments, both of which directly influence femoral component rotation necessary to create a balanced flexion space. This LBS II instrument technique describes a method for balancing the medial and lateral collateral ligaments that reproducibly creates symmetric and equal flexion and extension gaps in order to optimize knee function.

Abstract no.: 52586

EXTENDED CURETTAGE AND SARTORIUS MUSCLE PEDICLE BONE GRAFTING FOR BENIGN LYTIC LESIONS IN THE NECK OF FEMUR

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Proximal Femur is a common area for osseous tumors after the knee in the lower extremity. After curettage of benign lesions the reconstruction in this area needs to be stable and strong enough to withstand the stresses. Head of femur should be preserved in all young patients whenever feasible. We performed extended curettage and reconstruction using Sartorius based bone grafts in 12 patients. There were 7 Giant Cell Tumours, 2 Fibrous Dysplasia, 2 Aneurysmal Bone cyst, 1 Benign Fibrous Histiocytoma. The follow up ranged from two to five years. We had very good results in 10 patients in view of: MSTS(Musculoskeletal Tumour Society) scoring, Filling of the cavity with good bone and Local recurrence. There was local recurrence and coxa vara in two patients. Extended curettage and biological reconstruction offers a satisfactory outcome with acceptable recurrence rates and significantly less surgical morbidity. Natural anatomy is least disturbed and head is preserved for future intervention (like revision/prosthesis). Nonetheless, the reconstruction should be able to withstand normal stresses and if the strength of the construct is doubtful, it should be reinforced with an implant (till the bone healing is complete).

Abstract no.: 52587

COMMINUTED SUBTROCHANTERIC FRACTURES: RESULTS OF DCS BY MIPO

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Osteosynthesis with open reduction techniques in comminuted subtrochanteric femoral fractures can further devitalize fragments and lead to increased rate of non-union, infection, and implant failure. Therefore, these fractures require indirect reduction techniques which do not further damage the vascular supply or soft tissue attachments of the fragments. Dynamic condylar screw using indirect reduction and minimally invasive technique (biological fixation) may be a good alternative to avoid these complications in such fractures. 46 patients with comminuted subtrochanteric fractures underwent indirect reduction and biological internal fixation with DCS. Mean age was 43.7 (range, 24-66) years. There were 7 Seinsheimer type III, 16 type IV and 23 type V fractures. Mean union time was 16.13 (range, 13-23) weeks. There were no cases of non-union or implant failure at mean follow-up of 25.09 (range, 18-31) months. Seven patients had mean limb length discrepancy of 1.48 (range, 1-2) cm. According to Harris hip score functional results were excellent (>90) in 13 patients and good (80-90) in 33 patients with mean score of 88.2 (range, 80-90). Two patients had coxa vara and persistent limp. Osteosynthesis of comminuted subtrochanteric fractures is desirable using indirect reduction and minimally invasive technique. Dynamic condylar screw can be used based on these principles, however the proper planning and execution of the technique is required to achieve good functional outcome and to avoid complications.

Abstract no.: 52596

CENTRAL OSSIFYING FIBROMA WITH CYSTIC DEGENERATION IN THE MAXILLA: A RARE CASE REPORT AND LITERATURE REVIEW

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A 23- year old female reported to the outpatient department with swelling in the left side of the mid-face region, which gradually increased in size since the past 3 years. The swelling was asymptomatic with pain since 2-3 months. It extended from lateral border of nose anteriorly to lateral canthus of eye posteriorly. Superiorly it extended from infra orbital margin to 1 cm above the angle of mouth. Computed Tomography scan revealed well defined expansile lytic lesion with internal separations involving alveolar margin of maxilla and hard palate. Showing extension into the maxillary sinus medially and also projecting into nasal cavity with deviation of nasal septum is also present. Based on these finding a provisional of odontogenic tumor- adenomatoid odontogenic tumor was made. During FNAC, blood was aspirated. Finally, the histopathology finding proved to be totally opposing and confirmed the lesion to be a central ossifying fibroma with a huge cystic degeneration. The cystic degeneration in the ossifying fibroma and the site of the lesion make it a rare occurrence. In the paper, we hereby present this case with a literature review of such past lesions.

