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ABSTRACT BOOK

Short Free Papers

Date: 2019-12-05

Session: International Congress on Hip Dysplasia 1

Time: 08:00 - 10:00

Room: Grand Ballroom Hall A2

Abstract no.: 54517

BIOMECHANICS OF ABDUCTION CONTRACTURE AND ITS IMPLICATIONS TO DDH

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Introduction: It has been suggested that loss or inadequacy of strong abductor muscles can have deleterious effects after closed or open reduction. However, the biomechanical effect of different amounts of abduction contracture have not been studied with regards to forces acting on the hip. We hypothesized that different degrees of contracture may cause different magnitudes and direction of force. Methods: A biomechanical model representative of the lower extremity of a 10-week old female infant was developed using CT scans. The mechanical forces of the gluteus medius and minimus were included in the model and the stiffness was adjusted to simulate different degrees of contracture. Mechanical properties for the acetabular and femoral cartilage were obtained from the literature. In addition, the lower extremity was kept in the anatomical position as a lateral external force was applied to the femur. We tested two different external forces of 5lbs and 10lbs to investigate the stress distribution of the acetabular cartilage. Results: Stress distributions on the acetabular cartilage show that pressure on the acetabular cartilage moves from central/posterior to anterior/superior as the abduction contracture decreases. Results also suggest that some of the forces are dissipated into the anterior joint soft tissues and different degrees of contracture may cause different magnitudes and directions of force. This in turn may influence shape of the developing acetabulum and potential for re-dislocation after successful closed or open reduction. Moreover, it may also have relevance regarding dislocation caused by swaddling, or in presence of neonatal hip abduction contracture.

Date: 2019-12-05

Session: International Congress on Hip Dysplasia 1

Time: 08:00 - 10:00

Room: Grand Ballroom Hall A2

Abstract no.: 54977

**INTERNATIONAL INTERDISCIPLINARY CONSENSUS MEETING ON
EVALUATION OF DEVELOPMENTAL DYSPLASIA OF THE HIP**

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Developmental Dysplasia of the Hip (DDH) is one of the most important paediatric orthopaedic conditions. Several aspects of diagnosis and management have been controversial. In order to arrive at a consensus on these controversial issues; several experts of various disciplines met in Csolyospalos, Hungary in September 2018. An international meeting of medical doctors of various disciplines, with expertise in the detection and treatment of DDH, was held. The aim was to arrive at a consensus on these topics, to develop a standardized system of teaching and training in hip US, and to work towards the maintenance of quality in the area. There was strong agreement that clinical examination alone is inadequate, and that screening by US is essential. Specifically Graf's technique of hip US was selected as the US technique of choice. Universal US screening was strongly favoured. Screening should be carried out as soon as possible, but not later than the sixth week of age. US screening is cost-effective, does not result in over-treatment, and contributes to substantially reducing long term consequences. The group, which has been formalized as the International Interdisciplinary Consensus Committee for DDH Evaluation (ICODE), will continue to meet and work towards establishing international consensus on DDH, standardizing and developing teaching and training in the Graf's technique of hip US, and towards the maintenance of standards in detection and management of DDH.

Date: 2019-12-05

Session: International Congress on Hip Dysplasia 1

Time: 08:00 - 10:00

Room: Grand Ballroom Hall A2

Abstract no.: 54750

EVIDENCE BASED TREATMENT FOR DEVELOPMENTAL DYSPLASIA OF THE HIP IN CHILDREN UNDER 6 MONTHS OF AGE

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Introduction: Developmental dysplasia of the hip (DDH) is a common paediatric orthopaedic conditions that attract a substantive amount of controversy. Diagnostic and treatments methods are variable. Clinical examination, Ultrasonography and X rays are among methods used in diagnosing the condition. The treatment varies depending on the grade of the DDH; both conservative and surgical treatments exist. In this review we have investigated the current treatment methods for DDH in infants below 6 months of age in terms of their effectiveness and side effects reported in the literature. Methods: A systemic review and meta-analysis using a modified Cochrane review methodology. The database was searched for studies reporting DDH treatment in infants below 6 months of age. Treatment failure of the device was chosen as the primary outcome. The secondary outcomes were complications that were associated with the treatment including femoral nerve palsy (FNP), avascular necrosis of the femoral head (AVN), residual dysplasia, failure of subsequent surgical treatment, skin problems, and compliance and tolerance issues. Results: A total of 30 studies were included in the review. Twenty-five studies were case series, two case control studies and four cohort studies. Methods of treatment that were reported and compared in this analysis were the Frejka pillow, Pavlik harness, Tubengin brace, Von Rosen splint and Aberdeen splint. These devices were compared in terms of success rate, complications rate in general and risk of avascular necrosis in particular. The results are reported according to the PRISMA guidelines.

Date: 2019-12-05

Session: International Congress on Hip Dysplasia 1

Time: 08:00 - 10:00

Room: Grand Ballroom Hall A2

Abstract no.: 53799

SHORT-TERM OUTCOMES OF CLOSED REDUCTION AFTER PERCUTANEOUS ADDUCTOR TENOTOMY FOR DEVELOPMENTAL DYSPLASIA OF THE HIP AND THE ANALYSIS OF THE INDICATIONS OF THIS TREATMENT: A RETROSPECTIVE STUDY OF 147 CASES.

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Introduction: To evaluate the effects of closed reduction after percutaneous adductor tenotomy for developmental dysplasia of the hip, and to identify indications for the procedure. Methods: Clinical data of 147 children (214 hips), who received closed reduction with percutaneous adductor tenotomy and cast fixation were reviewed. Acetabular index, Tönnis grade, and International Hip Dysplasia Institute (IHDI) grade were measured on pelvic plain radiographs independently reviewed by 2 observers. The presence of avascular necrosis of femoral head, residual dysplasia, and re-dislocation were documented. Univariable and multivariable logistic regression were used to identifying indications of closed reduction for DDH. Results: As for acetabular index, Tönnis grade and IHDI grade, differences between preoperative data and the ones at the final follow-up were statistically significant. Age between 12 and 18 months, walking independently, IHDI grade 2-4 and acetabular index were the risk factors of potential open reduction, while previous Pavlik harness treatment was the protective factor of close reduction. Age beyond 18 months, preoperative IHDI grade 3-4 and acetabular index were risk factors of AVN. Age beyond 18 months and acetabular index were the risk factors of re-dislocation. Conclusion: Closed reduction should be applied to patients who suffered from DDH between 6 and 18 months old with IHDI grade below III. Age over 18 months, excessive acetabular index, and IHDI grade III and above will increase the risk of AVN and the failure rate of closed reduction. Pavlik harness treatment may improve the prognosis and lower the risk of potential open reduction.

Date: 2019-12-05

Session: International Congress on Hip Dysplasia 1

Time: 08:00 - 10:00

Room: Grand Ballroom Hall A2

Abstract no.: 52932

THE OUTCOME OF SALTER INNOMINATE OSTEOTOMY FOR DEVELOPMENTAL HIP DYSPLASIA BEFORE AND AFTER 3 YEARS OLD

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Background: Developmental dysplasia of the hip (DDH) is one of the most important and challenging conditions in the field of paediatric orthopaedics; if not diagnosed and treated in time, it would lead to remarkable morbidity. Methods of treatment based on the patient's age can vary. The aim of this study is to compare the outcomes of Salter osteotomy surgery in two groups of patients under and over three years old. Methods: In this retrospective study, medical records of patients who had undergone innominate Salter osteotomy, within the past ten years, due to non-pathological DDH were collected. Mean follow up of all patients is 70.28 months (min=25, max=118). Results: seventy patients were selected including 85 operated hips. Radiological satisfaction based on modified Severin score system rate was 86% and 85% for lower three years old group and second group, respectively. In clinical assessment, it was found that results in 82% of the patients under 3 years old and 82.9% of patients older than three years old were satisfactory. There was no statistically significant difference between the two groups based on Modified MacKay criterion. Conclusion: Results in both groups of patients under and over 3 years old were found satisfactory. Difference in patient satisfaction rates based on clinical and radiological outcomes was not statistically significant between the two groups. It should also be noted that complications such as redislocation and deep wound infection would cause poor clinical and radiological outcomes.

Date: 2019-12-05

Session: International Congress on Hip Dysplasia 1

Time: 08:00 - 10:00

Room: Grand Ballroom Hall A2

Abstract no.: 54213

SALTERIAN DEGA OSTEOTOMY FOR THE MANAGEMENT OF DEVELOPMENTAL DYSPLASIA OF THE HIP IN CHILDREN AFTER WALKING AGE

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Background: Dega osteotomy is a popular choice for the acetabular reconstruction of developmental dysplasia of the hip (DDH). A salter like Dega osteotomy through starting the cut at a higher level than the conventional Dega was done. The purpose of this prospective study is to evaluate this procedure and report the preliminary clinical and radiological results in DDH patients after walking age. Materials and methods. From February 2015 to June 2018 41 patients with 46 dysplastic hips between 1.5 and 4 .5 years old were managed with this technique. Clinical and radiological assessment using modified McKay criteria and modified Severin classification, respectively acetabular angle, and centre-edge (CE) angle and any complications was recorded. Results: The average age at surgery was 1.6 years (range 1.5 to 4.5), mean duration of follow-up 12.4 months (range 5.0 to 38.9). On the final follow-up the rate of favourable outcome in clinical and radiological evaluations was 90.6 % and 89.3 % respectively. The mean AI changed from 38.0° to 20.8°, the mean CE angle increased from -10.7° to 29.4°, preoperatively and at the latest follow-up respectively. One case of AVN was recorded during follow-up. Conclusion: This salter like Dega procedure was found to achieve good improvement in clinical and radiographic outcomes with simple osteotomy approach and little morbidity.

Date: 2019-12-05

Session: International Congress on Hip Dysplasia 2

Time: 10:30 - 12:00

Room: Grand Ballroom Hall A2

Abstract no.: 54178

IMMOVABLE ACETABULAR CENTRE IN TPO LEAD A GOOD CLINICAL AND RADIOLOGICAL OUTCOMES IN CHILDREN WITH DDH.

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Introduction: Triple pelvic osteotomy (TPO) is usually performed in patients with late-presenting DDH. Methods: We retrospectively reviewed 33 hips in 24 patients (18 girls and 6 boys; 9 bilateral) who were performed TPO between 2012 and 2016. Tönnis classification, acetabular index (AI), centre-edge angle (CEA) were documented before and after surgery. Preoperative and postoperative distance from triaxial cartilage to mid-line of body was measured to observe the changing of the acetabular centre. Harris hip score was used to assess the function of the affected hip. Results: There were significant differences shown in AI, CEA between before and after operations. No significant difference was noted in distance from triaxial cartilage to midline of body. The changes in distance of acetabular centre was slightly negatively correlated with the Harris score, but not statistically significant. Based on the mean Harris score, functional results varied from good to excellent. Avascular necrosis of the femoral head was documented in 2 cases. Conclusions: To maintain acetabular centre not lateralisation, TPO is can provide a better biomechanical structure of hip, decrease the incidence of complication and lead to good or excellent functional and radiological outcomes.

Date: 2019-12-05

Session: International Congress on Hip Dysplasia 2

Time: 10:30 - 12:00

Room: Grand Ballroom Hall A2

Abstract no.: 55796

COMPARISON OF OUTCOMES OF PERIACETABULAR OSTEOTOMY (PAO) FOR DEVELOPMENTAL DYSPLASIA OF THE HIP (DDH) VS FEMOROACETABULAR IMPINGEMENT (FAI): A STUDY USING THE UK NON ARTHROPLASTY HIP REGISTRY (NAHR) DATASET

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The periacetabular osteotomy, also known as the Ganz or Bernese osteotomy, can be used for the surgical management of patients with hip dysplasia, as well as FAI with acetabular retroversion. This study utilised a national database to report the outcomes for patients undergoing a PAO for either DDH or FAI. A retrospective study cohort study was undertaken, reviewing, prospectively collected registry data from the national "Non-Arthroplasty Joint Registry" for patients undergoing periacetabular osteotomy for either DDH or FAI, between January 2012 and February 2019. Baseline demographic data was collected along with information on FAI morphological subtype and PROMs Scores (iHOT-12 and EQ5D) were completed at 6 and 12 months. A cohort of 630 PAOs were identified of which 558 (89%) were performed for DDH and 72 (11%) for FAI. iHOT-12 scores were better in the DDH group compared with the FAI group; preoperatively, at 6 months and at 12 months, however, this difference was only statistically significant for pre-operative scores. There was significant improvement, from baseline, for the 6-month and 12-month iHOT 12 and EQ-5D index scores for both the DDH and FAI groups. This improvement was maintained at 12-months post-operatively. Subsequently, at approximately 12 months, 90% of patients had achieved the minimum clinically important difference (MCID) in iHOT-12 score. The results of this study demonstrate PAO to be a successful surgical treatment modality for DDH and FAI with acetabular retroversion. Our study demonstrated patients achieving significant improvement in patient reported outcome scores which are maintained up to 24 months post-operatively.

Date: 2019-12-05

Session: Spine Free Papers 2

Time: 16:00 - 17:30

Room: Junior Ballroom B

Abstract no.: 53896

ANALYSIS AND OUTCOME OF TRAUMATIC THORACOLUMBAR FRACTURES IN TERTIARY LEVEL SPINE CENTRE

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(INDIA)**

Introduction: Thoracolumbar fractures constitute a spectrum of injuries ranging from simple undisplaced fractures to complex fracture dislocations. Our study involves a detailed analysis and description of traumatic thoracolumbar fractures, who were treated at a tertiary level spine Centre in India. Methods: Our study was conducted as a retrospective trial involving patients, who were treated at our Spine Centre in India between period July 2012 to June 2018. We studied 668 patients with traumatic thoracolumbar fracture, who were treated both conservatively and operatively. Epidemiological details, Thoracolumbar Injury Classification and Severity Score (TLICS) scoring and description of fractures using Arbeitsgemeinschaft für Osteosynthesefragen (AO) classification was done. Change in the Cobb's angle for conservatively and surgically treated fractures were studied in detail. Results: Incidence of thoracolumbar fractures were more common in males than females, among 668 patients 377(56.4%) were due to road traffic accident (RTA) and 291(43.5%) were due to fall from height. Most of the traumatic fractures were of type A (467) of AO classification and 185 and 16 were of type B and type C respectively. We observed 339 patients with TLICS score 4 and above. Conclusion: We observed raising incidence of thoraco lumbar fractures due road traffic accidents. AO Type A fractures found to be more common with type A3 predominance. We also observed significant improvement of Cobb's angle in surgically treated patients. Our data helps in understanding burden of spinal injuries in developing countries and hence need for necessary measures to prevent them is required.

Date: 2019-12-05

Session: Hip Short Free Papers

Time: 08:00 - 10:00

Room: Meeting Room 8

Abstract no.: 54130

A RETROSPECTIVE STUDY TO COMPARE THE RESULTS OF SHORT VERSUS LONG CEPHALOMEDULLARY PROXIMAL FEMORAL NAIL (PFN) FOR TROCHANTERIC REGION FEMORAL FRACTURES IN ELDERLY PATIENTS WITH MINIMUM 2 YEARS FOLLOW-UP

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Introduction: Femoral trochanteric region fractures are increasingly common in elderly. In last few years, our primary author has shifted his choice of implant from long to short cephalomedullary Proximal Femoral Nail (PFN) for such fractures. The purpose of this study is to compare these two groups. **Methods:** We conducted a retrospective chart review of elderly (≥ 60 years) patients with trochanteric region femoral fractures treated by PFN. Total 120 patients treated by a single author at 2 different institutions were included. We excluded concomitant sub-trochanteric or shaft fractures, pathological or poly-trauma fractures and follow-up < 2 years. Out of 120 patients, 80 were treated at level-I trauma centre with long PFN during 2011-13. The remaining 40 were treated at level-II trauma centre with short PFN during 2014-16. Comparative analyses of demographics, pre and intra-operative characteristics, clinical outcomes and complications were carried out. **Results:** No significant differences were observed between the two groups in terms of to age, gender, fracture-classification, injury-surgery interval, blood-transfusion and total hospital stay. The mean operative-time for short PFN procedures was significantly less (62 minutes) when compared to that of long PFN (97 minutes). Similarly, intra-operative blood loss and overall operative-cost were significantly higher in long PFN group as compared to short PFN. We did not encounter any periprosthetic-fracture near distal-tip of short PFN. **Conclusions:** Past learning experience is definitely a limitation in our study. However, relatively shorter operative-time, lesser blood-loss and operative-cost have made short PFN a better choice of implant for treatment of trochanteric region femoral fractures.

Date: 2019-12-05
Session: Hip Short Free Papers
Time: 08:00 - 10:00
Room: Meeting Room 8

Abstract no.: 52923

INTRAMEDULLARY NAIL (IMN) AND SLIDING HIP SCREW (SHS) FOR MULTIFRAGMENTARY TROCHANTERIC FRACTURES TYPE AO/OTA 31-A2: REVISION AND MORTALITY OF TOTAL 650 CASES.

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Background: For this retrospective cohort study we assessed multifragmentary trochanteric fractures (AO/OTA 31-A2). An intramedullary nail and a sliding hip screw were the used devices. The study was to determine both devices in relation to any re-operation and mortality up to 2 years. The main question was: Is there one device superior to the other? Methods: The mono-centre study was conducted based on our computerized data. The treatment period covered 10 years. Only patients with type AO/OTA 31-A2 fractures were included. The used device was to the discretion of the surgeons. Apart from descriptive variables, the following measurements were assessed: 1) duration of surgery, 2) blood loss, 3) transfusion, 4) hospitalization, 5) any re-operations, 6) any implant revisions; and 7) mortality. The follow-up was two years for each living patient. Missing data were evaluated by telephone call. Results: 650 consecutive fractures were enrolled, within 408 fractures were treated with nailing and 242 fractures with SHS. The mean age was 81.5 years (20-101) and most were female patients (76.3%). Regarding the variables no significant effects were evaluated. Due to the measurements, re-operations ($p=0.015$), fracture displacement ($p<0.001$), cut out ($p<0.001$), implant revision ($p=0.002$), duration of surgery ($p<0.001$), and blood loss ($p<0.001$) were significantly decreased by nailing. Mortality rate up to 2 years was without differences between the both devices (log rank 0.294). Conclusions: We only recommend intramedullary nailing for the treatment of multifragmentary fractures type AO/OTA 31-A2 as a result of fewer re-operations including fewer implant revisions.

Date: 2019-12-05
Session: Hip Short Free Papers
Time: 08:00 - 10:00
Room: Meeting Room 8

Abstract no.: 52902

TEMPORAL SUBSIDENCE RATES WITH THE C-STEM CEMENTED TRIPLE-TAPERED POLISHED STEM: A 13 TO 18 YEAR FOLLOW-UP STUDY

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Introduction: The C-stem was designed to load the femur proximally. Subsidence within the cement mantle generates hoop stresses which transmit to the bone, reducing negative remodelling, maintaining bone stock and minimising loosening. The Exeter continues subsiding up to 10 years, but there are no long-term reports on the pattern of subsidence of the C-stem. Methods: Data was collected prospectively on a series of 500 consecutive C-stems (455 patients) performed between March 2000 and December 2005. A posterior approach, cemented acetabulum, canal restrictors, stem centralisers and Palacos-R bone cement, containing Gentamicin, were used, with a third generation cementing technique. Results: There were 282 female patients (62%) and age at surgery averaged 69.3 years (23-92). 280 replacements were followed beyond 10 years and follow-up of the remaining 189 averaged 183 months (156-225). Seven femoral implants loosened (1.4%), all associated with rapid acetabular wear and calcar changes at 10 years. Subsidence occurred in all but one femoral implant (99.8%) and averaged 1.53mm at 15 years. Subsidence occurred in 52% of implants between 1 and 3 years, 41% between 3 and 5, 14% between 5 and 10 and 4.4% between 10 and 13, with only one implant subsiding thereafter. Summary: The C-stem performed well, with low complication and revision rates. The percentage of implants subsiding decreased with the passage of time, but continued up to 13 years, at which time total subsidence averaged 1.53mm. The findings are consistent with the performance and magnitude of subsidence reported for polished double-tapered stems.

Date: 2019-12-05
Session: Hip Short Free Papers
Time: 08:00 - 10:00
Room: Meeting Room 8

Abstract no.: 54160

INFLUENCE OF ORTHOGERIATRIC INPUT AIDED BY A SPECIALIST NURSE IN OUTCOME OF PATIENTS WITH FRACTURE NECK FEMUR IN A DISTRICT GENERAL HOSPITAL

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Background- NHFD 2018 mentions that at any one time patients recovering from hip fracture occupy over 3,600 hospital beds in England, Wales and Northern Ireland. Best model to determine collaborative care has yet to be established despite many prior studies. We hereby present our results in our District General Hospital comparing three years having only routine (twice a week) geriatric consultation without the services of the Specialist Fracture neck of Femur nurse and with next three years having shared care with Orthopaedic and Orthogeriatric consultants and a specialist dedicated fracture neck of femur nurse practitioner. Materials and Methods- We compared outcomes as regards in-patient mortality, length of stay and time to surgery for 2482 patients presenting to our hospital between October 2011-14(geriatric consult) and comparing them to patients presenting between 2014-17(shared care). Secondary outcomes including readmission rates and post operative co morbidities were also studied. Results- 30 day mortality as well as time to surgery (hours) both decreased below the national average with the shared care and aid of specialist nurse. The incidence of pressure ulcers also decreased significantly and was well below the national average. More than 90% patients had formal Orthogeriatric, nutritional and delirium assessment in the shared care model. Conclusion- Formulation of a full time Orthogeriatric department including a specialist nurse in a shared care model with Orthopaedic team results in significant improvement in morbidity and mortality in fracture neck femur patients

Date: 2019-12-05
Session: Hip Short Free Papers
Time: 08:00 - 10:00
Room: Meeting Room 8

Abstract no.: 52900

TOTAL HIP REPLACEMENT WITH THE C-STEM POLISHED TRIPLE-TAPERED IMPLANT: 13- TO 18-YEAR FOLLOW-UP STUDY

David SOCHART

Northern Care Alliance, MANCHESTER (UNITED KINGDOM)

Introduction: The C-stem was designed to load proximally at the calcar, avoiding negative bone remodelling, maintaining bone stock and minimising loosening. Methods: Data was collected prospectively on 500 consecutive C-stems (455 patients). A posterior approach and cemented acetabulum were used. Results: There were 282 females and 173 males, average age was 69.3 years (23-92). Average follow-up of the surviving 189 implants was 183 months (156-225). There were 7 periprosthetic fractures (5 - ORIF, 1 non-operative, 1-revision) and 13 dislocations (8 – closed reduction, 1 – open, 2 – PLAD, 2 – cup revisions). 33 acetabular components loosened aseptically (6.6%) and were associated with rapid wear. There were 21 (4.2%) acetabular revisions, 18 (3.6%) for aseptic loosening, 2 for dislocation and one for late deep infection. At 10 years, there were no calcar changes in 70%, rounding in 16% and distal femoral cortical hypertrophy (DFCH) in 6 cases (1.2%). Loss of calcar height (4.6%) and localised lysis (9%) were associated with rapid acetabular wear. Seven femoral implants loosened aseptically (1.4%), all associated with rapid acetabular wear and in one case resulted in a periprosthetic fracture. There were 14 femoral revisions (aseptic loosening – 3; late deep infection – 1; part of a revision procedure for acetabular loosening – 10) and four currently await revision. Summary: The C-stem polished triple-tapered implant performed well, with low complication and re-operation rates. Acetabular loosening (6.6%), femoral loosening (1.4%) and negative changes in the calcar (13.6%) were all associated with rapid wear.

Date: 2019-12-05
Session: Hip Short Free Papers
Time: 08:00 - 10:00
Room: Meeting Room 8

Abstract no.: 55265

A SHORT STEM FOR TOTAL HIP ARTHROPLASTY: WHY? RESULTS AFTER 3 YEARS WITH A SHORT CURVED TISSUE AND NECK SPARING IMPLANT

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Background: Total hip arthroplasty (THA) is one of the most effective orthopaedic procedures, providing consistently high success rates across population segments as measured by pain relief, improved function, and patient satisfaction. However, clinical outcomes have been less favourable in young active patients, with a strong demand for quicker rehabilitation (smaller incision, muscle preserving, shorter hospitalization, easier rehabilitation, quicker return to sporting activities) leading many surgeons and patients to look for alternative surgical selection. Such a style of short stems is curved neck preserving designs. Methods: This is a retrospective study of 150 short curved neck and tissue sparing cementless femoral implant (TSI™ Hip Stem, Signature Orthopaedics) implanted in the same institution using a posterior minimal invasive surgical approach since September 2016. Results: Three femoral components were explanted due to postoperative infection. An intraoperative distal femoral fracture in a Dorr type A bone profile during stem insertion. There was a posterior dislocation; there were two thigh pains. There was no abnormality of implant fixation. Conclusion: This short curved neck and tissue sparing stem has demonstrated excellent short-term initial results, excellent implant stability, and excellent calcar medial bone remodelling. The removal of the infected stems demonstrated the stability of the implant with early bone fixation to the proximal porous surface. High neck resection allows easy revision and conversion by implanting a new conventional cementless stem. There was a short but definitive learning curve.

Date: 2019-12-05
Session: Hip Short Free Papers
Time: 08:00 - 10:00
Room: Meeting Room 8

Abstract no.: 54843

SAGITTAL ALIGNMENT OF SHORT-TAPERED COMPARED TO STANDARD TAPERED FEMORAL STEM

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Introduction: The use of short-tapered femoral stems in total hip arthroplasty is increasing. However, few data have been published regarding the risk of sagittal mal-alignment of these stems. Our hypothesis was that a short-tapered stem is more prone to sagittal mal-positioning than a standard tapered femoral stems. A secondary aim was to assess the cause of this malalignment. Methods: We retrospectively reviewed the immediate post-operative radiographs of 190 hips (95 on each group) that underwent a total hip arthroplasty by a single surgeon through a direct lateral approach. A standard tapered femoral stem (Corial, Depuy Synthes) or short-tapered stem (Tri-Lock BPS, Depuy Synthes) was inserted on either group. The femoral stem position was assessed in the sagittal view using the computer-assisted EBRA-FCA (EinzelBildRontgenAnalyse-Femoral Component Analysis) method. All radiographic measurements were performed twice with a time interval of at least 3 weeks by a single independent observer who was not involved in the management of these cases. Results: There was a significant difference between the two stems in the sagittal stem orientation ($p=0.01$). The short stem was significantly more prone to sagittal mal-alignment. This possibly was due to the loss of guiding effect of the femoral shaft when using a short stem. Conclusion: Our results illustrate that a neutral stem tip position in THA is significantly more difficult to obtain with a short tapered stem, when compared to a long standard tapered stem. Further studies are required to assess any effect on the functional outcomes and survival of these stems.

Date: 2019-12-05
Session: Hip Short Free Papers
Time: 08:00 - 10:00
Room: Meeting Room 8

Abstract no.: 53703

DUAL MOBILITY CUPS FOR PREVENTION OF EARLY TOTAL HIP ARTHROPLASTY DISLOCATION IN PATIENTS WITH FAILED PROXIMAL FEMORAL FRACTURE FIXATION

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Introduction: Most proximal femoral fractures can be treated successfully with reduction and internal fixation using either medullary or cortical fixation devices such as sliding hip screw, trochanteric plate, dynamic condylar screw, blade plate and cannulated screws. Failure of fixation often occurs in patients with poor bone quality, severe osteoporosis or unstable fracture patterns. In elderly patients with poor bone stock or a badly damaged hip joint, salvage by replacement is optimum. Dislocation is one of the most feared complications in this patient population due to tissue scaring and muscle wasting. The purpose of the present study is to assess short term clinical and radiographic outcome of dual mobility cups and its reliability in prevention of dislocation after failure of proximal Femur fracture fixation. Patients and Methods: we conducted a prospective study involving 40 patients who underwent total hip replacement using dual mobility cup after failure of proximal femoral fixation. The mean follow up period was 1 year and Harris hip score was used to evaluate the patients clinically with emphasis on dislocation rate. Results: none of the patients showed articular dislocation or intraprosthetic dislocation with mean Harris hip score improved from 19.3 to 72.9 and 2 patients experienced postoperative wound infection treated with debridement and antibiotics according to culture. Conclusion: dual mobility cup shows good clinical results with low dislocation rate when used in patients at high risk of dislocation after failure of proximal femur fracture fixation. Keywords: Dual Mobility Cup, Tripolar, High Risk of Dislocation.

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Abstract no.: 55086

ACETABULAR REVISION WITH LARGE BONY DEFECTS USING JUMBO CUPS

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Introduction: Large bony defects of the acetabulum can be a challenging problem in the revision THA criticizing the outcomes of the surgery. In our previous study, it has been shown that utilizing Jumbo cups can be associated with promising outcomes in these patient population. In the current study, we investigated the midterm clinical, radiographic and functional outcomes of acetabular revision using Jumbo cups in continuation of the previous study with more patients. **Methods:** Between 2004 and 2016, there were 83 patients with large acetabular defects underwent uncemented revision total hip arthroplasty (THA) using Jumbo cups. The patients were followed for 11.2 ± 6.3 years. **Results:** Aseptic implant loosening occurred in 5 patients who underwent re-revision THA. Postoperative dislocation was occurred in two patients. Radiolucency around the bone-implant interface was found in 5 patients without prosthetic instability and loosening. One patient developed infection. There was no thromboembolic events in the current study. The Harris hip score (HHS) averaged 79.4 ± 17.2 . Based on the HHS, the functional outcomes were excellent in 14 patients, good in 33 patients, fair in 25 patients and poor in 11 patients. **Conclusion:** The findings of the current study demonstrated that utilizing Jumbo cups in revision THA with large bony defects can be associated with good clinical and radiographic outcomes. Of interest, the rate of major complications was no considerable in these patients.

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DIFFERENT BEARINGS ON EACH SIDE HAVE DIFFERENT INCIDENCE OF INFECTION DURING AN OBSERVATION PERIOD OF 35 YEARS IN PATIENTS WITH BILATERAL TOTAL HIP ARTHROPLASTIES

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Introduction: study of infection risk on bilateral total hip arthroplasties (THA) with different bearings; surgery performed in the same hospital from 1981 to 2010 (mean followup 15 years; 7 to 35). Methods: 1) first population (age 32 years \pm 14) with high risk of infection: 325 patients (650 hips) with sickle cell disease (SCD); 116 patients with Metal on PE (MoP) on one side and Ceramic on PE (CoP) on the contralateral; 106 patients with CoP and Ceramic on Ceramic (CoC); 103 patients with MoP and CoC. 2) a matched control population (same age, same period) of 820 patients (1640 hips) without co-morbidities; 354 patients with MoP and CoP; 237 with CoP and CoC; 229 with MoP and CoC. Results: Among the 2290 hips, 59 infections (2.6%); 23 infections (1.4%) in 1640 control hips, versus 36 (5.5%) in the 650 sickle cell disease hips ($p < 0.0001$). In SCD group, MoP hips had higher risk of (26 among 219) when compared with CoP (9 among 222; $p=0.002$), and CoC (1 among 209 hips; $p=0.0004$); with increase over time from 1% at one year to 4% at most recent follow-up with CoP, and from 1% to 11.8% with MoP. In control group, difference was less significant ($p=0.02$) for each bearing surfaces; 2 infections for 466 CoC hips, 7 among 591 CoP hips, and 14 among 583 MoP hips. Conclusion: When contralateral hip of same patient is control, PE components are more prone to infection than those involving ceramic-on-ceramic.

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Abstract no.: 53652

PARTICIPATION IN SPORTS ACTIVITIES AFTER TOTAL HIP ARTHROPLASTY USING A MINIMALLY INVASIVE ANTEROLATERAL-SUPINE APPROACH

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Introduction: Sports activities have recently been shown to promote health and healthy aging, but are often prevented by hip dysfunction. The invasiveness of total hip arthroplasty (THA) has been reduced by minimally invasive approaches, particularly the anterolateral-supine approach (ALS-THA), and has enabled early recovery. However, quantitative sports participation data after ALS-THA has not been reported. This study investigates sports participation and the types and frequencies of sports activities among patients who underwent ALS-THA and factors for sports participation. Materials and Methods: Patients voluntarily participated in sports activities, without surgeon recommendations, and the sports participation was retrospectively investigated. Of the 1173 patients who underwent hip orthopaedic surgery at Kitasato University Hospital in Japan between January 1, 2013, and January 31, 2018, 307 patients under 80 years who underwent ALS-THA were enrolled. We administered questionnaires recording sports participation, and the type and frequencies of sports activities before and after ALS-THA. Results: Sports participation was achieved in 73.4% of the postoperative patients. High-impact sports were performed in 7.0% before operation and 3.6% after operation. The median sports activity frequency was 3.00 (1st–3rd quartiles, 0.02–7.00) times a week. Postoperative patients who achieved sports participation weighed less than those who did not [54.7 (48.9–62.0) and 60.7 (52.7–66.7) kg, respectively]. Conclusion: Our results suggest that ALS-THA enables more than 70% of patients to achieve sports participation, and have an appropriate frequency of sports activity for preventing diseases and enhancing healthy life expectancy. Low weight before surgery also contributes to sports participation.

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Abstract no.: 54631

INFLUENCE OF IMPLANT CHARACTERISTICS ON SURVIVAL OF A CEMENTED STEM

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Introduction: Today almost any prosthetic implant brand includes a number of variations. For example, a stem may be available in different lengths, sizes, caput-collum-diaphyseal (CCD) angles, and with or without extra offset. We studied the influence of design variations on implant survival of a cemented stem (Lubinus-SP2/LINK) based on detailed recordings of implant characteristics in the Swedish Hip Arthroplasty Register. Methods: 115 022 stems were reported during 1999-2017. Analyses only included cases with stem length 15 cm, head sizes 28, 32 and 36 mm, primary osteoarthritis, and cemented cup from the same manufacturer (n= 75,377). Outcome was non-infectious stem revision with or without revision of the cup. Cox regression with adjustment for age, sex, incision and year of operation was used and Hazard Ratios (HR) presented with 95% CIs. Results: Mean age was 71.6 years. 58.1% were females. At 18 years, overall stem survival was 95.9±0.5% (Kaplan Meier estimate). Stems with extra offset had doubled risk for stem revision (HR: 2.1, 1.6-2.6). CCD angle of 117° was protective (HR=0.7, 0.5-0.9). Below size 3 the risk for stem revision increased with decreasing size. Long (HR=1.4, 1.2-1.6) or extra-long neck (HR=2.3, 1.5-3.4) had a negative influence. Discussion: We observed several effects of design variations; small stem sizes showed, extra offset and long neck length had an increased risk, whilst CCD angle 117° had lower risk of stem revision. It should be emphasized that the choice of a specific implant is related to the anatomy of the hip operated and surgical technique.

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OLD UNREDUCED TOTAL HIP ARTHROPLASTY, TREATMENT AND RESULTS

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In developed countries, there is easy access to health care services but in developing countries sometimes it is very difficult for patient to get advanced medical care. It is possible to see some unreduced total hip arthroplasties in these countries. It can be happened because of the future of patients or difficulty in getting access to high quality specialists. From 2005 to 2017 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.

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Abstract no.: 54933

TOTAL HIP ARTHROPLASTY FOR COMPLEX PRIMARY HIPS

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Introduction: Total hip arthroplasty (THA) surgery for complex primary hips present challenging technical difficulties with increased risk of complications, thus requiring detailed planning to ensure successful operation. This paper aims to present the pattern of complex primary hips presenting for THR, the challenges and complications. Methodology: Data collected over a four year period, of patients who presented for THA, were analysed for age, sex, diagnosis, type of hip, complications, duration of surgery, blood loss and transfusions, challenges and outcome. Results: 15 (43.4%) of the 52 cases of THA done in last 4 years were complex primary hips. Ankylosing spondylitis (60%) was the commonest cause of complex primary hips in our series. Most of them had totally ankylosed hip with negligible movement and absent/tight medullary canals. This was followed by avascular necrosis due to post trauma / post operation (26.7%), Degenerative Acetabular Protrusion (0.66%) and old unreduced hip dislocation (0.66%). The major peri operative complication noted was calcar cracking in 3 patients (20%) Discussion: Ankylosing spondylitis patients presented more with complex primary hips and the commonest difficulty was dislocating the hips and recreating medullary canals. Intubating such patients were another challenge for anaesthetists. Technical difficulties alongside increased operation time and blood loss should be anticipated and prior measures to be kept in place to avert complications. Key words: Complex primary hip / total hip arthroplasty / replacement.

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INDICATIONS AND RESULTS OF CONVERSION OF GIRDLE-STONE TO TOTAL HIP ARTHROPLASTY

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Introduction: Resection of head and neck of femur is a procedure which may be used for managing of some hip disorders like infection, failed internal fixation or arthroplasty. It lowers Harris hip score significantly. Because of flail hip and significant Leg length discrepancy some patients cannot tolerate it. Conversion to total hip arthroplasty is an option for increasing patient satisfaction and improving function. Materials and Methods: Between 2005 and 2018 every case of girdle-stone which converts to total hip arthroplasty studied. Cause of resection of head and neck, pre operative and post operative leg length discrepancy, Harris hip score, acetabulum and femur reconstruction, infection and neurovascular complications were studied. Results: There were 36 cases of girdle-stone which convert to total hip arthroplasty. Average LLD improves from 5 cm to 0.5 cm and average Harris hip score increase from 64 to 90. acetabulum reconstruction with allograft was done in 15 cases. All of them need distal fixation because metaphyseal fixation was not possible. In 7 cases dual mobility cup and in 8 cases constrained liner were used. There was one case of deep infection which ends with girdle procedure again. Discussion: Converting girdle stone to total hip arthroplasty is a successful procedure in improving patient satisfaction and LLD and hip scores but it needs attention to bone defects in acetabulum and femur by acetabuloplasty and diaphyseal fixation and also abductor insufficiencies by dual mobility cups or constrained liners.

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Abstract no.: 53740

PREVALENCE OF ADVERSE REACTION TO METAL DEBRIS FOLLOWING THE 28-MM METASUL METAL-ON-METAL TOTAL HIP ARTHROPLASTY: MINIMUM 15-YEAR FOLLOW-UP

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Introduction: Metal-on-metal total hip arthroplasty (MoM-THA) with a 28-mm head has generally shown more favourable outcomes than larger-head MoM. Nevertheless, there may be a concern regarding adverse reactions to metal debris (ARMD) even in small head MoM. The purpose of the present study is to evaluate the long-term results of 28-mm Metasul (Zimmer Biomet) MoM-THA, and to assess the postoperative prevalence of ARMD. Methods: We retrospectively evaluated clinical outcomes using the Harris Hip Score (HSS) and blood metal-ion (Co and Cr-ion) levels in 33 patients who underwent primary cementless THAs using a 28-mm Metasul articulations. The minimum follow-up period was 15 years. The prevalence of ARMD was assessed on metal artifact reduction sequence magnetic resonance imaging (MARS-MRI). Results: The mean preoperative HSS was 43.5, improving to 88.5 at the final follow-up. MARS-MRI revealed ARMD in seven hips (28%). The mean Co and Cr-ion levels were 9.0 and 6.3 µg/L in patients with ARMD, while 1.5 and 1.7 µg/L in patients without ARMD. Seven hips (20.5%) were revised due to septic failure (42.9%), recurrent dislocation (14.3%), and ARMD (42.9%). The 19-year survivorship of revision for any reasons and for ARMD was 79.5% and 90.5%, respectively. Conclusions: We showed a relatively high revision rate (20.5%) as well as high prevalence of ARMD (28%) in 28-mm MoM THA using Metasul bearings. Our results suggest that a careful screening is needed not only for large-diameter MoM patients but also for small-diameter MoM patients according to blood metal-ion concentrations and clinical imaging findings.

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Abstract no.: 54708

MIDTERM RESULTS OF TRABECULAR METAL AUGMENTS COMBINED WITH CEMENTED CUPS IN RECONSTRUCTION OF ACETABULAR DEFECTS

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Introduction: Combined acetabular segmental and cavitory defects represent a challenging procedure for the hip surgeon. A question was proposed about the efficacy of reconstructing the acetabular defects using combination of Tantalum Augments and cemented cups. Methods: Between April 2010 and August 2017, 35 combined segmental and cavitory acetabular defects, Paproskey Classification Grade IIB, IIC and IIIA, were reconstructed using Tantalum Augments combined with a polyethylene cemented cup. In difficult primary cases, patients received a primary stem and in revision cases long cementless (Wagner) stems were used. Impaction bone graft was utilized in patients with medial defects. Patients were prospectively evaluated using the modified Harris Hip Score (HHS) in addition to radiological evaluation at 3, 6 and 12 months then annually afterwards. Results: At an average follow up period of 4.8 years (range 2-9) all patients in the study group had a stable construct, indicating a 100% success rate. All metal augments were stable and good incorporation of the impacted bone graft was observed. No revision for loosening was needed. The HHS significantly improved from 27 pre-operatively to 83 postoperative ($P < 0.001$). Conclusion: Metal augments can convert massive acetabular defects to a more contained defect suitable for impaction graft. The combination of tantalum augments that provide strong structural support and cemented cups is successful at the mid-term follow up.

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Abstract no.: 52901

DETERIORATING RESULTS OF THE OPERA CEMENTED ACETABULAR COMPONENT BEYOND 10 YEARS: A 13 TO 18 YEAR FOLLOW-UP STUDY.

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Introduction: The Opera cemented acetabular component (Smith & Nephew Ltd) achieved 7A ODEP rating in 2012 and 10A* in 2015, despite being withdrawn in 2013 for portfolio streamlining. The NJR shows 3% revision at 10yrs rising to 6% at 14yrs. Methods: Data was collected prospectively on 303 consecutive Opera implants (275 patients), performed between March 2000 and December 2005. A posterior approach, C-Stem femur, canal restrictors, stem centralisers and Palacos-R bone cement containing Gentamicin were used. Results: There were 185 in female patients (61%) and age at surgery averaged 69.2yrs (25-92). Aseptic loosening occurred in a total of 31 (10.2%) cases and 15 (5%) are currently loose, all associated with increased wear. Acetabular revision was performed in 17 (5.6%) cases, 16 (5.3%) for aseptic loosening and one for late infection. Six cups were revised for aseptic loosening before 10 years, and 10 between 13 and 15 years. At 10 years 34% of implants showed rapid wear rising to 45% at 13. Conclusions: Registries aim to detect failing implants at an early stage but their end-point is revision. This study demonstrates how this can significantly underestimate true failure rates. The Opera had a low revision rate, but many implants show high wear and actual or impending failure, with a rising revision rate. Long-term studies are hard to conduct, but provide the most accurate and detailed information. These results raise concerns about the true performance of the Opera cup and close follow-up of these implants is recommended.