Abstract no.: 52599

CHERUBISM OR FAMILIAL FIBROUS DYSPLASIA: REVISITED

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Cherubism an inherited autosomal dominant disorder affects multiple members of a family. It is characterized by bilateral, symmetrical multilocular bone resorptions filled with fibrous tissue in the mandible and/or maxilla. These tissue masses can expand the cortical bone and lead to swelling of the cheeks. The cases usually show bilateral involvement, the mandible appearing to be affected more so than the maxilla. When both jaws are affected the fibrous lesions usually present initially in the mandible with secondary involvement of the maxilla. The histopathology of the lesions in cherubism is not pathognomonic or diagnostic and can mimic central giant cell granuloma with multinucleated osteoclast-like giant cells within vascular fibrous connective tissue stroma. Therefore, definitive diagnosis is made on the basis of radiographic and clinical presentation. In this poster the cases of cherubism reported to our tertiary care government hospital shall be discussed for the past 7 years with the current update on cherubism.

Abstract no.: 52603

**ROLE OF TERIPARATIDE IN MANAGEMENT OF OSTEOPOROTIC
INTERTROCHANTRIC FEMORAL FRACTURES: A PROSPECTIVE
RANDOMISED CONTROLLED TRIAL**

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Failure rate of osteosynthesis in intertrochantric fractures with osteoporosis remains high despite achieving perfect reduction and adequate positioning of the implant. Several attempts have been made to address these osteoporotic fractures with newer implant designs and pharmacological agents. Terapatide, an established therapy for osteoporosis has been reported to enhance fracture healing in several studies. We undertook a randomised control study to evaluate the effect of teriparatide in the fracture healing and functional outcome in elderly patients with osteoporotic intertrochanteric fractures. A total of 30 cases were randomized to Group A [non-teriparatide] and Group B [teriparatide] with 15 patients in each group. The mean age was 73.60 ± 9.55 years (55-88 years). The mean body mass index was 24.31 ± 4.08 kg/m² [17.35-34.17 kg/m²]. There was statistically significant difference ($p < 0.001$) in time to union between group A (15.47 ± 1.41 weeks) and group B (13.33 ± 1.95 weeks). There was significantly more varus collapse in group A (4.59 ± 2.03 vs 3.04 ± 1.46 ; $p < 0.01$) at 6 months compared to 3 months ($p = 0.140$). The average lower extremity functional scale score depreciation from pre-injury levels was not statistically different between groups at 3 months ($p = 0.110$), however it was significantly more in group A at 6 months ($p = 0.004$). There is an accelerated fracture healing with use of teriparatide in osteoporotic fracture and it leads to improved functional results at 6 months' follow-up.

Abstract no.: 52605

USE OF STERILE ADHESIVE DRAPES FOR PREVENTING SURGICAL SITE INFECTION AFTER TOTAL HIP ARTHROPLASTY

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Introduction: Surgical site infection has been estimated to occur in about 15% of clean surgery and 30% of contaminated surgery cases. Utilization of adhesive drapes to defend the wound from organisms that may be present on the surrounding skin during surgery is one strategy used to prevent surgical site infection. There are conflicting results about its efficacy. In this study we evaluated the use of sterile adhesive drapes for preventing surgical site infection after total hip arthroplasty. **Patients and Methods:** This was a randomized clinical trial study in 764 patients underwent hip surgery in Erfan, Milad and Amiralmomemnini during 2016. Patients were randomly assigned to receiving adhesive drapes (n=367) or non-use of adhesive drapes (n=397) groups. The frequency of surgical site infection was recorded based on culture before and 6 months after surgery and compared in two groups. Data were entered in SPSS software ver 16.0 and analyzed. P value lesser than 0.05 considered as significant. **Results:** The mean age of participants was 51.29±15.88 years old and majority of patients was female (50.91%). There was no difference of age and body mass index in both groups (P>0.05). All patients underwent hip surgery. There were significantly more positive cultures in without adhesive drape group (n=12, 3.05%) than with (n=2, 0.54%) (P<0.01). **Conclusion:** We showed that covering the skin with adhesive drapes seems to decrease recolonization of the skin after antiseptic preparation. However, clinical trials to confirm this finding are warranted.

Abstract no.: 52606

IS ONE-STAGE BILATERAL TOTAL HIP ARTHROPLASTY A SAFE PROCEDURE FOR PATIENTS WITH AVASCULAR NECROSIS OF THE FEMORAL HEAD?

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Introduction: Some surgeons are concerned about safety of stage bilateral total hip arthroplasty (BTHA). In current study, the outcomes and complications of one-stage BTHA through Hardinge approach was investigated in patients with avascular necrosis of femoral head. Methods: There were 72 patients with bilateral AVN of femoral head enrolled in current prospective study. The patients aged 32.3 ± 6.2 years. All of the patients underwent one-stage BTHA. Beside of clinical and radiological evaluations, modified Harris Hip Score (MHHS) was completed for all of the patients. preoperatively and again postoperatively. Results: The mean operational time and hospital stay was 2.5 ± 0.2 hrs and 3.7 ± 1 days, respectively. After the operation Hemoglobin level decreased significantly (13.2 ± 4.1 mg/dL Vs 8.2 ± 2.7 mg/dL; $p < 0.001$). There was no deep venous thrombosis, pulmonary embolism, infection, dislocation and periprosthetic fracture in our study. One patient developed unilateral heterotrophic ossification. The MHHS increased significantly from 45.7 ± 10.2 preoperatively to 93 ± 12.6 postoperatively ($P < 0.001$). Conclusion: Based the findings of current study, one-stage BTHA through Harding approach is a safe and useful treatment for patients with femoral head avascular necrosis. However, long term studies are necessary.

Abstract no.: 52608

ONE-STAGE BILATERAL TOTAL HIP ARTHROPLASTY IN YOUNG PATIENTS

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Background: One-stage bilateral total hip arthroplasty (BTHA) offers many advantages which are important to younger patients and diminished costs and time. There are some concerns about the safety of the procedure. Our study was designed to provide more information in regard with THA in patients 30 years of age or younger. Materials and Methods: Between 2010 and 2015, There were 180 patients underwent one-stage bilateral total hip arthroplasty. All patients were in American Society of Anesthesiology (ASA) category of 1 or 2. All complications were followed closely for a period of 4.67 ± 0.54 years. Results: The mean operation time and the average length of hospital stay were 156 ± 23 minutes and 5.20 ± 2.44 days, respectively. We reported 3 patients developed unilateral, temporary peroneal nerve palsy (1.66%), 3 intra-operative fracture (1.66%), two patients (1.11%) with deep vein thrombosis and four patients (2.22%) with superficial wound infection. The functional scores in every diagnosis of patients, improvement was better in avascular necrosis (AVN) than, rheumatoid arthritis (RA), juvenile rheumatoid arthritis (JRA), slipped capital femoral epiphysis (SCFE) and developmental dysplasia of the hip (DDH), respectively. There were significant differences between diagnosis and every functional score separately ($P < 0.05$). Conclusion: Our results showed that one stage bilateral THA provides improved hip function and stable implant fixation at short- to midterm follow up and we suggested one-stage cementless THA in bilateral advanced arthritis in patients younger than 30 years.

Abstract no.: 52612

LOCAL ANTIBIOTIC FOR THE REDUCTION OF INFECTION OF THE PROSTHETIC JOINT IN TOTAL HIP REPLACEMENT SURGERY

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Introduction: Prosthesis-related infection is a serious complication for patients after orthopedic joint replacement, specifically in total hip arthroplasty. In most cases, removal of the infected prosthesis is the only solution to cure the infection. In this study we compared the results of using or not using local antibiotic for prevention of prosthetic joint infection. **Patients and Methods:** We performed a retrospective chart review of 812 patients underwent total hip replacement surgery in Erfan, Milad and Amirmohammadian during 2015-2016. The groups were broken down into patients who received local antibiotics (n=426) versus those who did not (n=386) to compare the occurrence of prosthetic joint infection rate. Data were entered in SPSS software ver 16.0 and analyzed. P value lesser than 0.05 considered as significant. **Results:** The mean age of participants was 53.76 ± 11.37 years old and majority of patients was female (57.88%). There was no difference of age and body mass index in both groups ($P > 0.05$). Number of patients with wound infection was 16 patients in using local antibiotic (3.75%) and 48 patients in non-using local antibiotic (12.4%). The difference between two groups was not significant ($P = 0.067$). Patients receiving local antibiotics had similar blood urea nitrogen and creatinine levels postoperatively compared to the no antibiotics group. **Conclusion:** We showed that administration of local antibiotics trended towards a preventative effect for PJI in THA patients but was not statistically significant. While the use of local antibiotics may prevent PJI, more data is required especially in the revision arthroplasty groups as clinical trial studies.