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FINANCIAL ANALYSIS OF REVISION HIP ARTHROPLASTY

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Revision total hip arthroplasty (THA) is a complex procedure which carries both a greater risk for patients and greater cost for the treating hospital than does a primary THA. The aim of this study was to compare cost of treatment and health insurance reimbursements between revision THAs for infection with revision for aseptic indications (aseptic instability and periprosthetic fracture). We analysed hospital data from 168 patients who underwent revision THA between 2010 and 2018 at Clinical department of Traumatology, Sestre Milosrdnice University Hospital Center in Zagreb, Croatia. Financial data were collected from Hospital Information System. Financial analysis included total cost per a patient, Croatian Health Insurance reimbursements, cost of implants and length of hospital stay. Patients were divided into three groups according to indications for revision THA: aseptic instability, infection and periprosthetic fracture. Statistical analysis was made by Student's t-test at the 95% confidence level ($p < 0.05$). The difference between mean of total cost per patient and mean of Croatian Health Insurance reimbursements was -262.83 € (-6.08%) for aseptic instability, -1694.94 € (-17.25%) for infection and - 916.49 € (-17.33%) for periprosthetic fracture. Revision THA for infection carries with it a greater cost and a longer stay than that for aseptic indications. The Croatian Health Insurance Fund does not recognize differences in the cost of revision THA for aseptic instability, infection and periprosthetic fracture. Health insurance reimbursement are inadequate for centres which offer a revision hip surgery.

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Abstract no.: 54503

FUNCTIONAL OUTCOME OF TWO-STAGED TOTAL HIP REPLACEMENT FOR LONG STANDING GIRDLESTONE EXCISION ARTHROPLASTY.

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Introduction: GSEA is a common surgery for infective hip conditions, but was also a common procedure for hip pain in our environment due to poverty and paucity of expertise then, especially in the northern part of Nigeria where a mobile hip is highly desired for religious purposes. We studied the functional outcome of THR in this group of patients with longstanding GSEA. Method: we sequentially recruited and followed up 20 patients over 5 years. Harris Hip Score (HHS) was done at admission and post-operatively at 6 and 12 weeks, and at 6, 12 and 24 months. In the first stage, open fibrolysis was done and distal femoral skeletal traction was applied for 2 weeks. When the limbs equalise on traction, patient was returned to the operating theatre for THR (second stage). Physiotherapy was commenced immediately post-operatively. Patient was ambulated second day post-operatively. Results: A total of 20 patients had THR following longstanding GSEA with a mean age of 43.7 ± 11.7 years. M:F ratio was 4:1. Pre-operatively, the mean HHR was 43.6 ± 9.6 while the average limb length discrepancy (LLD) was 5.0 ± 0.8 . Average hospital stay was 21.0 ± 3.0 days. The mean HHR at 2 years was 94.3 ± 3.0 while the mean LLD was 0.1 ± 0.2 . A patient developed footdrop that recovered fully at 6 months. Two patients had revisions done due to LLD of 2cm. No established infection was recorded. Conclusion: Two staged THR offers excellent functional outcome in longstanding GSEA with minimal complications.

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Abstract no.: 53345

POSSIBILITIES OF JOINT PRESERVING SURGERY IN ADOLESCENTS IN THE DEVELOPING DYSPLASTIC COXARTHROSIS

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Significance of pelvic and femoral osteotomies in the condition of developed arthrosis is still disputable. Early osteoarthritis and dis-congruency of the articular surfaces are evaluated by many specialists as contra-indication for the joint preserving operation. Review middle term results of reconstructive treatment in adolescents and young adults with dysplastic coxarthrosis Treatment outcomes of 32 patients with dysplastic coxarthrosis were analysed. Mean age at intervention was 16 years (14-20). The grade of arthrosis in joints were assessed according to Tönnis: I – 22, II - 10, III - 3. Type of congruence of articular surfaces were assessed according to Coleman: I- 8, II-5, III -7, IV – 12. 24 subjects underwent extraarticular hip reconstruction with Ilizarov apparatus included pelvic and femoral osteotomies. In 8 observations made additionally intra-articular interventions (osteochondroplasty, heilectomy) Outcomes were followed from 3 to 12 years. Functional outcomes according to Merle d'Aubigne-Postel were: Pain $4,7\pm 0,1$ points. ROM – $4,1\pm 0,2$ points. Walking ability – $4,6\pm 0,1$ points. Radiographic findings according to Severin were: IIa - 11, IIb - 17, III – 4. The grade of arthrosis was unchanged in 25 cases, progressed one grade in 3 joints, reduced in 4 cases. Considering clinical and radiological picture the positive outcomes made up 82%. Application of reconstructive operations with Ilizarov frame allows to extend fairly the indications for extra-articular reconstructive invasions in dysplastic coxarthrosis. Improved congruence of the articular surfaces in conditions of osteoarthritis in most cases leads to a slowing of progression.

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Abstract no.: 53107

EXTRA MEDULLARY FIXATION IN UNSTABLE TROCHANTERIC/SUBTROCHANTERIC FRACTURE BY PF-LCP (PRE CONTOURED PROXIMAL FEMORAL PLATE)

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Introduction: Fracture geometry, anatomy and bio-mechanics render trochanteric and subtrochanteric region susceptible to instability, reduction loss, implant failure and non union. An implant providing complete angular stability by creating fixed angle dynamic lock, PF-LCP meets all needs of these fracture fixation minimizing complications. PF-LCP provides advantage of TSP, blade plate and LCP. Method: Supine on fracture table under spinal anaesthesia, lateral vastus splitting approach. Biological/open fixation depending upon indirect/direct reduction respectively. Rotation maintained by keeping patella horizontal. PF-LCP on lateral aspect of proximal femur, 3 guide wires passed through wire guide mounted on plate in desired position under C Arm control, three screws in neck and minimum 3 distal to fracture. 49 cases done in last 3 years. Discussion: Postero-Medial column reconstruction is of paramount importance. PF-LCP acts as tension band plate, provides lateral shield, angular screws in neck provide torsional, bending stiffness, combi hole plate provides compression at Metaphyseal-diaphyseal junction, kick stand screw prevents varus collapse. Result: All patients followed till union. No revision or additional surgery done. Subtrochanteric fractures took longer to heal. Two patients had screw back-out but not enblock screw backout from neck. Three elderly patients had loss of initial position due to early weight bearing. No cut-out of hip screws. No patient developed infection, DVT, non-union, implant failure. Conclusion: PF-LCP provides stable, effective extramedullary fixation in unstable trochanteric like reverse oblique, fracture lateral trochanteric wall, four part fractures and sub-trochanteric fractures, fractures with narrow medullary canal, previous deformities, revision for malunion/ non-union.

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OSTEOPOROSIS AND TOTAL HIP ARTHROPLASTY: RESULTS OF A SURVEY ABOUT ORTHOPAEDIC SURGEONS' ATTITUDES

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Introduction: The elderly population has increased and orthopaedic surgeons are confronted with more and more elderly patients undergoing hip arthroplasty. The aim of this study is to evaluate the orthopaedic surgeons' opinions and attitudes concerning osteoporosis and Hip Arthroplasty. Methods: A survey was developed and sent to orthopaedic surgeons practicing in Algeria. The results were analysed to determine the orthopaedic surgeons' opinions and attitudes concerning osteoporosis and Hip Arthroplasty. Results: 182 orthopaedic surgeons participated in the study. 86% reported that low bone mineral density is a reason to reconsider operation strategies, but only 9% performed bone mineral density measurement preoperatively. In case of suspicion of osteoporosis intraoperatively, 65% percent of all asked surgeons would prefer to refer patients to a rheumatologist or their general practitioner. 35% would start diagnostic investigation in the days following the surgery. Discussion: In elderly patients requiring a total hip prosthesis, 91% of asked surgeons don't perform bone mineral density measurement before the surgery. However, 86% reported that low bone mineral density is a reason to reconsider their strategy and to opt for a cemented implants. The majority of surgeons refer patients to a rheumatologist or their general practitioner for the diagnostic investigations. Conclusion: The majority of asked surgeons confirm that a low bone mineral density is a reason to reconsider operation strategies. But, only 9% performed bone mineral density measurement preoperatively.

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DEBRIDEMENT, ANTIBIOTICS AND IMPLANT RETENTION (DAIR) FOLLOWING TOTAL HIP AND KNEE REPLACEMENTS IN A DISTRICT GENERAL HOSPITAL

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Introduction: Debridement, Antibiotics and Implant Retention (DAIR) procedure is well established for acute Prosthetic Joint Infection (PJI) after total hip and knee replacements. We present our perspective of DAIR in a relatively small cohort in a District General Hospital (DGH) in UK. Methods: We undertook a retrospective study involving consecutive patients, who underwent DAIR between 2012 and 2017 following primary and complex hip and knee replacements. Results: 20 patients [10 males (1 bilateral), 10 females; age 62 - 78 years (Mean 70.7); BMI 22 - 44.2 (Mean 33.8)] underwent 21 DAIR procedures within 3 weeks of onset of symptoms. 19 out of 21 grew positive cultures. Intravenous antibiotics were started after multiple samples intraoperatively and continued in 11 patients after discharge, while 8 were discharged with oral antibiotics. One patient died in immediate postoperative period due to generalised sepsis, another died of myocardial infarction after 2 years and 1 patient had final arthrodesis for periprosthetic fracture, unrelated to DAIR. In our series (n=21) with follow up of 6 months to 4 years 7 months following DAIR, 18 (85.6%) out of 21 were well with no recurrences with regular followup (6 months – 4 years 7 months). Conclusions: With good patient selection, DAIR is a far simpler safe and reproducible surgical option in PJI in hip and knee replacements compared to one or two stage revisions. But published Data in contemporary literature is predominantly from specialised centres. We delivered comparable results to leading tertiary centres in short to mid-term followup.

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Session: Sports Medicine Short Free Papers 1

Time: 10:30 - 12:00

Room: Meeting Room 8

Abstract no.: 53643

ONE STAGE LIGAMENT RECONSTRUCTION IN MULTI-LIGAMENT KNEE INJURY

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Introduction: Multi-ligament knee injury (MLKI) is a complex traumatic injury. It may associate with Concurrent fracture, neurologic or vascular insult although there is high agreement for surgical treatment there is no clear consensus regarding the superiority of either single-staged or staged surgery, some surgeons prefer stage surgery but in the other hand some choose single stage intervention. There is some other controversy in operation time after injury. The purpose of this study was to report the outcomes of MLKI in patients treated with single-stage multi-ligament reconstruction surgery. Patients and methods 41 consecutive patients who established multi-ligament injury by MRI and underwent single-staged surgical reconstruction evaluated for knee range of motion, stability post op complication and knee score Lysholm and (IKDC) Results: in 41 patients average follow-up period was 36.9±17.8 months. The average time from injury to surgery was 11.5±8.9 months. The mean Lysholm and IKDC score were 86.9±11.5 and 70±18.7, retrospectively. The mean Lysholm and IKDC score were not statistically different in patients who underwent surgery less than 6 months after the injury compared to those who were reconstructed after 6 months. Range of motion restriction observed in 7 patients. There was a popliteal injury in 1 patient during surgery. Discussion: Our study revealed that single-staged reconstruction of MLKI could result in an acceptable outcome, at least in short-term there were no significant difference in the outcome of patients who treated less than 6 months from the injury and those who were treated after 6 months.

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MULTILIGAMENT KNEE INJURY, OMAN EXPERIENCE

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Multiligament knee injury (MLKI) is a complex problem that may or may not present as acute knee dislocation. It defined as a tear of at least two of the four major knee ligament structures. There is no study about multiligament knee injury in Oman and the prevalence is not known. Multiligament knee usually caused by both high-energy trauma such as MVCs and low-energy trauma such as sport injury. Many factors must be taken into consideration when individualizing treatment protocols. Patient factors such as age, pre injury activity level, medical comorbidities, motivation for rehabilitation, and expectations. In addition to that, surgeon factors such as graft type selection, potential neurovascular risks, experience with technique, and post-operative rehabilitation protocol. In our study 33 cases done from 2013 till the end of 2017, with mean age of 29 years old, 31 males & 2 females, 21 were due to sport injury while 12 were due to MVC, 8 cases were done early (within 6 weeks from injury) & 25 cases were done as delayed surgery. Lysholm score was used as a functional score to assess our results, outcome revealed 94 overall Lysholm score for all our patients, with 92.6 score for patients treated early & 94.6 for patients treated with delayed surgery. In conclusion: operative treatment for MLKI cases is superior than non-operative treatment with reconstruction having better outcome compared with repair, there was no difference almost between acute versus delayed reconstruction for the structures injured.

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Abstract no.: 53234

**IMPROVING QUALITY OF CARE OF ACL SURGERY AS DAY CARE
PROCEDURE REVIEW OF 250 CASES FROM OMAN**

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Anterior cruciate ligament reconstruction is being done at our institution since 2009. Since then over thousand cases have been done by 3 consultant surgeons. When we started this was done as inpatient procedure with an average in patient admission rate of 7 days. As the hospital started implementing the enhanced recovery after surgery (ERAS) protocol we started doing ACL surgery as day care procedure. The poster shows the various quality improvement steps taken to successfully implement the procedure as day care surgery. In the patient demography there were a large group of patient from Oman who travelled back to Oman on the same day after surgery. A retrospective analysis of these patients with regard to infection rate/ deep vein thrombosis/ knee stiffness and readmission to hospital was also done.

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Abstract no.: 53838

ARTHROSCOPIC PARTIAL SCAPULECTOMY FOR THE TREATMENT OF SNAPPING SCAPULA

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Aim: To assess the outcome of arthroscopic partial scapulectomy in patients with a snapping scapula. **Methods:** Twenty five consecutive patients who underwent arthroscopic partial scapulectomy for the treatment of a snapping scapula, were assessed. All had failed non-operative treatment including physiotherapy and had reported transient symptomatic relief from an ultrasound guided local anaesthetic injection. Pre- and post-operative function and pain was assessed using the Constant and Quick DASH scores. **Operative Technique:** Surgery was undertaken with the patient prone and the hand of the operative side placed in the small of the patient's back creating a "Chicken Wing" position increasing access to the undersurface of the scapula. An inferior-medial viewing portal was established and a direct lateral portal was used to resect the scapula using a combination of radiofrequency and a burr. **Results:** At a mean follow up of 43 months (24-92) a significant improvement in the Constant score was noted from 58 (48-69) to 86 (58-97). The mean post-operative Quick DASH score was 79. All of the patients had gained a significant improvement with regards to pain and crepitus, which was completely absent in 12. Two patients developed a gradual recurrence of symptoms and underwent a repeat arthroscopy with further scapula resection, resulting in improvement in their symptoms. No complications were reported. All of the patients reported that they would be happy to have this procedure again. **Conclusion:** Arthroscopic scapulectomy is a safe and reproducible procedure for the treatment of snapping scapula.

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Abstract no.: 53667

A NOVEL BICEPS INCORPORATION TECHNIQUE FOR ARTHROSCOPIC REPAIR OF MASSIVE ROTATOR CUFF TEARS.

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We describe the arthroscopic repair of irreparable massive rotator cuff tears using a novel biceps incorporation technique. **METHODS:** Twenty-two shoulders with irreparable massive rotator cuff tears underwent arthroscopic repair using a novel arthroscopic biceps incorporation technique. Our technique involves the liberal use of marginal convergence sutures incorporating the biceps, followed by anchoring of the converged tendon and biceps to the greater tuberosity using suture anchors. All patients underwent a standardized clinical and ultrasound assessment at a minimum of 1 year post-operatively. **RESULTS:** The mean follow-up period was 23 months (range = 12-29). All 22 patients reported satisfaction with the surgery and willingness to have the surgery performed again. The mean Constant and American Shoulder and Elbow Surgeons (ASES) scores post-operatively were 74.6 and 80.7, respectively. The mean Western Ontario Rotator Cuff index (WORC) post-operatively was 72.7%. The mean Physical and Mental components of the Short Form-12 (SF-12) questionnaire were 47.6 and 48.3, respectively. Ultrasound showed 36% of patients had evidence of complete rotator cuff tears post-operatively and that 41% had radiographic evidence of partial tears. Only 23% were completely intact. Comparing outcomes between intact/partially intact repairs versus complete re-tears demonstrated no statistically significant differences. **Conclusions:** Massive rotator cuff tears repaired arthroscopically using our biceps incorporation technique showed variable healing rates but high levels of patient satisfaction and good functional outcomes on the basis of general, joint-specific, and disease-specific outcome measures.

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Abstract no.: 53586

OUTCOMES OF HIP ARTHROPLASTY IN PATIENTS WITH CHRONIC RENAL FAILURE ON DIALYSIS

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Objective: To analyse the outcomes of hip arthroplasty in chronic renal failure patients undergoing dialysis. Methods: We examined 27 chronic renal failure patients undergoing hemodialysis (29 cases) out of 1767 cases of hip arthroplasty between January 2003 and December 2015. The mean age of the patients was 61.1 years, and 11 were male and 16 were female. The average follow-up period was 42.2 months. There were 24 cases of osteoporosis. This study examined the occurrence of the local and systemic complications as determined by radiological and clinical assessment. Results: Radiological findings showed infection-induced changes in the tilt angle in 1 case (acetabular cup); however, no implant migrations were observed in other cases. Changes in alignment of femoral stems, subsidence, osteolysis and dissociation were not observed. Complications developed within one year of surgery in 16 cases; of these, local complications developed in 2, with infection of the operation site in 1 and dislocation in 1. Systemic complications developed in 14 cases, infectious complication in 6 cases, and aggravated renal failure in 4 cases; there were 3 deaths. In 16 cases, complications developed more than a year after the surgery, with no local complications. In these 16 cases, systemic infectious complications occurred in 10 cases, and renal failure aggravated in 4 cases, others 2 cases; there were 5 deaths. Conclusion: Hip arthroplasty in chronic renal failure patients on hemodialysis showed excellent radiological and satisfactory clinical outcomes; however, it may be associated with various postoperative complications, including infections, and may aggravate underlying disease.

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Abstract no.: 54892

EVALUATION OF LIGAMENTISATION OF THE PATELLAR TENDON GRAFT 21 YEARS FOLLOWING ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

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Ligamentisation is a process by which tendinous autografts used in ACL reconstruction are gradually moulded into a more ligament-like structure. There are numerous animal studies describing this phenomenon, but their direct application in human subjects might be misleading. Reports on human subjects do support light microscopic modification in the graft structure, however, ultrastructural differences were found to persist as long as after 15 months of reconstruction between the graft and a normal ACL ligament. We have evaluated an ACL autograft twenty-one years following the ACL reconstruction. The patient was a 40-year-old male who reported to us with ligament laxity in his right knee on which he had undergone ACL reconstruction 21 years back. On evaluation, the reconstructed ACL was found to be non-functional and a revision ACL reconstruction was planned. During arthroscopy, the reconstructed ligament was found to be lengthened and lax. We collected punch-biopsy specimen from the old ACL graft using 3mm basket forceps from its mid-segment. We have done the histological examination of the specimen using hematoxylin-eosin stain and Masson's trichrome stain. We have also done transmission electron microscopic analysis of the graft. To the best of our knowledge, no such report on the ultrastructural examination of the reconstructed ligament 21 years after the procedure is present in the current English literature. Our study provides valuable information on the ligamentisation process in human knees in the quiescent stage.

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Abstract no.: 54552

**ACCURACY OF TIBIAL TUNNEL AND FEMORAL TUNNEL PLACEMENT
IN ARTHROSCOPIC ANTERIOR CRUCIATE LIGAMENT
RECONSTRUCTION IN PATIENTS MORE THAN 40 YRS AND ITS
CORRELATION WITH FUNCTIONAL OUTCOME**

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Introduction: Anterior Cruciate Ligament (ACL) is the major stabilizer of knee joint. Goal of surgical intervention in ACL tear is to restore the normal knee kinematics. Though there are many factors influencing successful outcome yet, graft placement in anatomical tunnel is imperative and accuracy of graft placement decides the outcome. Aim of study: To study the accuracy of bony tunnel placement in anterior cruciate ligament reconstruction in patients more than 40 yrs and, to study the functional out come on the basis of accuracy of tunnel placement. Materials and Methods: 50 patients above 40 yrs who had undergone ACL reconstruction were included. Anteroposterior and lateral radiographs of knee were used to assess position of femoral (FT) and tibial tunnel (TT) respectively. Based on the deviation of the tunnel placement from the ideal placement, the impact on the functional outcome was checked using Lysholm Score at 3 and 6 months and end of 1 yr. Data was analysed using statistical software SPSS ver. 17.0. Results: Excellent to good functional outcome was observed in 80% cases at 12 months. The deviation in femoral tunnel (lateral view) and tibial tunnel (AP view) were inversely correlated with Lysholm score at 3 months. The deviation in femoral tunnel (lateral view) was inversely correlated with Lysholm score at 6 months. Conclusion: Placement of tunnels is of utmost importance to achieve successful outcome after ACL reconstruction in patients above 40 yrs, especially femoral tunnel to achieve successful outcome after ACL reconstruction.

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Abstract no.: 54329

KNEE MUSCLE STRENGTH FOLLOWING ACL RECONSTRUCTION USING HAMSTRING TENDON AUTOGRAFT – A QUANTITATIVE ANALYSIS USING FORCE GAUGE.

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Introduction: Hamstring tendon autograft is the most widely used graft for primary ACL reconstruction. We report a quantitative analysis of Knee strength in our patients who have undergone ACL reconstruction using hamstring tendon autograft. Materials and Methods: A retrospective study included patients who underwent ACL reconstruction between May 2014 and September 2018. Study included 46 patients (33 males, 13 females) with average age 31yrs (16-50years). The quadrupled hamstring tendon graft (semitendinosus and gracilis) used for reconstruction was harvested from ipsilateral knee. The peak isometric Knee flexion and extension strength was quantified using Force Gauge with knee positioned at 90degrees of flexion to negate effect of gastrocnemius. The results were compared with that of contralateral normal knee and analysed. Results: At an average follow up of 31.84months (6mon to 4yrs), the average peak isometric strength of knee extension was 206.35N (SD42.19) in the operated knee and 203.08N (SD43.40) in the normal knee. The average peak isometric strength of knee flexion was 89.8N (SD 30.80) in the operated knee and 133.38N (SD29.96) in the normal knee. The difference in knee flexion strength between operated and normal knee was statistically significant (t-test, $p < 0.001$). The average IKDC knee function score was 88/100 in the operated knee. This did not correlate to the hamstring strength although it remained two-thirds the strength in normal knee. Conclusion: Knee flexion strength quantitatively remains less compared to normal knee following hamstring graft use in ACL reconstruction. However, the knee function score remained independent of Hamstring strength in our patients.

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ARTHROSCOPIC SURGERY VERSUS CONSERVATIVE TREATMENT FOR AVULSION FRACTURES AT THE TIBIAL ATTACHMENT OF POSTERIOR CRUCIATE LIGAMENT

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Surgery is recommended for displaced avulsion fractures at the tibial attachment of posterior cruciate ligament (PCL) due to the high incidence of non-union when treated conservatively. There are few reports which compare the outcomes of operative versus conservative treatment in this condition. The purpose of this study was to compare the rate of bone union, and the patient reported outcomes after arthroscopic reduction and internal fixation (ARIF) and conservative treatment. Patients with PCL avulsion fractures who were treated either by ARIF (group A) or by conservative treatment (group C) and followed for at least six months were included. The ARIF technique consisted of reduction by direct visualization of the avulsed fragment through the posterior portal and pull-out fixation using an adjustable length loop device. Bone union was assessed by computed tomography (CT) at six months and 12 months when union was not achieved at six months. Knee injury and osteoarthritis outcome score (KOOS) and Lysholm scale were evaluated at six months and 12 months. There were 13 patients in group A, and nine patients in group C. Bone union was achieved in 61.5% (8/13) and 22.2% (2/9) by three months and increased to 90.9% (10/11) and 50.0% (3/6) in group A and C, respectively. No statistical difference was observed in any of the KOOS subscales. The total Lysholm scale was significantly lower in group C at six months. In conclusion, a higher rate of bone union was achieved, and total Lysholm scale was better by ARIF, compared to conservative treatment.

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PROXIMAL TIBIOFIBULAR JOINT INSTABILITY IN MULTILIGAMENTOUS KNEE INJURY

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Introduction: This study emphasizes the importance of proximal tibiofibular joint (PTFJ) in assessment of multi-ligament knee injury. This not only provides stability to the knee joint but also prevent failure of the fibular based, lateral side knee procedures. Methodology: The study spanned from 2014-2018, 84 multi-ligament knee injury patients reported to our hospital. The PTFJ was assessed preoperatively & intraoperatively. The PTFJ was reduced and stabilized then posterolateral repair/ reconstruction was done. Intraoperatively the reduction was assessed radiologically under fluoroscopy and by ballottement. Postoperatively radiographs, Lysholm, IKDC scores were done. Results: Nine patients (10.7%) were found to have PTFJ instability. No instability recurred after surgery in follow up (12-36 months, mean 14 months). Four patients required screw removal. Three Larson procedure failed in 1 year follow up probably had unstable PTFJ. Mean Lysholm score was 81(range,58-94) & mean IKDC score was 64(range 28-88). Dial test was falsely negative in all these patients. Conclusion: Our study emphasises the importance of proximal tibio-fibular joint in assessment of multi-ligament knee injury. The clinical examination of this joint should be a part of preoperative as well as intra operative assessment of multi-ligament knee injury patients. The fixation of this joint is utmost important for the reconstructive ligament procedures on the lateral aspect of the knee. The dial test used for the assessment of the integrity of PLC injury should have a prerequisite of proximal tibio-fibular joint stability, otherwise it can lead to erroneous assessment. The proximal tibio-fibular joint should be given attention in multi-ligament knee injury patients.

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Abstract no.: 53677

MULTI-LIGAMENT INJURED KNEE ROLE FOR BICEPS FEMORIS RE-ROUTING IN POSTERO-LATERAL CORNER RECONSTRUCTION

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Background: One of the significant factors for satisfactory outcomes of multi-ligament knee reconstruction is sound restoration of anatomy and biomechanics of the postero-lateral corner of the knee. Effective postero-lateral reconstruction is challenging notably when allograft tissue bank is not available. Under such circumstances, literature reported several techniques of debatable outcomes especially of biceps femoris re-routing. Hypothesis: Does biceps femoris re-routing yield satisfactory clinical outcomes? Patients & Methods: Patients of injured postero-lateral corner of as part of multi-ligament injured knee were prospectively managed by two different techniques; Group-A patients were managed by biceps femoris re-routing; and Group-B patients were managed by Larson technique. Postoperative results were evaluated in terms of knee pain, range of motion and instability, functional activity, Lysholm score and return to work. Results: In both groups; there was a statistically significant improvement in knee pain, range of motion and stability, functional activity, Lysholm score and return to work. Inter-group comparison of clinical outcomes revealed statistically insignificant difference; however, positive provocative tests of postero-lateral corner were statistically-insignificant higher in group-A. Conclusion: The technique of biceps femoris re-routing for postero-lateral corner reconstruction as a part of multi-ligament knee reconstruction yielded satisfactory clinical outcomes especially under the paucity of tendon graft.

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Abstract no.: 53571

DOES TIMING FROM ANTERIOR CRUCIATE LIGAMENT (ACL) INJURY TO SURGERY AFFECT THE OUTCOME OF ARTHROSCOPIC ACL RECONSTRUCTION? – A PROSPECTIVE SHORT-TERM OUTCOME STUDY

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Introduction: Arthroscopic ACL reconstruction has now become a common Orthopaedic procedure. Yet the optimal timing for the surgery since injury is under debate. Methods: 34 patients who underwent single bundle anatomical ACL reconstruction with quadrupled hamstring graft from November 2017 to March 2018 were followed up. Demographic characteristics, injury characteristics, and short-term outcomes utilising Tegner Lysholm knee score, visual analogue pain score and knee range of motion (ROM) was assessed sequentially up to 3 months. ACL reconstruction done within 5 months of injury was defined as early and rest as late. Results: Mean age of the cohort was 25.86 years with males predominating (88.6%). Right knee was predominantly injured (54.3%). Mean duration from injury to surgery was 14.4 months (range 1-84 months). Ten (29.4%) underwent surgery within 5 months of injury and 24 (70.6%) patients more than 5 months after injury. Lysholm knee score and visual analogue pain score improvement at 3 months was statically significant ($p < 0.05$) in both early and late reconstruction groups together but between the groups there was no statistically significant difference in above outcome measures ($p > 0.05$). Regard to meniscal and chondral damage there was no statistically significant difference between the two groups ($p > 0.05$). ROM improvement was found to be 90-120 degrees and Lachman was negative at 3 months in all subjects. Discussion: Timing since injury to ACL reconstruction does not have statistically significant impact on clinical and stability outcomes in the short term.

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CONVENTIONAL DIGITAL TOMOGRAPHY AS AN INITIAL DIAGNOSTIC SCREENING MODALITY IN THE INVESTIGATION OF STERNOCLAVICULAR JOINT PATHOLOGY

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Objective: Plain radiographs of the Sternoclavicular Joint (SCJ) are difficult to interpret and a CT or MRI scan is the usual investigation of choice. At our hospital we use digital SCJ tomograms as our first line investigation for all SCJ pathologies. We wanted to ascertain whether this is a safe and appropriate first line imaging investigation. **Methods:** We retrospectively reviewed every patient who had undergone an SCJ digital tomogram (DT) over a 4 year period. We cross-referenced each patient with their records to assess the reason for referral, result, requirement for further investigation, diagnosis and management. **Results:** We identified 132 SCJ tomograms over the study period. Twelve patients were referred from other hospitals with pre-existing imaging and were excluded. The reasons for radiological investigation in the remaining 120 patients were pain/lump without trauma (54.2%), pain/lump with trauma (30.8%) and postoperative review (15%). Of the 102 patients who had DT as their initial investigation, the most common diagnoses identified included osteoarthritis, normal SCJ, fracture and dislocation amongst others. Only 18 (17.6%) of these patients required further investigation with CT and/or MRI. **Conclusion:** Our study is the first to assess digital tomography in SCJ pathology. We have shown that digital tomograms are a safe, accurate and economically beneficial investigation for SCJ pathology and propose it should be used as a first line imaging investigation.

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Abstract no.: 53167

FAILURE RATE OF 5-STRAND AND 6-STRAND HAMSTRING AUTOGRAFT ACL RECONSTRUCTION

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Introduction: Quadrupled (4-strand) hamstring tendon autografts are commonly used in anterior cruciate ligament (ACL) reconstruction surgery. Despite the popularity of this technique, a notable disadvantage is the variability of the graft size. Studies have shown an increased load-to-failure rate with larger graft diameter as well as better functional outcomes. Hence, several techniques have been described to produce a larger hamstring graft diameter using relatively smaller tendons including increasing the number of bundles. Aim: To describe the technique and report on the failure rate of different graft techniques. Methods: We retrospectively reviewed all hamstring autograft ACL reconstructions done at AIKhor hospital between 1/1/2014 and 31/12/2017 with a minimum of one year follow up. 500 patients were included. The population was decided into 3 groups depending on the graft technique into conventional 4-strand, 5 stand and 6 strand grafts. The groups were further stratified according to graft size in 0.5mm increments. Graft sizes less than 8mm were excluded. Patients' demographics, surgical technique, complications and concomitant knee pathologies if any were recorded. All patients had suspensory femoral fixation and interference screw tibial fixation. Results: The overall failure rates for 4 strand, 5 strand and 6-strand grafts were 2%, 1.7% and 2% respectively which was statistically insignificant. All failures in all groups were mid-substance tears rather than failure at the suspensory fixation. Conclusion: 5-strand and 6-strand grafts are safe, effective and inexpensive techniques to increase the hamstring autograft diameter in tendons of sufficient length.

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ARTHROSCOPIC TRANSOSSEOUS ROTATOR CUFF REPAIR

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Transosseous sutures were used in open and mini open rotator cuff repairs. Arthroscopic surgery allows less-invasive procedure, with decreased deltoid muscle morbidity and a comparable rate of healing. We performed a prospective study at Menofia university hospital to compare: arthroscopic RCR: transosseus technique versus single row anchor repair. The aim of work is to: Evaluate clinical outcome of rotator cuff repair in patients treated by arthroscopic transosseous bone tunnel technique compared to patients treated by arthroscopic single row repair. Methods: Inclusion criteria: Rotator cuff tears. Criteria of exclusion: Massive cuff tears with more than 50 % fatty infiltration, irreparable tear, Revision repair, Osteoporotic bone. Technique: the standard arthroscopic portals, clear the sub-acromial bursa, Prepare the greater tuberosity bed, we use the tensor surgical tunneller for RC repair. The follow-up visits are at 2 weeks, 4 weeks, 3 months, and 6 months. The clinical outcomes of all cases are evaluated and compared using American shoulder and elbow surgeon score and oxford shoulder score. Results: Outcome analysis demonstrates: a statistically significant improvement in both groups from preoperative to 2 year follow up as regard to ROM, ASES score, Oxford shoulder score. Without statistically significant difference between the two groups as regard to ROM, ASES score, Oxford shoulder score. Outcome analysis demonstrates equivalent clinical results for both groups. Conclusion: Arthroscopic transosseus RCR achieves benefits of arthroscopic repair with the gold standard transosseus repair.

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ACUTE ACROMIOCLAVICULAR DISLOCATIONS TREATMENT META-ANALYSIS ON RECENT PROCEDURES WHERE ARE WE GOING?

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Introduction. After the first decades of treatment in acromioclavicular (A-C) dislocations, and associated complications, we turned to arthroscopic techniques to solve the same problem. We collect papers with treatment of this lesion with an arthroscopic approach and compares the results, trends and complications with different fixations methods between 2000 e 2018. 62 abstracts chosen. After exclusion biomechanical papers 13 abstracts remain with 527 patients. The articles Level evidence were 90% grade IV and V .Results. The predominant Fixations methods were cortical suspension buttons or similar in Coraco-Clavicular (C-C) and Acromioclavicular cerclage with some form of suture (Tape, button).Complications vary from 12 to 27 %, mainly with loss of reduction, hardware irritation, coracoid/ clavicular fracture, residual pain and infection. The loss of reduction of A-C in single C-C system not always associated with loss of function or need for surgery. Fixation methods with double fixation with allograft in C-C and in A-C is more common with late fixation, but with the most improved anatomic results, but with higher complications, when compared to single CC system. Conclusions. We are going towards an anatomic reconstruction with Synthetic systems in CC and AC in acute lesions and anatomic reconstructions with allograft in late treatments. The method Fixation emphasis is combining vertical (CC system single or double) with horizontal stability. The synthetic material in new generations of fixations methods provide good to excellent results with less serious complications. The complications still exist, but its less serious, and lesser revisions rates.

Date: 2019-12-05

Session: Sports Medicine Short Free Papers 1

Time: 10:30 - 12:00

Room: Meeting Room 8

Abstract no.: 54547

THE PREDICTORS OF CORE DECOMPRESSION SUCCESS IN PATIENTS WITH AVN

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Introduction: Avascular necrosis of femoral head typically presents in young population. Core decompression in pre-collapse stage provides pain relief and preservation of femoral head. We developed present study to investigate predictive risk factors of failure in femoral head decompression. Method: We retrospectively reviewed 135 patients (208hips; 72 men [128 hips], 58 female [80 hips] who underwent CD (mean age: 34.7 years [21-71]) from April 2010 to December 2017. All patients were followed with a mean of 57 months. In present study, all hips were in pre-collapse stage (Ficat I, II) Result: from 208 hips were performed with a core decompression, there were 42% failed and 58% success rate. The Kerboul, Ficat, Arco classification, multifocal AVN of femoral head, Alcohol, smoking, opium and corticosteroid were significantly associated with failed Decompression In univariate logistic regression analysis. The factors mentioned above were significantly higher in patients whose CD surgery was unsuccessful, but to predict the success rate of treatment need to multivariate logistic regression analysis. In multivariate logistic regression analysis, the Kerboul and Ficat classification, Alcohol and multifocal AVN of femoral head were significantly correlated with CD failure. The most common predictive factors in CD failure were the Ficat II, Kerboul stage3, multifocal AVN of femoral head and Alcohol usage. Conclusion: we had overall 58% success rate in core decompression of femoral head AVN. Depending on the results, imaging studies are most valuable predictors for success of CD. We are in alignment with previous studies in showing corticosteroid use is not a predictor of CD failure of femoral head AVN.

Date: 2019-12-05

Session: Sports Medicine Short Free Papers 1

Time: 10:30 - 12:00

Room: Meeting Room 8

Abstract no.: 53706

COMPARATIVE STUDY BETWEEN ARTHROSCOPIC RELEASE OF SREC ONLY VERSUS ARTHROSCOPIC RELEASE AND DRILLING OF LATERAL EPICONDYLE AS TREATMENT FOR CHRONIC LATERAL EPICONDYLITIS (TENNIS ELBOW)

Ahmad Ibraheem Addosooki Mohammad ABDELRAHEEM¹, Abdelrahman HAFEZ², Mohamed ELJEZAWY¹, Ahmed TARIK¹

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Introduction: Lateral epicondylitis, also known as tennis elbow, is a disorder with an estimated prevalence of 1–3%. Most cases are believed to be caused by a musculotendinous lesion at the origin of the proximal extensors of the lateral epicondyle. Surgical treatment open lateral release is a valid treatment option. Arthroscopic treatment has recently been described as having a shorter rehabilitation period and lower complication rate. In the present study, we compare between results from arthroscopic release of SREC only versus arthroscopic releases and drilling of lateral condyle as a method of treatment of chronic lateral epicondylitis. Patients and Methods: We treated 22 patients that presented with lateral epicondylitis for which conservative treatment had failed over a period of more than six months with the age from 15 to 60 years. Patients were divided randomly into two groups. All procedures were done under general anaesthesia. Patients underwent arthroscopic release of ECRB and debridement in one group and adding drilling to the previous procedures in the other group. Results: Patients were followed up at 2, 4, 10 weeks and 6 months postoperative. Patients were evaluated for pain improvement using visual analogue score and functional evaluation was done using Nirschl tennis elbow score. There were no statistically significant difference between both groups regarding pain improvement, time of return to work, or Nirschl tennis elbow score. Conclusions: Adding drilling to arthroscopic ECRB release is of no benefit to the patients and we do not recommend adding it the arthroscopic release.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 54790

CLAVICULAR TUBERCULOSIS: A NEGLECTED DIFFERENTIAL OF SHOULDER PAIN

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Introduction: Tuberculosis of the clavicle is a rare lesion, accounting for less than 1% of all osteo- articular tuberculosis. The rarity of the lesion, its nonspecific symptoms, and its striking resemblance to common cystic conditions like bone tumours and metabolic conditions like rickets make diagnosis difficult. Methods: The authors describe a series of 27 patients with primary tuberculosis of the clavicle. The preliminary diagnosis was based on clinico-radiological data. Radiographs showed diffused thickening and honeycombing, eccentric expansile lytic lesions with surrounding osteopenia, or sequestration not unlike pyogenic infection. Magnetic resonance imaging is useful for determining the extent of the lesion and soft tissue involvement. The diagnosis was confirmed on biopsy. Patients were treated with multidrug antitubercular therapy (ATT) for 18 months. Results: Results of conservative management were largely dependent on timing of commencement of ATT from the time of symptoms. patients in whom ATT was started within 10 weeks had better overall functional results and lower chances of surgical debridement compared to those in whom ATT was started after 10 weeks.(p=.01) Conclusion: A high index of suspicion for patients with unexplained shoulder girdle pain must be kept particularly in endemic area for tubercular osteomyelitis of clavicle.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 54792

SWIMMER'S SHOULDER PREVALENCE AMONG YOUNG COMPETITIVE SWIMMERS IN HUNGARY

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Swimmer's shoulder is the most frequent musculoskeletal problem among swimmers. Most of the surveys apply to adult age groups, and poor information is available for children, although prevention should ideally commence at this age. Goals: Obtain data on the occurrence of swimmer's shoulder, to assess the presence of some known, adulthood risk factors and to examine whether they have a relationship with shoulder pain in childhood. Methods: 146 competitive swimmers (80 male, 66 female, aged 12 ± 1 y) participated in this study, started swimming 5,5 \pm 1,7 years ago. The tests were carried out in the region centres. We collected data in the form of questionnaires about shoulder pain, other musculoskeletal complaints and weekly swimming loads. We checked up on swimmers' shoulder for the range of movement and rotation muscle strength of the shoulder, range of trunk rotation, presence of scapular dyskinesia, and we observed the implementation of the plank test and the posture. Results: 36% of children have experienced shoulder pain. Most common postural problems include increased dorsal kyphosis, lumbar lordosis and forward head. The weakness of serratus anterior and core stability as well as the remained rotational arch of the shoulder joint are observed, along with reduced internal and increased external rotation range. Scapular dyskinesia was not frequent. In the case of the painful shoulder, the decreased body rotation, the greater the workload, was more frequent. Conclusion(s): Shoulder pain and risk factors are present in young swimmers and the pain is associated with some adulthood risk factor.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 54491

IMPROVED FUNCTIONAL OUTCOME BY PROXIMAL HUMERAL FRACTURE TREATED BY PHILOS AND PMMA AUGMENTATION

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Objective: To evaluate functional outcome and complications of ORIF with PHILOS for PHF plus PMMA bony voids filling to improve the humeral head stability and to compare with outcomes of PHILOS plating with bone graft augmentation. Methods: We reviewed 42 patients who underwent ORIF with PHILOS plate plus PMMA (Group I, n = 19) and PHILOS plus iliac crest autograft (Group II, n = 23) .According to Neer classification system, 15 and 24 patients had 3- and 4-part fractures, respectively and 3 patients had 4-part fracture dislocation. The Constant score (CS) and DASH score were assessed 3, 6 and 12 months postoperatively. Fracture healing and potential complication were evaluated on postop Xrays. CS, DASH and complications were compared in between two groups. Results: At the 3- month follow-up, the mean CS was 57.1 and DASH was 28.1 for Group I. Both scores significantly improved by the 6 –month follow-up (CS 66.5, DASH 18.4). Compared to Group II we found better score at the 3 –month for Group I and almost no significant difference at 6- and 12 –months follow-ups. We found increased numbers of early complications in Group II related to early loss of reduction and secondary articular screw perforation. Conclusion: PHILOS plating of displaced PHF plus PMMA void filling provides stable fixation in PHF which allows earlier mobilising, better early functional outcome and reduced rate of early implant-related complications.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 54349

MODIFIED TECHNIQUE FOR CORACOACROMIAL LIGAMENT TRANSFER IN FRESH ACROMIOCLAVICULAR JOINT DISLOCATION.