Abstract no.: 52614

COMPARISON OF SUTURES VERSUS STAPLES IN SURGICAL WOUND CLOSURE AFTER TOTAL HIP REPLACEMENT

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Introduction: There are various studies with conflicting results regarding the efficacy, economics, rate of complications and cosmetic outcomes achieved when comparing sutures and staples for closure of surgical wounds. In this study we evaluated the efficacy of this two methods. **Patients and Methods:** In current RCT, 637 patients underwent THA during 2015-2016. Patients were randomly assigned to two groups: staples (n=297) or suture (n=340). Vancouver Scar Score and Holland wound evaluation scar was evaluated. **Results:** The mean age of participants was 51.48 ± 13.78 years old and majority of patients was female (53.68%). There was no difference of age and body mass index in both groups ($P > 0.05$). Number of patients with wound complication was 65 patients (10.20%) after six-week follow-up which had no difference between staples and suture skin closure ($RR = 0.45$, $CI = 0.34-1.29$). The mean of Vancouver Scar Score and Holland wound evaluation scar was not significantly different between two groups ($P > 0.05$). Time to closure in wounds was shorter in staple group (mean= 5.3 min, $CI = 2.3-8.4$) than the nylon suture group (mean= 14, $CI = 6.5-17.5$). Pain was more in staple group rather than nylon suture group by VAS score (mean 4.5 versus 3.2). **Conclusion:** This study suggests that 10.2% of patients report a wound complication with no difference between sutures and staples. It was demonstrated that suturing skin requires more time and staples are more painful to remove. However, there are no significant difference in use.

Abstract no.: 52615

MINIMALLY INVASIVE PLATE OSTEOSYNTHESIS WITH DUAL LOCKING COMPRESSION PLATES OF PERIPROSTHETIC SUPRACONDYLAR FEMUR FRACTURES ABOVE TOTAL KNEE ARTHROPLASTY

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Objective: We posited that minimally invasive plate osteosynthesis (MIPO) with a dual (medial and lateral) locking compression plate (LCP) for periprosthetic fractures above total knee arthroplasty increased the plate fixation stability and encouraged a good clinical outcome. There we evaluated the outcome of MIPO with dual LCP for periprosthetic supracondylar femur fractures above total knee arthroplasty. **Methods:** Thirteen patients with metaphyseal complex distal femur fracture underwent MIPO with dual LCP. The average age was 74.2 years (range, 67-82 years). According to the AO classification system, there are 13 type 33-A3 and 9 type 33-C2 fractures. Indexes for evaluation included the operative time; time to radiographic union; and incidence of malunion, nonunion, angulation, and shortening complications. A modified WOMAC score was introduced for functional evaluation. Statistics Analysis System (SAS) 9.2 was used for analysis. **Result:** All patients had bony union. The average time to union was 16.2 (range, 12-24) weeks. The average modified WOMAC score was 45.1 (range, 32-51). The mean visual analog scale (VAS) was 1.6 (range, 0-5). The mean activity score was 24.7 (range 20-28). The mean range of motion (ROM, flexion contracture) score was 8.4 (range 5-10). The tenderness at the fracture site score was 4.2 (range 0-5), and the full weight bearing time was 6.4 weeks (range, 4-12). Nonunion, broken plate or implant failure was not observed. **Conclusion:** We believe that MIPO with dual LCP can be a good treatment option for periprosthetic supracondylar femur fractures above total knee arthroplasty.