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Title: Modified technique for coracoacromial ligament transfer in fresh acromioclavicular joint dislocation. Objective: To establish a new easy and more biological replacement for coraco-clavicular (CA) ligament in reconstruction of acromioclavicular joint. Method: 14 cases of Type III and above acromioclavicular joint dislocation were selected on random basis for the treatment, after obtaining consent for the procedure. In this procedure medial half of CA ligament along with a portion of attached bone from acromion process was rerouted to lateral 3rd of clavicle. Through a drill hole, the bony part is brought into clavicle and tied, maintaining the tension in ligament. Reduction was augmented with clavicular hook plate or K wires. Post operatively patients were followed up for one year. Result: At the end of follow up, all patient showed full range of movement and stress X-ray showed no increase in coraco-clavicular distance as compare to opposite normal side. No implant related complications were noted. Conclusion: This new technique could be an easy and effective reconstruction method in AC joint dislocation providing a more biological bony union and thus helping to achieve a near normal biomechanical repair.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 53710

FIGURE OF EIGHT REPAIR OF ACROMIO-CLAVICULAR JOINT USING PALMARIS LONGUS TENDON GRAFT: A NEW SURGICAL TECHNIQUE

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Acromio-clavicular (AC) joint separation is very common injury among young athletic population. Numerous surgical repair and reconstruction techniques have been described in literature, but none of the technique can be considered ideal and without failures. Anatomical techniques in which the coraco-clavicular ligaments are reconstructed using graft materials are considered to have lesser failure rates compared to the non anatomical techniques. We believe that additional reconstruction of acromioclavicular ligament will add extra strength to the repair and decrease the chances of failure. We have designed a new technique in which we reconstruct the acromio-clavicular joint using the Palmaris longus tendon autograft. The tendon is passed in a figure of 8 manner. This configuration provides an adequate depressing force on the lateral end of clavicle and helps in better healing of the AC joint. Methodology: Nine patients with Ac joint dislocation were included in our study. In three patients it was a chronic injury. One patient had associated lateral end clavicle fracture. Similar figure of eight reconstruction technique using Palmaris longus was done in all nine patients. Results: In over 10 months follow up none of the patients had a failure of the reconstruction. Good shoulder movements were regained and the mean Oxford shoulder score at the end of 6 months was 42.4. Conclusion: Figure of eight technique of reconstruction of AC joint is an excellent method providing good depressing force on the lateral end of clavicle and has no failure in our study.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 53900

MESH-PLASTY AS A SHOULDER STABILISATION TECHNIQUE FOLLOWING HEMI-ARTHROPLASTY OF SHOULDER

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Introduction: Hemi-arthroplasty surgery for shoulder reconstruction often may be plagued by functional deficits due to instability of the shoulder joint. Various techniques have been described in literature for achieving stability following hemiarthroplasty. A synthetic prolene mesh can improve functional outcome by providing mechanical constraint and stability after shoulder hemi-arthroplasty. Material & Method: We retrospectively reviewed 21 patients with shoulder hemi-arthroplasty reconstructed with a synthetic mesh during a period from March 2014 to July 2018. The mesh was stitched to the glenoidal labrum throughout its circumference, thereby creating a pocket for the prosthesis head to be secured in place by non-absorbable sutures. The muscles and tendons could be secured to the mesh as and when required followed by closure. Patients were evaluated clinically and radiographically for a mean of 26.3 months (range, 13–43 months) for instability, dislocations, pain, range of motion and functional outcome. Results: There were no shoulder dislocations till the latest follow-up. The mean shoulder flexion was 44 degrees (range, 15–170) and mean shoulder abduction of 35 degrees (range, 15–110). All the movements were reasonably pain-free. One patient had a superficial wound infection, but there were no deep infection. Conclusions: The data suggest the use of a synthetic prolene mesh for shoulder hemi-arthroplasty may reduce dislocation rates and may result in better functional outcome.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 54084

SEVERE GLENOID BONE LOSS DURING TOTAL SHOULDER ARTHROPLASTY: IS BONE GRAFTING STILL AN OPTION?

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Introduction: Glenoid bone defects create a difficult reconstructive problem during shoulder arthroplasty. These typically occur following loosening of glenoid prostheses, progressive glenoid erosion following resurfacing arthroplasty and secondary to destructive rheumatoid disease. Aim: To evaluate clinical and radiological outcomes in patients following bone grafting for glenoid deficiency during total shoulder arthroplasty (TSA). Methods: Retrospective review of 35 patients who underwent bone grafting of the glenoid during TSA between 2014-2018. A new generation dual platform TSA system was used in all cases. Assessments were carried out using Oxford Shoulder Score (OSS) and radiographs to look for graft resorption and scapular notching. Results: There were 25 women and 10 men with a mean age of 68.5 (range 43-87). Standard deltopectoral approach was used in 29 patients and extensile delto-pectoral approach with clavicular osteotomy in 6. Autologous humeral head was used in primary procedures and femoral head allograft in revision surgery. 13 patients underwent anatomical TSA and 22 patients underwent reverse TSA. The average active elevation improved from 43deg to 115deg following surgery. The average post-operative OSS was 37.6. There were no postoperative infections or dislocations. One patient developed graft resorption with persistent pain. One had acromial fracture which settled with non-surgical treatment. Grade 1 scapular notching was noted in 4/27 patients (14%). Conclusions: Bone grafting the glenoid defect during TSA is successful in relieving pain and improving clinical outcomes. This dual platform TSA system enables optimal positioning of the glenoid component along with use of bone grafts to facilitate glenoid reconstruction.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 53596

**RESULTS OF COPELAND SHOULDER RESURFACING ARTHROPLASTY
IN SICKLE CELL PATIENTS WITH HUMERAL HEAD AVASCULAR
NECROSIS**

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Introduction: Avascular necrosis (AVN) of the humeral head is a debilitating complication of sickle cell disease (SCD) estimated to occur in about 5% of patients for which the optimal therapy is not well defined. The aim of this study was to evaluate the results of Copeland shoulder resurfacing arthroplasty (CSRA) in sickle cell patients with humeral avascular necrosis. Methods: Eleven CSRA were performed in eight patients with sickle cell disease from 2010 to 2014 in Sultan Qaboos University hospital, Oman. Medical records, radiograph, operative note, clinical outcome and complications were reviewed retrospectively with a mean follow-up of 4 years. Results: Seven CSRA (63.6%) have improved in their pain and range of movement post operatively. One shoulder developed stiffness that required arthroscopic capsular release. Three CSRA (27.3%) underwent revision to a total anatomical shoulder arthroplasty due to aseptic loosening (one patient) and glenoid arthrosis (two patients). Patients with high grade AVN (stage 4 and 5) showed inferior result and satisfaction following CSRA. Conclusion: Treatment of humeral head AVN in SCD patients is challenging. Copeland shoulder resurfacing arthroplasty may provide improvement in pain and function in selected SCD patients with early stage of humeral head AVN.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 53102

**TILT ANGLES OF THE BIPOLAR RADIAL HEAD PROSTHESIS
CORRELATE WITH RADIOCAPITELLAR INSTABILITY**

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Introduction: Although the bipolar radial head prosthesis has advantages, tilting of the head is commonly observed on postoperative radiographs, especially in cases of joint instability. The purpose of this study was to assess the relationship between the tilt angle of the bipolar radial head and radiocapitellar instability. Methods: A total of 28 consecutive patients who underwent bipolar radial head arthroplasty were assessed. The tilt angle of the bipolar radial head and radiocapitellar joint instability were measured on a lateral radiograph taken at the final follow-up. Results: The mean tilt angle was 17.6° (range, 1–35°), and the mean distance between the capitellum and the centre of the radial head was 8 mm (range, 1–15 mm). Pearson's correlation coefficient, which was used to determine the correlation between these 2 variables, was 0.8. Conclusion: With an increase in the tilt angle of the bipolar radial head prosthesis, there was a corresponding increase in posterior subluxation of the radial head prosthesis. The tilt angle of the bipolar radial head can be used as an indicator of radiocapitellar joint instability.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 53006

SHORT TERM OUTCOMES OF REVERSE SHOULDER ARTHROPLASTY (RSA): DOES THE FUNCTIONAL OUTCOME DIFFER AMONG THE INDICATIONS FOR SURGERY?

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The aim of the current research study is to investigate the clinical and radiological outcome of patients undergoing RSA in NHS Tayside Ninewells hospital and medical School Scotland United Kingdom and to compare the results in different indications of RSA in terms of functional outcome and complications rate. After Caldicott Guardian approval, pre-and post-operative data was collected from the Tayside Upper Limb Audit (TULA) database. 39 patients were divided into four groups according to the indication of surgery. Patient's functional outcome was evaluated using OSS, Quick DASH score and EQ-5D-3L scoring system. In addition, pre-and post-operative radiographs were assessed on PACS X-ray archiving system stored on the NHS Tayside intranet. Mean Oxford shoulder score improved from 15.72 pre-operatively to 31.00 at 26 weeks follow up and further to 32.84 at 52 weeks follow up. Similar improvement was seen in Quick DASH and Eq-5D-3l scores which were statistically significant. However, the improvement in functional scores was similar in all the diagnosis for which RSA was undertaken. The total complication rate was 33%, it included complex pain syndrome (7.6%), peri-prosthetic fracture (10.2%), dislocation (10.2%) and deep infection (5.1%). Seventy-eight (78%) of the patients were satisfied with the procedure. JRI reverse shoulder arthroplasty has a satisfactory functional outcome at short term results and its outcome are comparable to that of literature. The functional scores did not differ statistically among the different diagnosis for which RSA was undertaken. Cuff tear arthropathy had the least complications and better subjective outcome among the different diagnosis.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 54151

BONE ALLOGRAFT RECONSTRUCTION IN SHOULDER AND ELBOW SURGERY

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Severe bone loss presents a reconstructive challenge. In shoulder and elbow surgery, autograft, bone substitutes and custom implants can be used, but these options may not be appropriate in all cases. In such cases, allograft could still play a vital role in restoring bony continuity to allow implantation of prosthesis. We present our indications of using allograft, our complications and measure outcomes based on whether radiological union was achieved. The senior surgeon's shoulder and elbow cases that received bone allograft for reconstructive purposes were identified. Reconstruct the glenoid, femoral head was used either in the morselised or structural form. Either tibial or femoral strut graft was used to reconstruct the humeral metaphysis, humeral shaft, distal humerus and ulna. Cavitary defects were filled with morselised femoral head allograft. Indications: Nineteen patients underwent allograft reconstruction: - Shoulder (10 patients): glenoid (8) and humeral metaphysis (2). - Revision elbow replacements (3 patients): humeral side (2) and ulnar side (1) - Humerus – shaft/distal (3): all non-unions - Scapulothoracic fusion (3) Radiological union: - Shoulder: all 10 patients. - Revision elbow replacements 2 out of 3 - Humerus: all 3 patients - Scapulothoracic fusion: all patients. Three complications were observed: failure of ulna allograft following revision elbow replacements resulting in ulnar component breakage; deep infection of revision reverse shoulder replacement which required two stage revision; heterotopic ossification in shoulder replacement. In this series, we demonstrate that bone allograft reconstruction remains a reliable option in severe bone loss and can achieve solid bony union.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 54420

METAL BACK GLENOID ANATOMICAL TOTAL SHOULDER REPLACEMENT: A SINGLE SURGEON SERIES WITH MEAN THREE-YEAR FOLLOW-UP

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Long-term survivorship of total shoulder replacements (TSR) heavily relies on the glenoid component. Studies have questioned success of metal back glenoid components over time. We present a retrospective analysis of prospectively collected data of a single-surgeon series using the VAIOS shoulder arthroplasty system. We identified patients who underwent anatomical TSR with metal back glenoid by the senior surgeon. The primary outcome was implant survival measured by Kaplan Meier survival analysis. Secondary outcomes were measured clinically by pre- and post-operative Oxford Shoulder Scores (OSS) and radiologically at time of follow-up. 30 patients met our inclusion criteria. 23 patients underwent primary anatomical TSR and 7 were revision of hemi resurfacing /hemiarthroplasty to anatomical TSR. In 11/30 patients, the glenoid bone loss was addressed by bone grafting before implantation of the metal back glenoid component. Mean age at time of surgery was 68.3 years (53 – 81 years). Mean follow-up was 34 months (12 – 62 months). There were 2 revisions (6%), due to subscapularis failure requiring revision conversion to reverse shoulder replacement. The average Oxford shoulder score improved from 14 pre-operatively (7-30) to 30 post-operatively (9-48). The use of metal back glenoid in TSA remains a good option. It allows the ability to address the glenoid bone loss by using bone graft at the time of glenoid implantation. In this series, the early results suggest a lower revision rate. We plan to monitor long-term implant survivorship and patient reported outcomes. Further studies are required to assess if these outcomes are reproducible.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 54113

CLINICAL AND RADIOLOGICAL SHORT-TERM RESULTS OF STEMLESS SHOULDER ARTHROPLASTY

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Introduction: This study evaluated the clinical and radiological results of shoulder arthroplasty using a single type of stemless humeral component with a minimum follow-up of 2 years. **Materials and methods:** A retrospective review was conducted of primary shoulder arthroplasties performed with stemless humeral component since 2014. Shoulder arthroplasty using Comprehensive Nano stemless shoulder system (Biomet®, Warsaw, IN, USA) was performed in 16 shoulders; 7 underwent hemiarthroplasty (HA), 7 underwent total shoulder arthroplasty (TSA), and 2 underwent reverse total shoulder arthroplasty (RTSA). 15 patients (16 shoulders) who were aged 56.8 years were available for clinically and radiologically at a mean follow-up of 31.2 months. Clinical evaluations were documented using Constant-Murley Score (CMS); American Shoulder and Elbow Society (ASES) score; Korean Shoulder Scoring (KSS) System. Radiological evaluations was based on the occurrence of radiolucent lines and signs of osteolysis or implant migration. **Results:** Clinically, CMS improved from 43.9 to 84.3 and ASES score improved from 44.8 to 85.8 and KSS improved from 54.5 to 89.4 (P=0.001). Active range of motion improved significantly for flexion (from 116.5° to 152.9°), abduction (from 95.0° to 156.3°; P=0.001), and external rotation (from 38.5° to 57.1°; P=0.007). Radiologically, radiolucent lines could be detected around humeral component, but none of them have had clinical relevance yet. **Conclusion:** The functional and radiologic results of the Comprehensive Nano stemless shoulder system are promising in short-term follow-up. Mid to long-term study including a large number of patients are needed to confirm this short-term results.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 53839

RESULTS OF 59 CONSECUTIVE ARROW ANATOMICAL TOTAL SHOULDER REPLACEMENT FOR PRIMARY OSTEOARTHRITIS - A SINGLE SURGEON SERIES

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Background Since 2012, the senior author has done 73 Arrow (FH Orthopaedic) anatomical total shoulder replacements for both primary osteoarthritis and rheumatoid arthritis. This series is a report on 59 consecutive Anatomical total shoulder replacements for primary osteoarthritis. The surgical approach (anterior superior with subscapularis resection) and postoperative protocols were identical in all. Patients continue to be reviewed prospectively for range of motion, evidence of loosening and deterioration of function. **Methods** The average age at surgery was 72 (range 51-90). There were 38 females and 21 males. There were 30 Left, 29 right and 7 bilateral shoulders. Assessment was by physical examination, record of Oxford Shoulder Scores and x-rays. Routine follow up is at 6 weeks, 3 months, 6 months and yearly intervals thereafter. The rotator cuff tendons was intact in all cases. **Results** Three patients died at most recent follow up. Two patients had severe dementia but had no deterioration of shoulder function. Two patients were lost to follow-up. The mean Oxford Shoulder Score was 38 (range 23-49). No glenoid or humeral radiolucencies have been noted. We have had no revisions for pain, loosening, infection or loss of function. There was one postoperative subluxation from subscapular dehiscence. **Conclusion** The Arrow press-fit stem with cemented glenoid is providing very good results in the medium term and there have been no signs of loosening or revisions in our single surgeon series. Patient satisfaction and functional range of movements have been good. This is now our preferred surgical option in patients with primary osteoarthritis. We carefully monitor all patients yearly and we will report on the long-term outcomes in the future.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 53225

SHOULDER ARTHROPLASTY: THE WOLVERHAMPTON ROYAL EXPERIENCE

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Introduction: Shoulder Arthroplasty 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%) with Osteoarthritis (57%). Our project aimed to determine the Wolverhampton Royal Experience by recording our findings Methods: Data was collected retrospectively to include patient demographics, co-morbidities, per-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 06/01/11 and 03/05/17, 209 Shoulder Arthroplasty cases were performed by 5 upper limb consultants using a variety of manufacturer implants. 56 Anatomic shoulders, 100 reverse shoulder replacements, 10 hemiarthroplasties and 43 resurfacing's took place. Length of stay was highest on average in the RSA group at 4.04days (Med: 2.5, Range: 1-12, 95% CI: ± 0.782 days) and shortest in the resurfacing group 2.18days (Med: 1, 95% CI: ± 1.01). Blood loss was highest in the Hemiarthroplasty group with an average drop of 25g/L in Hb; however, 13% of the RSA group required transfusions. Post-operative complications (2 wound issues and 4 axillary nerve neuropraxias) and rates of AKI (63% of AKI patients were accounted for by RSA) were highest after RSA. RSA patients were OR: 2.28 times (95% CI: ± 20.1 , P=0.0088) more likely to have a length of stay over 3 days, comparatively. Conclusion: Shoulder Arthroplasty's increasing frequency is not without complication. We found RSA became the most popular procedure, with the highest complication and blood transfusion rate comparative to other groups.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 54241

ARTHROSCOPIC EXTRA-ARTICULAR TENODESIS OF THE LONG HEAD OF THE BICEPS TENDON: A CASE STUDY ASSESSING SINGLE ANTEROLATERAL PORTAL TECHNIQUE

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Isolated lesions of the long head of the biceps tendon (LHBT); one of the frequent aetiologies of shoulder pain, develop due to excessive physical activity, trauma, or inherent bony anatomy of the intertubercular sulcus. Among patients treated for degenerative, inflammatory, and traumatic lesions of the LHBT, biceps tenodesis is the preferred management modality among the young and active patients. A prospective review was performed on 20 successive patients; 13 males and 7 females who are less than 60 years old, receiving an arthroscopic, single anterolateral portal technique of biceps tenodesis. Four patients were lost to follow-up. Pre-operative and post-operative variables studied were pain assessed by American Shoulder and Elbow Surgeons score (ASES), and Rowe score for instability. Arthroscopic biceps tenodesis technique using a single anterolateral portal technique with fixation distal to the bicipital groove was done. At six months postoperatively, ultrasound imaging evaluating the different criteria studying the integrity of the biceps tenodesis was carried out showing good results. There was a total of one complication, with a patient complaining of a Popeye deformity. Both the Rowe and ASES score showed satisfactory results indicating patient satisfaction on the levels of function, pain, mobility and stability. In this case study, the surgical outcome results on follow up showed significant improvement on clinical, function and pain levels with regain of motility and range of motion of the affected shoulder.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 54212

SUPERIOR SHOULDER SUSPENSORY COMPLEX DISRUPTION

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The superior shoulder suspensory complex (SSSC) is a bony soft tissue ring at the end of a superior and an inferior bony strut. This ring is composed of glenoid process, coracoid process, coracoclavicular ligament, distal clavicle, acromioclavicular joint, and acromial process. The superior strut is the middle third of the clavicle, whereas the inferior strut is the junction of the most lateral portion of the scapular body and the most medial portion of the glenoid neck. SSSC disruption is classified according to the number of places being disrupted to single, double or triple disruption. Single traumatic disruptions of the SSSC are anatomically stable situations because the integrity of the complex is not violated and non-operative management will yield a good to excellent result, while in double disruption; the integrity of the SSSC is compromised, creating an unstable situation. Understanding the role played by the bony and ligament stability is important to identify true floating shoulder injury and to offer an appropriate treatment. Both conservative and surgical treatment modalities are described but recent literature has shown the important role played by the ligaments in providing stability in ipsilateral fracture of the clavicle and scapula. In a true floating shoulder injury, it is important to stabilize the injury by fixation of the scapular fracture with clavicular fracture to achieve better correction of Glenopolar Angle and clinical outcomes of Disabilities of the Arm, Shoulder and Hand (DASH) and Constant-Murley Shoulder Outcome (Constant) scores than either fixation of the clavicle alone or conservative treatment.

Date: 2019-12-05

Session: Shoulder & Elbow Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 54172

SURGICAL TREATMENT OF FRACTURES OF THE UPPER END OF THE HUMERUS

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Introduction: Fractures of the upper end of the humerus are common, they represent about 5% of all fractures. Even today there is no consensus on the therapeutic management of these fractures which passes from simple immobilization with humeral arthroplasty. Methods: We studied and we compare the anatomical and functional results of surgical treatment of these fractures, and this through a retrospective study of 32 cases of upper end of humerus fractures treated surgically in orthopaedic surgery department Aile4 in Ibn Rochd university hospital in Casablanca between January 2011 and December 2016 with a mean of 24months. Results: The middle age of patients was 42 years with a male predominance (81%). A radiograph of the shoulder front and profile was done in all patients and allowed us to diagnose and identify the anatomical type according to Neer and duparc classification. Postoperative immobilization was necessary in all patients followed by functional rehabilitation. In the group treated by plate (12 cases): so the mean time of healing was 54,2 days the mean measuring of cephalic angle was 48,22°, Anatomical judged cases showed 81,1% of cases, the mean Constant score was 77,63% The functional results were good to excellent in 81,6%.We noted as complications: 2 cases of malunion and 1 case of pseudarthrosis. In the group treated by pinning (20 cases), the mean measuring of cephalic angle was 53,06°, Anatomical judged cases showed 50% of cases, Constant score was 81,1 The functional results were good to excellent in 93,5%.We noted as complications:2 cases of shoulder stiffness.

Date: 2019-12-05

Session: Knee Short Free Papers 1

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 52982

USE OF THE IDEAL FRAMEWORK TO GUIDE SAFE INTRODUCTIONS OF NOVEL INNOVATIONS IN KNEE SURGERY: TOKA® - A PATIENT SPECIFIC 3D PRINTED SYSTEM FOR HIGH TIBIAL OSTEOTOMY

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The international 'IDEAL collaboration' proposed a framework for surgical innovations to aid their safe introduction. For devices, this includes a PreIDEAL phase to include laboratory testing and training prior to first in man studies (IDEAL Phase I), feasibility (II) and randomised control trials (III). This pathway has not been previously reported for knee surgery. We characterise the IDEAL process for development of a novel invention: TOKA® - a patient specific 3D printed plate system for high tibial osteotomy (HTO). PreIDEAL phase evaluation was designed by a team comprising engineers and surgeons using different approaches (planned series of testing/evaluations): 1) Laboratory /Experimental testing using composite tibiae and finite element simulation to evaluate the influence of plate design variables [including geometry (TOKA® vs Tomofix) and screw positioning] on clinical factors [plate stress and interfragmentary movement]. The geometry of the novel TOKA® plate was structurally optimised. 2) In silico virtual trial, using the previously validated models, to evaluate the safety equivalence of TOKA® vs Tomofix plate - with regard to plate breakage risk (maximum stress within plate), healing stimulation and screw loosening risk (maximum strain at bone-screw interface). 3) Surgeon training using simulation methods - videos and interactive planning software 4) In vitro cadaveric study to evaluate translation into practice and inform technical considerations ahead of Phase I/II studies. This includes CT evaluation following HTO using TOKA® system. This pathway describes optimal development and introduction of a novel implantable device, and can be adapted for subsequent innovations in knee surgery. Permission to publish.

Date: 2019-12-05

Session: Knee Short Free Papers 1

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 55020

TOP 10 RESEARCH PRIORITIES FOR PROBLEMATIC KNEE REPLACEMENTS: A PRIORITY SETTING PARTNERSHIP LED BY THE BRITISH ASSOCIATION FOR SURGERY OF THE KNEE (BASK) AND THE JAMES LIND ALLIANCE (JLA)

Johnny MATHEWS¹, Andrew TOMS², - REVISION KNEE REPLACEMENT PRIORITY SETTING PARTNERSHIP³

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Introduction: The James Lind Alliance brings together patients, carers, and healthcare professionals on an equal footing via Priority Setting Partnerships (PSPs). The British Association for Surgery of the Knee (BASK) initiated the Revision Knee Replacement PSP to optimise future research about the assessment, management and rehabilitation of patients with problematic knee replacements. Methods: A steering group consisting of patients and healthcare professionals partnered with various national organisations and charities including the British Orthopaedic Association. A national survey was conducted to elicit uncertainties regarding problematic knee replacements that necessitate future research. Submissions were encouraged from participants throughout the country with personal or professional experience of problematic knee replacement. Submissions were thematically analysed and grouped into summary questions by an independent information specialist. Summary questions were individually reviewed by the steering group, refined and evidence checked to form a long list of 32 questions. These were then ranked during a second national survey to inform a final workshop, where purposively sampled patient and professional representatives undertook nominal group techniques. Results: 739 research questions were submitted by 267 respondents including 137 patients, 18 carers / spouses and 112 clinicians. Emerging themes following analysis included psychological and social support, diagnosis, prognosis, (p)rehab, pain, infection, surgical (implant and technical) and service organisation. The rankings following second survey were used to inform the final workshop where participants reached consensus regarding the top ten questions. Conclusion: We report the UK top ten research priorities regarding the assessment, management and rehabilitation of patients with problematic knee replacements.

Date: 2019-12-05

Session: Knee Short Free Papers 1

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 54214

COMPARATIVE ANALYSIS OF ACCURACY OF PATELLAR INDEX MEASUREMENTS USING MULTIPLANAR MRI SCAN

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BACKGROUND: The causes for anterior knee pain are multifactorial with abnormalities affecting the patella or the extensor mechanism leading to patellar malalignment. We used four methods to measure patellar height developed originally for plain radiographs and compared them on MRI to assess normal values and test accuracy and reliability. **MATERIALS AND METHODS:** We included 25 normal subjects (13 female, 12 male; age range 19-21 years) from a local student population with mixed ethnic background. Inclusion criteria included skeletally mature individuals with no previous knee pain. Both knees were scanned per subject. We used Insall-Salvati (IS), Blackburne-Peel (BP) and Caton- Deschamps (CD) methods for measuring the patellar height. Two observers obtained the results independently and repeated after three weeks to assess inter and intraobserver variations. Statistical analysis was performed using StatsDirect Statistical Software. **RESULTS:** The coefficient of variation was relatively small for IS and it also possessed the smallest IQR and range. Intra-observer reliability differed across the three patella ratios for two observers, with IS ratio displayed the best reliability for the 1st observer and CD for the 2nd observer. The worst measure for both observers in terms of intraobserver repeatability was BP. With regard to inter-observer reliability, BP was the least reliable measure, followed by CD. The best attributes of reliability was with IS ratio. **CONCLUSION:** The IS ratio, although was designed for use with plain film, is reliable and reproducible using MRI scans. The CD method deemed middling in both categories and BP proved to be least reliable.

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Session: Knee Short Free Papers 1

Time: 16:00 - 17:30

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Abstract no.: 54032

**FUNCTIONAL COMPUTER DIAGNOSTICS OF THE KNEE
ENDOPROSTHESIS LOOSENING**

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Introduction: one of the most common problem after total knee arthroplasty is endoprosthesis loosening. Radiography and CT-scan play a key role in the diagnosis of this complication. But the accuracy of X-ray and CT evaluation has some limitations. We offered dynamic CT-scan evaluation of the knee endoprosthesis loosening. Methods: for this goal we used 640-slice computed tomography (CT) scanner. The patient was placed with a roller under the knee joint so that the flexion in the joint was 90 degree. During CT scanning the patient performed a smooth extension of the knee joint to the maximum possible level. After 3D reconstruction, we marked 5 points in the tibial component, 5 points in the tibial cortical bone and drew lines between them. Similar lines we drew between points in the femoral component and points in the femoral cortical bone. The computer displayed the length of the same lines at each stage of flexion of the knee joint. If the length of at least one line was changed to 1 mm or more, we concluded that the component was unstable. We performed dynamic CT – scan in 17 patients with pain in the knee joint after TKA. All of them underwent revision knee arthroplasty. Results: Data from dynamic CT scan and intraoperative observations coincided in 16 cases (94,1 %). Functional computer diagnostics in doubtful cases allows clarifying the presence or absence of knee endoprosthesis loosening with high accuracy.

Date: 2019-12-05

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Abstract no.: 53585

POPLITEAL ARTERY THROMBOSIS – POST TKR – SERIES OF CASES

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Popliteal artery occlusion is a rare complication with direct injury being the most common. We present a rare case with complete occlusion of the popliteal artery at the 1st post-operative day. The possible cause could be development of a thrombosis over the atherosclerotic plaque. Reported case popliteal artery thrombosis without known risk factors. A 67 year old gentleman presented to the orthopaedic out-patient department with bilateral grade -4 osteoarthritis. On examination the patient had restriction of movements, joint line tenderness present, crepitus, no flexion deformity and bilateral varus angulation of knee of 10 degree. The patient was counselled and operated for right TKR since right knee was more symptomatic. Smith and Nephew oxinium implant was used. Immediately in the post-operative period distal pulses were palpable. Patient was started on LMWH, but surprisingly in the post-operative day 1, ankle dorsi-flexion and plantar flexion were absent. Toes were cooler and sensation was absent with the presence of femoral pulse and absence of dorsalis pedis and post-tibial pulse. Vascular surgeon opinion was taken and a Doppler done showed acute arterial thrombosis in the distal 2/3 rd of the right popliteal artery with no phasic flow in the posterior and anterior tibial artery. CT angiogram showed acute thrombosis and complete occlusion of the right popliteal artery. The patient was posted for percutaneous transluminal balloon angioplasty and thrombectomy was done. Now the patient is at 2 years follow up with intact distal pulses. Knee range of movements showed 0-90 degree with no scar issues.

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Abstract no.: 53451

MEASURES TO REDUCE INFECTION RATE IN KNEE AND HIP ARTHROPLASTY

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Infection following total knee and total hip arthroplasty can be difficult to diagnose and treat. Diagnosis is multifactorial and relies on the clinical picture, radiographs, bone scans, serologic tests, synovial fluid examination, intra-operative culture and histology. In our study, we performed a unique protocol for all arthroplasty patients to prevent infection. Retrograde study done on 500 cases to evaluate our protocol to prevent infection. The study was done on 33 Total hip arthroplasty patients, 432 primary total knee, 13 bilateral primary total knee and 9 cases of revision total knee. The protocol for prevention of infection decided into preoperative measures (Elimination of any septic focus, 3 showers with Hepatin for patient, Shower for the surgeon with Hepatin, Antibiotic during induction), Intraoperative measures (Sterile Helmet for the surgeons and nurses, Double gloves technique, Complete disposable draping, Use pulsatile wash, Iopan film scrubbing the patient, Wash using Hydrogen peroxide, Wash using 3 litres normal saline, Change gloves after draping, Change gloves before apply the prosthesis, Antibiotic spray after closure of wound, Dressing by silver nitrate dressing, Reduce the time of tourniquet, Haemostasis) and postoperative measures (Wound exposure after 2 w of surgery, IV Antibiotics for 5 days, CBC after 24 hours of surgery, If HB below 10 :give blood transfusion). The results showed that just one case had infection till 2 years follow up, and 499 case does not show any signs of infection, so the rate of infection in our hospital is 0.2%. Our protocol succeeded to prevent the infection in arthroplasty surgeries.

Date: 2019-12-05

Session: Knee Short Free Papers 1

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Abstract no.: 53425

COMPARISON OF UKA AND HTO IN MEDIAL KNEE OA BY FORGOTTEN JOINT SCORE 12

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BACKGROUND: The clinical outcome after unicompartmental knee arthroplasty (UKA) and high tibial osteotomy (HTO) has not been compared using the Forgotten Joint Score 12 (FJS). **PURPOSE:** To compare the outcome after UKA and HTO in medial knee osteoarthritis (OA) using FJS, and to analyse the effect of patient-related factors on FJS. **METHODS:** Records for 29 patients with medial unicompartmental OA who were treated by either UKA or HTO and were followed for at least six months were retrospectively reviewed. There were 16 patients who underwent UKA and 13 patients who were treated by HTO. Final clinical outcomes were assessed by the range of motion (ROM), Knee Injury and Osteoarthritis Outcome Scores (KOOS), and FJS. **RESULTS:** Patients in the UKA group were significantly older than those of the HTO group (mean 74.1 and 56.6, $p=0.002$). There were no significant differences in other characteristics of the patients between the two groups. There was no significant difference in the pre- and post-operative ROM and KOOS between the two groups. There was also no significant difference in FJS in UKA group and HTO group (mean 68.1 and 62.3 points, $p=0.57$). FJS did not correlate with any of the patient-related factors including age, sex, and Body Mass Index (BMI). There was a correlation between FJS and every particular item of KOOS. **CONCLUSION:** Both treatments achieved good clinical outcomes. There was no difference in any of the clinical outcome measures among the two groups, despite the difference in the mean age.

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Abstract no.: 53233

ONCOLOGICAL LOWER LIMB SALVAGE WITH USE OF MEGAPROSTHESES FOR TUMOURS AROUND THE KNEE: 10-YEARS EXPERIENCE AT NATIONAL INSTITUTE OF REHABILITATION MEDICINE, ISLAMABAD, PAKISTAN

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Objective: The present study was carried out to document the clinical presentation of tumours around the knee and determine the outcome of reconstruction with rotating hinge modular megaprotheses in terms of knee function, disease free survival and any complications at 3 years. **Methods:** This case series was conducted at the Department of Orthopedic Surgery, (NIRM), Islamabad over a period of 10-years. It included all patients with tumours around the knee who underwent megaprothetic reconstructions. The target follow up was 3 years for recording the outcome measures. **Results:** There were 57 patients with 34 males and 23 females. Their ages ranged between 16-53 years with a mean of 32.58 ± 9.98 years. The tumours included GCT (n=34), osteosarcomas (n=19), Spindle cell sarcoma (n=2), Ewing's sarcoma (n=1) and chondrosarcoma (n=1). The average musculoskeletal tumor society (MSTS) score was 87.49%. The hospital stay was 7-23 days with a mean stay of 9.45 ± 2.47 days. Among our share of complications included superficial infections/ delayed wound healing among 7(12.28%) patients, local recurrence in 5(8.77%), deep infections among 4(7.01%) and transient palsy of peroneal nerve in 2(3.50%) cases. There was one case of aseptic loosening and traumatic disruption of extensor mechanism one each (1.75%). There were 3(5.26%) mortalities in our series. **Conclusions:** Meticulous en bloc extra-articular resection of tumours around the knee followed by megaprothetic reconstruction offers a prudent treatment option for limb salvage in carefully selected patients. With the liberal availability of efficient chemotherapy the newer generation modular prosthetic devices yield reasonable knee function and disease free survival.

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Abstract no.: 54950

EFFECT OF PRE-OPERATIVE SERUM VITAMIN-D LEVELS ON POST OPERATIVE OUTCOME IN TOTAL KNEE ARTHROPLASTY

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OBJECTIVE: To determine the effect of pre-operative serum Vitamin-D levels on the post-operative outcome in patients undergoing Total Knee Replacement (TKR). **METHODOLOGY:** This prospective, cohort study was conducted from 11th May 2017 to 10th May 2018. A total of 110 patients undergoing primary unilateral Total Knee Arthroplasty (TKA) and meeting the inclusion criteria were enrolled in the study. Patients were placed into two groups; A and B. Group A included patients who had deficient Vitamin-D3 levels ($< 30\text{ng/mL}$) while in B patients with sufficient levels of Vitamin-D3 ($> 30\text{ng/mL}$). Functional evaluation of the patients in both groups was done pre-operatively and at 03 months post-op using American Knee Society Score (KSS), Alternate step test (AST) and Six-meter walk test (SWT). Data analysed with SPSS version 23 and mean functional scores compared using student's t-test. **RESULTS:** 48 (43.64%) male and 62 (56.36%) female patients were included in the study. Mean age of patients in group A was 60.87 ± 5.10 years while in B 60.09 ± 4.78 years. Group A patients had mean Vitamin-D levels of 13.56 ± 6.12 ng/mL and those in B with 41.49 ± 9.95 ng/mL. At 3 months post-op, Functional Knee Society Score (KSS) showed a significant difference between the two groups (65.98 ± 5.10 in group A and 74.87 ± 5.02 in group B, $p<0.01$). Among the performance tests, AST and SWT showed significant difference, as in group A AST score 16.46 ± 2.78 to 15.12 ± 3.37 in group B ($p=0.02$) while for SWT 8.48 ± 2.06 in group A to 7.49 ± 1.88 in group B ($p=0.01$). **CONCLUSION:** Vitamin-D deficiency adversely affects the functional outcome in post-operative phase after TKA.

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Abstract no.: 54706

A STUDY ON KNEE ANTHROPOMETRY IN INDIAN POPULATION AND ITS COMPARISON WITH OTHER ETHNIC GROUPS AND CURRENT TKA IMPLANTS- A CT BASED STUDY.

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Introduction: In TKA, maximal implant coverage on the bone surface minimizes the stress applied to the bone-implant interface. A good shape of the knee prosthesis which matches the resected surface of knee has been reported as a factor for long-term survivorship in TKA. Most of the implants used for TKA in Asian population have been produced based on anthropometry of Western people. Since anatomic features and life styles are different between Western and Eastern people, there would be ethnic differences in terms of conformity of implants to the patient's anatomy and clinical results after TKA. Materials: We studied 60 patient, 3D reconstruction of normal knee of the patients undergoing CT scan for injured knee was done. Data of this study was compared to available data of Americans, Chinese, Japanese and Korean knees. Also, comparison of data with five commonly used knee systems at our centre which included PFC Sigma Knee System (DePuy), NexGen LPS Flex Mobile Knee System (Zimmer) and Scorpio NRG Knee System (Stryker), Freedom (MAXX) and Buechal Pappas was done. Results: We found significant difference ($p < 0.001$) in the measurement of fAP, fML, tAP, tML and femoral aspect ratio among males and females of study population. For both the femur and tibia, it was found that the ML dimension was undersized with smaller AP and overhang was observed for larger AP dimensions. Conclusions: Research on implant mismatching carried out in various Asian countries has led to the conclusion that the Asian-Pacific population should have special designs of TKA implants.

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Session: Knee Short Free Papers 1

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 54641

TOTAL KNEE REPLACEMENT AND EXPERIENCE FROM AFGHANISTAN

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Introduction: Total Knee Replacement (TKR) is a standard procedure for degenerative and other varieties of knee pathologies, with almost very predictable results. We present our data and results of this procedure from Afghanistan. Material and Method: We present our data and experience of almost a decade (since 2008) with total cases of above 500 patients (600 knees). The Implant that we use till today is INOR. Surgical Approach is standard Medial parapatellar approach Patients were evaluated using universal knee scoring system Results: We have used this technique and implant on more than 600 knees so far and for conditions like Degenerative OA (81%), RA (13%), Traumatic including gunshot OA (4%), and post infected OA (2%). We have assessed our patients in regards to their pre op pain score and post op, range of motions, walking distance, ability to squat, and stability. Conclusions: Total Knee Replacement is one of the most rewarding surgeries of recent advances in orthopaedic surgery with quite good outcomes, and survival ship. And with almost a decade of our own experience we have no candidate for revision. But looking to our culture and difference of life style, terrain, and pathophysiology we need to look for our own made implants for our kind of Anatomy and demands.

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Room: Meeting Room 8

Abstract no.: 54364

DOES A 24-HOUR POST-OPERATIVE INTRA-ARTICULAR LOCAL ANAESTHETIC INFUSION AFFECT PATIENT LENGTH OF STAY OR OXFORD KNEE SCORE FOLLOWING ENHANCED RECOVERY PRIMARY TOTAL KNEE ARTHROPLASTY?

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Introduction: Enhanced Recovery protocols for total knee replacement (TKRs) include numerous perioperative analgesic elements, including intra-operative local anaesthetic infiltration. Nine of our arthroplasty surgeons additionally used an intra-articular catheter for bolus Levobupivacaine infusions for 24 hours. We were keen to explore if the post op infusion via intraarticular catheter affected length of stay (LOS) and Oxford Knee Score (OKS) improvement. Methods: Identifiers for ASA grade 1 and 2 patients operated on consecutively between July 2011 and March 2016, were linked to: 1) data submitted to the National Joint Registry, 2) comorbidity and complications data from the online patient administration system, 3) Oxford Knee Scores from the national PROMs programme. Data were analysed using chi square and t tests, and regression analysis done to identify predictors of LOS and OKS improvement at 6 months compared to pre-operative baseline. Results: 1284 TKRs received additional levobupivacaine via post-op catheter and 496 did not. The two groups were statistically matched for age, gender, ASA grades, BMI, prevalence of comorbidities, and incidence of complications. Mean LOS was 2.8 days in the catheter and 2.6 days in the no-catheter group ($p=0.04$). OKS scores showed improvement in both groups, increasing by 17.4 and 16.9 respectively ($p=0.85$). In the multivariable regression analyses, the use of intra-articular anaesthetic bolus infusion influenced neither the LOS ($p=0.75$), nor the change in OKS ($p=0.33$). Conclusions: Intra-articular local anaesthetic infusion does not affect patient length of stay or Oxford Knee Score following Enhanced Recovery TKRs.