Abstract no.: 52618

TWO-STAGE SALVAGE IN INFECTED TOTAL KNEE ARTHROPLASTY

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Infections following any surgical procedures is not uncommon. There is also an increase in the number of Geriatric population with many co-morbidity. As the number of Total Knee Arthroplasties are increasing, there is also a increase in the incidence of Post-operative infections following the surgical procedure. Literature mentions about different modalities of treatment options available with varying results. Mention is made about Single stage Revisions, Two stage Revisions, Arthroscopic Lavage, Antibiotic suppression, Liner Exchange among others claiming various Advantages and Disadvantages. We present our experience with Two Stage Revision of Infected Knees with consistent, promising and Encouraging Results. We conclude that Two Stage Revision is a good salvage procedure in management of Infected Knee Arthroplasties.

Abstract no.: 52633

OPEN-POROUS SCAFFOLDS MADE OF SHORT MAGNESIUM FIBRES AS BONE DEFECT FILLERS

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With considerable preclinical research over the last decade, biodegradable metals made of magnesium alloys are now being used as plate and screw fixation systems in the CE market. Apart from avoiding the need for re-operation, the advantage of these temporary implants are their high specific strength and their bone formation stimulus during degradation by triggering the release of CGRP from sensitive nerve endings in the periosteum as recently published in Nature Medicine (Zhang et al. 2016). Thus, this biomaterial seems to represent an ideal structure for partially loaded bone defect fillings. Here, we present a liquid-phase sintered short fibre construct made of magnesium alloy WZM211. A MgF2 coating has been developed to reduce the initial corrosion rate, which is usually expected with the high surface area obtained with scaffolds. Following three months of implantation in beagle dogs, this construct showed a high cell adhesion with primary human osteoblasts and good biocompatibility in a load-bearing environment such as mandibular defects. The scaffold was fully vascularised and filled with bone remodelling, while remnants of the fibres were still visible at three months postoperatively. No accumulation of magnesium or alloying elements in the existing bone could be detected around the corroding scaffold. The mechanical compression tests were in the range of human cancellous bone. In summary, this surface-coated WZM211 open-porous magnesium scaffolds represent promising bone substitute biomaterials for bone conduction clinical applications in load-bearing environments.

Abstract no.: 49540

CONGENITAL PSEUDARTHROSIS OF THE TIBIA: THE OUTCOME OF A PATHOLOGY, AN ORIENTED CLASSIFICATION SYSTEM AND TREATMENT PROTOCOL

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INTRODUCTION: Congenital pseudarthrosis of the tibia (CPT) is defined as a nonunion of a tibial fracture that develops in a dysplastic bone segment of the tibial diaphysis. Pathologically, a fibrous hamartoma surrounds the bone at the CPT site. Histobiochemical studies have revealed increased osteoclastic activity in the periosteum surrounding the CPT. **METHODS:** The cases of 25 children, who have CPT, were included in this study. Their ages ranged from 15 months to 12 years at the time of treatment. Neurofibromatosis-1 was present in 24 children. They were managed according to our classification system and treatment protocol. The treatment for mobile pseudarthrosis (types 1 and 2) included excision of the pathological periosteum, insertion of autogenous iliac crest bone graft, and combined fixation using intramedullary rod and Ilizarov external fixator. For type 3 pseudarthrosis (stiff pseudarthrosis), a pre-constructed Ilizarov fixator was applied for simultaneous distraction of the pseudarthrosis and deformity correction without open surgery. **RESULTS:** Consolidation of the pseudarthrosis and osteotomies was achieved in all cases (100%). Refracture occurred in one case (4%) at the site of previous pseudarthrosis. Residual LLD more than 2.5 cm. occurred in two cases (8%). Valgus deformity of the ankle was present in 12 cases (48%) and was treated by supramalleolar osteotomy. Follow up ranged from 24 to 48 months. **CONCLUSION:** The results of our treatment protocol, based on our classification system, have been consistently good and predictable in all cases of CPT. Mobility of the pseudarthrosis is an important factor in choosing the type of interference.