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Abstract no.: 54344

GENU RECURVATUM FOLLOWING PRIMARY TOTAL KNEE ARTHROPLASTY: A POTENTIAL INDICATION FOR ISOLATED POLYETHYLENE EXCHANGE

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Introduction: Isolated liner exchange is a rare option in revision total knee arthroplasty (TKA) with variable results. It can be successful in selected patients with well-fixed and well aligned TKA. We therefore reported our experience with isolated PE exchange for genu recurvatum following TKA at our institution. Material: From January 2011 to January 2018 we performed 876 primary TKA at our institution using single radius design. All patients underwent operation by single surgeon using a standard surgical protocol. Four patients came to us with recurvatum deformity of the operated knee at average 1.3 y(6 month to 3 years) following surgery (0.4%). Results: The mean age of patients with recurvatum was 59 (55 to 67). All patients were female with some generalized ligamentous laxity. We managed them conservatively with hinged knee brace for 3 months. 3 patients did not respond to non operative treatment, therefore, isolated PE exchange were performed. We observed wear at the base of polyethylene post in all 3 revised patients. The mean thickness of PE has been increased from 8.6 mm to 16 mm to. At an average follow up of 2 years, all patients going well without any residua recurvatum deformity. Conclusion: Isolated polyethylene exchange could be considered in patients with recurvatum following single radius TKA design with at least short term follow up success. Using thicker polyethylene at the time of primary TKA in patients with ligamentous hyperlaxity might have prevented this complication.

Date: 2019-12-05

Session: Knee Short Free Papers 1

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 54302

TOTAL KNEE REPLACEMENT SURGERY IN PATIENTS WITH VARUS RECURVATUM DEFORMITY- CHALLENGES AND EARLY RESULTS

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Introduction: Recurvatum deformity in Arthritic knees undergoing Total knee replacement (TKR) is uncommon, occurring in <1% of patients. Though, frequently associated with valgus deformities and neuromuscular disorders, many cases in Our Series have been associated with Varus deformity. Here we report the challenges involved in balancing knees with this Combined Varus Recurvatum deformity. Methods: A Prospective study, done between 2015-2018, with 59 TKR surgeries in 40 patients with > 5 degrees of Recurvatum deformity. Deformity graded as I, II & III. Functional outcome was assessed by KSS. Patients with neuromuscular disorders were excluded. Results: The Study included 59 knees in 40 patients (Unilateral – 21, Bilateral 19) (M:F=1:6) with Mean age 62.8 years. We had 38 knees as Grade 1, 16 knees as Grade 2 and 5 knees as Grade 3. Mean follow up was 17.6 months (min- 6 months, median- 15months). The functional outcome KSS scores improved from Mean pre-op score of 29 to Post-op score of 75, the two-tailed P value < 0.0001, considered extremely significant. Knees with these deformity were associated with Anterior Tibial wear, lesser posterior tibial slope & PF arthritis. These associations were statistically significant. Conclusion: Though TKR surgery in Arthritic Knees with Varus Recurvatum deformity is difficult and challenging, a proper pre-op planning will help in using a Minimal Constrained Knee prosthesis. Early functional outcome in these knees are good and comparable. This Deformity is often underdiagnosed, leading to larger gaps and warranting high inserts, so one should cautiously look for this deformity.

Date: 2019-12-05

Session: Knee Short Free Papers 1

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 54225

12 YEAR OUTCOME AND SURVIVORSHIP ANALYSIS OF HIP AND KNEE REPLACEMENT BASED ON THE EGYPTIAN COMMUNITY ARTHROPLASTY REGISTRY

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TKR and THR cases since 2007 till end of 2018 were included. All failure and complications were reported for cases, which have their index procedure recorded in this register. Also, there are revision cases included in the registry while their primary procedures were done in other hospitals that are not included in this registry. Data were collected from registry, follow-up visits and telephone calls. Kaplan Myers test was used for survivorship analysis. Results: Implants used were 13 hip and 13 knee from different implant companies. Incidence of infection was 1.5 % in the absence of laminar flow, space gown and pulse lavage. Survey of 5216 TKR and THR cases (2007 to 2015) revealed 210 infected cases. Only 95 out of 210 had their primary index surgery reported in the register. There was a misuse of antibiotics with extended duration beyond one week. Few low cost implants were used and yielded low survival and higher complications rate. Failure related to aseptic loosening was 1.1% for knees and 1% for THR. Confidence Interval 95%. Discussion and Conclusion: This study has limitations as the registry cases were mostly done by specialized experienced surgeons. It appears that in the presence of limited resources, the incidence of failure and complications are not as high as it was thought. Developing countries could have different pathology, demands, time of presentation, economic constraints, level of training, availability and selection of implants. These could have an adverse effect on the outcome and survival of hip and knee arthroplasty.

Date: 2019-12-05

Session: Knee Short Free Papers 1

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 53696

DOES TOTAL KNEE ARTHROPLASTY REDUCE FALL RISK?

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Adults suffering from arthritis are 2.5 times more likely to have more falls than adults without arthritis. Despite studies primarily concluding that knee OA increased fall-risk, it remains unknown if standard treatments, such as total knee arthroplasty (TKA), can effectively decrease fall-risk. We hypothesized that subjects who have undergone a total knee arthroplasty would have less fall risk than those in the knee OA group, but would have more fall risk than age matched normals. For this study, 14 patients had undergone TKA at least one year prior and had excellent Knee Society Function and Pain scores, 8 patients had end-stage knee OA and had been told to have TKA in the future, and 11 subjects were asymptomatic and considered age-matched normal. A sophisticated, bilateral, kinematic analysis system (GRAIL, Motek Medical BV, Netherlands) which included a split-belt, variable speed treadmill was used to simulate the perturbation condition where forward stepping responses were required to avoid a fall and each participant wore a full-body harness with tether. A fall was determined by the patient losing footing and full patient weight on the tether. Data analysis of fall outcomes during these perturbations showed 60% averaged fall outcomes for TKA, 52% for severe OA group and 49.9% for the normal group. Statistical analysis of variance concluded that there were no significance differences between the groups. In conclusion, TKA was not shown to lessen fall risk with this method of study and showed a slight trend for more risk of falling.

Date: 2019-12-05

Session: Knee Short Free Papers 1

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 53351

ROLE OF TRANEXAMIC ACID IN KNEE ARTHROPLASTY: TOPICAL VS ORAL

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Tranexemic acid (TXA) has received extensive attention in management of blood loss in total knee replacement. However, there is still no consensus on the ideal method of its administration. Present study was undertaken to evaluate the efficacy of topical/ oral TXA in primary knee arthroplasty. Fifty patients were divided into 2 groups. In group A (25 patients), 1.5 g of TXA in 50 mL of normal saline solution was instilled through drain tube after surgery and the drain was clamped for two hours. In group B (25 patients), 1950 mg TXA was given orally 2 hours prior to the incision. These groups were compared to our previously operated 50 patients (control) in whom no TXA was used. Post-operative drain volume, pre and post-operative haemoglobin and requirement of blood transfusion were noted. Mean drain volume in group A & B was 160 mL and 366 mL respectively ($p < 0.001$) as compared to a mean of 582 mL in the control group ($p < 0.001$). The mean post operative fall in hemoglobin was 1.01 and 1.7 g% in group A and B with a post-operative blood transfusion incidence of 12% each. In contrast, the control group had a 90% incidence of blood transfusion including more than one unit in many cases ($p < 0.001$). No post-operative complications were observed in any of the cases. Significant reduction in drain volume and minimal fall in post-operative haemoglobin indicates efficacy of TXA administration in knee arthroplasty. Further intraarticular route is more effective compared to oral TXA.

Date: 2019-12-05

Session: Knee Short Free Papers 1

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 54504

KINEMATIC ANALYSIS OF KNEE JOINT IN SITTING-STANDING MOTION USING BIPLANE FLUOROSCOPY IN OSTEOARTHRITIC KNEE THAT UNDERWENT THE MEDIAL OPENING WEDGE HIGH TIBIAL OSTEOTOMY

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Purpose: The purpose of this study was to analysis changes in knee joint kinematics during sitting-standing movement in patients undergoing medial opening wedge HTO using biplane fluoroscopy. **Methods:** Ten subjects were enrolled for this study. 5 were normal volunteers and 5 were medial knee OA undergoing medial opening wedge HTO. Kinematic measurement in OA patients was serially undertaken at preoperative, postoperative 3, 6, 12 months. Kinematic data were obtained using biplane fluoroscopy during sitting-standing movement of the subjects on stool. The average degree of motion was calculated the flexion-extension (FE), internal-external rotation (IE), and abduction-adduction (Ab-Ad) motion of knee joint. Biplane fluoroscopy image and 3D joint model were matched and analysed. Serial kinematics of patient was compared with that of normal volunteers. **Results:** FE and IE movement in medial open HTO at postoperative 12 months (69°, 26°) was not recovered to normal (83°, 28°) (p=0.0001). Serial measurement of FE and IE showed an increasing trend in motion (p=0.0001, p=0.0002). Ab-Ad movement (2.1°) at postoperative 12 months was recovered to normal (2.2°) (p=0.567). Most strikingly changes occurred in Ab-Ad movement (from 3.8° at preoperative to 2.1° at postoperative 12 months) **Conclusion:** Even though medial opening wedge HTO is associated with improving changes in knee kinematics in all three planes of motion during sitting-standing movement, FE and IE movements were not recovered to the normal until 12 months. However, there were significant changes in Ab-Ad movement during study period which was recovered to normal at postoperative 12 months.

Date: 2019-12-05

Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 54740

A MODIFIED MASQUELET TECHNIQUE FOR THE FOREARM INFECTED SEGMENTAL BONE LOSS

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Introduction: The use of a temporary bone cement spacer followed by bone grafting, is one of the recent treatment strategies for post-traumatic bone defects, especially in the presence of infection. **Patients and Methods:** This is a prospective study that includes a series of 16 patients with infected long bone defects in the radius or ulna. Patient`s age was from 9 - 46 years. Average bone loss was 6.5 cm. (range: 4.5 – 11 cm.). All patients were treated with the technique of free non-vascularised bone grafting and plate fixation following placement of an antibiotic-loaded cement spacer. A special novel modification in the original technique; was bone stabilisation during 1st. stage using special K. wire internal construct (instead of external fixation). **Results:** All cases showed bone union with sound consolidation in all; with persistence of infection in only one case. Total complications were few and minor after a minimum follow-up of two years (range 2-3.5 y.). **Conclusion:** This modified Masquelet technique is a satisfactory option in the management of infected segmental forearm bone defects at a low complication rate.

Date: 2019-12-05

Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 54462

EVALUATION OF FUNCTIONAL OUTCOME AND HISTOLOGICAL FEATURES OF INDUCED MEMBRANE IN PATIENTS MANAGED WITH MASQUELET TECHNIQUE

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The reconstruction of critical sized segmental bone defect is a major challenge. Induced membrane technique proposed by Masquelet is a promising approach but not many studies have been conducted using this technique and the biological properties of the induced membrane remain largely unknown. A prospective study was conducted in 16 patients with post traumatic infected fracture nonunion of lower limb bones. 16 patients underwent Masquelet's staged procedure with 11 tibial defects and 5 femoral defects. After stage I, the mean defect created was 7.1 ± 2.3 cm (mean \pm SD). Average time to stage II was 11.56 ± 4.64 weeks (mean \pm SD). At 9, 12 and 15 months follow up 42.8%, 78.5% and 100% had united clinically as well as radiologically respectively and the mean time to union was 10 months. The time to union was found directly proportional to the defect size ($p=0.018$) with an average rate of union of 6.7 mm/month. However, rate of union also increased with the defect size ($p=0.003$). Histological examination of the membrane revealed a two layered architecture with inner cellular layer and outer fibrous layer and 25% samples showed new bone formation. The thickness as well as the microvessel density of the membrane was found maximum between 8 to 12 weeks. Our study provides conclusive evidence regarding successful clinical outcome of Masquelet technique. Moreover, the study also characterized the induced membrane as osteogenic with features similar to periosteum, and peak biological properties between 8 to 12 weeks.

Date: 2019-12-05

Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 54402

OUTCOME OF NON VASCULARISED AUTOLOGOUS FIBULA GRAFT IN TREATMENT OF GAP NON-UNION: A CASE SERIES

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Introduction: Gap non-unions caused by trauma, tumour excision or osteomyelitis post debridement, are one of the most perplexing problems facing the orthopaedic surgeon. Non vascularised autologous fibula graft is a simple and effective treatment option for gap non-unions. Methods: The study comprised 11 patients of gap non-unions of which 7 were the result of trauma, 2 of osteomyelitis and 2 of tumour excision. Age ranged between 13 to 80 years. The gap could not be closed by acute docking so fibular graft was harvested from the mid shaft region using the standard postero-lateral approach. The graft was fixed at the site of gap using plate and screws, TENS nail or Monorail system (LRS). Postoperatively limb was immobilised for 4 weeks with regular follow up at 1, 3, 6 months and every 6 monthly. Results: Of the 11 patients 5 were male and 6 females. The average bone gap was 7 cm. 6 cases involved the femur while the rest included other long bones. 73% of the patients achieved bone union after the first procedure (8 of 11). Of the remaining three, one showed union after secondary cortico-cancellous bone grafting, while two are planned for the same. Functional range of motion was achieved in both the proximal and distal joints. Conclusion: Non-vascularised fibular bone grafting is a simple and effective treatment option, does not require any special skill, has a low complication rate and has very high patient compliance. Therefore, it is a better technique than bone transport in developing countries.

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Session: Trauma Short Free Papers 1

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Room: Meeting Room 9

Abstract no.: 54297

LIMB SALVAGE IN LATE PRESENTING VASCULAR INJURIES: HOW LATE IS REALLY LATE? A PROSPECTIVE 12 CASE EXPERIENCE

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Introduction: Inclement weather, adverse terrain coupled with limited diagnostic and surgical facilities in peripheral setups in eastern India, results in extremity vascular injuries reaching extremely late to a vascular centre. Does that mean all such limbs should be amputated? Literature is not supportive of limb salvage in such cases. But the implications of limb loss in a breadwinner, soldier or student can be catastrophic. At our centre we decided to give everyone a fighting chance and attempted to salvage almost all cases to surprising outcomes. Methods: Prospective analyses of 12 cases between May 2017 to Mar 2019. Diagnoses obtained clinically and through doppler & CT Angiography. Fasciotomies done in the beginning to assess limb viability. Embolectomies, bypass grafting done as revascularization procedures. Intensive care with pertinent interventions provided postop to avoid reperfusion injury and other complications. Severely mangled limbs, almost total traumatic amputations excluded. Results: Age 7-60 years. Delay at Presentation 8hrs to 2 weeks. Limbs Lower 3, Upper 9. Concomitant Orthopaedic Injuries 100%. Interventions – Thrombectomies 5, Bypass grafting 6. One amputation due to unsalvageable gangrenous limb. Salvage to full function - 3 (25%) including a fighter pilot. Salvage to limited function (ADLs) – 6 (75%). Non functional limbs - 2 (17%). No secondary amputation. Conclusions: Meticulous care, urgent and appropriate surgery and a liberal outlook towards salvage in such cases yielded good outcomes in this continuing study. A rethink of surgical strategy is needed and a guideline is being evolved.

Date: 2019-12-05

Session: Trauma Short Free Papers 1

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Abstract no.: 53765

RUNNING VERSUS INTERRUPTED ALLGOWER SUTURE TECHNIQUE IN ANKLE FRACTURE SURGERY: A RANDOMISED CONTROLLED TRIAL ASSESSING PERI-INCISIONAL PERFUSION USING INTRA-OPERATIVE ANGIOGRAPHY IN 26 ANKLE FRACTURE PATIENTS

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Introduction: The Allgower-Donati suture technique has been widely recommended for wound closure for at-risk wounds. This technique maintains peri-incisional microcirculation, thereby decreasing soft tissue morbidity, but is a time consuming suture to apply. The purpose of this study is to compare the peri-incisional perfusion and perfusion impairment between the conventional Interrupted Allgower-Donati (IAD) technique and a modified Running Allgower-Donati(RAD) technique in ankle fracture surgery. **Material and Methods:** This study is an IRB approved, prospective, randomized controlled clinical trial. Between 2017-2018, 26 healthy patients with ankle fractures (AO/OTA 44-A, B or C), were prospective randomized into two groups; (1) 13 patients in RAD group and (2) 13 patients in IAD group. Skin perfusion was assessed immediately after wound closure with laser-assisted indocyanine green angiography (ICG-A). Mean incision perfusion and mean perfusion impairment were measured and compared with analysis of variance (ANOVA). All patients were followed for a minimum of 3 months after surgery to assess for wound complications. **Results:** The RAD technique demonstrated a statistically significantly shorter closure time compared to IAD technique (375±76second vs 440±84second, p<0.05). No difference was found regarding postoperative wound complications, and intraoperative mean incision perfusion and mean perfusion impairment (p>0.05). **Conclusion:** With the exception of significant shorter wound closure time for the RAD suture, both techniques showed comparable results in healthy patients. Increased power analysis and use in non-healthy patients, may show additional differences between techniques. Further investigation is warranted.

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Abstract no.: 53161

REUNITING UNUNITED POST NAILING ASEPTIC DIAPHYSEAL FRACTURE FEMUR/TIBIA BY AUGMENTATION PLATING

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The failure is either mechanical, biological or both. Mechanical failure – undersized nail, improper locking, distal spacious medullary canal, distal small fragment. Biological failure- comminuted fractures, internal degloving. Treatment options are exchange nailing/conversion to plate/augmentation plating with bone graft/bone grafting alone. Method: All surgeries done under spinal anaesthesia. Appropriate surgical approach depending on site. Decortication proximal and distal to fracture site, retaining existing nail. 6-8 cortices purchased on both sides. Autogenous bone graft in every patient. Discussion Popular method is exchange nailing with large size nail, the success rate varies from 53-100% in different studies. Rotational stress is chief cause of failure after exchange nailing. We used combi-hole plates for augmentation. Fixing plate over nail in situ is possible with little manoeuvring. Augmentation plate eliminates rotational stress completely. It's a myth that during reaming endosteal blood supply damages and putting a plate after few months jeopardises the periosteal vascularity also. It has been proved beyond doubt that endosteal blood supply is restored within two to six weeks after reaming. Augmentation plate with autogenous bone graft combines the advantage of nail providing stable alignment with rigid fixation by plate. Augmentation plate increases bending stiffness 2.5 times and torsional stiffness 3.3 times, concomitant bone graft stimulates osteogenesis. This procedure is simple, lesser associated risks and not requiring blood transfusion. Conclusion: Augmentation plating with bone grafting will be the treatment of choice for nonunion of diaphyseal fractures. Medlock concluded mean union-rate in exchange nailing 74% in augmentation plating is 99.8%.

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Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 54531

COLCHESTER HOSPITAL AUDIT ON ORTHOPAEDIC POST-OPERATIVE NOTES

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Background: An operation note is essential to ensure continuity of care between the operating team and other colleagues, and provides a medicolegal record of a patient's care. Aim: Assess adherence of post operative notes to what the Royal College of Surgeons has laid out to be included as per "Good Surgical Practice 2014" Methods: A Retrospective study was conducted at Trauma and Orthopaedic Department Colchester, total of 80 operative notes were collected randomly during a period of one week in a month for 4 months using a proforma checking if certain key information were mentioned on the notes as per the RCS guidelines of 2014, this was then repeated after presenting initial data and raising awareness. Results: 80 patients included, Demographics: 80 Reaudit:80, Nature of surgery Elective 14 Trauma 30 Unclassified 36 Reaudit: Elective 26 Trauma 44 Unclassified 5, Name Surgeon and Anaesthetist 80 Reaudit: 80 Operative Diagnosis:50 Reaudit: 74, Incision 74 Reaudit 70, Findings 65 Reaudit:71, complications 3 Reaudit:61, Additional procedures 0 Reaudit:53, tissues removed/altered or any prosthesis used 71 Reaudit: 66 Details of closure 77 Reaudit:75 anticipated blood loss 0 Reaudit: 71 antibiotic prophylaxis 76 Reaudit: 77 VTE prophylaxis 80 Reaudit: 80 post operative care instructions 79 Reaudit: 80, Signature 75 Reaudit: 70 Gmc number 3 Reaudit: 66 legibility 66 Reaudit:72 Conclusion: Following raising awareness there was a significant improvement in quality of post operative notes. Next step is for department to introduce a generic template specifically for trauma operations so as to improve postoperative note documentation.

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Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 54514

COLCHESTER HOSPITAL AUDIT OF ORTHOPAEDIC SURGICAL-SITE MARKING.

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Background: Literature suggests incidence of wrong-site surgery cases at 1-2 per 100,000 procedures. Prevention requires active pre and perioperative MDT input. HIGH 5s GUIDE TO SURGICAL SITE MARKING which was initiated by WHO in 2007 to improve safety. Aim: To prevent wrong limb/side surgery by assessing concordance of pre-op surgical site marking especially since there is often a break in continuity with trauma patients. Site marking is variable, delivering quality marking including laterality, name of procedure, initial and marking within 6 inches of surgical site Methods: Surgeries performed between 26th May to 1st June 2018 were included and data was collected using performa where the marking methodology was assessed. After presentation and raising awareness in the department this was repeated and data was re-collected between 26th July and 1st August 2018. Results: 33 patients with 34 markings (M:20 F:13). 23 no laterality, 22 no procedure mentioned. 8 not visible after being draped. 34 no initials. One patient was marked with a cross thereby being indefinite of side. Recollected data after presentation, 39 patients were included (M: 23 F:16), 10 markings did not have their laterality mentioned, 4 markings did not have the procedure mentioned, 3 markings were not visible after being draped and 8 markings did not have the markers initials. Conclusion: Following raising awareness there was a significant improvement in quality of surgical site marking. Next step is for department to introduce a form specifically for surgical site marking to be checked and verified before transfer to theatres from ward

Date: 2019-12-05

Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 54235

ROLE OF SIGN IN IMPROVING RURAL ORTHOPAEDIC TRAUMA CARE

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Introduction: SIGN (Surgical Implant Generation Network) is a non-profit organization working towards developing equality in fracture care. It provides local partners throughout LMICs with equipment and training to perform long bones and hip fracture fixation. Nepal is still struggling to find ideal rural trauma surgical model. In contrast there is an excess of surgeons in urban areas. Furthermore, there are very few trainings available to surgeons working in remote areas. These inequities in equipment, human resources, and access to services lead to poor outcomes for poor, marginalized, rural populations. Intervention: We have developed a model of rural orthopaedic care using MD-GPs as backbone of care. They are trained to perform orthopaedic surgeries under supervision of an orthopaedic surgeon, with off-site telecommunications support and intermittent (quarterly) on-site on-going training and support. Setting: Our intervention has capacitated SIGN-supported programs at two district level hospitals in remote rural districts of Achham and Dolakha. Results: Our model of care has demonstrated following progress: 1. Improved surgical skills of GP's working in rural areas. 2. Improved orthopaedic care to rural population: less referrals, similar treatment outcomes; decreased out of pocket expenditures for people. 3. SIGN: Provides free equipment and trainings that works in resource constrained settings. Conclusions: A local Nepali partnership with SIGN, has demonstrated improved orthopaedic service provision in two remote districts in Nepal. The experiences learned during this program by training GPs and mid-level health care providers' insights into further expansion of orthopaedic care in similarly remote areas throughout the country.

Date: 2019-12-05

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Room: Meeting Room 9

Abstract no.: 54855

ROLE OF ULTRASOUND IN DETECTION OF RADIOLUCENT FOREIGN BODIES IN EXTREMITIES

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Removal of foreign bodies from soft tissues in emergency is very challenging and becomes more problematic when it is radiolucent. Blind exploration is sometimes hazardous for patients especially when it is in proximity to a vessel or a nerve or an overlying tendon. The purpose of this study was to determine the accuracy of ultrasonography (USG) in detecting radiolucent soft tissue foreign bodies in the extremities. From January 2014 to January 2016, 120 patients with either a positive history or clinically suspected soft tissue foreign body and negative radiography were evaluated by USG with a high-frequency (13–6 MHz) linear-array transducer. The sonographic findings were used to guide surgical exploration. Out of 120 patients who underwent surgical exploration, USG was positive in 114 cases, and foreign body was retrieved in 108 cases, and among the six cases where USG was negative, foreign body was retrieved from one case. In one case with strong clinical suspicion of foreign body USG was falsely negative. Majority of foreign bodies were removed from foot (69 cases) and hands (26 cases), and rest of foreign bodies were removed from ankle (4 cases), wrist (3 cases), thigh (2 cases), leg (1 case), knee (2 cases), forearm (2 cases). Accuracy, sensitivity, and positive predictive value were determined as 94.16, 99.08, and 94.13%, respectively. The real-time high-frequency USG is a highly sensitive and accurate tool for detecting and removing radiolucent foreign bodies which cannot be visualized by routine radiography.

Date: 2019-12-05

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Room: Meeting Room 9

Abstract no.: 54667

AUDIT OF COMPARTMENT SYNDROME IN A DISTRICT GENERAL HOSPITAL

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The reason behind undertaking the audit was to evaluate the causes of compartment syndrome, diagnosis and management against standards of the BOAST guidelines of compartment syndrome management. 18 patients have been operated on by Fasciotomy in Wrexham Maelor Hospital from the period of April 2017 till September 2018 (17 months). Data was analysed according to gender, age, which compartments released, and whether pre-fasciotomy intervention needed or not as MUA. Documentation and time to theatre were challenged against the BOAST guidelines 10 Diagnosis and management of compartment syndrome of limbs recommendations were as follows 1. Manipulation of high risk fracture is a priority and should be done ASAP and not left to next morning to avoid risk of compartment syndrome development. 2. Documentation of evaluation as per BOAST guidelines is part of assessment and should be carried out by junior staff and written clearly in the notes. 3. Timing is very crucial in management of compartment syndrome, patients presenting to A & E with compartment should not wait for available bed before taking them to theatre, which increase the time from decision to surgery to 4-5 hours compared to 1 hour as per BOAST guidelines 4. Operative notes documented by operating surgeons should be complete and sufficient.

Date: 2019-12-05

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Room: Meeting Room 9

Abstract no.: 54372

MANAGEMENT OF COMPLEX DIAPHYSEAL HUMERUS NON-UNIONS WITH AUTOLOGOUS INTRAMEDULLARY FIBULAR STRUT GRAFTING AND LOCKED PLATING

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Introduction: Non-union of humerus shaft fractures following failed fixation with nails and plates are difficult to treat, especially in the presence of osteoporosis or gap non-union. They lead to grotesque deformities and loss of function of the upper extremity. Achieving osteosynthesis in these cases with autologous non-vascularised intramedullary fibular strut may be considered. Methods: Twelve patients with gap non-union of the humeral diaphysis were managed with a free autologous intramedullary fibular strut graft and autologous iliac crest bone grafting, stabilised with LCP. Radial nerve neurolysis was done whenever necessary. Duration of nonunion (time since index surgery) ranged from 6 months to 3 years. Bone gap ranged from 5 mm to 30 mm, with patients having undergone at least 2 to 4 prior surgeries. Mean age was 54.1 years. Results: Mean length of fibulae harvested was 13 cm. There was no donor site morbidity. Mean duration of follow-up was 18 months. The mean time to union was 23 weeks (range - 13 to 38 weeks). All patients but one had healing at the time of latest follow-up. One patient had active infection which went on to heal following debridement and wound washout. Conclusion: It has been a considerable challenge to treat difficult gap nonunion in humerus shaft fractures following failed primary osteosynthesis. Use of a free intramedullary autologous fibular strut graft provides for mechanical stability, bridges the gap, and facilitates osteogenesis in the medullary canal of humerus.

Date: 2019-12-05

Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 54157

**THE IMPACT OF MALNUTRITION ON SURGICAL SITE COMPLICATIONS
IN ORTHOPAEDIC TRAUMA PATIENTS WITH FEMORAL SHAFT
FRACTURES**

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Purpose: To identify the prevalence of malnutrition and to investigate the correlation between malnutrition and clinical outcomes in orthopaedic trauma patients with high-energy injuries. **Methods:** This retrospective case series was performed at a university-based level-1 trauma centre. Patients 18 years of age and older undergoing intramedullary nail fixation of their femoral shaft fractures were included. Malnutrition was defined as either malnourished as per serum markers (albumin < 3.5 g/dL) or obese as per body mass index (BMI) >30 kg/m². The primary outcome measure was need for any secondary surgical procedures. Secondary outcome measures included wound complications and postoperative medical complications. **Results:** A total of 249 patients were included in this series, whereby 98 patients (39.4%) presented with hypoalbuminaemia and 80 patients (32.1%) were obese. A multinomial logistic regression demonstrated that the risk of secondary surgical procedures was significantly higher in patients with hypoalbuminaemia ($p = 0.040$) and trended higher in obese patients ($p = 0.068$). There was a trend towards a higher risk of wound complications in obese patients ($p = 0.056$). The risk of medical complications was significantly higher in patients with an American Society of Anesthesiologists' (ASA) score of 3 or 4 ($p = 0.020$). **Conclusions:** There is relatively high prevalence of malnutrition among orthopaedic trauma patients with high-energy injuries. Malnutrition seems to increase the risk of surgical site complications. Future studies are required to further define malnutrition and its correlation with surgical site complications in orthopaedic trauma patients.

Date: 2019-12-05

Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 53943

TOTAL ELBOW REPLACEMENTS - 10 YEAR FOLLOW UP

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Introduction: Total elbow replacements (TER), although very rare have been reported to have increased in incidence in recent literature. TER's are used to treat several pathologies of the elbow including rheumatoid arthritis, elbow fractures not suitable for fixation and post traumatic or primary osteoarthritis. Our Aim was to evaluate the TER's done by single surgeon in our institution over a 10-year period. Method: Details of patients who underwent TER were collected from clinical coding. These patients were brought to a special clinic for follow up. Data collection was carried using a proforma consisting of the 'Mayo Performance Score' to check for functional status and patient satisfaction (Score above 90= excellent, 75-89= good, 60-74= fair and less than 60 = poor). Results: There was a total of 30 patients, of whom 3 underwent bilateral TER's. 76% of patients were followed up (n=23). 2 Patients passed away and 2 denied follow-up. 3 of them were uncontactable. 4 patients had previous elbow surgery. As indicated, 53% had their TER for rheumatoid Arthritis (n= 16), 43% for elbow fractures (n= 13) and 13% for osteoarthritis (n= 4). 80% of the patients were female. Most of the patients belonged to the age group 61-80 years. Conclusion: A prospective study involving a larger cohort of patients and obtaining a preoperative oxford elbow score will help evaluation of TERs better as it would showcase functional status and patient satisfaction score better.

Date: 2019-12-05

Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 53972

THE ANATOMICAL REGION INFLUENCES THE INTEROBSERVER VARIABILITY OF AIS

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Introduction: Abbreviated Injury Scale (AIS©) and Injury Severity Score (ISS) are nowadays the mainstay in the evaluation of the injury severity of polytraumatised patients for research purposes. However, it is difficult for not specially trained investigators to estimate the injury severity through the AIS coding system. In this study, we examined the interobserver variability of AIS and ISS in severely injured patients according to the different anatomical regions. Methods: We prepared a standardized questionnaire based on 10 cases of severely injured patients with various injuries of the six different AIS regions. This questionnaire was addressed to surgical specialists interested in polytrauma. Participants were asked to assess the severity of each injury based on AIS. The interobserver variability of AIS and ISS was calculated employing the Krippendorff's α coefficient for the surveyed population. Results: Overall 54 surgical specialists (47 male, 7 female) were included in the study. The major contributing medical specialties were Orthopaedic Trauma Surgery (36 participants) and General Surgery (13 participants). A median work experience was 10 years. The overall measured interobserver variability was high (α ISS:0,33). Moreover, we observed significant differences in the interobserver variability depending on the anatomical region (α head: 0,06/ α thorax: 0,45/ α abdomen: 0,27/ α extremity: 0,55). Conclusions: The interobserver agreement of AIS and ISS appears to be very low. We have also observed significant differences in variability depending on the anatomical location. The study shows that assessment of injury severity is highly variable within experts in the field which justifies the call for coding specialists.

Date: 2019-12-05

Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 53824

DEVELOPMENT OF A VIRTUAL FRACTURE CLINIC (VFC) SERVICE AT AN NHS DISTRICT GENERAL HOSPITAL

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Introduction: Virtual fracture clinic (VFC) is an attractive care model aiming to improve patient care through standardised care pathways, timely investigation and reduction of unnecessary appointments. We present our 2-year VFC service results at a medium-sized District General Hospital. Methods: We introduced a VFC service in September 2017 aiming for early Consultant virtual review and triage of 100% of referrals and a discharge target of 10%. Standardised care pathways were developed for common injuries, whilst specialist trauma was triaged into specialist orthopaedic clinics. All patients discharged were given a patient-initiated follow-up (PIFU) appointment providing open access for a set period of time. VFC review and discharge rates, patient satisfaction, adverse events and BOAST 7 guideline adherence were audited prospectively. Results: 100% of referrals (4136 patients) were reviewed through VFC. 22.2% (919 patients) were discharged following virtual review by an Orthopaedic Consultant and a Physiotherapist led telephone consultation, as per BOAST 7 guidelines. Only 1.8% of patients discharged initiated their PIFU with 85% of returning patients discharged after one review. 32.2% (1335 patients) required urgent review (less than one week), 618 of which were seen in specialist clinics. 44.6% (1844 patients) needed routine follow-up, with 901 of those patients reviewed in specialist clinics. No adverse events were encountered. An estimated 10% further reduction of appointments was achieved through direct patient investigation and triage into appropriate specialist clinics. Conclusion: VFC was very effective in reducing unnecessary fracture clinic appointments with high patient satisfaction and comparable safety profile to traditional fracture clinics.

Date: 2019-12-05

Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 53723

SPECTRUM OF OCCUPATIONAL PERIPHERAL NERVE INJURIES DUE TO METALLIC FOREIGN BODY

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Context: It is important to know about nerve injuries taking place at workplace because they affect the productive age group resulting in economic losses due to prolonged period of recovery and disability Aim: Our aim is to find the prevalence of nerve injuries caused by metallic foreign body in industrial workers. Methods and Material: This is a retrospective study carried out in a tertiary care hospital. Records of patients with nerve injuries who presented between 2012 and 2018 were analysed. 37 patients in the age group of 18-60 years of age with nerve injury fulfilled the criteria. We collected the demographics, nerve involved, anatomic location of injury, any associated injuries and time span between injury and surgery. Statistical analysis used: IBM SPSS version 22 was used to carry out descriptive statistical analysis. Results: Patient population included: 34 men (91.89%) and 3 women (8.11%). The mean age of the patients was 33.3 years (range: 18-60 years). The right side was found to be injured on 83.78% occasion while the left 16.22%. Most commonly injured nerve was median nerve (n=26; 70.27%). The most common anatomic site of nerve injury was proximal third forearm (35.14%). There were tendon injuries in 2 cases. Vascular structures were damaged in few cases (brachial artery-3, ulnar artery- 2). Conclusions: The present study is the first such report to our knowledge. This study will help us to focus better on prevention of such injuries. It gives us a proof to develop better protective wear for industrial workers.

Date: 2019-12-05

Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 53578

COMPARISON OF LATERAL ENTRY NAIL AND PIRIFORMIS NAIL FOR FEMORAL FRACTURES- IS IT BETTER?

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Introduction: Femoral shaft fractures are one of commonest fractures of the lower limb. Closed reduction and intramedullary interlocking nailing (IMILN) is the current treatment of choice. The ideal entry point for antegrade nail- Piriformis fossa (PF) or Greater trochanter (GT) and straight or valgus bend nail is a point of contention. This study was done to compare the entry points and nails in such fractures. Methods: The study was conducted at a tertiary level trauma centre. Fifty subjects were included. Inclusion criteria were: closed traumatic femoral shaft fractures, aged 20-60yrs, without associated injuries. Standard supine nailing technique on fracture table was used. Intra-operatively, fluoroscopy and operative times, blood loss and complications were noted. Functional outcome-Harris hip score and abductor strength was analysed. Results: Mean age was 35.6yrs. Males were more commonly involved (75%). Right side was more commonly involved (69%). RTA was the commonest cause (73%). Average union time was 16.4wks. Fluoroscopy time (no. of shots) for entry favoured GT entry (GT:6.8±1.5; PF:10.7±1.8, p:<0.001). In obese patients, differences were more marked. Average surgery duration in GT group was 77.9min compared to 99.3min in PF group. Total blood loss was less and incision shorter in GT group. Harris hip score and abductor strength at 1yr were comparable. Conclusion: The GT portal entry is better than PF portal entry in femoral fractures considering image intensifier time, surgery duration, incision length, blood loss and complications especially in obese patients. GT entry nailing can be considered a rational option in such fractures.

Date: 2019-12-05

Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 53372

PRIMARY SHORTENING - SECONDARY LENGTHENING AS THE METHOD OF CHOICE FOR TREATMENT BIG DEFECT OF LONG BONE AND SOFT TISSUE OF EXTREMITIES.

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Introduction: Surgical treatment big defect of long bone and soft tissue of extremities is one of more difficult surgical problems in orthopaedics and traumatology. Material & Methods: A hundred twenty patients with big defect of bone and soft tissue wounded during the war in Bosnia and Herzegovina treated in hospital Zenica with primary shortening and secondary lengthening, with external fixation by Ilizarov and with Fix AS Results: Defect of bone was from 3 – 30 cm; the middling defect was 12 cm. the middling time of treatment every one patient was about one year. Conclusions: Primary shortening-secondary lengthening is method of choice for treatment big defect of bone and soft tissue

- o 1. With primary shortening we can make suture of vassals (artery and vein), nerve, muscle and tendon.
- o 2. With primary shortening we can make contact of bone fragment and skin.
- o 3. The technique of primary shortening-secondary lengthening is much easy than any kind of plastics operation
- o 4. There was not any problems with circulation during shortening and lengthening.
- o 5. Finale result is very good, without plastics operation, pseudarthrosis, osteomyelitis and amputation.

Date: 2019-12-05

Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 53290

LONG BONE DEFECT MANAGEMENT BY MASQUELET TECHNIQUE

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LITERATURE REVIEW: Segmental bone defect following trauma are associated with Long-term morbidity. The healing of this defect is an on-going clinical problem. Due to difficulty of the treatment, amputation was the preferred treatment of choice. However, limb salvaging has been developed over the last century. Limb salvaging is important in the face of increasing segmental bone loss due to increasing motor vehicular accident, physical assault and increasing global conflict. Majority of these injuries are associated with significant amounts of environmental foreign body and bacteria contamination. Ilizarov technique, vascularized fibular grafts and acute limb shortening have been used to address defects of various length. Bone graft technique are limited by uncontrollable graft resorption despite well vascularization of the graft site. Alain Masquelet described a surgical technique which helps in solving the problems of graft containment and growth protein supplementation of non-autologous bone grafts. It involves the induction of a fibrous membrane prior to the induction of the graft material at the defect site. The aim of this study is to investigate management of large long bone defect by using the Masquelet technique in our centre. **MATERIALS AND METHODS:** Relevant information will be extracted from the hospital database concerning the three (3) Patients as case report. **RESULTS:** The three patients healed well which is comparable to the standard outcomes following Masquelet technique in managing large long bone defect. **CONCLUSION:** Masquelet technique is a reliable method in long large bone defect management protocol.

Date: 2019-12-05

Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 53062

ENDOPROSTHETIC REPLACEMENT OF FEMUR FOR NON-ONCOLOGICAL INDICATIONS - MAJOR TRAUMA CENTRE EXPERIENCE

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Proximal, distal and total femur endoprosthetic replacements of femur are increasingly being used for non-oncological indications. These salvage prosthesis have been used for revision procedures, periprosthetic fractures, failed fixations and primarily for proximal and distal femur fractures for selective patients. 42 endoprosthesis were implanted in 41 patients (22 distal femur, 15 proximal femur and 5 total femur replacements) between 2011 and 2017. 8 DFRs and 1 PFR were done primarily. Mean age at surgery for our cohort was 75.7 [range 40-98, median 78] with median ASA grade of 3. All PFRs and TFRs had blood transfusion (average 2 units) while only 2 DFRs had blood transfusion. Median length of stay was 19 days. Median postoperative oxford knee score in DFR was 19 and EQ VAS score of 50. 8 patients had died during follow up (4 within 90 days, 5 of PFR and 3 of DFR). None of the DFRs have been revised while 2 PFRs and 2 TFRs have been revised. 12 patients (7PFR, 2TFR, 3DFR) had infection requiring intervention. 1 PFR and 1 TFR had dislocations requiring revision. 1 patient with DFR had foot drop. Satisfactory outcome was noted in 25 patients (60.9%) without major complications restoring mobility in otherwise bed bound complex moribund patients. We report from our study that when conventional prosthesis aren't feasible or deemed to have high failure rate; these femoral endoprosthesis shows satisfactory outcomes for elderly patients, though the operating teams needs to be aware of high complication rates.

Date: 2019-12-05

Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 52977

THE MANGLED EXTREMITY SEVERITY SCORE - TIME FOR A REVISION

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Background: The Mangled Extremity Severity Score (MESS) was constructed as an objective quantification criterion for limb trauma. A MESS of or greater than 7 was proposed as a cut-off point for primary limb amputation. Opinions concerning the predictive value of the MESS vary broadly in the literature. The aim of this study was to evaluate the applicability of the MESS in a contemporary civilian Central European cohort. Methods: All patients treated for extremity injuries with arterial reconstruction at two centres between January 2005 and December 2014 were assessed. The Mangled Extremity Severity Score (MESS) and the amputation rate were determined. Results: Seventy-one patients met the inclusion criteria and could be evaluated for trauma mechanism and injury patterns. The mean MESS was 4.97 (CI: 4.4-5.6). Seventy-three percent of all patients (52/71) had a MESS < 7 and 27% (19/71) of ≥ 7. Eight patients (11%) underwent secondary amputation. Patients with a MESS ≥ 7 showed a higher, but statistically not significant secondary amputation rate (21.1%; 4/19) than those with a MESS < 7 (7.7%; 4/52; p=0.20). (Table 2). The area under the ROC curve was 0.57 (CI 0.41; 0.73). Conclusions: Based on these results, the MESS is an inappropriate predictor for amputation in civilian settings in Central Europe possibly due to therapeutic advances in the treatment of orthopaedic, vascular, neurologic and soft tissue traumas.

Date: 2019-12-05

Session: Trauma Short Free Papers 1

Time: 08:00 - 10:00

Room: Meeting Room 9

Abstract no.: 52929

THE GERTALITY SCORE – A FEASIBLE AND ADEQUATE TOOL TO PREDICT MORTALITY IN GERIATRIC TRAUMA PATIENTS

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Introduction: A large number of prediction models and subsequent outcome scores for trauma mortality have been developed over the last decades. The aim of this study was to develop and validate a scoring system for the prediction of mortality in severely injured geriatric trauma patients. Methods: 58.055 trauma patients older than 65 years with an ISS ≥ 9 were included. Patient and trauma characteristics as well as diagnostics, therapy and outcome data were gathered. Relevant variables were added to the novel GERTality-scoring system. Subsequently, this score as a sole predictor for mortality was validated by conducting a ROC-analysis and comparison with the Geriatric Trauma Outcome Score and the RISC-II Score. Results: Based on the univariable analysis the following five variables were included in the GERTality-score: age ≥ 80 years, PBRC-transfusion requirements in the time from admission to ward, ASA-score ≥ 3 , GCS ≤ 13 , AIS in any body region ≥ 4 . For every positive variable in an indexed patient, the score adds up one point. So, the maximum GERTality-score was 5. A mortality rate of 72.4% was calculated in patients with a maximum GERTality-score. The AUC found by ROC-analysis of the novel GERTality score was 0.803, whereas the Geriatric Trauma Outcome Score had an AUC of 0.784 and the highly complex RISC-II score resulted in an AUC of 0.879. Conclusion: The novel GERTality-score is a simple and feasible scoring system that enables an adequate prediction of the probability of mortality in severely injured geriatric patients by using only five specific parameters.

Date: 2019-12-06

Session: Trauma Short Free Papers 2

Time: 07:00 - 08:00

Room: Auditorium

Abstract no.: 53743

COMPLICATIONS IN THE MANAGEMENT OF CLOSED HIGH-ENERGY PROXIMAL TIBIAL PLATEAU FRACTURES, A RETROSPECTIVE STUDY

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Objective: To analyse the infectious and noninfectious complications encountered in the management of high-energy Schatzker type V and VI tibial plateau fractures. **Methods:** This retrospective study was conducted at the Tertiary care hospital for a duration of three years from 1st July 2015 to 30th June 2018. The inclusion criteria were patients aged between 18 and 60 years, no previous involvement of ipsilateral lower limb by surgery, fracture or arthritis, closed fracture of the proximal tibia, high-energy tibial plateau fractures (type V and VI) or AO type 41-C1, C2 and C3. All the patients were treated by open reduction and internal fixation with locking plates through minimally invasive techniques. **Results:** A total of 104 patients were included in the study. Mean age was 35.15 ± 11.59 years. 90 (87%) were males and 14 (13%) were females. The overall complication rate was 29.80% (31 out of 104). Infectious complications were noted in 18.26% cases (19/104). In majority of the cases (13/19), superficial infection was seen which managed with regular dressing and antibiotic administration. The patients (6/19) who had developed deep-seated infection were subjected to repeated debridements, flap coverage, implant removal or amputation depending upon the host response. 12 patients had experienced noninfectious complications. Hardware related complications were noticed in four patients and two among them received a secondary procedure. Malalignment was observed in 08 patients which included malalignment in the postoperative radiographs of five patients and three patients on follow-up. **Conclusion:** Proximal tibial plateau fractures especially Schatzker type V and VI are associated with extensive soft tissue damage even in closed injuries. The complications encountered in the management of these fractures can be minimized with appropriate patient selection and minimal soft tissue dissection.

Date: 2019-12-06

Session: Trauma Short Free Papers 2

Time: 07:00 - 08:00

Room: Auditorium

Abstract no.: 54942

CORRELATION OF ORTHOPAEDIC INJURIES WITH MODE AND MECHANISM OF TRAUMA IN ROAD TRAFFIC ACCIDENTS USING CDC-WHO INJURY SURVEILLANCE GUIDELINES AND ICECI

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Road traffic accidents are one of the major causes of death in developed as well as developing countries. India accounts for about 10% of road accident fatalities worldwide and more deaths are recorded due to traffic crashes than due to cardiovascular diseases or neoplasms. The present study was carried out on the patients injured due to road traffic injuries admitted in orthopaedic ward of Shyam Shah Medical College and associated Sanjay Gandhi Memorial Hospital, Rewa (MP), during the one-year period from 1st October 2014 to 30th September 2015. The collected data was classified and coded as per the guidelines laid down under the WHO/CDC Injury Surveillance System and ICECI. This study showed that the majority of crash victims were males in the age group 20-44 years accounting for huge economic losses for their families and the country at large. Motorized two-wheeler accounted for 46.78% of the accidents. Out of total accident victims, 45% were drivers and riders; 49.47% of accidents occurred between 4 pm to 12 pm. Most drivers/riders mentioned had not taken safety measure (Helmet/seat belt) during accident. Fractures (87.97%) were the most common nature of injuries and lower limb was more commonly involved than the upper limb. Road traffic accidents are preventable. Strict traffic laws and penalties have to be imposed to curb this ever growing menace.

Date: 2019-12-06

Session: Trauma Short Free Papers 2

Time: 07:00 - 08:00

Room: Auditorium

Abstract no.: 54492

THE IMPACT OF INTRODUCTION OF PRE-HOSPITAL TRAUMA LIFE SUPPORT (PHTLS) ALGORITHMS ON PRE-HOSPITAL CARE IN A EUROPEAN METROPOLITAN AREA

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INTRODUCTION Pre-hospital trauma life support (PHTLS) algorithms were designed to optimize pre-hospital care and to improve outcome of trauma patients. Introduction of PHTLS in several settings resulted in improved outcome. However, the impact of PHTLS implementation in European metropolitan areas on outcome is unclear. We hypothesized that the introduction of PHTLS in a European metropolitan area is associated increased efficiency of pre-hospital care. **METHODS** Adult polytrauma (ISS>15) patients admitted to our level-one-trauma centre during a 7-year time period were included. Individuals were grouped based on the presence or absence of a PHTLS-trained paramedic in the pre-hospital trauma team. Group I (no-PHTLS group) included patients treated by non PHTLS-trained personnel. Group II (PHTLS group) was composed of cases managed by a PHTLS qualified team. Outcome was compared. **RESULTS** A total of 187.839 rescue operations were performed, of whom 280 cases were included. Patient characteristics, trauma severity and geographical data between groups did not differ. Transfer times were significantly decreased in PHTLS teams compared with non-qualified teams (9.3 vs.10.5 min, P=0.006). Furthermore, the in-field operation times were decreased in PHTLS qualified teams (36.2 vs 42.6 min, P=0.03). Besides there was a trend towards less emergency doctor requirements after PHTLS implementation (5.1 percent decrease). **CONCLUSION** The current study demonstrates that the implementation of PHTLS-algorithms in a European metropolitan area is associated with improved efficiency of pre-hospital care for the severely injured. We therefore recommend considering the introduction of PHTLS in metropolitan areas.

Date: 2019-12-06

Session: Trauma Short Free Papers 2

Time: 07:00 - 08:00

Room: Auditorium

Abstract no.: 54428

FACTORS AFFECTING THE AMOUNT OF RADIATION EXPOSURE FROM FLUOROSCOPY DURING INTRAMEDULLARY NAILING OF ISOLATED TIBIA FRACTURES

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Introduction: Intramedullary nailing of tibia fractures is one of the most common procedures in orthopaedic trauma that requires the use of fluoroscopy. There are many factors that might lead to increased amount of radiation exposure, without additional patient benefit. This study aims to determine the factors affecting the amount of radiation exposure during intramedullary nailing of isolated tibia fractures. **Methods:** All patients admitted for isolated tibia shaft fractures to our institution between 2012 and 2018 were included. Patient demographics, fracture type, surgeon level of training, radiation time and the total radiation dose after fixation was recorded. The Mann-Whitney U test was used to assess then continuous outcomes. Additionally, multi-variate linear regression models were constructed to assess the factors affecting the radiation dose, radiation time and surgical time. **Results:** A total of 40 patients with a mean age of 34.8 years (range: 17-82 years) were included. 65 % of the fractures were closed injures, and the majority of patients were males. The level of training had no effect on radiation dose ($P=0.68$), radiation time ($P=0.36$) and surgical time ($P=0.86$). However, BMI ($P=0.01$) and surgical time ($P=0.027$) were the only factors which increased radiation dose and radiation time. **Conclusion:** The only significant factors that might lead to increased amount of radiation exposure are the BMI and surgical time, which should be considered preoperatively.

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Session: Trauma Short Free Papers 2

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Room: Auditorium

Abstract no.: 54159

DESIGNING AND USING THE PEDICLE MINI-FLAP FOR TAKING PRESSURE OFF THE PEDICLE IN DISTALLY BASED SKIN FLAPS

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Introduction: This report describes our experience designing and using the pedicle mini-flap for taking pressure off the pedicle in distally based skin flaps. Methods : Between July 2014 and October 2017, island flaps pedicled with the perforator were used to treat 37 patients of skin and soft tissue defects in the lower leg, ankle, and foot. A pedicle mini-flap was designed and used to take pressure off the pedicle in all these flaps. There were 23 men and 14 women with a mean age at surgery of 45 years. The sizes of the soft tissue defects varied from 5.0 cm × 2.0 cm to 18.0 cm × 10.0 cm. The pedicle mini-flap sizes varied from 1.0 cm × 1.0 cm to 4.5 cm × 3.5 cm. Results : All flaps survived completely except three, which suffered a marginal partial flap necrosis due to venous congestion. These flaps were left without further surgical intervention, which healed by secondary intention after changing the dressing. Conclusion : Designing and using the pedicle mini-flap takes pressure off the pedicle and facilitates primary closure after transposition of the island flaps pedicled with the perforator, which is a simple and effective method to prevent complications of these flaps. Keywords: perforator flap; mini-flap; complications; lower extremity reconstruction

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Room: Auditorium

Abstract no.: 52801

THE USE OF SOCIAL MEDIA WHILE DRIVING: AN ORTHOPAEDIC RESIDENT'S PERSPECTIVE ON 'THE DANGERS OF DRIVING AND USING SOCIAL MEDIA'

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Using social media affects drivers' capability to adequately direct attention to the roadway, respond to important traffic events, control a vehicle within a lane and maintain speed and headway. This review is intended to evaluate the information and routine with regards to current street wellbeing measures and directions, and bring issues to light towards the significance of movement standards as for driving among the population in Karachi, Pakistan. **MATERIALS AND METHOD:** All patients in this cross-sectional study presented with a history of road traffic accident secondary to social media usage and suffered from fractures at the accident and emergency department from January to June 2018. **RESULTS:** 71 patients were included. Age range was 15-71 years, mean 34.86 (sd 12.73). Mechanisms were car vs. Bike were 33(46.5%), bike vs. Bike were 18(25.4%), bike vs. Pedestrian 9(12.7%), car vs. Pedestrian 4(5.6%) and motor vehicle v/s footpath 7(9.9%). According to fracture type, close injuries were 62(87.3%) and open fracture were 9(12.7%). The most common fracture was clavicle 16 (22.5%) followed by tibia fibula 11(15.5%). Most common social media application was Facebook 29(40.8%), WhatsApp 18(25.4%), google 16(22.5%), Instagram 7(9.9%) and others 1(1.4%). **CONCLUSION:** This study provides evidence that texting compromises the safety of the driver, passengers and other road users. Combined efforts, including legislation, enforcement, parent modelling, social norms and education while driving, will be required to prevent continued deaths and injuries.

Date: 2019-12-06

Session: Trauma Short Free Papers 2

Time: 07:00 - 08:00

Room: Auditorium

Abstract no.: 52956

**PELVIC/ACETABULAR INJURIES IN A SEHA (UAE/ ABU DHABI)
GOVERNMENTAL HOSPITAL – OUR EXPERIENCE**

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In UAE the most common cause of pelvis/acetabular fractures is the MVC. In spite of the modern and lighting of the roads, from 2010-2014 234 patients suffered pelvis/acetabulum fractures due to high energy trauma caused by MVC. 112 patient had unstable fractures which needed surgery, surgery was done for 65 patients only, for the others surgery was not done due to multiple reasons. For pelvic fractures anterior-posterior approaches were done, and for the acetabulum fracture Kocher- Langenback approach was done. Follow up average was 28 months. Patient went back to their normal life in 4-6 months.

Date: 2019-12-06

Session: Trauma Short Free Papers 2

Time: 07:00 - 08:00

Room: Auditorium

Abstract no.: 54218

TREATMENT FOR UNSTABLE COMMUNITED DISTAL FEMUR FRACTURES: DUAL PLATE FIXATION

Romit AGRAWAL, Vijay SINGH, Ayush SHARMA, Nilesh MANGALE, Jeet SAVLA, Priyank DEEPAK, Shorabh SINHA, Ajay JAISWAL

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Introduction: Treatment of multiplanar comminuted intraarticular unstable distal femoral fractures presents with many challenges in terms of its approach and fixation. Standard single lateral plating is often associated with delayed union, varus collapse and implant failure in these cases. We present our study of dual plating (lateral and medial plating) via dual incision with or without autogenous bone grafting. Material & Methods: Thirty patients with closed AO type C2 and type C3 fractures were included; out of which twenty cases were presented early and remaining were presented as a delayed union with single lateral locking plate fixation in situ. Mean age was 33.5 years (range 22–44 years). Mechanism of injury was road traffic accident in eighteen patients and fall from height in other twelve cases. Mean follow-up was 13.7 months (range 11–18 months). Results: Mean radiological healing time was 17.2 weeks (range 12-28 weeks). HSS scoring system was used for the clinical efficacy evaluation. Clinically, eight cases (26.6 %) had excellent results, ten cases (33.3 %) had good results, eight cases (26.6 %) had fair results, and four cases (13.3 %) had poor results. No complications were noted, however two cases had limited knee flexion to 90 degree, and one develop implant loosening. Conclusion: Use of this approach facilitated anatomical reconstruction of complex distal femoral fractures with lower expected complication rate and acceptable clinical outcome. Double-plating technique should be considered for treatment of supracondylar femur fractures, particularly in patients with poor bone quality, comminuted and low periprosthetic fractures.

Date: 2019-12-06

Session: Trauma Short Free Papers 2

Time: 07:00 - 08:00

Room: Auditorium

Abstract no.: 54224

SURGICAL VS NON-SURGICAL TREATMENT OF ANKLE FRACTURES IN PATIENTS ABOVE 50 YEARS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction: There is much debate around the management of ankle fractures in older individuals. We conducted this systematic review and meta-analysis to compare outcomes for ankle fractures in population above 50 years of age which were treated with or without surgery. Methods: 12 comparative studies were identified by several databases search in October 2017. Primary outcome was nonunion rate, secondary outcomes included mal-union, management parameters (hospital stay, re-admission rate, period in cast), functional outcomes (return to pre-injury level and patient satisfaction) and complications rate. Results: From the eligible studies a total of 54,699 patients above the age of 50 were analysed, 27,110 in surgical group and 27,588 in the conservative group. The nonunion and mal-union rates were significantly higher in the non-surgical group with high incidence of loss of reduction, a better return to pre-injury activity in the surgical group with no difference in satisfaction rate, no significant difference in hospital stay, re-admission rate or period in cast, with a higher mortality at 1 year in the non-surgical group. Conclusion: Taking into consideration the higher rates of nonunion and loss of reduction in patients above 50 years with ankle fractures treated conservatively, better return to activity with the surgical option and no difference in complication rate, open reduction and internal fixation is considered valid and safe in the management of ankle fractures in patients above 50 years.

Date: 2019-12-06

Session: Trauma Short Free Papers 2

Time: 07:00 - 08:00

Room: Auditorium

Abstract no.: 54209

OBESITY PARADOX HOLDS TRUE FOR HIP FRACTURE PATIENTS– A PROSPECTIVE REGISTER BASED COHORT STUDY

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Hip fractures are associated with high mortality and reduced quality of life. Studies have reported a high body mass index (BMI) as being positively associated with survival when linked to old age and some chronic diseases. This phenomenon is called the “obesity paradox.” The association between BMI and survival after hip fracture has not been thoroughly studied in large samples, nor has to what extent the association is modified by comorbidities, sex, and age. The objective of this study was to investigate the association of BMI with survival after hip fracture and with the probability of returning to living at home after hip fracture. Methods: This prospective cohort study was based on RIKSHÖFT, the Swedish registry of patients with hip fracture. A total of 17,756 hip fractures were included. BMI was registered, comorbidity (ASA), and the date of death. Data on living arrangements were assessed on admission and 4 months after fracture. Results: Despite ASA scores being similar among all BMI groups, obese patients had the highest survival and patients with a BMI of <22 kg/m² had the lowest. Adjustment for potential confounders strengthened the associations. For the chance of returning to living at home, no advantage was seen for obese patients, but patients with a BMI of <22 kg/m² had clearly worse odds compared with patients who were of normal weight, overweight, or obese. Conclusions: The obesity paradox appears to be true for hip fracture patients 65 to 105 years of age.

Date: 2019-12-06

Session: What's New in Chinese Microsurgery?

Time: 07:00 - 08:00

Room: Grand Ballroom Hall C1

Abstract no.: 55954

CLINICAL APPLICATION OF THE DESCENDING GENICULAR ARTERY AS THE RECIPIENT ARTERY FOR FREE ANTEROLATERAL THIGH FLAP

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Objective: To investigate the clinical feasibility of using the descending genicular artery as the free anterolateral thigh flap implant to repair the recipient vessel around the knee wound surface when the anterior or posterior tibial artery cannot be used. **Methods:** From January 2015 to January 2019, the free anterolateral thigh flap implant, which was applied in descending genicular artery-great saphenous vein anastomosis, was used to repair the large-sized skin and soft tissue defects complicated with bone and tendon exposure around the knee in 9 cases, including 4 males and 5 females, with the flap area ranging from 38 cm×8 cm to 20 cm×6 cm. **Results:** All patients were followed up for 6-14 months, with the average of 8.7 months. Two cases with large flaps suffered from distal necrosis for about 6 cm and 4 cm. After resection, the residual wound surface was healed through two-stage skin grafting. Meanwhile, the remaining 7 flaps completely survived, and the residual wound surface in the recipient site was healed through two-stage skin grafting. **Conclusions:** The diameter and blood flow of the descending genicular artery can be precisely positioned before surgery through colour Doppler ultrasound; in addition, the diameter of the descending genicular artery can be expanded intraoperatively using the microsurgical techniques. Moreover, the descending genicular artery can serve as the recipient vessel for the free anterolateral thigh flap to repair the soft tissue defects around the knee, which can attain satisfactory clinical efficacy. **Key words:** Descending genicular artery; Anterolateral thigh flap; the knee joint; Transplantation.

Date: 2019-12-06

Session: What's New in Chinese Microsurgery?

Time: 07:00 - 08:00

Room: Grand Ballroom Hall C1

Abstract no.: 55957

AESTHETIC RECONSTRUCTION OF FINGERS WITH RE-SHAPED 2ND TOE IN ONE-STAGE OPERATION

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Although the 2nd toe-to-hand transfer have been the main measures of finger reconstruction since 1965, the reconstructed finger still result in a toe appearance if the 2nd toe was transferred to finger position without any re-shape. In order to provide useful guideline for selection of the proper one-stage re-shape procedures of 2nd toe and make the reconstructed fingers present a relatively-normal appearance and play their functions, the 2nd toe was classified, and then one-stage re-shape procedures were proposed for each classification. In total, Fifty-seven fingers with different levels of defect in 41 cases were reconstructed with 2nd toe transfer since 2007, various surgical procedure were performed to re-shape 2nd toe according its type and the measured data. Only 21 cases including 33 fingers attained 6 months to 9 years (averaged 4.2 years) follow-up, follow-up rate was 51.2%. According to the assessment criteria after toe-to-hand transfer issued by International Federation of Societies for Surgery of the Hand and Hand Surgery Association of China Medical Association, Total active range of motion:100°-215°, Activities of daily living:15-20 points, Static two-point discrimination: 4-10mm. 8 cases were "very satisfied" with the shape of fingers, 13 cases were classified as "satisfied". 20 fingers out of 13 cases were excellently recovered, 13 fingers out of 8 cases were acceptable recovered.100% of fineness was reached. Which suggest that the classification and one-stage re-shape procedures of 2nd toe vary with each type are effective to reconstructed aesthetic fingers.

Date: 2019-12-06

Session: Knee Short Free Papers 2

Time: 07:00 - 08:00

Room: Junior Ballroom A

Abstract no.: 54418

TOTAL KNEE ARTHROPLASTY IN VARUS KNEE: THE IMPORTANCE OF TIBIAL CUT

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Aim: We developed a classification based on the presence of lateral laxity and the amount of medial defect to guide the surgeon during TKA. **Methods:** 194 knees in 163 patients were included in this study. There were 111 female and 52 male. The mean age of patients were 60.44(34 to 80) years. The mean BMI was 29.6. The mean varus deformity was 16.9 degrees (9 to 42). We then classified varus knees as type I if there is no defect and lateral laxity, type II if there is no defect but lateral laxity exists, type III if there is medial defect without lateral laxity and Type IV if there is both lateral laxity and medial defect. **Results:** All patients were received PS system 13 % of knees were in type I, 18% in type II, 27% in type 3, 42% in type 4. Patient in type II need least thickness of lateral tibial cut followed by knees in type 4. 35(37.2%) of knees in this study needed medial release, most of them in knees with type II varus .96% of patients received 10 mm or less PE liner. **Conclusions:** Our study showed that the amount of lateral laxity and medial tibial defect would help surgeon to determine the thickness of lateral tibial cut at first and the potential need for lateral release at the final balancing. He or she therefor will able to get a well-balanced, well-aligned and stable TKA while using a thin PE insert and avoid higher constraint.

Date: 2019-12-06

Session: Knee Short Free Papers 2

Time: 07:00 - 08:00

Room: Junior Ballroom A

Abstract no.: 54716

AN INTRAOPERATIVE STUDY OF DISTAL FEMUR ASPECT RATIO IN INDIAN PATIENTS AND ITS COMPARISON WITH NEWLY AVAILABLE KNEE SYSTEMS

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Introduction: For a successful outcome of Total knee replacement, it is imperative to have optimum bone coverage with the prosthesis. After implantation, the resected bone surface should neither have undercoverage, which gives excessive bleeding and exposed bone surface, nor overcoverage, which leads to chronic knee pain and decreased range of motion. The parameter used to assess both patients and the prosthesis sizing is Aspect ratio (ML diameter/AP diameter) 100. . The available prosthesis are manufactured based on the data collected on Caucasian knees, which would give a significant mismatch, when used in Asian knees, proved to have smaller dimensions. Methodology: A total of 120 patients were included in the study and their intra operative measurements taken after the 9 mm distal femoral cut. Both the AP (medial femoral) and ML dimensions are measured with the verniers callipers. Results: The Aspect ratios of the patients were compared with the newly available implant system namely, Attune® knee systems-Depuy Synthes Inc., Zimmer®Persona™Knee, Optetrak Logic primary system-Exatec Inc, Vangaurd knee system, Biomet. It was found that all the implant systems gave significant mismatch. The implant most far away from patient dimension, was Attune (DEPUY) and that which closely matched patients' dimensions was Persona (Zimmer). This was at smaller sizes (AP 50-55mm), which is maximum used size in the Indian patients. Conclusion: There is a need for extra sizing option for Asian population for better clinical outcome.

Date: 2019-12-06

Session: Knee Short Free Papers 2

Time: 07:00 - 08:00

Room: Junior Ballroom A

Abstract no.: 53531

THE OPERATIVE RECOVERY AND TIME OF HOSPITALISATION OPTIMISATION PATHWAY (ORTHO P) FOR PATIENTS WITH DEPUY SIGMA FIXED-BEARING CEMENTED UNICOMPARTMENTAL KNEE ARTHROPLASTY

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Background OrthoP was introduced as an enhanced recovery pathway for our short-stay unicompartmental knee arthroplasty (UKA) service. This study reports early results of OrthoP in our UKA patients. Methods Patients undergoing UKA in 2018 were managed in line with OrthoP and have been prospectively followed up. Length of stay, infections, transfusions, thromboembolic complications, wound problems, readmissions and Oxford Knee Score (OKS) were documented. Results Twenty four patients with a mean age of 68 years (range 50-88 years), median ASA of 2 and mean BMI of 32 (range 22.5 - 40.9) underwent 28 medial UKA (4 simultaneous bilateral) procedures. Mean length of stay was 1.8 days (range 0 - 3 days). No deep infection, thromboembolic complication or wound oozing were encountered. No patient required blood transfusion. Two patients on lifelong anticoagulation (10mg Apixaban and 20 mg Rivaroxaban respectively) were readmitted post surgery, 1 with a mild haematoma and 1 with a stitch abscess. Both were discharged with no return to theatre. A mean OKS rise of 11 points was noted within 2 months from surgery. Conclusion OrthoP was associated with a short length of stay allowing for day-case UKA in select cases. No significant complications were encountered despite higher than average age and BMI, multiple comorbidities and bilateral UKA in some of these patients.

Date: 2019-12-06

Session: Knee Short Free Papers 2

Time: 07:00 - 08:00

Room: Junior Ballroom A

Abstract no.: 54931

TKA WITH PSI: CLINICAL AND X-RAY ALIGNMENT EVALUATION

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PSI determine angles of cuts as well as rotations of the components. The report is based on six years follow-up retrospective study of 400 TKA; it was performed a case-control study on two homogeneous groups of 150 patients and a radiographic study of alignment in the entire population. Clinical studies are based on KSS and KOOS administered at various stages. Radiographic study takes into account the femoral-tibial axis, coronal, and sagittal alignment-slope. The KOOS show values 34.8 pre-op, 71.4 at 1 year, 79.3 at 2 years and 81.3 at 3 years. The KS score and function pre-op 42-46.5 have grown 74.7-82.9 at 1 year, 76.3-85.6 at two years and 82.5-86.6 at three years. The two groups showed homogeneous case-control values, respectively KOOS 37.6-36.8 pre-op, 78.6-76.8 at 1 year and 84.5-84.6 at 2 years ($p \geq 0.1$) and values KS score and function pre-op [43.5-45.5] - [44.5-46], at 1 year [78.4-77.9] - [78-79.4] and at 2 years [82.4-84.6] - [81.9-86.1] ($p \geq 0.1$). The tibiofemoral angle's average was 4.9° valgus, tibial coronal alignment was 90.3° , while the slope of 3.3° : respectively 99.3%, 98.7% and 99.7 % of patients is part of an ideal group $\pm 2.5^\circ$ with respect to the desired values. The clinical results obtained did not show statistical significance ($p \geq 0.1$). The radiographic findings instead show a significant reduction in the percentage of mal-alignment. The clinical results are comparable to the traditional method, but they deserve a long-term appreciation, according to the significant improvement in axial alignment.

Date: 2019-12-06

Session: Knee Short Free Papers 2

Time: 07:00 - 08:00

Room: Junior Ballroom A

Abstract no.: 54692

META-ANALYSIS OF GAIT POST TOTAL KNEE ARTHROPLASTY

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Background: Gait analysis has been used to objectively measure patients' functional outcomes following total knee replacement (TKA); although the outcome remains strongly contested. A meta-analysis will help to calculate expected outcomes in patients undergoing TKA versus Controls using gait analysis. The objective is to further evaluate the improvement in gait dynamics, if any, with improvement in prosthesis design. Methods: The keywords for search were TKA/TKR, total knee arthroplasty, kinematics and kinetics. PubMed and SPORTDiscus were the databases searched. The analysis was performed using mean, standard deviation and P-value data, with 95% confidence intervals for each variable to create Effect Sizes (ES). I² has also been calculated as statistical measure of heterogeneity. Results: A total of 270 TKAs versus 271 Controls were analysed with median follow-up of 7.5 [3-24] months. Statistically significant Stride Length with ES of -0.39 [-0.59, -0.20], velocity with ES of -0.69 [-0.88, -0.50], ROM with ES of -0.80 [-1.08, -0.52], Knee Flexion Moment with ES of -0.79 [-1.20, -0.38], Knee Extension Moment with ES of -0.56 [-0.86, -0.26] and Knee Adduction Moment with ES of 0.64 [0.22, 1.06] were consistently in favour of control population when compared to patients undergoing TKA even at follow-up periods ranging from 6 to 24 months ($p < 0.0001$), but with varying degrees of heterogeneity. Conclusion: Artificial joint replacement strategy does not allow complete recovery (compared to controls) of knee gait dynamics in patients post TKA surgery, which has important implications for future research on artificial joints and improvement in the prosthesis design.

Date: 2019-12-06

Session: Knee Short Free Papers 2

Time: 07:00 - 08:00

Room: Junior Ballroom A

Abstract no.: 54680

**MOBILE VERSUS FIXED BEARING TOTAL KNEE REPLACEMENT:
SYSTEMATIC REVIEW OF RANDOMISED CONTROLLED TRIALS**

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Aims: A systematic review of the available literature comparing the outcomes of mobile to fixed bearing in total knee replacement of primary knee osteoarthritis. **Methods:** Medline and EMBASE databases were searched for English language articles on January 2019. Articles were considered for review if they satisfied all of the following inclusion criteria: Randomised Controlled Trials comparing fixed versus mobile bearing total knee replacement, primary osteoarthritis, adult patients and including both genders. Minimum ten years follow up. Outcomes measures of interest are the clinical and radiological survivorship and maximum function. Critical appraisal of the selected papers was carried out through using RAMMBo appraisal tool for randomised controlled trials. **Results:** Two articles were identified from searching databases which met the inclusion criteria. One trial showed no statistical significant in their finding and concluded that there is no differences in the durability, mean maximal range of motion and function between fixed and mobile bearings. On the other hand, the other trial showed the functional outcomes measures were statistically significant better with clinical importance in the mobile bearing group compare to fixed bearing group. Implant survival rate were reported 95.2% of the mobile bearing and 94.7% for the fixed bearing postoperatively which was statistically significant with a confidence interval of 95%. **Conclusion:** Both trials have shown that the PFC implant survivorship is excellent whether they have used fixed or mobile bearing and it's above 94.7% at mean of ten years following up. There is conflicting evidence with regards to functional outcome between both trails.

Date: 2019-12-06

Session: Knee Short Free Papers 2

Time: 07:00 - 08:00

Room: Junior Ballroom A

Abstract no.: 54970

FAST-TRACK BILATERAL TOTAL KNEE ARTHROPLASTY: FACTORS CONTRIBUTING TO EARLIER DISCHARGE

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Introduction: There has been a large focus on decreasing length of stay (LOS) and healthcare costs for total knee arthroplasty (TKA), with a push towards post-op day one discharge. Identifying patient factors to help determine which patients are better suited for such “fast-track” programs is important in the selection process. The objective of our study is to identify which factors are most associated with early discharge. Methods: We identified all patients who underwent simultaneous bilateral TKA by 4 different surgeons at our institution from 2014-2018. A total of 322 patients were included. Collected data included demographics, social factors, past medical history, relevant past surgical history, preoperative range of motion, American Society of Anaesthesiologists (ASA) score, and Charlson Comorbidity Index (CCI). A forward and backward stepwise regression analysis was then performed to determine which factors had a greater association with early discharge versus extended LOS. Results: The stepwise regression analyses determined that the factors most closely associated with earlier discharge were lower BMI, caregiver available post-op, having that caregiver living with the patient post-op, and lower overall number of comorbidities ($p < 0.05$). Peripheral vascular disease and chronic obstructive pulmonary disease were the two comorbidities most associated with extended LOS. Conclusion: When selecting patients who are suited for “fast-track” discharge following simultaneous bilateral TKA, both medical and social factors should be considered. Patients with fewer comorbidities, lower BMI, and a strong support structure at home are more likely to have success in a “fast-track” program.

Date: 2019-12-06

Session: Knee Short Free Papers 2

Time: 07:00 - 08:00

Room: Junior Ballroom A

Abstract no.: 54215

SAFETY OF SIMULTANEOUS BILATERAL TOTAL KNEE REPLACEMENT SURGERY IN PATIENTS OVER THE AGE OF 75 YEARS

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Purpose: The purpose of this study was to assess the safety effectiveness of quality of life after simultaneous bilateral total knee replacement (SBTKR) surgery in patients over the age of 75 years. **Material and methods:** We assessed 39 patients, over the age of 75 years, who underwent SBTKR in our institution. Pre-operatively, all patients were assessed for existing co-morbidities, visual analogue scale (VAS), Oxford knee score (OKS) and knee society score (KSS). Post-operatively, patients were assessed for length of hospital stay (LOS), complications in the immediate post-operative period, and at three months, VAS, OKS and KSS. **Results:** Mean age 78.05. Hypertensive: 27 (71.05%), diabetes: 16 (41.6%), heart disease: 9 (23.08%), asthma: 2 (5.13%), COPD: 1 (2.56%), CKD: 2 (5.13%) and, Parkinson's: 1 (2.56%). The mean LOS: 6.51 days. The immediate major post-operative complications were MI: one (2.56%), wound dehiscence: one (2.56%), Patellar fracture: 2 (5.13 %). At three months, mean VAS: 4.86 to 7.46, the mean OKS: 15.05 to mean 33.42, mean KSS: 36.76 to 74.37. **Conclusion:** SBTKR a safe procedure in the elderly provided a multidisciplinary approach is followed. Our study has also shown that quality of life can improve significantly after SBTKR in this age group. However, this is an observational study comprising a small group of patients. Larger studies are required to address the matter further so that the conclusion can be applied to the larger general population.

Date: 2019-12-06

Session: Knee Short Free Papers 2

Time: 07:00 - 08:00

Room: Junior Ballroom A

Abstract no.: 54030

SIMULTANEOUS BILATERAL KNEE REPLACEMENT - FUNCTIONAL RESULTS

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Knee osteoarthritis is primarily most common cause, followed by rheumatoid arthritis and other types of inflammatory arthritis. Medical management remains most common modality of treatment, patient with severe arthritis see total knee replacement as the definitive way to improve their quality of life. Bilateral total knee replacement in one stage has an advantage of single hospital admission, shorter rehabilitation and is less expensive. But single stage bilateral total knee replacement was in limited vogue due to fear of the perioperative complications. Limited data exist on patient safety after simultaneous vs staged bilateral total knee replacement in matched groups. Hence, this study was to compare length of stay, in-hospital complications, 30-day readmissions and mortality after simultaneous and staged bilateral replacement in matched patients. This was 2 year study involving a series of 150 consecutive patients who were operated for single stage bilateral total knee replacement using same implant and staged was done alternatively. Inclusion criteria were patients with bilateral osteoarthritis who underwent single stage bilateral total knee replacement. All patients underwent a pre and postoperative evaluation using oxford knee score at 3rd and 12th month. Results showed in-hospital complication rate was 15.9% after simultaneous vs 7.1% after staged procedures. Eight patients were re-operated after simultaneous vs one patient after staged bilateral TKR. The 30-day readmission rate was 8.1% after simultaneous vs 5.2% after staged procedures. Single stage bilateral total knee arthroplasty improves the quality of life in patients with severe osteoarthritis as reflected in oxford knee score.

Date: 2019-12-06

Session: Knee Short Free Papers 2

Time: 07:00 - 08:00

Room: Junior Ballroom A

Abstract no.: 53878

**TOTAL KNEE ARTHROPLASTY IN PATIENTS OLDER THAN 80 YEARS:
IS CEMENTLESS MOBILE BEARING TKA A VALID OPTION?**

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Introduction: The ideal fixation of a TKA in elderly patients is controversial because of concerns regarding decreased bone remodelling that occurs with normal ageing, and whether the use of cement is more efficient than pressfit fixation in terms of ensuring durable stability. Our purpose was to compare clinical outcomes and implant survivorship of cemented versus cementless TKA in patients older than 80 years. Methods: We examined retrospectively 176 patients aged more than 80 years with primary osteoarthritis randomized to receive mobile bearings TKA with cementless or cemented fixation. 67 patients received a Cementless implant (Group I), 74 patients a Cemented TKA (Group II). Follow-up included clinical evaluation using KSS, KSSF, WOMAC score and knee range of motion. Results: There was one aseptic revision and one septic revision in both groups. KSS, KSSF, WOMAC score were higher in Group 1 compared to Group II (P= 0.117, P= 0.0218, P= 0.0061 respectively). The mean range of motion was 112 ± 8.50 degrees in Group I and 116 ± 14.50 degrees in Group II (P=0.23). Conclusion: Uncemented TKA yielded comparable knee range of motion, rate of revision surgery and KSS value to cemented TKA with a trend towards better KSSF and WOMAC score. Despite some limitations (lack of radiological evaluation and limited length of follow-up), this study suggests that uncemented mobile bearing TKA is a safe procedure and offers good results also in the elderly population.

Date: 2019-12-06

Session: Knee Short Free Papers 2

Time: 07:00 - 08:00

Room: Junior Ballroom A

Abstract no.: 52976

CORRELATION ANALYSIS OF THE ANTEROLATERAL LIGAMENT LENGTH WITH THE ANTERIOR CRUCIATE LIGAMENT LENGTH AND PATIENT'S HEIGHT

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The aim of this study was to evaluate the anatomical characteristics of the anterolateral ligament of the knee (ALL) with the main focus on potential gender differences. The ALL length and the length of the lateral collateral ligament (LCL) were taken in extension. The length of the anterior cruciate ligament (ACL) was measured at 120° flexion. We correlated the length of the ALL with the LCL and ACL with respect to potential gender differences. The ALL was significantly ($p = .044$) shorter in females (mean length: 32.8 mm) compared to males (mean length: 35.7 mm). The length of the ALL correlated significantly positively with the lengths of the ACL ($p < .001$) and the LCL ($p < .001$). There was no significant correlation with the TLL ($p = .888$) and body size ($p = .046$). Furthermore, TLL and donor size correlated significantly positively ($p < .001$). The ALL length significantly correlates with patients' ACL length and height. The ALL was significantly shorter in females, however without clinical relevance. Concerning ALL reconstruction, femoral or tibial preparation of the graft should therefore not be altered due to the patients' gender.

Date: 2019-12-06

Session: Research Short Free Papers

Time: 08:00 - 10:00

Room: Meeting Room 8

Abstract no.: 54737

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. Methods: A modified Wagner apparatus was used as a mono-plane mono-axial lengthening device for 17 patients and a modified Orthofix frame for another 11 patients. The Ilizarov method of metaphyseal corticotomy-callotasis was applied to all 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 malunion with shortening & angulation where a diaphyseal corrective osteotomy was done. The bi-focal technique was done for 4 cases (14.2 %). Results: The femora were lengthened to an average of 8.3 cm (= 23 % of original femoral bone length), range of lengthening was : 4.5 - 17 cm (= 9 – 56.6 %). The average healing index was 32 days per cm (with a range of 26 to 43 days per cm). Conclusion: competent mono-plane lengthening devices can provide a high success rate in femoral bone lengthening of various aetiology with a well-accepted complication rate.

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Abstract no.: 54551

LONG-TERM FOLLOW-UP RESULTS OF FINAL FUSION SURGERY AFTER GROWING ROD TREATMENT IN CHILDREN WITH PROGRESSIVE SCOLIOSIS

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Objective: The purpose of this study was to evaluate the usefulness of a growing instrument obtaining the outcomes of patients who underwent final fusion surgery after growing rod surgery. **Methods:** We studied 18 patients who underwent final fusion surgery after treatment with growth-oriented instruments among 32 cases of progressive scoliosis in children. We analysed the changes of age, height, rods length, degree of spinal growth, Cobb's angle, and thoracic kyphosis and lumbar lordosis angle pre-operation(T1), post-operation(T2), time of fusion surgery(T3) and the final follow-up(T4). **Results:** The mean age of the patients was 9.62 ± 3.26 years in T1, the mean age was 15.6 ± 3.55 years in T3, and the follow-up period was 6.9 ± 2.6 years. The mean height was 130 ± 18.8 cm in T1, 147.2 ± 18.4 cm in T3 and 149.4 ± 18.3 cm in T4. The length of the expanded metal rod was 40.3 ± 11.7 mm. The mean Cobb's angle was 63.1 ± 20.2 degrees in T1, 33.4 ± 16.1 degrees in T2 and 26.2 ± 19.7 degrees in T3, respectively. The thoracic kyphosis angle was 37.5 ± 20.6 degrees in T1, 17.5 ± 10.6 degrees in T2 and 21.4 ± 18.8 degrees in T3. **Conclusions:** When the scoliosis of the child was treated with growing rods, the average of spinal growth was obtained about 4cm, but it was only 20.6% of the 19.4cm of the growth of the whole height. This increased length would be useful because it is a thoracic spine, but the extent to height growth is not large.