Abstract no.: 49541

DEFINITION OF BONE TRANSPORT FROM AN ORTHOPLASTIC PERSPECTIVE

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Reconstruction of traumatic bone and soft tissue loss (TBSTL) employs several approaches among which is the bone transport (BT). In this procedure a healthy bone segment is mobilized by means of an external fixator to bridge a bone gap. Mobilization of the bone segment entails advancement of the overlying soft tissue envelop altogether. Between the year 2000 and 2017 the author has treated 150 cases of TBSTL using distraction histogenesis and external skeletal fixation in all cases. The procedure was performed in two modes, in the first group the transport was performed gradually by distraction-compression of the osteotomy and bone defect sites respectively. In the second group, the procedure was performed by acute shortening and re-lengthening (ASRL) technique. Skin grafts (STSG) were used in six cases (4%) and iliac crest bone graft (ICBG) in 42 cases (28%). No free vascularized tissue grafts were used in any case. A few problems have been met with during gradual bone transport, and were manageable without effect on the treatment course or final outcome. Based on our observations in this series, BT was defined as "Bone transport is an instrumented advancement of a local vascularized osteomyocutaneous flap to bridge bone and soft tissue defect either gradual or acute." When perceived as an osteomyocutaneous flap, bone transport extends the umbrella of the reconstruction ladder to include cases where other procedures could not be safely employed. Bone transport, either gradual or acute, is a powerful tool in the armamentarium of Orthoplastic limb reconstruction.

Abstract no.: 49542

**TRAUMATIC BONE AND SOFT-TISSUE LOSS OF THE LEG AND ANKLE:
CLASSIFICATION AND DECISION-MAKING ALGORITHM FOR
MANAGEMENT**

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BACKGROUND: Several reconstructive approaches have been described for management of traumatic bone and soft tissue loss (TBSTL). A classification system and decision-making algorithm, are necessary for the purpose of description, prognosis and choice of treatment method. **PATIENTS AND METHODS:** Between the year 2000 and 2017 a series of 150 cases of TCBSTL were treated using distraction histogenesis and external fixation techniques. The tissue loss was due to either the initial injury or debridement of infection. Adjunctive procedures included split thickness skin grafting and ICBG when indicated. **CLASSIFICATION AND ALGORITHM:** A classification system was designed by the author. The classification is based on factors that influence management and prognosis; (1) stability of the host bone (intact tibia or a well-fixed fracture), (2) presence or absence of infection in the fracture site, (3) size of bone defect, and (4) contamination (infection) of the medullary cavity. Two types (A & B) are described according to host bone stability, subtypes (A1 & A2; B1 & B2) describe absence or presence of infection, and groups describe size of bone defect (in subtype B1) and contamination of the medullary cavity e.g. infected IMN (in subtype B2). A flowchart and decision-making algorithm was subsequently developed. **DISCUSSION:** The proposed classification is simple, applicable, recallable and includes most scenarios of reconstructible TBSTL. The classification provides a basis for communication, description and evaluation of such cases. The algorithm, based on our classification, provides a guideline for management without over/under treatment.

Abstract no.: 49543

COMBINED BONE AND SOFT-TISSUE DEFECTS OF THE LEG TREATED BY DISTRACTION HISTOGENESIS USING EXTERNAL FIXATION TECHNIQUES

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BACKGROUND: Limb reconstruction for combined bone and soft tissue loss of the leg is lengthy and may not yield satisfactory functional results. Distraction histogenesis using Ilizarov techniques comprehensively addresses these injuries and minimizes the need for tissue grafts. **METHODS:** This study presents the results of cases treated between 2000 and 2015 and included 254 patients with tibial fractures complicated by bone and soft tissue defects as a result of open fractures or surgical debridement of infected non-unions. The bone loss ranged from three to eleven Cm. (average 4.7 cm). Their ages ranged from 12 to 54 years. The follow up ranged from 24 to 140 months. The procedure included resection of all devitalized tissues, acute limb shortening to close the defect (no 150) or bone transport (no 104), application of Ilizarov fixator and metaphyseal osteotomy for re-lengthening or bone transport. **RESULTS:** In all patients (100%) the fractures united with well aligned limbs. Acute limb shortening of up to six Cm. was done in the lower third of the leg. Limb lengthening was done in all cases and ranged from 3 to 9.5 Cm. (average 4 cm). Bone graft was needed in 72 cases (28%) and skin grafting was needed in 10 cases (4%). Satisfactory results were obtained in 93% of cases. **COCLUSION:** Distraction histogenesis comprehensively addresses the problems of combined bone and soft tissue loss and minimizes the need for soft tissue flaps. It is better instituted early in the management of these cases to ensure better functional outcome.