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Abstract no.: 53070

EFFECTIVENESS OF SEALANT VERSUS DURAL CLOSURE FOR THE TREATMENT OF CEREBROSPINAL FLUID LEAKAGE: A META-ANALYSIS

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Purpose The purpose of the meta-analysis was to compare the effectiveness and safety of using sealant with dural closure for the treatment of cerebrospinal fluid (CSF) leakage. **Methods** The authors made a hypersensitive search strategy to identify all published randomized controlled trials until December 2018. The Risk of bias tool (RoB) was used to assess the risk of bias. Five questions were answered to evaluate the clinical relevance and Cochrane methodology was used for the results of this study. **Results** We chose seven RCTs involving 1,626 patients. Compared with the dural closure group, the success rate of the sealant group was significantly higher. (Sealant group: 93.58%; dural closure group: 56.15%; OR: 10.93; 95 % CI: [5.94, 20.11]; $P < 0.00001$, $I^2 = 37\%$). However, no difference was found in postoperative CSF leakage rate (OR:0.77; 95 % CI: [0.52, 1.14]; $P=0.19$, $I^2 = 0\%$), total adverse events (AEs) (OR:1.03; 95 % CI: [0.77, 1.37]; $P=0.84$, $I^2 = 0\%$), serious AEs (OR:1.00; 95 % CI: [0.75, 1.35]; $P=0.98$, $I^2 = 0\%$) and surgical site infections (SSIs) (OR:0.66; 95 % CI: [0.39, 1.11]; $P=0.12$, $I^2 = 0\%$). **Conclusions** From the existing results, sealants do not provide significant benefits for preventing CSF leakage. Considering the high cost of sealants, maybe sealants should not be considered to become routine consumables for treatment. More independent high-quality RCTs are needed in further.

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Abstract no.: 54646

**TOURNIQUET USE IN ORTHOPAEDIC SURGERY: A SURVEY STUDY
AMONG ALGERIAN ORTHOPAEDIC SURGEONS**

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Introduction: Tourniquet use in orthopaedic surgery is common practice. However, there are no standard guidelines. The aim of this study was to investigate and interpret the trends in tourniquet use among Algerian orthopaedic surgeons. Methods: A survey was developed and distributed to orthopaedic surgeons practicing in Algeria. The results were analysed to determine the trends in the use of tourniquet. Results: 207 orthopaedic surgeons participated in the study. A variation in tourniquet pressure settings and techniques used was reported. 41% surgeons use a pressure range of 250 – 300 mm Hg for the upper arm and 43 % use a range of 350 – 400 mm Hg for the lower limb. Two hours as the maximum tourniquet inflation time was reported by 44 % of respondents for the upper limb and 53% for the lower limb. 47 % of respondents experienced a complication secondary to tourniquet use, the most common complications being nerve and skin injury. Discussion: Tourniquets are frequently used by orthopaedic surgeons due to their benefits in maintaining a bloodless surgical field. The ideal maximal safe tourniquet cuff pressure and time inflation remains controversial. The results indicate a lack of consensus in tourniquet practice, suggesting the need for further research and the establishment of clinical practice guidelines. Approximately half of respondents reporting that they experienced a complication related to tourniquet use. Conclusion: The results of this survey indicate that there is a wide variation in tourniquet practice by Algerian orthopaedic surgeons.

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Abstract no.: 53949

ESTABLISHING SUCCESSFUL CLINICAL RESEARCH NETWORKS IN ORTHOPAEDICS AND TRAUMA. WHAT DOES THE LITERATURE HAVE TO SAY?

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Introduction: Less than 1% of patients undergoing surgery are enrolled in surgical clinical trials annually. It is therefore important that research networks exist to ensure sufficient subjects are available for trials. Articles on clinical research networks and centres of excellence in orthopaedics or trauma are not very prevalent in the scientific literature. However, the number of such research networks is growing. The current review was conducted to find out exactly what publications are available on the topic, and what lessons can be drawn from the networks described. Methods: A systematic search of Medline using search term combinations such as “clinical research network” as well as the gray literature was conducted. Eligible publications provided information on the following topics: general, orthopaedic and trauma research networks; (surgeon, institution, financial and environmental) factors limiting participation in clinical research; site selection; support provided to clinics; metrics to measure success; communication; and publication policies. Results: 59 were publications examined, 9 of which were specifically orthopaedic or trauma focused. Successful research networks appear to require a clear and shared vision, a defined structure, effective communication channels, elements of quality assurance, and enough flexibility to respond to changes in situations / barriers that appear. Country and/or regional differences should also be considered. Conclusion: Although scant, current literature on research networks provide useful directions grounded in experience for those who wish to set up similar structures. Careful selection of sites into research networks should maximize the chances of successfully completing studies and engender a research culture among clinicians.

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Abstract no.: 53909

MORPHOMETRIC ANALYSIS OF CERVICAL SPINE VERTEBRAE PEDICLE USING COMPUTED TOMOGRAPHY IN A SOUTH INDIAN POPULATION

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Introduction: Cervical pedicle screw provides more rigid fixation than other posterior instrumentation techniques, but it is associated with high risk of catastrophic damage to surrounding neurovascular structures. Our study purpose is to analyse the variation in the dimensions of cervical pedicle and hence ease the pedicle screw fixation. Methodology: We conducted a morphometric analysis of more than 50 patients' cervical spine from C2 to C7 with no significant congenital anomaly using computerized tomography. Measurements were taken for both side pedicle width (PW), pedicle axis length (PAL), pedicle transverse angle (PTA) in axial plane, and pedicle height (PH), pedicle sagittal angle in sagittal plane and analysed to determine the size and trajectory for pedicle screw fixation in cervical spine. Results: No significant difference between right and left side pedicle dimensions. It is found that female has smaller value compare to male. Mean values of PW progressively increasing from C3 to C7 level. PH in the sagittal plane is found to be larger than PW, at each vertebral level, and for both male and female. Hence, PW should be important parameter to determine pedicle screw size. Conclusion: In view of significant sex and ethnic morphometric variability, preoperative CT evaluation is recommended. Uniformly sized screws cannot be used at every level. Hence image guided screw placement is highly advised to ensure safety and accuracy.

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Abstract no.: 53745

**DIGITAL TECHNOLOGIES IN THE DIFFERENTIAL DIAGNOSIS OF
BENIGN AND MALIGNANT BONE TUMOURS**

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The main criterion of differential diagnosis between benign and malignant bone tumours is availability of atypical mitoses. Released in March 2018, IBM Power AI Vision with the ability to search objects based on specified characteristics, allowed IBM's specialists, in conjunction with the CITO Pathology Department, to create the computer model, which could help the pathologist in diagnostic. Materials and methods: The object of the investigation was to test the possibility of using Power AI Vision model to identify atypical mitoses. About 1000 images were used to create this model. The process of learning the model had several stages. For model training were used images with pathological mitoses from the collection of Prof. GN Berchenko. Result: For testing the model, were used histological images of new patients, which were scanned using "Leica SC2" scanner with a resolution of 40x. The resulting images were converted to jpeg format and split into an array of 1024k by 1024k pixels. Using the script, the array of images was passed through the model. In the case of object detection of atypical mitosis, the model marked it on image. Conclusion: IBM Power AI Vision allows you to find atypical mitoses in histological slides, thereby clarifying and simplifying the process of differential diagnosis between benign and malignant bone tumours. Additional training of the model by adding new images with atypical mitoses will increase its accuracy. Such a model can be used in the work of the doctor pathologist as a method of pre-medical diagnosis.

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Abstract no.: 53702

INCREASE OF HUMAN GROWTH BY LENGTHENING OF LOWER EXTREMITIES: OPPORTUNITIES, PROBLEMS, PROSPECTS

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The increase in bone length was made possible by the discovery by the Russian scientist Ilizarov of the ability of tissues to regenerate under tension. Improved designs for distraction osteosynthesis, reduced risk of complications has contributed to the fact that more and more healthy people request to lengthen their legs. No matter how we treat this problem, it is relevant because of the increasing demand for this type of service. In these conditions, orthopaedists need only to optimise the technique, to achieve a reduction in treatment time and reduce complications. Our aim was to analyse the results of lengthening of the lower extremities, improve technology, develop measures for the prevention of complications. From 1996 till present, 327 young patients underwent lengthening of both lower limbs. The height of the patients was from 147 to 190 cm. In all cases, tibial or femoral osteotomy and osteosynthesis with the Ilizarov apparatus were performed. Distraction started at 5-7 days postoperatively, 1 mm/ day. Three Problems: Organisational (long-term follow-up) Psychological (patient selection) Medical (improvement of devices / treatment of complications). The magnitude of elongation was from 3 to 9 cm. In 311 patients, both legs were extended, and in 16 patients hips were extended. In 12 patients, a combination of external osteosynthesis was used for elongation followed by fixation with intramedullary nails. The main complications are purulent-inflammatory phenomena at the points of exit of the K-wires and rods, secondary displacements in the process of distraction, contracture of the joints, long periods of treatment.

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Abstract no.: 53663

AN ECONOMIC ANALYSIS OF PICO SINGLE-USE NEGATIVE PRESSURE WOUND THERAPY COMPARED TO CONVENTIONAL DRESSINGS IN REDUCING SURGICAL SITE INFECTIONS FOLLOWING ORTHOPAEDIC SURGERY

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In orthopaedic surgery, surgical site infections (SSIs) are particularly consequential, as they may necessitate costly revision surgery. This study analysed the cost-effectiveness of PICO™ single-use negative pressure wound therapy (sNPWT) compared to standard care (SC; post-surgical dressings) in reducing SSIs following orthopaedic surgery, from the perspective of the United Kingdom National Health Service (NHS) over a 12-week period. An economic model analysed costs incurred in both acute and post-discharge community care using data from published literature and the NHS National drug tariff. SSI rates without PICO were obtained from a large observational UK-based study, and PICO effectiveness data from a systematic review/meta-analysis we conducted showing a statistically significant 57% reduction in SSIs and a 1-day reduction in hospital length of stay. We conducted a sensitivity analysis, as well as a sub-group analysis in patients with American Society of Anaesthesiologists (ASA) ≥ 3 , diabetes, and body mass index (BMI) ≥ 30 . For a cohort of 1000 patients, PICO was estimated to result in 24 SSIs and a total cost-per-patient of £183.09, compared with 56 SSIs and £135.96, respectively, for SC. The model's results were sensitive to baseline incidence of SSI, but not to other parameter changes (i.e., cost of PICO). In subgroup analysis, PICO resulted in cost-savings (£152.74 for ASA ≥ 3 , £116.85 for diabetes, and £78.14 for BMI ≥ 30) and improved clinical outcomes per patient. These results suggest that the use of PICO following orthopaedic surgery reduces the incidence of SSI when compared with SC, with high-risk patients particularly benefiting from this treatment.

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Abstract no.: 54728

IS FEVER UNNECESSARILY DELAYING HOSPITAL DISCHARGE AFTER TOTAL JOINT ARTHROPLASTY?

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Introduction: Total joint arthroplasty (TJA) has been evolving into a same day procedure. Although it has been demonstrated that it is safe to discharge patients in less than 24 hours, little is known about those patients who spike a fever and are kept inpatient to study its cause. Objective: The aim of this study is to evaluate if patients who spiked a fever really needed to remain in the hospital and if there was need for lab work and images to be taken. Methods: A retrospective review of 1600 consecutive TJA patients who underwent surgery during 2015 was completed. Charts were examined and patients with a body temperature over 99.6°F (37.6°C) were considered to have fever. Complication rates were compared between patients with and without fever. Images, cultures, blood work orders, and length of stay were evaluated. Age, gender, ASA score, BMI, OR time and transfusion requirement were taken into account for data analysis. Results: 21 (1.31 %) out of the 1600 patients developed fever after TJA, only 2 (0.125 %) of them were found to have infection (1 urinary infection and 1 periprosthetic infection). 10 (0.625 %) of the patients with reported fever had a concomitant transfusion. Patients with fever had longer length of stay (4.12 vs. 2.35, $p < 0.01$). Conclusion: Developing fever after TJA does not mean that a complication has happened. Most of the times no complications were found among those with fever. Patients are unnecessarily kept inpatient and obtained laboratories and images only added hospital costs.

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Abstract no.: 54489

ASSOCIATION OF VITAMIN-D DEFICIENCY AND KNEE OSTEOARTHRITIS IN YOUNG INDIAN PATIENTS

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The objective of this study is to look for the association of vitamin-D Deficiency (VDD) in young primary osteoarthritis knee (KOA) patients. In a 2-year observational study, 146 non-obese KOA patients of age 35 to 60 years were evaluated clinically (Knee injury and Osteoarthritis Outcome Score, KOOS) and radiologically (Kellegren-Lawrence stage, KL). Their serum 25(OH) D3 level was measured using ELISA method. Similarly serum vitamin D3 of 146 normal individuals of same age group was also measured for comparison. Serum vitamin D3 level of >30 ng/ ml was considered as sufficient, 20-30 ng/ml as insufficient and <20 ng/ml as deficient. Both the groups were comparable in terms of age (49.42 vs. 51 years, $p=0.07$) and sex (male: female; 68:78 vs. 60:86). The average serum vitamin-D3 level in normal healthy individuals and KOA patients was 45.83 ng/ml and 34.58 ng/ml respectively. Inadequate Vitamin-D3 level was found in 46.57% patients of KOA group and 24% participants of the control group. There was a significant positive association between inadequate vitamin-D level and KOA (Odds ratio 2.77, 95% CI 1.67-4.54, $P<0.001$). However the KOOS and KL grade severity of KOA was not correlating to the vitamin-D status. To conclude, the vitamin D3 level is significantly low in the OA knee patients. However, the clinical and radiological severities of the OA knee have no association with the vitamin D3 level in these patients.

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Abstract no.: 54731

ADIPOSE DERIVED STEM CELLS (ADSCS): VIABILITY AND CELL COMPOSITION CHARACTERISATION FROM FRESH ISOLATED TISSUE SAMPLES

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Introduction: ADSCs represent a population of adult MSCs able to self-renew and multipotentially differentiate into different cell lineages that play key role in regenerative medicine or tissue engineering, alone or in combination with biomaterials, growth factors or different types of scaffolds. Subcutaneous adipose tissue is becoming the first choice for cell isolation since it's easily accessible, relatively abundant and can be harvested by an absolutely minimally invasive procedure in order to be transplanted to an autologous or an allogeneic host. Our aim is to compare fresh ADSCs isolated from adipose tissue samples extracted with different surgical procedures. Methods: ADSCs have been isolated from tissue samples obtained with different commercially available withdrawal systems. In detail, we compared adipose samples extracted with the Lipogems system versus different types of lipoaspirate samples. The output was characterize in terms of viability and cell composition using multicolour FACS analysis. Results: Multicolour FACS analysis revealed that SVF are composed of heterogeneous cell populations including blood-derived cells (CD45+), ASCs (CD31-CD34+CD45-CD90+CD105-CD146-), endothelial (progenitor) cells (CD31+CD34+CD45-CD90+CD105lowCD146+), pericytes (CD31-CD34-CD45-CD90+CD105-CD146+), and other cells. In our hands, the cell viability among all the different extraction methods was overall comparable. Nevertheless, we found an increased in the percentage of endothelial cells in Lipogems samples (15%) compared to others liposuction methods (2,5%). Conclusions: Histological studies indicate that a stem cell population resides in a perivascular location, where ASCs coexist with pericytes and endothelial cells. Our data suggest that the heterogeneity of the population can be maintained by the procedure that preserves the tissue architecture (niche).

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Abstract no.: 55146

TO EVALUATE THE FUNCTIONAL OUTCOME OF PLATELET RICH PLASMA INFILTRATION IN PLANTAR FASCIITIS

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Introduction: There are various treatments modalities are available for plantar fasciitis but none have uniform success rate so it can be frustrating to treat and require careful management and patience to ensure optimal outcome. We have evaluated the result of PRP infiltration in plantar fasciitis in relation to pain relief, functional outcome and its complication if any. Material and Methods: 37 consecutive patients (24 female and 13 male) with mean age of 35.48 years (20 to 63) included in study and PRP injected at the sites of maximal tenderness at plantar surface under regional block. Evaluation was done at 3 week, 3 month and 6 months with different parameters including skin reaction, pain and complications, while outcomes were assessed as per modified AOFAS score, VAS and FAAM score. Results: VAS score decreased an average of 6.44 from baseline (mean 8.85 ± 1.13) to post infiltration follow-up (mean 2.41 ± 1.76), representing 73% pain relief. The AOFAS score improved an average of 22.33 from baseline (mean 67.75 ± 9.7) to final follow up (mean 90.08 ± 7.9), 33% improvement. Similarly, participants reported clinically significant improvement in FAAM score an average of 23.72 from baseline (mean 49.38 ± 5.2) to final follow up (mean 73.10 ± 5.2), a 48% improvement. No complications were reported except temporary pain and swelling in 15 patients for average 3 days (2-7 days) which subsided gradually within a week. Conclusion: In our experience PRP infiltration in plantar fasciitis has a high rate of success, relatively simple to perform, performed as day care procedure and has been with minimal complications.

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Abstract no.: 54656

CAMERAS IN OPERATIVE TRAINING: THE TRAINEE AND MEDICOLEGAL PERSPECTIVE

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The use of cameras to observe and teach technical and non-technical skills is established. Procedure based assessments (PBAs) are also an established form of assessing trainees. However, do trainees feel their assessments are truly reflective? We sought to 1) assess the timing and how PBAs are being filled 2) assess the perceived viability of supplementing assessments using intra-operative camera footage and 3) clarify medico-legal considerations for the use of cameras in theatre. We undertook a survey of Orthopaedic trainees in the East of England Deanery, United Kingdom. A simple six question questionnaire was designed and provided to trainees (paper and online). The response rate was 75%. Sixty percent felt that current PBAs do NOT allow them to highlight their strengths and weaknesses; a higher percentage felt that retrospective access to a video recording would help with reflective practice (87.5%) and filling in a PBA (70%). Forty-nine percent stated they did not fill their PBAs with their Consultant. Trainees' main complaint with PBAs included the forms being 'arduous', whilst, as predicted, there were concerns regarding potential legal implications. These concerns could preclude rapid adoption for the use of footage for behavioural observations; we suggest it is important that the surgeon controls what is recorded. This footage should be securely stored for retrospective review if required. Whether 'cameras in operative training' becomes the normality remains to be seen. Our next step is to perform a trial study assessing the impact of using video footage to enhance reflective learning.

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Abstract no.: 54232

THE PROTEOMIC SIGNATURE OF NUCLEUS PULPOSUS IN HUMAN FOETAL INTERVERTEBRAL DISCS

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Background: Clarifying the molecular nature of Human foetal disc which has not been exposed to mechanical, inflammatory or infective insults would pave way for a better understanding of normal structure and homeostatic mechanisms of intervertebral disc. Materials and Methods: 8 Disc samples of foetal discs obtained from medical abortions and 6 discs from MRI normal, healthy brain dead voluntary organ donors were subjected to proteomic analysis. Discs obtained from foetus was taken as (A) group: from donors < 40 years were considered as young group (B) and those > 40 years as aged (C). The entire proteome map and alteration in protein expressions were further analysed using Gene Functional Classification tool in DAVID and STRING database. Results: A total of 745 proteins were identified in the foetal group, 409 in group B and 512 in group C. Amongst the 584 unique proteins in foetus, Periostin, Collagen 9 A1 & A2, Matrilin 1 & 3, and Collagen 11A1, 12A1 and 14A1 were some of the noted Extracellular Matrix proteins. TUBB (Tubulin Beta)-1A, 2A, 2B, 4A, 4B which are part of cytoskeletal organization were also unique to foetus. Majority of the other unique proteins belonged to glycolytic and gluconeogenesis mechanisms. Conclusions: This study provides fundamental information on the proteomic constitution of healthy human foetal disc. Comprehensive catalogue of the various structural, biochemical and metabolic regulatory proteins has been performed and this is first important step in identifying and distinguishing the cellular process and pathways involved during normal biological ageing and disease.

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Abstract no.: 54164

INFLAMMAGING IS THE KEY FACTOR DISSECTING THE MOLECULAR MECHANISMS BETWEEN BIOLOGICAL AGEING AND DISC DEGENERATION

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Background: The true understanding of ageing and disc degeneration (DD) is still elusive. We did an Experimental analysis to utilise proteomics and understand the molecular basis of healthy, ageing and degenerating discs and conclusively differentiate normal ageing and degeneration. **Methods:** L4-L5 disc samples from MRI normal, healthy brain dead voluntary organ donors of six decades and five degenerated discs were subjected to proteomic analysis. Discs from donors < 40 years were considered as control; > 40 years as aged and those from fusion surgery as degenerated. The entire proteome map and alteration in protein expressions were further analysed using Gene Functional Classification tool in DAVID and STRING database. **Results:** There were 84 common proteins with specific proteins being 225 in A, 315 in B and 283 in C. By GO biological process identification, Group A predominated with extracellular matrix organisation, cytoskeletal structural and normal metabolic proteins. Group B differed in having additionally basal expression of immune response, complement inhibitors and senescence proteins. Group C was completely different with upregulation of proteins associated with oxidative stress response, positive regulators of apoptosis, innate immune response, complement activation and defence response to gram +ve bacteria indicating ongoing inflammaging. **Conclusions:** Our study documented entirely different proteome signatures between the young, ageing and degenerating discs and inflammaging being the main basis of DD. Multiple inflammatory molecules unique to DD were identified, allowing the possibility of developing specific biomarkers for early diagnosis and thereby provide evidence based metrics for preventive intervention and monitoring progress.

Date: 2019-12-06

Session: Research Short Free Papers

Time: 08:00 - 10:00

Room: Meeting Room 8

Abstract no.: 53066

SENSORY NERVE PROTECTS FROM THE PROGRESSION OF OSTEOARTHRITIS AT EARLY STAGE IN MICE

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Osteoarthritis (OA) is a chronic degenerative joint disease. Sensory nerves play an important role in bone metabolism and in the progression of inflammation. This study explored the effects of sensory nerve on OA progression at early stage in mice. OA was induced via destabilization of the medial meniscus (DMM) in C57BL/6 mice. Sensory denervation was induced by subcutaneous injection of capsaicin (90 mg/kg) one week prior to DMM. One week after capsaicin injection, sensory denervation in the tibia was confirmed by immunofluorescent staining. Four weeks after DMM, micro-CT scans, histological analysis and RT-PCR tests were performed to evaluate OA progression. Our results showed that subcutaneous injection of capsaicin successfully induced sensory denervation in tibia. The Osteoarthritis Research Society International (OARSI) score and synovitis score of the capsaicin+DMM group were significantly higher than the score of the vehicle+DMM group. The BV/TV of the tibial subchondral bone in the capsaicin+DMM group was significantly lower than in the vehicle+DMM group. In addition, the level of expression of inflammatory factors in the capsaicin+DMM group was significantly higher than in the vehicle+DMM group. In conclusion, capsaicin-induced sensory denervation accelerated OA progression at early stage in mice. To put it another way, sensory nerve protects from OA progression at early stage in mice.

Date: 2019-12-06

Session: Research Short Free Papers

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Room: Meeting Room 8

Abstract no.: 54746

DO DIFFERENT WIBERG PATELLA TYPES AFFECT THE ARC OF SAFETY?

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Introduction: The anatomical dual bundle medial patellofemoral ligament (MPFL) reconstruction technique is a technique used to treat lateral patellar instability. The surgical risks are patellar fracture and penetration of patellofemoral articular surface. **Objectives and Aims:** The study aims to investigate if different patella Wiberg types affects the arc of safety of the superior and inferior patella bone tunnels. This enables the surgeon to improve the positioning of patella bone tunnels for different morphology, reducing complications. **Methods:** In this study, MR knee images of patients with intact MPFLs were investigated. We noted the morphology of the patellae based on Wiberg classification. The arc of safety of superior and inferior bone tunnels were measured – the angle between the tunnels and the superior aspect of the patella. Independent samples T test analysis was done to evaluate if the different Wiberg types had significance on the arc of safety measured. **Results:** 100 male patients were studied, 55 of Wiberg type 1 and 45 of Wiberg type 2. The mean superior arc of safety for Wiberg Type 1 and 2 was 22.48 and 20.96 respectively and p value was 0.69. The mean inferior arc of safety for Wiberg Type 1 and Type 2 was 23.90 and 23.87 respectively and p value was 0.74. No significance was noted between the different Wiberg types and the arc of safety. **Conclusion:** The arc of safety is an important parameter to ensure optimal bone tunnel placement, and reduce the risk of complications during surgery.

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Abstract no.: 54589

COMBINING BISPHOSPHONATES WITH CALCITONIN AND ALONE IN TREATING OSTEOPOROSIS A COMPARISON

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Osteoporosis is a burning topic and awareness has increased in last two decades. People using bisphosphonates and calcium even without consulting proper doctor. Maximum no. of people used bisphosphonates alone. In developing countries less than 5% get BMD done before starting drug. This study undertaken to see effect of bisphosphonates alone and with calcitonin on 1000 patients over a period of ten years. Patients followed for three years & in each of 500 patients the results were analysed as general wellbeing, pain relief, healing of fractures and increase in BMD. It was clearly noted that the group receiving only bisphosphonates along with other supplements improved in general, fracture risk reduced though BMD not much improved, fracture healing and pain not improved, but in other 500 receiving calcitonin along with bisphosphonates and other supplements definitely had better results. Pain relief after vertebral osteoporotic, metastasis fracture decreased a lot. Healing in hip and spine fracture, better general feeling observed. The need for kyphoplasty etc. decreased, pain in spine disappeared after 2 to 3 weeks even spine became stable. In fracture healing occurred at a faster rate as compared to bisphosphonates alone. So this is concluded that use of calcitonin along with bisphosphonates has a definite better out come as compared to bisphosphonates alone. Though literature does not support. No toxicity of calcitonin seen as reported in western literature & it is cost effective. BMD alone cannot be criteria for improvement.

Date: 2019-12-06

Session: Foot & Ankle Short Free Papers

Time: 10:30 - 12:00

Room: Meeting Room 8

Abstract no.: 53429

2-5 YEAR RESULTS AFTER MINIMALLY INVASIVE RECONSTRUCTION OF THE ACHILLES TENDON WITH SEMITENDINOSUS TENDON TRANSFER

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Introduction: Defect situation after Achilles tendon rupture is caused by neglected acute rupture and resection after revision Achilles tendon surgery. The study evaluates the outcome following reconstruction defect situation after Achilles tendon ruptures/surgeries using free Semitendinosus tendon (Semi-T) graft transfer in endoscopic assisted technique. Methods: Twenty-six patients (10 female, 16 male) underwent Achilles Tendon repair with free Semi-T graft transfer. Results were assessed using VAS score for pain, function and satisfaction and VISA-A score at Baseline and follow-up and strength test for dorsal extension (DE) and plantar flexion (PF) only postoperatively. Results: The mean age of the patients was 56.85 ± 10.27 years. The average follow up was 47.38 ± 27.97 months (10-83). The statistical analysis shows significantly better results at follow-up in almost all evaluated subjective aspects. VAS for pain improved from 3.3 ± 2.9 (0-8.5) baseline to 1.58 ± 2.04 (0-6.5) postoperatively ($p=0.005$). VISA-A improved from 7.4 ± 27.4 (0-82) to 71.38 ± 24.53 (29-100) postoperatively ($p=0.005$). The isokinetic strength measurement showed a side to side difference at plantar flexion of $92.72\% \pm 65.18$ (34-283) at $30^\circ/\text{sec}$ and $70.22\% \pm 24.72$ (41.5-105.1) at $120^\circ/\text{sec}$. Measurement of dorsal extension resulted in a side to side difference of $128.5\% \pm 108.35$ (49.5-480) at $30^\circ/\text{sec}$ and $117.18\% \pm 47.82$ (66.7-232.9) at $120^\circ/\text{sec}$. Only minor complications were observed. Discussion and Conclusion: This is a challenging technique but requires advanced expertise in endoscopic/arthroscopic surgery. This technique offers good clinical and functional outcomes (in terms of pain, strength, satisfaction and function) and is safe.

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Abstract no.: 53939

ADDITIONAL AKIN PROXIMAL PHALANX PROCEDURE HAS LIMITED EFFECT ON OUTCOME OF SCARF OSTEOTOMY FOR HALLUX VALGUS SURGERY.

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One of most common supplementary techniques for hallux valgus surgery is proximal phalanx correction proposed by Akin. This study aims at the influence of Akin procedure on the outcome of scarf osteotomy for hallux valgus correction. This prospective randomized study on one hundred and forty-five patients diagnosed with moderate to severe HV underwent a scarf corrective osteotomy, was carried out between 2011 and 2016. Patients were divided into two groups based on the additional Akin correction of the proximal phalanx. Postoperative follow-up was 2 years. The patients underwent two medical examinations by two medical doctors simultaneously – preoperatively and postoperatively at 2 years follow-up. Data collected included biometrical records, X-rays [HV angle (HVA), inter-metatarsal angle (IMA), American Orthopaedic Foot and Ankle Society Hallux Metatarsophalangeal Index (AOFAS-HMI) and visual analogue scale (VAS) for pain and satisfaction]. There was a significant difference in comparison of HVA between the groups at the final follow-up: 13 degrees in Scarf and Akin group vs 15 degrees Scarf group. Other collected parameters were similar (AOFAS-HMI, level of pain and satisfaction). The complication rate was also similar between the groups. We observed comparable second consent and foot appearance satisfaction in both groups. Regardless of additional Akin correction the outcome was comparable. Despite a significant difference in HVA score, pain and satisfaction level were similar. Based on our results Akin procedure has limited role during forefoot correction.

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Abstract no.: 53885

TIMING OF SURGICAL REDUCTION AND STABILISATION OF TALUS FRACTURE-DISLOCATIONS

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Talus fractures with associated dislocations are uncommon but have high rates of complications, including avascular necrosis (AVN). Management of these injuries involves urgent surgical reduction and fixation, although there are no definitive data defining an operative time frame for preserving the blood supply and preventing complications. To determine the effect of time to surgical reduction of talus fractures and fracture-dislocations on rates of AVN and posttraumatic osteoarthritis (PTOA), we reviewed talus fractures surgically managed by me during the 15-year period 2000 to 2015. Operative reports were obtained and reviewed, using the Hawkins and AO/OTA systems, classified the injuries on plain radiographs. Analysis of AO/OTA 75 fractures with associated tibiotalar, subtalar, or talonavicular dislocations was performed. Rates of AVN/PTOA were 35% for all talus fractures and 55% for talus fracture-dislocations. Mean time to surgical reduction was not significant for development of AVN/PTOA for all talus fractures ($P = .45$) or talus fracture-dislocations ($P = .29$). There was no difference in age ($P = .20$), body mass index ($P = .45$), or polytrauma ($P = .79$) between patients who developed AVN and those who did not. Open fractures were significantly correlated with the development of AVN/PTOA ($P = .009$). Talar fracture-dislocations are devastating injuries with high rates of complications. Our data suggest there is no effect of time from injury to surgical reduction of talus fractures or talus fracture-dislocations on rates of AVN and PTOA except in compound injuries.

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Abstract no.: 54976

FUNCTIONAL OUTCOME OF SINGLE-STAGE CORRECTION OF PARALYTIC RIGID EQUINOCAVOVARUS DEFORMITIES

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Rigid equinocavovarus is a common foot deformity in paralytic conditions and is often treated by triple arthrodesis or staged tendon transfers and soft tissue/bony operations with variable results. This retrospective study over a 20-year period was conducted to describe the outcome of a single-stage surgical procedure (comprising of extra-articular osteotomies and soft tissue reconstruction) for rigid paralytic equinocavovarus deformities in 64 subjects (aged 5-24 years, 66% females). 22 had bilateral deformities. The aetiology included cerebral palsy (40%), post-polio residual paralysis (20%), neglected club foot (10%), spina bifida (8%), arthrogryposis multiplex congenita (8%) and hereditary motor sensory neuropathy (4%). Indications for surgery were pain, instability, and non-healing callosities and trophic ulcers. The surgical procedure involved Orthopaedic Selective Spasticity Control Surgery of gastrocnemius, peroneus longus, tibialis anterior or posterior, open z-lengthening of tendoachilles, Steindler's plantar release, midtarsal Akron dome osteotomy and modified Jones' procedure. In 18 patients (22 feet) a lateral displacement sliding calcaneal osteotomy was additionally performed. In 1 patient, Stainsby's reconstruction of the forefoot was performed. The feet were stabilised by external fixator in 58 patients (64 feet) and by K-wires in others. 8% had delayed wound healing and 1% had transient neurovascular compromise. Good functional and cosmetic results were obtained in all the operated feet except one at a mean follow up of 6 years (range 2-16 years). According to the Outcome Grading Classification System for Cavus feet described by Mubarak and Van Valin, 60% feet were categorised as very good, 39% as good, and 1% as poor.

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Abstract no.: 53664

WEBER-TCNC-ARTHRODESIS - ULTIMA RATIO IN DIFFERENT TALAR PATHOLOGY

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Introduction: Patients with severe infections after failed ankle arthrodesis, failed ankle joint replacements or with diabetic foot syndrome and Charcot foot have to undergo often amputations of the foot. The tibio-calcaneo-naviculo-cuboidal arthrodesis is a foot salvage procedure for these patients with irreparable damage to the talar and peritalar anatomy. Patients and Methods: The principle of this own technique consists of complete removal of the talus, creating a bony fusion of tibia with calcaneus, navicular and cuboid bone. The application of a ring fixator with the inclusion of the foot is used for retention of the tibio-tarsal fusion and allows for simultaneous distraction osteogenesis in the proximal tibia to correct the resulting leg length discrepancy. A total of 34 legs in 32 patients with an average age of 44 years (range: 11y to 71y) have been operated with the TCNC-fusion. Results: Average lengthening distance = 5,3 cm (3,5cm – 10 cm). Average wearing time of fixator with tibial lengthening = 9 months, without tibial lengthening = 4,5 months. In all cases, a stable TCNC-arthrodesis with asymptomatic full weight bearing could be achieved. Full equalisation of leg length could be achieved in the 30 lengthened legs. In 4 cases a bone plasty due to callus insufficiency had to be done. Three pin tract infections required revisions. No recurrence of infections. No secondary amputations. All patients require a rocker bottom sole at the shoe. Conclusion: TCNC-arthrodesis ensures a permanent, stable fusion between tibia and foot and can prevent foot amputations.

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Abstract no.: 53366

OBSERVATION ON THE CURATIVE EFFECT OF CALCANEAL LONGITUDINAL OSTEOTOMY IN THE TREATMENT OF MALUNION OF CALCANEAL FRACTURE

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Objective To review the treatment of malunion of calcaneal fracture with longitudinal osteotomy and evaluate its clinical characteristics. **Methods** From June 2008 to June 2015, 18 patients with calcaneal fracture malunion were treated. All patients underwent X-ray, CT and three-dimensional reconstruction before operation. According to the shape of deformity, lateral longitudinal incision of calcaneus was selected, osteotomy and joint fusion were used to correct deformity, restoring force line, height and length of calcaneus. Postoperative clinical examination and X-ray follow-up were performed. Pain visual analogue score (VAS) and AOFAS hind foot score were used for clinical evaluation. **Results** All patients were followed up for 22 to 53 months, with an average of 39.7 months. At the last follow-up, the VAS score was 0-6, with an average of 2 ± 0.7 , and the AOFAS hind foot score was 68-91, with an average of 80.9 ± 2.3 . Two patients with subtalar joint distraction and bone graft had poor healing at fusion site one year after operation, and were treated with autologous iliac bone graft to recover. One patient had heel pain during walking 3 years after operation. X-ray showed screw tail stimulation and recovered after screw removal. **Conclusion** Longitudinal calcaneal incision and longitudinal osteotomy can achieve satisfactory results in the treatment of malunion of calcaneal fracture. Recovery of calcaneal height and length and correction of valgus and valgus are the key to achieve good results.

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Abstract no.: 53382

RETROGRADE DRILLING AND AUTOLOGOUS CANCELLOUS BONE GRAFTING TECHNIQUE FOR OSTEOCHONDRAL LESION OF THE TALUS

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PURPOSE: To introduce retrograde drilling and autologous cancellous bone grafting technique and explore its effectiveness to treat osteochondral lesion of the talus (OLT), and to discuss its clinical indications, advantages and disadvantages. **METHODS:** Between January 2013 and April 2017, 23 osteochondral lesions of the talus (defect size 8 to 14mm) in 23 patients (mean age 38.9 years) were diagnosed by symptoms, sign and imaging and cartilage surfaces were identified as intact according to MRI or arthroscopy examination. They were operated by fluoroscopy-guided retrograde autologous cancellous bone grafting drilling technique and were evaluated by clinical scores and imaging examination before and after operation. **RESULTS:** The mean visual analogue scale (VAS) score was 2.76 (range 1 to 6) and the mean ankle and hindfoot scale of the American Orthopaedic Foot and Ankle Society (AOFAS) score was 83.76(range 68 to 96) 6 months after operation. Preoperatively, the mean VAS score was 4.76 (range 2 to 7) and AOFAS score, 58.32 (range 41 to 87), both were significantly improved ($P<0.05$). The range of ankle joint motion and gait were improved to normal level. In imaging follow-ups, 10 of 23 defects showed a complete osseous remodelling, 13 patients showed partial bone resorption but no symptom or arthritis occurred. **CONCLUSION:** The technique reported can repair defects effectively in talus and leads to optimistic results in clinical and imaging assessments. It is a recommended therapeutic option for treating OLT with intact cartilage.

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Abstract no.: 53296

COMPARISON OF PARTIALLY THREADED AND FULLY THREADED 4MM CANCELLOUS SCREWS IN FIXATION OF MEDIAL MALLEOLAR FRACTURES: A RANDOMISED CLINICAL TRIAL

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Background: Several fixation devices have been described for fixation of displaced medial malleolar fracture. Fully threaded cancellous screws with more threads engaging the bone may provide advantages over partially threaded screws. This study was designed to compare clinical results of fully and partially threaded 4 millimetre cancellous screws in fixation of medial malleolar fractures. Methods: In a randomised clinical trial study 44 patients with displaced closed medial malleolar fracture. Randomly divided into two groups. In the first group two fully threaded 4 millimetre cancellous. Screws were used for fracture stabilization (FT group) and the second group was operated by use. Of two partially threaded 4 millimetre cancellous screws (PT group). Clinical results and .complications were compared in two groups at one year follow up. Results: 19 patients in the FT group and 21 in the PT group were present at final follow up. Non-union was not developed in either group however two cases (9%) of delayed union occurred in the PT group. The rate of postoperative infection and symptomatic hardware were not statistically different. ($p= 0.33, 0.6$) Functional assessment using AOFAS, MOXFQ and VAS scores showed no significant difference between the two groups. ($p= 0.11, 0.84, 0.12$) Conclusion: Both fully and partially threaded 4mm cancellous screws can be considered as acceptable fixation devices for the fixation of medial malleolar fractures with good and comparable clinical results. Keywords: Medial malleolus, Ankle fracture, screw, fracture fixation.

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Abstract no.: 53164

PERONEAL TENDON DISLOCATION IN TALUS FRACTURES AND DIAGNOSTIC VALUE OF FLECK SIGN

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INTRODUCTION: Talus fractures are not uncommon and one of the serious fractures in foot and ankle. Peroneal tendon dislocation is one of the commonly missed soft tissue injuries which may have significant impact on the outcomes including persistent pain and swelling. **AIM:** To report the incidence of peroneal tendon dislocation in talus fracture and the significance of fleck sign in the diagnosis of peroneal tendon dislocation. **METHODS:** We retrospectively reviewed 100 consecutive talus fractures in the period between 1/1/2011 to 1/7/2017. Inclusion criteria were: The patient underwent open reduction and internal fixation, had pre-operative CT scan and standard ankle plain radiographs. 2 independent authors reviewed the radiographs for peroneal tendon dislocation using how criteria, fleck sign and fracture classification if any. Patient records were reviewed for laterality, age, sex, mode of injury, associated injuries and operative interventions. 43 ankles met inclusion criteria. 42 were males, mean age was 31 year and the predominant mode of injury was fall from height. **RESULTS:** Peroneal tendon dislocation was found in 9 patients out of 43. (20%). All dislocations were found in talar neck fractures, and up to 67% of Hawkins type III and IV Talar neck fractures were associated with peroneal tendon dislocation. Most of the dislocations were missed and were untreated. Fleck sign sensitivity was 44.4% while specificity was 88%. **CONCLUSION:** Peroneal tendons dislocation is associated with 20% of talus fractures. The incidence of dislocation increases with neck fracture and severity of these fracture. Fleck sign is a highly specific radiographic sign.

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Abstract no.: 54739

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. Methods: 30 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 were treated by a one stage intervention in the form of radical debridement of the infected ankle 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 (3-8w.). Residual average limb length discrepancy was 2.5 cm. There was no late reactivation of infection after a follow up of 10 y. (7 -12.5 y.). Conclusion: simultaneous debridement and compression arthrodesis is a successful method of limb salvage in infected diabetic Charcot ankle joints; obtaining a satisfactory stable ankle in 85% of patients (with 60% solid union); and infection eradication rate of 65%.

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Abstract no.: 54570

MANAGEMENT OF ACUTE ACHILLES TENDON RUPTURE WITH TENDON-BUNDLE TECHNIQUE

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Objective: To explore tendon-bundle technique for treating Achilles tendon rupture with no defects. **Methods:** Patients with full unilateral Achilles tendon rupture with no defects were included. The Achilles tendon medial edge surgical repair approach was used, revealing horsetail-like rupture bundles. Tendon bundles were anatomically realigned and repaired end-to-end using 5-0 sutures. Patients were followed-up for 1 year, and assessed for differences between the repaired versus healthy limb. **Results:** Out of 29 patients (18 male, 11 female; aged 19–64 years) at 2 year following surgery, mean American Orthopaedic Foot and Ankle Society score was 90.4 ± 5.9 ; mean differences between the surgically repaired versus contralateral side in dorsiflexion and plantarflexion angle were $3.5\pm 2.3^\circ$ and $5.6\pm 3.2^\circ$, respectively; mean difference in calf circumference between the two sides was 0.9 ± 0.5 cm; and mean increase in Achilles tendon width versus the healthy side was 0.8 ± 0.2 cm. By 2 years post-surgery, there were no significant between-side differences in dorsiflexion and plantarflexion angle, or calf circumference. **Conclusions:** Tendon-bundle surgery resulted in good ankle function restoration and low complication rates. Tendon-bundle surgery may reduce blood supply destruction and maximally preserve Achilles tendon length, and may be effective for treating Achilles tendon rupture with no defects.

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Abstract no.: 53192

TREATMENT OPTIONS FOR UNSTABLE ANKLE FRACTURES IN OLDER ADULTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background Ankle fractures are the third most common fracture in the elderly. Patients over 60 years are more severely affected by these injuries than their younger counterparts, and have a higher rate of complications regardless of the management strategy. The aim of this review is to establish the best current evidence for or against different treatment strategies. Methods A systematic review and meta-analysis of randomised controlled trials comparing treatment options for unstable ankle fractures in adults over 55 was conducted, with the primary outcome being functional assessment score at 6-12 months (Olerud and Molander Ankle Score (OMAS)). Secondary outcomes were adverse events including infection and reoperation. Results The search strategies identified 426 articles. After screening and full text review, 4 papers met the inclusion and exclusion criteria, providing data on 754 ankle fractures. Alternative treatment groups were tibio-talo-calcaneal nail, fibular nail and casting and were compared to ORIF. Meta-analysis showed no difference in OMAS between treatment modalities at 6-12 months. There was, however, a significant reduction in the incidence of adverse events (OR 0.59 [0.44, 0.81]) and wound infection (0.13 [0.05, 0.31]) in the alternative treatment groups compared to ORIF. Conclusion The current evidence shows no significant difference between treatment modalities for ankle fractures in older adults in terms of functional outcome. ORIF has a higher rate of adverse events and wound infection when compared to alternative treatments. Therefore, surgery should be carefully considered and if undertaken, other treatment modalities, such as intra-medullary fixation should be considered.

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Abstract no.: 54433

**CORRECTION OF VALGUS-EXTERNAL ROTATION DEFORMITY IN
NEGLECTED FRACTURES OF THE ANKLE**

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Neglected fractures of ankle are common entities in developing countries. Inadequate reduction is associated with deformities, poor function and ultimately lead to disabling arthrosis. We describe our study of 17 patients from Eastern-India with neglected fractures of the ankle, among which 14 were Bi-malleolar and three were Tri-malleolar. They were managed primarily by traditional bone-setters. They presented with complaints like deformed painful ankles, limping and swelling. Radiographically all had shortened and malunited lateral malleoli, talar tilt, increased medial clear space and ununited medial malleoli. Five patients showed early arthritic changes and two had posterior subluxation of ankle. All the patients were operated with lengthening of fibula, clearing of the medial joint space and fixation of medial malleolus. All fibulae were fixed by 3.5 DCP with syndesmotic screws, keeping in mind the normal tibio-fibular variance. Ankle mortise alignment and stability was assessed under fluoroscopy stress views. All patients were followed-up regularly and evaluated by AOFAS score at the end of 3, 6 and 12 months. Although all the patients showed sign of arthrosis on follow-up X-rays, their functional status kept improving with time, except one patient with bad tri-malleolar fracture. With early identification of the problems and deformities of such neglected ankles, corrective surgeries can be performed with fairly satisfactory functional outcomes when judicious surgical planning and execution is done. Surgically correcting old fractures is a difficult undertaking due to soft-tissue contractures and malunited fractures. It is important to follow the correct mechanical and biological principles to achieve satisfactory outcomes.

Date: 2019-12-06

Session: Foot & Ankle Short Free Papers

Time: 10:30 - 12:00

Room: Meeting Room 8

Abstract no.: 53456

**TO WEIGHT-BEAR OR NOT TO WEIGHT-BEAR? THE ANKLE FRACTURE
FIXATION QUESTION**

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There is an increasing trend in the UK towards early weight-bearing as recent guidance from the British Orthopaedic Association advises weight-bearing as tolerated in a splint or cast unless in most circumstances. Our aim was to update our previous systematic review (May 2013) to determine if early weight-bearing after operative fixation of ankle fractures remains advantageous. We conducted a systematic review of electronic databases, reference lists of included studies and relevant systematic reviews were searched for randomized and non-randomised controlled trials in adults comparing early and late weight-bearing after open reduction and internal fixation of the ankle. Studies were excluded if they were non-English language, case reports, letters, editorials, or abstracts without corresponding fully referenced papers. Fourteen studies comprising 919 subjects were identified and included for review inclusive to June 2018. None of the studies showed any difference in fracture displacement, healing or complication rates between weight-bearing regimes. There were significantly better outcomes for early dorsiflexion range of motion, early functional outcomes, time to full weight-bearing, early return to previous work and shorter hospital stay in the early weight-bearing group. The evidence base contained many methodological limitations, though the more recent studies seem to be of generally better methodological quality. It remains true that any conclusion drawn from the research base should still be done so with caution. The conclusions also remain broadly similar to our previous review that early weight-bearing may allow for quicker rehabilitation and earlier return to work.

Date: 2019-12-06

Session: Foot & Ankle Short Free Papers

Time: 10:30 - 12:00

Room: Meeting Room 8

Abstract no.: 55920

DISPLACED INTRA-ARTICULAR CALCANEAL FRACTURES – OPEN REDUCTION AND INTERNAL FIXATION VERSUS PRIMARY SUBTALAR FUSION: A RETROSPECTIVE COHORT STUDY

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INTRODUCTION Displaced intra-articular calcaneal fractures are a challenging injury to treat, and they are fraught with short- and long-term complications. There is a large body of evidence comparing outcomes of non-operative versus operative intervention for these injuries, however for those treated operatively there is scarce evidence comparing open reduction and internal fixation for an acute fracture versus primary subtalar fusion. **AIMS** The aim was to compare outcomes in patients with displaced intra-articular calcaneal fractures who were managed operatively with either open reduction and internal fixation or open reduction and internal fixation with acute subtalar fusion. **METHODS** All patients between 2011 and 2018 who had displaced intra-articular calcaneal fractures treated operatively in Cairns Hospital were included. Chart reviews were conducted and data was recorded including patient demographics, past medical history, occupation, fracture morphology, treatment type, complications, and return to work. **RESULTS** 22 patients were included. 11 (50%) were treated with open reduction and internal fixation, and 11 (50%) were treated with primary subtalar fusion. The latter group were older on average, there were a higher proportion of work-cover cases, and the fractures had a more complex morphology. Complication rates, re-operation rates, and time to return to work were similar between both groups. **CONCLUSIONS** The experience of our institution has been that primary subtalar fusion for displaced intra-articular calcaneal fractures is a safe treatment option and may be a more appropriate option for patients who have more complex fracture morphology, older patients, and work-cover patients. Complication rates, re-operation rates and return-to-work times are comparable with those of open reduction and internal fixation.

Date: 2019-12-06

Session: Foot & Ankle Short Free Papers

Time: 10:30 - 12:00

Room: Meeting Room 8

Abstract no.: 52868

PLATELET RICH PLASMA FOR TREATMENT OF OSTEOCHONDRAL LESIONS OF THE TALUS: A SYSTEMATIC REVIEW OF CLINICAL TRIALS

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Introduction: Osteochondral lesion of the talus (OLT) is common among athletes and is a result of talar cartilage detachment with or without subchondral bone fragmentation after a traumatic event. Current management measures are still inadequate in fully restoring joint function. Recent studies show that the growth factors and bioactive components in platelet rich plasma (PRP) show promise in improving cartilage regeneration. Methods: Literature searches were performed across seven search engines for appropriate studies. Outcomes extracted included ankle function and pain measures. Level of evidence and methodological quality were evaluated using relevant guidelines. Results: Four studies met the eligibility criteria and were systematically appraised. Two studies scored Level 1 and 2 scored Level 2 based on the LOE assessment. MQOE evaluation revealed one study with excellent quality, and three with good quality. Conclusion: PRP improves joint function and reduces pain in patients with OLT regardless of the method of implementation, although better results were observed in patients receiving surgery in addition to PRP. Level of Evidence: Level 2, systematic review of Level 1 and 2 studies.

Date: 2019-12-06

Session: Foot & Ankle Short Free Papers

Time: 10:30 - 12:00

Room: Meeting Room 8

Abstract no.: 54897

AN EVALUATION OF REGIONAL ANAESTHESIA IN PATIENTS UNDERGOING FOREFOOT SURGERY

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Introduction:Image –guided regional blocks of foot and ankle surgeries have shown good results in the management of post-operative pain. Studies have shown foot and ankle surgeries cause moderate postoperative pain that is difficult to control using oral analgesia alone. There is a paucity of studies evaluating the role of regional anesthesia in forefoot surgery as most studies include midfoot and hindfoot surgeries. Methods: Between 2013 to 2017, 100 patients who underwent surgery by a single surgeon for symptomatic hallux valgus at a tertiary hospital were categorized into two groups: 50 patients who received Anaesthesia (either General or Regional) without a peripheral nerve block while the other 50 patients underwent surgery with an additional ultrasound guided popliteal nerve block to control postoperative pain. All the patients had Scarf osteotomy with or without lesser toe procedures to correct their forefoot deformities. Patients were given questionnaires to chart their pain on the Visual Analog Scale (VAS) preoperatively, hourly for the first six hours and at 24 hours postoperatively. Results:89% of the patients were female and the mean age was 57.6 . There was no difference in BMI, Sex and Age between the two groups. The 24 hr Postoperative VAS score for the regional block group was significantly lower than the non-block group (0.66 vs 1.04 p= 0.035). Similarly, the 6 hourly postoperative VAS score for the block group was also lower. Conclusion:Regional blocks should be routinely considered for forefoot surgeries as they are effective in controlling postoperative pain.

Date: 2019-12-06

Session: Foot & Ankle Short Free Papers

Time: 10:30 - 12:00

Room: Meeting Room 8

Abstract no.: 54470

**REGARDLESS THE PREVIOUS PHYSIOTHERAPY ESWT IS EFFECTIVE
IN THE TREATMENT OF PLANTAR FASCIITIS IN THE MIDTERM**

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Extracorporeal shockwave therapy (ESWT) is increasingly used in the treatment of plantar fasciitis especially in runners, but its effectiveness was assessed only in the short term. The aim of the study was to examine the effectiveness of ESWT in the treatment of plantar fasciitis in runners during the 5-year follow-up. Eighty consecutive runners with confirmed plantar fasciitis. Twelve cases of plantar fascia rupture were excluded. The Visual Analogue Scale – VAS, Laitinen pain questionnaire (LQ) and AOFAS was used before therapy, and at 3, 12 months and 5 years follow up. The runners were divided into groups regarding the history of physiotherapy within last 3 months: G0 - 42 with no therapy, G1 - 26 with physiotherapy. Four weekly ESWT sessions with: 1000 shocks / min. at density of 0.25 mJ / mm² with no local anesthesia were applied. From 68 patients included in the study we were able to contact 57 patients (G0 - 36, G1 -21) at the final follow-up. In both groups a statistically significant reduction of pain in VAS and LQ as well as improvement in AOFAS was achieved with no differences between groups at all time points. AOFAS at final follow up was 88.3 for G0, and 91.3 for G1. Faster relief 71% after the first session was in G0 comparing with 30% in G1. ESWT in the treatment of plantar fasciitis in runners showed a positive short and midterm outcomes. Participation in physiotherapeutic procedures prior to ESWT had no influence on results.

Date: 2019-12-06

Session: Tumours Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 53387

LUMIC ENDOPROSTHETIC RECONSTRUCTION AFTER PERIACETABULAR TUMOUR RESECTION: MID-TERM RESULTS

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Introduction: We aimed to analyze mid-term outcomes of LUMIC endoprosthetic reconstruction after periacetabular resection of primary bone sarcomas and carcinoma metastases. **Methods:** We retrospectively reviewed the charts of 17 patients[10 male, 7 female; mean age 47(38-64) years] in whom a LUMIC endoprosthesis[Implantcast] was used to reconstruct a periacetabular defect after internal hemipelvectomy for a pelvic sarcoma or carcinoma metastasis. The tumor was pathologically diagnosed as Ewing's sarcoma in five, chondrosarcoma in nine and bone metastasis from carcinoma in four. Internal hemipelvectomy included type II resection in 12, type II+III in 3, and type I+II/I+II+III in 2 patients. Trivera tube[Implantcast] was used in 13 patients to augment reconstruction and to prevent dislocation. Follow-up periods ranged from 1 to 5 years(mean 28 months). **Results:** Oncological outcomes were died of disease in 7 cases, no evidence of disease in 7, and alive with disease in 3. Implant survival rate was 94%; 1 patient with implant loosening required revision of LUMIC prosthesis at 18 months follow-up. The mean Musculoskeletal Tumor Society functional score was 60%(range, 50-80%). The overall complication rate was 47%(7), 35.2% required re-operation[early mechanical debridement for deep infection(2); open reduction under general anesthesia for dislocation(2); wound revision(1); endoprosthesis revision(1)]. One patient with pelvic obliquity was followed conservatively. **Conclusions:** At mid-term follow-up, Lumic endoprosthesis demonstrated a low rate of mechanical complications and failure. Even though the overall complication rate was high, this reconstruction method provided a stable pelvis with good functional and radiological outcomes in the management of periacetabular malignant tumors.

Date: 2019-12-06

Session: Tumours Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 53673

HIGH EFFICACY OF COMBINATION THERAPY OF MTOR INHIBITOR AND VEGFR INHIBITOR AGAINST DOXORUBICIN RESISTANT OSTEOSARCOMA USING PATIENT-DERIVED ORTHOTOPIC XENOGRAFT MODEL

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Introduction: The efficacy of the combination therapy of mTOR inhibitor and VEGFR inhibitor was reported in advanced renal cell cancer. However, none of the reports have been published in osteosarcoma. A 16-year-old male patient's osteosarcoma tumor was previously implanted orthotopically to establish a patient-derived orthotopic xenograft (PDOX) model. We found that the tumor is resistant to doxorubicin (DOX). In the present study, we evaluated the efficacy of pazopanib (PAZ), everolimus (EVE) and the combination of PAZ and EVE on the DOX resistant osteosarcoma PDOX model. Methods: The osteosarcoma PDOX model was randomized into five groups of seven mice, respectively. Group 1, Control (Ctrl) treated with PBS; Group 2, treated with DOX; Group 3, treated with PAZ; Group 4, treated with EVE; Group 5, treated with PAZ and EVE. Treatment was performed for 2 weeks. Treatment efficacy was evaluated on tumor volume ratio and adverse event was evaluated based on body weight ratio. Results: Tumor volume ratio was the Ctrl group: 4.70 ± 0.58 , DOX group: 3.97 ± 0.53 , PAZ group: 4.16 ± 1.01 , EVE group: 4.28 ± 1.41 , PAZ and EVE group: 1.70 ± 0.30 . PAZ and EVE combination group has significant difference compared to all groups. Body weight ratio was no significant difference among all groups. Conclusion: The combination therapy of PAZ and EVE was the most effective in the osteosarcoma PDOX mouse model. This study demonstrates that the combination therapy of mTOR inhibitor and VEGFR inhibitor has possibility to be therapeutic strategy for DOX resistant osteosarcoma.

Date: 2019-12-06

Session: Tumours Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 53887

NON-VASCULARISED FIBULAR STRUT GRAFTING IN BENIGN LYTIC LESION OF PROXIMAL FEMUR

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Benign bone tumors and tumor-like conditions are very common in proximal femur. The main indications for surgical treatment are lesions with impending fractures or established pathological fractures, or with aggressive or recurrent lesions. Different surgical methods have been described by various researchers. We present our experience of non-vascularized fibular strut graft insertion in benign lytic lesion affecting the proximal femur. Our study group consisted of 32 patients with different lytic lesion of proximal femur (20 males, 12 females) between the age group of 14 to 43 years. Following biopsy confirmation and thorough curettage of the lesion, taking care not to leave any pathological tissue behind, full circumference autogenous fibular strut grafts are harvested. Fibular struts are inserted into the lesions after reaming where ever required. Internal fixation was done using various intra- or extramedullary implants as per necessity. Most of the patients were relieved from pain by 10-14 weeks, grafts showed signs of incorporation by 4 -6 months duration; good bony union and satisfactory function were achieved by 9 months to 15 months. In our series all but one pathological fracture resulted in good bony healing, radiological signs of union was seen by 10-16 weeks, fibular grafts incorporated well with the parent bone, patients were relieved of pain and achieved satisfactory function. Cortical fibular strut-grafting following thorough curettage of the lesion, with or without any internal fixation appears to be a very good procedure for management of benign lytic lesion of proximal femur.

Date: 2019-12-06

Session: Tumours Short Free Papers

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Abstract no.: 53802

OSTEOBLASTOMA IN CHILDREN AND ADOLESCENTS: ANALYSIS OF 57 PATIENTS

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In the CITO, an analysis of the diagnosis and the results of osteoblastoma treatment were carried out in 57 patients aged 4 to 16 years (35 boys and 22 girls). The pathological focus is most often localized in the spine (up to 40%), and less often in the femoral, tibial or humeral bones. Males were affected almost 2 times more often than females. In the clinical picture of osteoblastoma there was no specific symptoms, it has similarities with the clinical picture of osteoid-osteoma, Brodie abscess. The characteristic X-ray signs of osteoblastoma were a focus of osteolytic or mixed destruction with "lumpy" inclusions in sizes from 1.5 to 4 cm. Examination using CT, MRI and angiography techniques made it possible to visualize the focus of destruction, and to make a differential diagnosis with other tumors and inflammatory processes. In all cases, the final clinical diagnosis was verified by morphological methods. The greatest difficulty arose in the differential diagnosis of osteoblastoma with osteosarcoma of a low degree of malignancy. The main difference between osteoblastoma and osteosarcoma was the absence of atypical mitoses in histological specimens. All patients were given surgical treatment; whenever possible, minimally invasive interventions were performed with the installation of CT- anchor. Diagnosis of osteoblastoma should be comprehensive, and treatment depends on the nature of the course of the tumor, its location and prevalence.

Date: 2019-12-06

Session: Tumours Short Free Papers

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Abstract no.: 54927

OUTCOMES OF MINIMALLY INVASIVE SPINE SURGERY FOR SPINAL METASTASIS

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AIMS AND OBJECTIVES: Surgical treatment of spinal metastasis is generally a palliative procedure. Although minimally invasive surgical (MISS) techniques are supposedly less morbid than open techniques. The purpose of the study is to assess the efficacy and outcome of Minimally Invasive Spine Surgery (MISS) in the management of spinal metastases. **MATERIALS AND METHODS :** This is a single institution prospective study of 55 consecutive patients with metastatic spinal disease treated with minimally invasive spinal surgery. Patients presenting with pathological compression fractures and mechanical instability had PPSF / vertebroplasty / kyphoplasty, and those with radiological and/or clinical metastatic spinal cord compression (MSCC) underwent an additional mini-decompression. Data collected included patient demographics, Karnofsky's performance status (KPS), pain scores and neurology. Other data included number and location of involved levels, number of instrumented levels, complications and time for postoperative initiation of adjuvant treatments, Frankel grade following which the outcomes are measured. **RESULTS :** Out of 55 patients, who successfully underwent minimally invasive spinal surgery, in which 65 % had at least 1 Frankel grade neurological improvement with 95% of patients had an improvement in pain relief, and 70% of the patients had improvement of KPS by 10 points, and average length of stay in hospital was around 7 days. **CONCLUSION :** MISS is a safe technique that maintains or improves functional outcome in the vast majority of patients presenting with spinal metastases in terms of providing good palliative care by means of speedy recovery, less morbidity and improved quality of life. **KEYWORDS :** MISS, Metastatic spine disease, Karnofsky, Frankel grade.

Date: 2019-12-06

Session: Tumours Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 54658

THE ILLUMINOSS PHOTODYNAMIC BONE STABILISATION SYSTEM FOR PATHOLOGICAL OSTEOLYSIS AND FRACTURES OF THE HUMERUS: INDICATIONS, ADVANTAGES AND LIMITS IN A SERIES OF 12 PATIENTS AND 13 PROCEDURES AT MID-TERM FOLLOW-UP

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Introduction :The humerus is the most common site for metastatic bone lesions after the spine and the femur. Intramedullary stabilization is considered the mainstay treatment in patients with aggressive histotypes, high risk of fracture and short survival. Locked titanium nails are considered the gold standard of treatment. Nevertheless, they are responsible for CT and MRI artifacts which interfere with postoperative radiotherapy and follow-up. The IlluminOss intramedullary stabilization system does not cause these artifacts, allowing easier and more effective radiotherapy and follow-up. The aim of this study is to review indications, advantages and limitations of its use at mid-term follow-up in patients affected by pathological osteolysis of the humerus. **Methods:**All patients who underwent surgery with the IlluminOss Photodynamic Bone Stabilization System for pathological osteolysis and fractures of the humerus were considered and included in the present series. **Results :**12 patients and 13 procedures were included in the study. All surgeries were performed without intraoperative complications. No early postoperative complications were noted. The wounds healed in all cases. The patients were able to perform chemotherapy after three weeks. All patients referred satisfactory function recovery three months from surgery, with an occasional use of painkillers although the consumption was often related to problems due to metastases in other sites. **Conclusion :**The IlluminOss intramedullary stabilization system provides effective stability and does not present artifacts at postoperative imaging, giving a better chance to perform prompt radiotherapy and chemotherapy. Randomized studies are necessary to verify if reduction of the local progression rate is also associated.

Date: 2019-12-06

Session: Tumours Short Free Papers

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Room: Meeting Room 8

Abstract no.: 54167

50 CASES EXPERIENCE IN TREATMENT ANEURYSMAL BONE CYSTS TREATED BY EXTENDED CURETTAGE, CRYOSURGERY AND BONE GRAFTING

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Background: Aneurysmal bone cyst has a variable radiological appearance and should be considered in the differential diagnosis of any uni-locular or multi-locular radiolucent lesion. No role for conservative management as it is a surgical problem. ABC in the extremities can be managed by curettage and different kind of bone grafts. Recurrence rate is high especially in a young age with open growth plates. The use of liquid nitrogen as an adjuvant measure after extended curettage decrease tumor recurrence rate. Patients and Methods: A case series of 50 patients with aneurysmal bone cyst involving different anatomic locations in the skeleton who evaluated and staged according to Enneking et al. system as 40 active benign and 10 aggressive benign lesions. Extended curettage was achieved in all the patients followed by application of liquid nitrogen for 2 cycles and lastly reconstruction of the cavity by bone graft. The mean age at surgery was 14. 7 years at operation (3 – 35 years). The average follow-up was 48 months (24-72 months). Results The Musculoskeletal tumor Society (MTS) score described by Enneking et al. was used to assess functional outcome. Follow-up the functional score ranges from 70% to 94%, with an average of 86%. One case developed local recurrence and managed by second operation. Two cases developed superficial post-operative wound infection and treated conservatively.

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Abstract no.: 53394

RECURRENCE RATE AFTER TREATMENT OF ANEURYSMAL BONE CYST WITH INTRALESIONAL PROCEDURES AND ADJUVANT THERAPY AT PAEDIATRIC AGE GROUP .

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BACKGROUND: The treatment of surgical aneurysmal bone cyst (ABC) needs a proper intralesional curettage with usage of effective adjuvant therapy to extend the surgical margin to decrease the recurrence rate of the ABC verses to use the marginal or wide resection which result in bone loss and the need for reconstruction which may lead to morbidity for the patients.**METHODS:** We retrospectively analyzed 63 cases of aneurysmal bone cyst affecting pediatric age group (≤14 years old) who presented to our musculoskeletal oncology clinic at the Royal Rehabilitation Center, between January 2011 – December 2016 who underwent surgical treatment by intralesional curettage manual and using power burr to scrap out the bone to remove the cyst lining completely then usage of intraoperative adjuvant phenol as chemical to burn the cyst bed to remove microscopic tumor cells then bone grafting.**Results:** Male to female ratio was 1:1.3; age range 2 years to 14 years. The most frequent location was the femur 20.7% then followed by the tibia 13.8% then the humerus 12.1%. The recurrence rate was 13.8% (8 cases).**CONCLUSION:** The combination of power burr and phenol as a method of treatment of the aneurysmal bone cyst a good method to avoid major surgeries as marginal resection and so no major boney reconstruction and the recurrence rate are generally acceptable as we compared our results with the literature and may cured with revision intralesional procedures .

Date: 2019-12-06

Session: Tumours Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 53389

FREE FIBULA RECONSTRUCTION OF DISTAL TIBIAL OSTEOARTICULAR DEFECTS AFTER SARCOMA SURGERY

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Introduction: We present our experience with a limb sparing surgery using vascularized fibular graft (VFG) following resection of distal tibial bone sarcomas. **Methods:** Between 2007-2016, 12 patients [average age 14(9-21) years] with osteosarcoma and Ewing's sarcoma of the distal tibia underwent osteoarticular resection and biological reconstruction with VFG. All received preoperative and postoperative chemotherapy. Two patients received with Ewing's sarcoma postoperative radiotherapy. Fibular graft was placed in an intercalary fashion between the remaining tibia and talus to achieve arthrodesis of ankle joint. In 2 patients with small defect size, double-barreled VFG was used. Osteocutaneous flap was required in 3 patients. Low-profile locking plates were used for fixation to provide stability. Average follow-up was 62(28-124) months. **Results:** Graft union on bone ends/arthrodesis was achieved in 91.6% and 100% of the patients at 12 and 24 month follow-ups respectively. Graft hypertrophy was observed and progressively increased in 11(91.6%) patients between 12-24 months. In 1 patient with delayed union, fibular graft was hypertrophied between 24-36 months. The average final follow-up Musculoskeletal Tumor Society score was 76%(64-92%). Eleven patients regained almost normal ambulation within 24 months. Overall complication and re-operation rates were 41.6% and 33.3%. Four patients underwent re-operation for delayed union(1), implant failure(1), skin necrosis(1) and wound problem(1). The disease relapsed in 3(25%) patients in terms of distant metastasis, and 11(91.6%) patients were still alive at the time of study. **Conclusions:** Biological reconstruction of osteoarticular distal tibial defects with VFG can achieve ankle arthrodesis to provide permanent stability with good functional results.

Date: 2019-12-06

Session: Tumours Short Free Papers

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Room: Meeting Room 8

Abstract no.: 55135

LOW-DOSE ZOLEDRONATE FOR LOCAL DELIVERY TO PATIENT-DERIVED SPINAL BONE METASTASIS SECONDARY TO LUNG CANCER

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Introduction: Zoledronate (Zol), a high potency third-generation bisphosphonate, has been shown to reduce pain and skeletal-related events in patients with bone metastases secondary to lung cancer. However, the high systemic Zol doses cause several complications ranging from flu-like symptoms to osteonecrosis of the jaw. To overcome these debilitating side effects, we aimed to evaluate the effects of lower Zol doses on lung cancer and lung-induced bone metastases cells over a longer time period, providing an alternative approach to locally deliver Zol at the tumor site. Materials and Methods: Human lung cancer (HCC827) and three lung-induced bone metastasis cells (BMLs) were first treated with Zol at 1, 3 and 10 μ M for 7 days and then assessed for proliferation, migration, invasion and apoptosis. Next, a local delivery method using 3D-printed nanoporous scaffolds loaded with Zol was tested in vitro over 7 days. Statistical analysis was preformed using ANOVA and Tukey post-hoc tests at a 95% confidence level. Results: Low-dose Zol treatment significantly decreased cell proliferation, migration and invasion of HCC827 and BMLs. Also, HCC827 and BMLs revealed higher levels of apoptotic activity under the same treatment conditions. Moreover, Zol-loaded 3D-printed nonporous scaffolds released Zol and significantly inhibited lung and metastatic cell proliferation. Conclusions: Our data exploits the potential of using low Zol doses for longer treatment periods. At the same time, 3D-printed drug-loaded nanoporous scaffolds are a potential clinical therapeutic modality to fill bone defects, block cancer recurrence and decrease systemic side effects.

Date: 2019-12-06

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Room: Meeting Room 8

Abstract no.: 53966

MIXED BONE GRAFTING (AUTOGRAFT + HYDROXYAPATITE CRYSTALS) IN THE MANAGEMENT OF BENIGN LYTIC LESIONS OF BONE : A PROSPECTIVE STUDY

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Introduction: Benign bone tumors form a major part in the vast array of bone tumors and are much more frequent than their malignant counterparts. Traditional treatment involves thorough curettage of the cavity followed by bone grafting. The aim of our study is to evaluate the role of autogenous bone graft mixed with hydroxyapatite crystals, in the management of benign lytic lesions of bone. Materials & Methods :15 cases of benign lytic lesions of bone were managed by extended curettage and mixed bone grafting (autogenous+hydroxyapatite). Inclusion criteria were benign lytic lesions of bone with or without pathological fractures. The exclusion criteria were active infection, very large tumor size, diagnosed or suspected malignant lesion and traumatic bone loss. Functional outcome was assessed during followups and serial radiographs were taken for evaluation of graft incorporation by criterion of Irwin et al. Results : Amongst the 15 cases managed by mixed bone grafting, 11 cases were in stage III and 4 cases in Stage II at the time of final follow up. Restriction of motion was the commonest complication in mixed bone graft cases (n=4). Discharging sinus was observed in 1 patient. 67% of patients of mixed bone grafting had an excellent outcome, 26% had a good outcome and 7% fair outcome. Conclusion :Mixed bone graft (autogenous bone graft mixed with hydroxyapatite crystals) is of immense importance because it provides relatively larger amount of graft with lesser morbidity. Also the basic advantages of osteoconduction, osteoinduction as well as osteogenesis are incorporated in mixed bone graft.

Date: 2019-12-06

Session: Tumours Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 53256

LOCAL RECURRENCE IN BONE SARCOMA TREATMENT AND RESULTS IN 55 CASES

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Introduction: The purpose of this study is to evaluate the risk of local recurrence and identify factors of post recurrence survival in bone sarcoma local recurrence. Methods: In all 610 bone sarcomas between 2005 and 2017 were analysed . Fifty five patients (9%) had developed local recurrence after conservative surgery. A median follow-up was 32 months . The median age of patients was 27,56 years . Histologically osteosarcoma was prevalent , 30 cases (60%) , followed by chondrosarcoma 12 cases (21,8%) and Ewing sarcoma 8 cases (14,5%). Treatment was by reexcision in 18 patients and by amputation in 35 patients. Results : After the patients had a complete tumor resection remission, a local recurrence occurred with a median interval of 9 months . 28 patients (53%) had metastases . At the latest follow-up 20 patients died of their cancer disease (36%). Overall survival after local recurrence was 67% at 2 years and 55% at 5 years. The best 5 years survival was correlated with absence of metastases , reexcision and chondrosarcoma . Conclusion : The only prognostic factors were the presence of metastases , small size of the local recurrence and histological type of bone sarcoma . Increased risk of local recurrence was strongly correlated with positive margins of resection .

Date: 2019-12-06

Session: Tumours Short Free Papers

Time: 14:00 - 15:30

Room: Meeting Room 8

Abstract no.: 54493

GIANT CELL TUMOR WITH SECONDARY ANEURYSMAL BONE CYST OF THE PATELLA: A CASE REPORT

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A 15-year-old girl presented to us with pain and swelling on anterior aspect of right knee since one year. The radiological evaluation with x-rays and MRI were suggestive of a benign aggressive lesion of right patella with cortical breach. Core needle biopsy of the lesion revealed it to be a Giant cell tumour. She was treated with total patellectomy and end to end repair of quadriceps to patellar tendon. The histopathological report of whole specimen revealed it to be GCT with secondary ABC. After 24 months, she was asymptomatic and there was no evidence of local recurrence or distal metastasis. An extensive review of literature revealed only four cases of combined GCT with secondary ABC. Though rare, GCT with secondary ABC of patella should be kept as a differential diagnosis for anterior knee pain and swelling in young patients and diagnosis is solely based on histopathological findings. It is imperative to obtain a precise tissue diagnosis in the preoperative period to plan appropriate treatment.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 54253

COMPARING CLINICAL OUTCOME WITH THE PATIENT-REPORTED OUTCOME AND THEIR RELATION WITH PATIENT SATISFACTION FOLLOWING PRIMARY ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION.

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INTRODUCTION: Anterior cruciate ligament (ACL) reconstructions are common among young active adults especially those involved in sporting activities. There are many subjective scorings available for determining the functional outcome of ACL reconstruction and also objective clinical tests. Patient-reported outcomes (PRO) are there to assess knee function, quality of life, psychological factors, and return to sports. The aim of the study: To know patient satisfaction following ACL reconstruction using the hamstring graft and how various PRO are related to patient satisfaction. We also tried to find out which among the various PRO actually determine patient satisfaction. We also compared PRO with clinical criteria in determining patient satisfaction. **MATERIALS AND METHODS:** 49 patients were included in the study with 39 males and 10 females who had a complete ACL tear and underwent arthroscopic ACL reconstruction using hamstring graft. Pre and Postoperative subjective scores and objective tests were done and patient satisfaction was determined at 3, 6 and 9 months. **Results:** Objective test at 3, 6 and 9 months and their relation to patient satisfaction showed that anterior drawer test was significantly associated at 3 months and pivot shift significantly associated with patient satisfaction at 9 months. Among the subjective scores (PRO) different scores showed significance at different time duration after surgery. **Conclusion:** objective clinical tests results are not enough in assessing patient satisfaction. Subjective scores assessing psychological factors are found to be more helpful in determining the final outcome and return to sports activity after ACL reconstruction.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 54231

CAN A BIOACTIVE GLASS CONTAINING SCREW BE USED FOR ANTERIOR CRUCIATE LIGAMENT GRAFT FIXATION? PROSPECTIVE STUDY ON 108 PATIENTS.

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Materials used in the manufacture of bioabsorbable interference screws for fixation and reconstruction of anterior cruciate ligaments are polymers of lactic/glycolic acid and composite materials, which have risks of intolerance or prolonged bone incorporation. The aim was to study the behavior of a biocomposite based on bioactive glass and a lactic acid copolymer, stimulating bone regeneration. A continuous and prospective series of 108 anterior ligamentoplasties was included. A patellar tendon autograft was used in 53 patients; the hamstring tendons in 55. All groups were evaluated at 3 and 12 months. At final revision, all the patients, except 2, had a laximetry less than or equal to 3 mm compared to the healthy knee. Average IKDC score was 88 and Lysholm at 94. 62% of patients resumed normal sport activities. Clinical tolerance of the screw was good: no cyst, only 2 patients complaining of pain at tunnel entrance. 4% of patients had radiographic enlargement of the tibial tunnel and only 1 patient had lysis (without any symptomatology). Bone regeneration was visible by the third month (61% fully filled tibial tunnels and 37% partially) and at one year 96% of patients had complete tibial tunnel filling. The clinical results obtained are comparable to the literature and the radiological data confirm that the active bioactive glass allows for a satisfactory early fixation of the grafts based on radiologic evidences. Bone reconstruction is rapid with radiological normalization of visible bone tissue from the 3rd postoperative month. Thus, the bioactive material is a valid option.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 54677

CORTICOSTEROID INJECTIONS IN ADHESIVE CAPSULITIS OF SHOULDER: A SYSTEMATIC REVIEW OF RANDOMISED CLINICAL TRIALS

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OBJECTIVES: To evaluate the role, efficacy, dosage, safety and site of corticosteroid (CS) injections in Adhesive Capsulitis or Frozen shoulder. **METHODS:** A systematic literature search was conducted on 27th March 2019 using PubMed, Cochrane Central Register of Controlled Trials, and Scopus databases for randomized control trials (RCTs) evaluating role of CS injections in Adhesive Capsulitis of shoulder joint in last 10 years. All studies were qualitatively analyzed using Modified Coleman Methodology Score (average, 83.9/100). **RESULTS:** Twelve RCTs (full articles) evaluating 1096 patients (shoulders) were included, out of these five studies compared different sites of CS injections, four compared CS injections versus Non-steroidal anti-inflammatory drugs (NSAIDs), two studies compared different (low and high) dosages of CS injections, and one study compared CS and Hyaluronate injections. **CONCLUSIONS:** Low (20 mg) and high (40 mg) dosage of intra-articular triamcinolone showed no difference, while Gleno-humeral and Sub-acromial CS injections had similar efficacy. Corticosteroid injections are generally safe. No difference was seen between CS and Hyaluronate injections, and oral Non-steroidal anti-inflammatory drugs at 24 weeks. We may consider corticosteroid injections especially in the early stages, when pain is the predominant presentation. Level of Evidence: Level I, systematic review of Level I studies.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 54496

LESS THAN 9.5MM COROCO HUMERAL DISTANCE PREDICTS FOR SUBSCAPULARIS TEAR

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Introduction: Diagnosis of subscapularis-tendon (SSC) lesions on magnetic resonance imaging (MRI) can be challenging. A small coracohumeral distance (CHD) can be associated with SSC tears. This study was designed to answer the following research hypothesis: A specific threshold value for CHD scans can predict SSC tears on MRI scans. Methods: This retrospective study included 172 consecutive shoulders that underwent arthroscopic surgery for rotator-cuff tear (RCT) or glenohumeral instability (GI). Diagnostic arthroscopy confirmed SSC tear in 62 cases (36.0%, test-group a), RCT tears other than SSC in 71 cases (41.3%, control-group b) and GI without any RCT in 39 cases (22.7%, zero-sample-group c). All shoulders had a preoperative MRI. Minimum CHD was measured on axial fat suppressed or T2-weighted sequences. Receiver Operating Characteristics (ROC)- analysis was used to determine the threshold value for CHD and sensitivity and specificity was calculated. Results: CHD measurement had a good inter observer reliability (ICC 0.799). Mean CHD was highly significantly ($p < 0.001$) less for test-group a (mean 7.3mm, standard deviation (SD) ± 2.2) compared to control-group b (mean 11.1mm, SD ± 2.3) or zero-sample-group c (mean 13.6mm, SD ± 2.9). A threshold value of CHD < 9.5 mm had a sensitivity of 78.5—94.7% and a specificity of 83.6% to predict SSC tears. Conclusion: A CHD < 9.5 mm on MRI is a valuable tool to diagnose SSC tears.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 54136

ALTERNATIONS IN SERRATUS ANTERIOR ELECTROMYOGRAPHIC ACTIVITY IN PREADOLESCENT SWIMMERS WITH A HISTORY OF SHOULDER PAIN

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Introduction: The presence of shoulder pain among swimmers is a well - known fact among researchers interested in clinical and biomechanical issues of shoulder overload injuries. Musculoskeletal problems connected with the demands of swimming trainings are known as swimmer's shoulder and are characterized by such symptoms as: pain in anterior aspect of the shoulder, shoulder muscles dysfunctions, lack of neuromuscular control and posture disorders. Aim: The objective of this study was to search for the epidemiology of shoulder pain in preadolescent swimmers and to investigate whether there is a difference between the electromyographic activity of two important muscles involved in proper shoulder functioning – upper trapezius and serratus anterior - in two groups: swimmers with a history of shoulder pain and these, who have never reported any problems with their shoulders. Methods: Six competitors with reported shoulder pain in their training history were compared to sixteen members of the same team who haven't suffered the pain yet. After the functional examination of the shoulder region, the electromyographic signal for upper trapezius and serratus anterior was registered during bilateral shoulder elevation in the scapular plane. Results: Increased activity of the serratus anterior muscle, especially of the non – dominant arm, was found in the symptomatic group (median for symptomatic group = 81.04 μ V; median for asymptomatic group = 33.11 μ V; p – value = 0,0245 Conclusions: Previous episodes of shoulder pain may result in the long-lasting adaptations in muscles function to prevent swimmers from recurring shoulder dysfunctions.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 54762

DOES VIRTUAL REALITY SIMULATION HAVE A ROLE IN TRAINING TRAUMA AND ORTHOPAEDIC SURGEONS?

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Background:Surgical simulation has become increasingly prevalent and is relevant for orthopaedic trainees. The traditional method for arthroscopic training relies on appropriate clinical cases, costs and has implications for patient safety. The Virtamed ArthroS, released December 2017, is the world's first high-fidelity simulator for ankle arthroscopy. Primary aim of study was to determine the utility of this arthroscopic simulator for training based on level of training and experience. Methods:Volunteers recruited from each training level; medical students through to consultant and performed five arthroscopic procedures under control conditions. A 10-minute demonstration on the setup and operation of the simulator was given. Performance evaluated by obtaining predefined metrics for each procedure within the simulator with photo and video acquisition. Questionnaire administered to evaluate previous arthroscopic/video gaming experience, levels of stress, usefulness and authenticity. Results:Each arm consisted of a minimum of 5 participants. All groups demonstrated improved times, economy and safety within 20 minutes, reporting high levels of satisfaction and usefulness. All participants recommend simulated training prior to patient exposure. Significant reductions in camera/hook path distance alongside articular cartilage damage particularly within more junior trainees and those with no prior arthroscopic experience was demonstrated. Conclusion:The Virtamed ArthroS ankle module provides an authentic simulated experience for all levels of training with demonstrable performance and anatomy knowledge improvements alongside reductions in adverse events. With reduced working times and increased indicative arthroscopy numbers for completion of training the real-world benefits for orthopaedic trainees is promising. Further work required on transferability of acquired skills into clinical practice.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 52831

ANTHROPOMETRIC CORRELATION WITH HAMSTRING GRAFT SIZE IN ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION AMONG MALE PATIENTS: A PROSPECTIVE COHORT STUDY

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Abstract Background/introduction: Pre-operative knowledge of hamstring graft length and diameter for ACL reconstruction is of clinical importance and can assist in making appropriate and informed decisions about graft choice, which may lead to better outcomes. Our aim was to investigate correlations between anthropometric measurements such as height, weight, Body Mass Index (BMI), thigh length, thigh circumference and quadrupled hamstring autograft. **Methods:** The anthropometric data of 50 adult male patients, who underwent primary ACL reconstruction using quadruple hamstring autograft, were collected prospectively. Other variable such as using, age, height, weight, abdominal girth, thigh length and circumference was recorded. Data was analysed using Pearson's correlation test, while multiple logistic regressions analysis was used to investigate correlation not detected by Pearson's correlation test and to eliminate cofounder effects. **Results:** Patient's height demonstrated correlation with gracilis ($r=0.464$) and semitendinosus graft length ($r=0.541$). Thigh length showed correlation with gracilis ($r=0.456$) and semitendinosus graft length ($r=0.578$). Patient's height had correlation only with semitendinosus tendon length. Patient's age was the only independent factor that had positive correlation with ACL hamstring graft diameter ($r=0.412$). Multiple regression analysis showed abdominal girth to correlate with gracilis ($p=0.04$) and semitendinosus ($p=0.006$) graft thickness. **Conclusion:** Anthropometric parameters may serve as a guide to predict hamstring length and diameter pre-operatively for ACL reconstruction procedure in males. Which may be of great help for the surgeon to guide him in selection of the graft type.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 53874

INJURIES IN UNDERWATER RUGBY

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DUDDA¹

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Introduction: Underwater rugby is an internationally played, body-focused team sport at a depth of 3.5 - 5 meters. It is played without breathing aids with the help of fins and snorkel masks. Currently there are only limited data on the risk of injury, as well as the injury pattern of this diving sport. Methods: Underwater rugby players were questioned retrospectively at the European Championships 2017 and the International Champions Cup 2017 by means of an 8-page questionnaire. Results: Of the 181 players 78.5% were internationally active. The average career duration was 11.9 ± 8.8 years with an exposure time of 910.1 ± 805.1 hours and 6.4 ± 3.1 hours of training. An average of 75.2 ± 183.8 injuries per player were recorded. There was no significant gender difference with respect to the total number of injuries. "Player contact" was named the most common cause of injury (39.2%), followed by "defensive action" (21.0%) and "contact with equipment" (21.0%). The injuries mainly affected the regions head (45.3%, mean: 41.7 ± 163.7), fingers (22.8%, mean: 21.0 ± 62.2) and spine (11.2%, Mean: 10.3 ± 24.9). Most common injuries were bruises (46.8%) and distorsions (30.8%). 127 fractures occurred (fingers 36%, nose 24%, ankle 17%, wrist 15%, ribs 15%). Conclusion: In conclusion, it is the first epidemiological survey of underwater rugby injuries with a predominance of mild musculoskeletal injuries. The risk of injury in underwater rugby is low in comparison to other ball sports, but remarkably high for diving sports.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 54494

INCIDENCE OF VENOUS THROMBOEMBOLISM POST HIP ARTHROSCOPY

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INTRODUCTION: There is no consensus on the routine use of chemical prophylaxis for Deep Vein Thrombosis after hip arthroscopy. In a systematic review on VTE prophylaxis after hip arthroscopy by Haldane et al in 2018, the incidence of VTE was reported as 2% when VTE prophylaxis was used ,compared to 2.3% when VTE prophylaxis was not used. **Method:**This retrospective study was conducted at Whiston hospital, UK and all patients who had a hip arthroscopy done from September 2013 to February 2018 were included.The hospital data base was checked for any investigations that the patient had during their post-operative period for a duration of 2 months.**Results:**A total of 123 patients had hip arthroscopy done during the duration of 4.5 years. The average age of the patients was 34.7 years and the M:F ratio was 2:1. Chemical prophylaxis was used in 35 patients as this was the initial protocol which was then revised in 2014.None of the remaining patients had any prophylaxis after 2014.. None of the patients had any symptoms of VTE post arthroscopy and hence no diagnostic VTE scan was indicated in any patient.**Conclusion:**There was no reported incidence of VTE in any of the patients post hip arthroscopy at our hospital and the current practice is safe. Limitations of the study was that some patients may have had asymptomatic below knee VTE as no routine postoperative doppler scans were done. Thus, the recommendation is to use prophylaxis only in high risk groups such as prior thromboembolic event, obesity, OCP.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 54423

AVOID POSTOPERATIVE BRACING, REDUCE ACL RERUPTURE RATES

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Introduction:It has been quoted that the graft is more prone to injury in the early stages of ligamentization between 3 months and 6 months when the muscles are weak and compliance with post-op protocol is waning. Purpose of this study was to evaluate the functional outcome of avoiding postoperative bracing following ACL reconstruction and early enhanced recovery protocol on the reinjuries of graft.**Methods:**32 consecutive patients who underwent arthroscopic ACL reconstruction by a single surgeon in the same specialist centre between October 2015 and May 2017 were included in the study.All patients were educated regarding rehabilitation before the index surgery and preoperative quadriceps exercises had been initiated. Rehabilitation was undertaken as per a standard protocol with emphasis on early mobilization and knee bending. No brace was used. Patients were followed up between 3 months and 1 year. Lysholm knee scores were evaluated at 6 months and 12 months post-operatively. **Results:**No failures were noted (failure defined as instability, stiffness or persistent pain). The average Lysholm knee score at six months was 88 and at twelve months period was 91.No statistical significance($P>0.00001$) was noted in the scores between braced(other studies) and unbraced at one year. **Conclusion:**ACL rehabilitation without a knee brace can indirectly prevent re-rupture and is a cheaper as well as a safer method with better outcomes.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 53675

APERTURE VS SUSPENSORY DEVICES FOR THE TIBIAL SIDE FIXATION IN SINGLE BUNDLE ANATOMIC ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION USING QUADRUPLED HAMSTRING TENDON GRAFT

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Introduction: Arthroscopic Anterior cruciate ligament (ACL) reconstruction is one of the commonest ligament reconstruction procedure in orthopaedic surgery. Material and methods: 35 patients who underwent ACL reconstruction using suspensory button device for femoral fixation and two different methods of tibial fixation (attachable button suspensory device [ABS] vs bio absorbable interference screw) with quadrupled hamstring graft from November 2017 to March 2018 were followed up. Demographic characteristics, injury characteristics, surgical variables and short term outcomes utilizing tegner lysholm knee score, visual analogue pain score and knee range of motion (ROM) was assessed sequentially. Results: Mean age of the cohort was 25.86 years with males predominating (88.6%). Right knee was predominantly injured (54.3%). Mean duration from injury to surgery was 14.4 months. On MRI 77% had complete ACL injury vs 91.4% demonstrated arthroscopically and medial meniscus was involved in 25.7%. Graft utilized was semitendinosus (71.4%) and tibial implant was bio screw in 62.9% and rest being ABS. Mean values for femoral tunnel length, graft diameter, graft length were 42.35mm, 8.53mm, 65.74mm respectively. Lysholm knee score and visual analogue pain score improvement at 3 months was statically significant ($p < 0.005$) but there was no statistically significant difference between the tibial implant used vs knee score and pain score improvement. ROM improvement was found to be 90-120 degree at 6 months in all. Discussion: ACL reconstruction utilizing two different tibial fixation methods didn't show a significant difference in outcome between them though independently both techniques showed improved outcomes compared to pre operative state.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 53292

DYNAMIC INTRALIGAMENTARY STABILISATION FOR PRIMARY REPAIR OF ACUTE ANTERIOR CRUCIATE LIGAMENT RUPTURE: EARLY RESULTS FROM THE EAST OF ENGLAND

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Introduction: Primary repair of an acute anterior cruciate ligament (ACL) rupture using dynamic intraligamentary stabilisation (DIS) has been proposed as an alternative to conventional ACL reconstruction. It supports ACL healing, providing a stable scaffold and, in theory, preserving the proprioceptive function of the native ACL. Most existing studies are from designer centres. We document outcomes from an independent centre. Methods: Retrospective review of 27 consecutive patients (median age 28, range 17–52 years, 59% male) who underwent acute primary ACL repair with DIS at 17 (11–29) days from injury between 2016 and 2019. We document repair failures and functional outcomes at ≥8 months. Results: Three patients (11%) required revision ACL reconstruction, two due to a failed repair and one due to a traumatic re-rupture. Of 13 patients at ≥8 months and median 18 (8–28) month follow up, excluding the revised cases above, two had a flexion deficit of 10 degrees and one had 1+ Pivot shift test but negative Lachman test. Mean single hop and triple cross over tests were 97% (90–100%) and 98% (90–100%), respectively. 10 (77%) patients resumed their original sport. Mean Tegner activity level scores were 7.4 (5–9) pre-injury and 6.5 (3–9) at follow up. Lysholm knee, IKDC and VAS satisfaction scores were 93.2 (75–100), 91.9 (72.4–96.6) and 8.8 (7–10), respectively. Conclusion: Primary early ACL repair with DIS shows promising initial results. These are reproducible in non-designer independent centres with experienced ACL surgeons, a rapid knee injury referral pathway, appropriate patient selection and focused rehabilitation regimen.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 52870

CLINICAL OUTCOME AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION USING HAMSTRING TENDON AUTOGRAFT: A PROSPECTIVE STUDY WITH 6 MONTHS FOLLOW-UP

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Introduction: The goal of our study is to show that after single bundle anatomic ACL reconstruction technique using hamstring tendon autograft (quadrupled semitendinosus and gracilis tendons), there is excellent objective knee stability and return of flexor muscles strength. Methods: 65 patients aged 13 – 46 entered our study and were operated with single bundle ACL reconstruction technique using hamstring tendon autograft. The operation and postoperative protocol were standardized. Patients were evaluated at 3 and 6 months postoperatively with clinical examination, KT-1000 measurements, functional scores (Balance index, Hop index, IKDC, isokinetic testing) and subjective questionnaire (Lysholm score, Tegner score). Results: 65 patients were evaluated 3 and 6 months postoperatively. Lachman test was negative in 92% and pivot-shift test was negative in 89% of patients at 6 months follow-up. KT-1000 stability testing revealed difference of $1,05 \text{ mm} \pm 2,83$. At final follow-up overall IKDC evaluation grade A and B were obtained in 96% of patients. The mean Lysholm score, 6 months postoperative was 94. There was no statistical significant difference in the angle of peak torque in flexion at $60^\circ/\text{s}$ at 6 months follow-up. Conclusion: Our study shows that strength of knee flexion six months after harvesting both hamstring tendons returns. However, there is still statistically significant difference in knee flexion peak torque, when comparing the operative and non-operative side. Single bundle anatomic ACL reconstruction gives excellent knee stability and good clinical results with normal knee range of motion and returning to appropriate level of activity.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 53223

DO PATIENTS WITH A FROZEN SHOULDER AND CONCOMITANT PARTIAL ROTATOR CUFF TEAR BENEFIT FROM ROTATOR CUFF REPAIR?

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Patients with frozen shoulder who fail conservative therapy traditionally undergo an arthroscopic capsular release. Some patients may also have a concomitant partial rotator cuff tear. We aim to compare if patients who undergo concomitant rotator cuff repair do any better than patients who undergo capsular release alone. We reviewed prospectively collected data of patients who underwent surgical treatment between 2012 and 2016. Patients were included if they had a frozen shoulder and a concomitant partial rotator cuff tear. Functional scores were collected pre-operatively and at three, six and twelve months after surgery. There were 15 patients who underwent capsular release alone (CR group) and 18 patients who had a capsular release with concomitant rotator cuff repair (RCR group). Preoperatively, there were no significant differences in patient demographics and function but patients in the CR group had significantly greater pain (Visual Analogue Score (VAS) CR Group 8.05 vs RCR Group 5.53, $p=0.005$). Post-operatively, there were no significant differences in range of motion or clinical outcome scores at three and six months. At one year, patients in the RCR group had significantly better internal rotation, lesser pain (CR Group VAS 4.20 vs RCR Group VAS 0.54, $p=0.002$), better Constant Shoulder Score (CR Group 53.9 vs RCR Group 73.1, $p=0.0018$) and better University of California Los Angeles Shoulder Score (CR group = 23.3 vs RCR group 31.0, $p=0.004$). We conclude that patients with frozen shoulder and concomitant partial rotator cuff tear do benefit from concomitant rotator cuff repair with capsular release.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 55063

INTERNAL BRACING OF QUADRICEPS TENDON RUPTURES: A NOVEL TECHNIQUE FOR PRIMARY REPAIR.

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Introduction Traditional quadriceps tendon repair techniques involve length immobilisation. We describe a novel technique allowing early mobilisation. **Surgical Technique and rehabilitation:** Midline incision centred over the superior patella. A Krakow suture with Fiberwire or Ethibond harnesses the tendon proximal to the tear site. A 2mm fibertape is then also weaved through the proximal tendon using a mayo needle; with at least 4 suture loops through the healthy tendon, more proximal to the first Krakow suture. The two free ends of fibertape and two free ends of the primary suture are docked into the patella in pairs with two bioabsorbable swivelocks. Patients begin immediate quadriceps activation with straight leg raises. They are allowed to immediately fully weight-bear in a knee brace. At 6 weeks the knee brace is discarded and patients return to unassisted ambulation. **Results:** 17 repairs were performed in a consecutive series of patients by a single surgeon. Mean aged was 54 years (range 42-79 years). All patients were subject to the same early rehabilitation protocol. At their 6 month review all patients had returned to their pre-morbid activities, with no restrictions in range of motion. After a mean follow-up of 19 months (7-42) months there have been no instances of tendon re-rupture. **Conclusions:** Internal bracing of a ruptured quadriceps tendon using fibertape and swivelock fixation is a safe and reproducible technique which permits immediate post-operative mobilisation.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 54374

EPIDEMIOLOGY OF ANTERIOR CRUCIATE LIGAMENT AND MENISCAL INJURIES AT A TERTIARY CARE CENTRE IN WESTERN INDIA.

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Joint injuries, most commonly in the knee joint, make a significant percentage of musculoskeletal injuries in the athletes and in population. These injuries often require surgery and a long period of rehabilitation; sometimes they lead to permanent disability. Very few studies in India have focused on the epidemiology of knee injuries to formulate guidelines for the prevention of these injuries and their early detection for better management. In this study, we have studied the demographic features of 383 patients who came to the outpatient department of a tertiary care centre in Western India with clinical diagnosis of anterior cruciate ligament and/or meniscal injuries. The operated patients were followed up at 3, 6, 9 and 12 months to assess clinical improvement. ACL and meniscal injuries were found maximum in the age group of 18 to 25 years. The injuries were more common in males. The mean duration between injury and presentation to tertiary care centre was 6.44 months. 21.67 percent of the patients were athletes. ACL and meniscal injuries in athletes were most commonly due to non-contact injury. Football, cricket and kabaddi were the sports which were commonly implicated. Arthroscopic management was performed for 53 percent patients and 95.07 percent operated patients showed improvement according to Lysholm knee scoring scale.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 54179

ARTHROSCOPIC MANAGEMENT OF GIANT SYNOVIAL OSTEOCHONDROMATOSIS OF THE KNEE JOINT

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Synovial chondromatosis associated, intra-articular loose bodies are usually small in size. Giant intra-articular loose bodies are rare. We present the case of a 30-year young active man with giant intra-articular loose bodies from synovial chondromatosis located in the suprapatellar pouch, under the patella, in the intercondylar fossa and in the posterior compartment of the knee joint. He was treated successfully with arthroscopic removal of the loose bodies. The largest loose body was more than 5 cm in size. Synovial chondromatosis is a benign, slow growing tumorous proliferation of the synovium, characterized by numerous, small intra-articular loose bodies that are usually small in size. Giant intra-articular loose bodies are uncommon and can present a surgical challenge to the treating orthopaedician. We present the case of giant osteochondromatosis successfully managed with arthroscopy. Giant intra-articular loose bodies should be considered when treating patients with synovial chondromatosis. Arthroscopy confirms the diagnosis, allows the thorough examination of the knee joint, and subsequent excision of small or medium size attached synovial nodules or intra-articular loose bodies. Arthrotomy may be needed to excise giant loose bodies. The case is presented for awareness regarding minimally invasive treatment options for the management of such large intra-articular loose bodies, thereby allowing early rehabilitation.

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Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 53569

OUTCOMES OF SINGLE BUNDLE ANATOMIC ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION USING QUADRUPLED HAMSTRING TENDON GRAFT, LENGTH ADJUSTABLE CORTICAL SUSPENSORY BUTTON DEVICES AND BIO ABSORBABLE INTERFERENCE SCREWS FOR FEMORAL AND TIBIAL FIXATION

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Introduction: Arthroscopic Anterior cruciate ligament (ACL) reconstruction is one of the commonest ligament reconstruction procedure in orthopaedic surgery yet outcome studies in our context are rather sparse. Methods: 35 patients who underwent ACL reconstruction using suspensory button device for femoral fixation and two different methods of tibial fixation (attachable button suspensory device [ABS] vs bio absorbable interference screw) with quadrupled hamstring graft from November 2017 to March 2018 were followed up. Demographic characteristics, injury characteristics, surgical variables and short term outcomes utilizing tegner lysholm knee score, visual analogue pain score and knee range of motion (ROM) was assessed sequentially. Results: Mean age of the cohort was 25.86 years with males predominating (88.6%). Right knee was predominantly injured (54.3%). Mean duration from injury to surgery was 14.4 months. On MRI 77% had complete ACL injury vs 91.4% demonstrated arthroscopically and medial meniscus was involved in 25.7%. Graft utilized was semitendinosus (71.4%) and tibial implant was bio screw in 62.9% and rest being ABS. Mean values for femoral tunnel length, graft diameter, graft length were 42.35mm, 8.53mm, 65.74mm respectively. Lysholm knee score and visual analogue pain score improvement at 3 months was statically significant ($p < 0.005$) ROM improvement was found to be 90-120 degree at 3 months in all. Discussion: ACL reconstruction utilizing the above technique showed significantly improved short term outcome measures. Further follow up data will follow.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 53445

ARTHROSCOPIC 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 built 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.

Date: 2019-12-06

Session: Sports Medicine Short Free Papers 2

Time: 16:00 - 17:30

Room: Meeting Room 8

Abstract no.: 53556

MENISCAL ROOT REPAIR

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The interest with meniscal root injury, diagnosis and repair had greatly increased, since Pagnan described its anatomy and mechanical importance. The incidence of meniscal root tear is markedly increasing, now it is called the silent epidemic. Early repair techniques were performed through accessory postero-medial portal, however with evolution of new instruments arthroscopic trans-osseous repair became the method of choice nowadays. Over the last 2 years, 15 cases had been done in our institute. They were operated under spinal anaesthesia, in supine position with flexed knee. Standard antero-lateral and anteromedial portals have been used; pie crusting of MCL had been done as well as limited reversed notchplasty. Tear was identified and debrided. No 0 fiberwire passed through the root using knee scorpion (arthrix) and retrieved through medial portal. Drilling at the tibial foot-print using special guide, sutures are pulled out through the tunnel and fixed over the medial cortex of the tibia where it is tied over a screw and washer. Patients were kept in a protected weight bearing for 6 weeks. All subjective knee scores had obviously improved in all cases with delayed progression of arthritic changes. Larger number of cases as well as longer follow-up is recommended to have clear indications and even contraindications for repair of such injury

Date: 2019-12-07

Session: Spine Short Free Papers

Time: 10:30 - 12:00

Room: Junior Ballroom B

Abstract no.: 52832

CLINICAL RELEVANCE OF CEMENT LEAKAGE AFTER KYPHOPLASTY TECHNIQUES AND THE DIAGNOSTIC ACCURACY OF FLUOROSCOPY, RADIOGRAPHY AND COMPUTED TOMOGRAPHY IN DETECTING CEMENT LEAKAGE IN KYPHOPLASTY

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Introduction: Cement leakage is regarded as a typical complication during kyphoplasty of vertebral fractures. Recent methods, such as Radiofrequency Kyphoplasty (RFK), were compared with Balloon Kyphoplasty (BK) in terms of therapeutic success and complication rates. The study compared both techniques with respect to leakage rates, associated clinical complications, improvement of intraoperative visualization of cement application and verification of the best postoperative imaging for cement leakages. Patients and Methods: After prospective randomization, 100 patients (162 vertebral bodies) were treated by BK/RFK. Evaluated parameters were "localization of cement leakage" and "clinical relevance". In a retrospective study the rates of cement leakages detected by intraoperative fluoroscopy, postoperative radiography and computed tomography (CT) were evaluated. Results: Cement leakages were found in 60.8% of BK and 63.9% of RFK (p=0.420) without significant difference between both groups. Only two cases with intravascular leakage underwent interventional endovascular salvage. Compared with CT, intraoperative fluoroscopy detected intradiscal leakage in 75%, epidural in 21%, extravertebral in 31% and intravascular in 51%. The radiography compared with CT had a high sensitivity for detecting intradiscal (82%) and intravascular (70%), but a lower sensitivity in identifying epidural (42 %) and extravertebral (50%) leakages. Therefore, the CT scan convinced overall in detecting location and accuracy. Conclusion: Both kyphoplasty techniques had the same high rates of cement leakage with rare clinical complications. CT convinced with the highest sensitivity/specificity, especially in detecting epidural, extravertebral and intravascular cement leakages. In order to receive the best accuracy only CT satisfies the demand of a complete information.

Date: 2019-12-07

Session: Spine Short Free Papers

Time: 10:30 - 12:00

Room: Junior Ballroom B

Abstract no.: 54943

BONE CEMENT INTERGRADE BETTER IN EARLIER VERTEBROPLASTY AND MAY LEAD TO LESS ADJACENT FRACTURES

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Percutaneous vertebroplasty (PVP) is now widely used for treatment of painful osteoporotic vertebral compression fracture (OVCFs). Bone cement distribution pattern(BCDP) in the vertebral body is found to be related to recompression and adjacent fracture after PVP. The influences of the timing of PVP on BCDP in vertebral body and adjacent fractures were rarely discussed. We retrospectively reviewed patients with OVCFs received PVP between Oct, 2016 and Feb, 2018 and met the inclusion criteria . All of them received compute tomography (CT) evaluation after PVP and were followed at least one year. They were divided into two groups, early PVP (EPVP) and late PVP (LPVP) groups. The EPVP group included patients received PVP within 6 weeks of fracture event and the LPVP group involved patients received PVP 42 days later. BCDP were evaluated by two independent observers on standardized images, which were adjusted by using software from axial cut of the CT images of each cemented vertebra. The BCDP was classified into mass pattern and intergrading pattern. Fifty-seven vertebral fractures meet the criteria and were analyzed. There were more intergrading pattern cases (87.2%) in EPVP group than in LPVP group (12.8%). There were no differences between the two groups in pre-operative wedge angle, angle correction and BMD. Incidence of adjacent fracture is higher in LPVP group than in EPVP group (50% vs 10.3%). When PVP was performed late, 6 weeks after fracture event, the bone cement tend to be mass like distributed and may lead to more adjacent fractures.

Date: 2019-12-07

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Room: Junior Ballroom B

Abstract no.: 53156

EARLY PHASE MRI AFTER BALLOON KYPHOPLASTY CAN PREDICT SUBSEQUENT ADJACENT VERTEBRAL COMPRESSION FRACTURE IN OSTEOPOROTIC PATIENTS

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INTRODUCTION Balloon Kyphoplasty (BKP) brought benefits for patient with osteoporotic vertebral compression fracture (OVCF). However, subsequent painful adjacent vertebral compression fracture (SAVCF) often observed after the procedure. If SAVCF could be predicted, prophylactic therapy can be applied. The purpose of this study was to clarify whether early phase MRI of the involved level can predict SAVCF. **MATERIALS AND METHODS** Twelve patients underwent BKP for OVCF participated in this study. There were 5 males and 7 females and their mean age was 79 years. All patients underwent MRI targeted to the involved level 2 weeks after BKP. We defined low signal of T1 and high signal of short T1 inversion recovery of the adjacent vertebra on MRI as signal change positive. We investigated incidence of SAVCF, relationship between signal change positive and SAVCF, between local kyphotic angle of the adjacent vertebra and signal change positive, between bone mineral density (BMD) and signal change positive and between body mass index (BMI) and signal change positive. **RESULTS** The incidence of SAVCF was 33.3%. Signal change positive was observed in 8 patients (66.7%). Although 4 patients (50%) had SAVCF out of 8 patients with signal change positive, no patient who had signal change negative had SAVCF. Mean local kyphotic angle of patients with signal change positive was significantly larger than that of signal change negative. BMD and BMI had no statistically significant relationship with signal change positive. **CONCLUSION** This study showed MRI performed 2 weeks after BKP may have potential to predict SAVCF.

Date: 2019-12-07
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Abstract no.: 52930

CHANGE OF THE KYPHOTIC ANGLE AFTER STAND-ALONE PERCUTANEOUS STENT-KYPHOPLASTY FOR THORACOLUMBAR SPLIT AND BURST-SPLIT FRACTURES

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Introduction: Traditionally, thoracolumbar split and burst-split fractures are treated with combined antero-posterior bi-segmental fusion procedures. This retrospective study aims to determine whether percutaneous stent-kyphoplasty is a viable treatment option for these injuries in terms of kyphotic angle correction and patient safety. Methods: From Nov. 2014 to Dec. 2017, 25 consecutive patients (9 female, mean age 58 years) with 8 thoracolumbar split and 17 burst-split fractures (T11 to L5) of different etiology (7 high vs. 18 low energy trauma) were treated with percutaneous stent-kyphoplasty (SpineJack®). CT and MR imaging was performed preoperatively in all patients while radiographs were obtained postoperatively and at each follow-up. The mean follow-up was 176 days. All cases were evaluated retrospectively for complications regarding nervous damage caused by the spine, length of postoperative stay, duration of opioid intake, pain VAS pre- and postoperative, return to work time and change of radiographic kyphotic angle. Results: The mean kyphotic angle did not change from 1.1° preoperatively (CT) to 1.1° postoperatively (standing radiograph). Radiologically, the mean increase of the kyphotic angle between surgery and the last follow-up was 2.65°. The mean pain VAS was reduced to 1.8 postoperatively. The mean opioid intake duration was 4 days. Conclusion: Stand-alone percutaneous stent-kyphoplasty appears to be a safe and expeditious, minimally invasive treatment option for thoracolumbar split or burst-split fractures. It may be considered as an alternative to combined anterior-posterior instrumented bi-segmental fusion with its associated surgical morbidity. .

Date: 2019-12-07

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Room: Junior Ballroom B

Abstract no.: 54986

THE DISC/END PLATE PRESSURE IN DIFFERENT PERCUTANEOUS KYPHOPLASTY AND PERCUTANEOUS VERTEBROPLASTY SURGICAL METHODS- STUDY BY FINITE ELEMENT ANALYSIS

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Vertebral compression fractures(VCFs) are diseases of high prevalence, especially in population of osteoporosis. Percutaneous kyphoplasty(PKP) and percutaneous vertebroplasty(PVP) were the most two common procedures. Meanwhile, vertebral spacer(VS) and pillar also play the rolls in treating VCFs. Several articles point out that the adjacent segment disease is a common complication. The purpose of this article is to figure out the adjacent level pressure after vertebrae procedures using finite element analysis. Seven circumstances (including intact spine, osteoporotic spine, osteoporotic spine with PMMA injection, osteoporotic spine with pillar insertion...etc.) were stimulated to evaluate the adjacent level pressure using finite element method. The stimulation of vertebral body loading including compression, compression+flexion, compression+extension, and compression+axial rotation. The parameters of material properties were brought into the stimulation. The adjacent level pressure was higher in groups with pathologic spines including intact spine with no nucleus, osteoporotic spine with or without nucleus. The disc pressure is also high in group after VS treatment. There's no significant rise of disc pressure in groups treated with PMMA and pillar. The result shows most of the vertebral procedures increase the adjacent level pressure. The stimulation of pillar procedure restores the body height and using autograft instead of PMMA to maintain the body space effectively reduces the adjacent level pressure. The stimulation is a simplified spine model that the effect of pars and ligaments are excluded. The material of the pillar is Ti6Al4V in the experiment and one more stimulation could be done while using PEEK as material for the pillar.

Date: 2019-12-07

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Time: 10:30 - 12:00

Room: Junior Ballroom B

Abstract no.: 54565

COCCYX: THE FORGOTTEN SPINE

S SAKKA

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The coccyx is the terminal section of the spine and may consist of three to five bones depending on the individual development. The segments are fused or semi fused with fibrous or disc like joints between the segment allowing limited movement. The shape of coccyx also varies. These variations and inconsistency and the lack of details understanding give rise to the when systematic problems arise. Coccydynia is the commonest presenting problem. Deformity with seating difficulty, cosmetic appearances are rare problems. Causes are discussed We is discuss our experience in dealing with 90 pts with problems arise from the coccyx its treatment options and outcome including conservative. Injection technique and surgical treatment and its outcome. Best surgical outcome were with those who had traumatic dislocation /subluxation or had symptomatic deformity. We also review the literature

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Abstract no.: 53064

THE CONCEPT OF LAMINA-PEDICLE PERPENDICULARITY

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Introduction: The traditional method of assessing the sagittal inclination of the screw are cumbersome to be used intraoperatively. Further the position of the patient differs intraoperatively compared to a radiograph (standing/supine). Also human error precludes execution of a predefined angle. Based on our observations, when the short limb of a right-angle retractor was applied flush upon the lamina above and the same numbered vertebrae, the axis of long limb is parallel to the pedicle axis. With this observation, we decided to establish the relation between the pedicle-axis and inter-laminar line, to determine Zone of exit and safety angle for screw insertion. Methods: CT dorsal spine of 30 patients were included in the study. All measurements were done by 2 observers using Horos software. Results: Mean age 49.87 ± 15.48 (24-74), 20 males and 10 females. Inter-observer reliability ($r = 0.9$) was good. Pedicle-axis inter-laminar angle and zone of exit for D1 (87.09 ± 4.13), D2 (89.30 ± 2.96), D3 (87.74 ± 2.57) D4 (87.31 ± 2.70) D5 (86.21 ± 3.01) D6 (86.63 ± 2.85) D7 (87.97 ± 2.01) D8 (89.90 ± 2.28) D9 (90.11 ± 2.42) D10 (90.59 ± 2.72) D11 (88.64 ± 2.53) D12 (89.54 ± 2.17). Majority of the levels have >85% exit in zone A. There was no relation between the pedicle-axis inter-laminar angle and T1 slope (23.93 ± 8.73) or Cobb angle (35.79 ± 9.68). The mean superior and inferior safety angle ranged from 4.88 to 6.94 and 12.3 to 15.26 respectively. Conclusion: Right angle retractor (Pedicle-axis inter-laminar angle) is a good guide to determine the sagittal angulation of screws irrespective of the level.

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EFFICACY OF VITAMIN-D SUPPLEMENTATION IN PATIENTS WITH CHRONIC LOW BACK PAIN

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Objective:To determine the clinical efficacy of vitamin-D supplementation on pain intensity and functional disability in patients with chronic low back pain.**Study Design & Methods:**This prospective cohort study was conducted from 20th March 2015 to 19th March 2017.The inclusion criteria were patients of CLBP aged between 15 to 55 years.Exclusion criteria included all the patients with Disc prolapse, Spinal stenosis,Any signs of neurological involvement,Metabolic bone disease (Hypo- or Hyperparathyroidism)and Chronic kidney disease/Chronic liver disease.Patients were supplemented with 50,000 IU of oral vitamin-D3 every week for 8 weeks(induction phase) and 50,000 IU of oral vitamin-D3 once monthly for 6 months (maintenance phase).Efficacy parameters included pain intensity and functional disability measured by VAS and modified Oswestry disability questionnaire (MODQ) scores at baseline,2, 3 and 6 months post-supplementation.Vitamin-D3 levels were measured at baseline,2,3 and 6 months. **Results:** A total of 600 patients were included in the study.Mean age of patients was 44.21 ± 11.92 years.337(56.17%) were male and 263(43.83%) were females.454(75.66%) patients have deficient vitamin-D3 levels.Baseline mean vitamin-D3 levels were 13.32 ± 6.10 ng/mL and increased to 37.18 ± 11.72 post supplementation ($P < 0.01$). 299 (66%) patients attained normal levels (>29 ng/mL) post supplementation.Significant reduction in VAS was observed at 2, 3, and 6 months (61, 45, 36) as compared to 81 at baseline ($P = 0.001$).A significant improvement in the functional ability was also observed at 2, 3, and 6 months (35,30 and 25) as compared to baseline 46($P = 0.001$).**Conclusion:** Vitamin-D supplementation in CLBP patients may lead to improvement in pain intensity and functional ability.

Date: 2019-12-07

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Room: Junior Ballroom B

Abstract no.: 53487

THE ANALYSIS OF RISK FACTORS OF FAILED CONSERVATIVE TREATMENT OF THREE CONSECUTIVE SELECTIVE NERVE BLOCK FOR LUMBAR SPINAL PATHOLOGY

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Object: To report the clinical and radiological risk factors of the patients that are refractory to epidural nerve block in lumbar spinal pathology and eventually underwent surgical treatment **Methods:** Patients that underwent up to 3 times of transforaminal epidural block due to failed other conservative measures for a single level lumbar pathology were enrolled in this study. Patients with multi-level pathology, infection, trauma, tumor, previous history of lumbar surgery, motor deficit, and no available follow up clinical data were excluded. The criteria of failure of epidural nerve block was considered as patient urge to surgery due to radiating lower extremity pain or discomfort. Analyzed factors included age, gender, body mass index, symptom onset and duration, radiologic severity of nerve compression, concomitant medical history, preoperative pain intensity. **Results:** the 364 patients that underwent up to 3 times of transforaminal epidural block for a single level lumbar pathology, eventually 82 patients were analyzed. The overall conversion rate was 9.6% with VAS was decreased less than 50% in 46.3%. Patients 65 years or older avoided surgery after epidural block significantly more frequently than below 60 years ($p < 0.022$). In addition, among the patients below the age of 65 years, those with higher RMDQ was more likely to undergo surgical treatment (0.040). Other preoperative factors were not related with conversion rate. **Conclusion:** Elderly patient with age of 65 year or over were more likely to respond to epidural block. While younger patients with higher preoperative RMDQ were more likely to undergo surgery.

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Abstract no.: 53300

THE EFFICACY OF STRAIN COUNTERSTRAIN ON OUTCOME MEASURES IN TREATMENT OF ACUTE MECHANICAL LOW BACK PAIN PATIENTS

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Background: In developed countries, 60 to 80% of the active individuals suffer from LBP at least once in their life. Purpose: This study was to assess the effectiveness of Strain CounterStrain (SCS) on outcome measures in treating the patients with AMLBP with mobility deficits. Methods: Eighty four Patients diagnosed as AMLBP with mobility deficits divided into two groups equals in number (Group A) who received SCS techniques and (control group) who received advices to be active (Group B) participated in the study. The mean age was 24.04±1.82 and 24.07±1.55 years and BMI 24.19±2.13 and 24.36±1.58 kg/m² for group A, and B respectively. The Pressure Pain Threshold (PPT), Lumbar flexion ROM and Oswestry Disability Index (ODI) were used for assessment before, after treatment and six weeks follow-up for both groups. The treatment program was conducted for two weeks. Results: the results revealed that regarding within subject effect, there was significant increase in PPT for left L5, PPT for right L5, and flexion and significant reduction in ODI ($p < 0.05$) in the (Pre vs. post 1), (Pre vs. post 2), and (Post 1 vs. post 2) at both groups. Regarding between subject effects there was significant increase in PPT for left and right L5, and flexion and significant reduction in ODI ($p < 0.05$) in favour to group A in compared to group B at post one and post two of treatment. Conclusion: SCS is preferable to Advices to be active in treatment of AMLBP with mobility deficits.

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Abstract no.: 55881

RATIONALE, SURGICAL TECHNIQUE, AND SHORT-TERM FOLLOW-UP RESULTS OF A NEW MINIMALLY INVASIVE TREATMENT FOR THORACIC SPINAL STENOSIS

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Introduction: To describe the rationale, surgical technique, and short-term follow-up results of a new minimally invasive treatment for thoracic spinal stenosis (TSS) caused by herniation, ossification of the ligamentum flavum (OLF), and/or ossification of the posterior longitudinal ligament (OPLL) with a "U" route transforaminal percutaneous endoscopic thoracic discectomy (PETD). Methods: Fourteen patients, including 7 males and 7 females, underwent "U" route PETD. Myelopathy was caused by OLF in 14 patients, OPLL in 1, combined OLF-OPLL in 10, and intervertebral disc herniation (IDH) in 5. Decompression was performed in one segment in 12 patients, and in two segments in 2 patients. The Japanese Orthopaedic Association (JOA) scores, visual analog scale (VAS) scores, and complications were documented. Results: The JOA scores improved from 4.64 ± 2.31 preoperatively to 7.07 ± 1.59 1 day postoperatively and 11.79 ± 1.85 at final follow-up. The difference between preoperation and postoperation was statistically significant ($P < 0.05$). Moreover, the VAS score was 6.07 ± 2.06 points preoperatively, decreasing to 3.00 ± 1.24 points at 1 day postoperatively, and 1.14 ± 0.86 points at last follow-up ($P < 0.05$). Dural tear was observed in two cases during the intervention. No patient had transient worsening of preoperative paralysis. Conclusion: This retrospective analysis shows that "U" route PETD for decompression may be a feasible alternative to treat thoracic spinal stenosis.

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Abstract no.: 53532

COMPARISON BETWEEN TRANSFORAMINAL EPIDURAL(SNRB) VS INTERLAMINAR EPIDURAL IN THE TREATMENT OF LUMBAR RADICULAR LEG PAIN IN AN INDIAN POPULATION

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Background : Sciatic neuralgia is a result of nerve root oedema because of the inflammatory, immunological and mechanical factors. Steroid injections play an important role in the management of sciatic radiculopathy. Steroids act by reducing the oedema around the nerve roots and decreasing pain. Locally administered steroids have the advantage of reduced dosage and targeted delivery around the nerve roots. This forms the basis of epidural steroid injections. This can be given around the nerve root in the transforaminal space or in the interlaminar space . There is a paucity of literature comparing the two techniques of epidural steroid injections. We have done a randomized comparative trial , to compare the effectiveness of the two modalities of injection in the management of a single level unilateral foraminal disc herniation. Methods: Patients were randomized in two groups Group A: Transforaminal epidural(SNRB) and Group B: interlaminar epidural. Same dose of steroid was used in each group. Result: immediate post injection, 2week and 1month Transforaminal epidural(SNRB) was better compare to interlaminar epidural however at the end of 3 months the difference was not significant.(p val-0.08) Conclusion: Both transforaminal and interlaminar epidural injection are effective form of treatment in mild to moderate grade of disc disease. Both the technique provide short lasting relief in the symptoms associated with disc pathology, however pain management is better in transforaminal group compared to interlaminar group. Thus these techniques can be considered for delaying surgery and providing intermitant relief.

Date: 2019-12-07

Session: Spine Short Free Papers

Time: 10:30 - 12:00

Room: Junior Ballroom B

Abstract no.: 53359

CHANGES IN LUMBAR SAGITTAL ALIGNMENT FOLLOWING MICROENDOSCOPIC LAMINOPLASTY FOR GRADE1 DEGENERATIVE SPONDYLOLISTHESIS

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Introduction: Microendoscopic laminoplasty (MEL) is indicated well for grade 1 degenerative spondylolisthesis without instability. We prospectively investigated clinical outcomes and changes in sagittal alignment before and at 6 months postoperatively. Methods: Sixty-nine patients with grade 1 degenerative spondylolisthesis without instability underwent MEL at single level. The techniques used were bilateral decompression via a unilateral approach in 63 patients and spinous process splitting approach in 6 patients. Clinical outcomes were: low back pain visual analog scale (VAS), Japanese Orthopedic Association (JOA) score, Oswestry Disability Index (ODI). Radiologically, standing lateral digitized X-rays were taken preoperatively and 6 months postoperatively. Percent slip, slip angle, range of motion segment, sagittal vertical axis (SVA), pelvic tilt (PT), pelvic incidence (PI), and lumbar lordosis (LL) were measured as parameters. Result: VAS, JOA score, and ODI were significantly improved postoperatively ($P < 0.0001$). The preoperative percent slip was 14.0%, increasing to 15.5% postoperatively, but without significant difference. The slip angle increased and range of motion segment decreased; there was no significant difference in these as well. Regarding parameters of spinal alignment, LL significantly improved from 48.3 to 53.1 degrees ($P < 0.0001$). PT improved significantly from 20.3 to 17.2 degrees ($P = 0.0031$). SVA improved from 10.3 to 3.2 cm ($P = 0.3348$). PI did not change before or after surgery. Conclusions: MEL was a clinically effective surgical method for grade 1 degenerative spondylolisthesis without instability. Spinal sagittal alignment also improved via the minimally invasive decompression surgery.

Date: 2019-12-07

Session: Spine Short Free Papers

Time: 10:30 - 12:00

Room: Junior Ballroom B

Abstract no.: 55882

"TRANS-LAMINA" ROUTE PERCUTANEOUS ENDOSCOPIC LUMBAR LAMINOPLASTY AS A NEW TREATMENT FOR LUMBAR SPINAL STENOSIS

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PURPOSES: To describe the rationale, surgical technique, and short-term follow-up results of a new minimally invasive treatment for lumbar spinal stenosis (LSS) caused by ossification and/or hypertrophy or hyperplasia of the ligamentum flavum (OLF or HLF) with Percutaneous Endoscopic Lumbar laminoplasty by "Trans-lamina" approach. **METHODS:** Twenty patients, including 12 males and 8 females, underwent "Trans-lamina" Route. Myelopathy was caused by OLF in 14 patients, HLF in 6. Decompression was performed in one segment in 15 patients, and in two segments in 5 patients. The Japanese Orthopaedic Association (JOA) scores, visual analog scale (VAS) scores, Macnab score and complications were documented. **RESULTS:** The JOA scores improved from 5.73 ± 1.38 preoperatively to 6.78 ± 2.18 1 day postoperatively and 10.75 ± 0.99 at final follow-up. The difference between preoperation and postoperation was statistically significant ($P < 0.05$). Moreover, the VAS score was 5.91 ± 1.88 points preoperatively, decreasing to 3.08 ± 1.66 points at 1 day postoperatively, and 1.27 ± 0.67 points at last follow-up ($P < 0.05$). Dural tear was observed in 1 cases during the intervention. 5 cases were rated excellent, 10 were good, 4 were fair and 1 were poor. No patient had transient worsening of preoperative paralysis. No spinal cord injury, nerve root injury or epidural hematoma occurred postoperatively. **CONCLUSIONS:** This retrospective analysis shows that "Trans-lamina" Route PELL for decompression may be a feasible alternative to treat lumbar spinal stenosis.

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Room: Junior Ballroom B

Abstract no.: 54994

SHORT-TERM EFFECT OF PELD VIA TRANSFORAMINAL APPROACH IN THE TREATMENT OF GIANT LUMBAR DISC HERNIATION IN THE YOUNG.

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Objective To evaluate the short-term efficacy of the treatment of young patients with giant lumbar disc herniation, through comparative analysis of the symptoms before and after PELD. **Methods:** May 2016 to April 2017, 20 cases of young people diagnosed with GLDH were treated with PELD, 13 males and 7 females, 22 and 39 years. Course of disease 1 month and 1 year. 1 case of herniation at level L3-4, 12 at L4-5 and 7 at L5-S1. Imaging data were consistent with the symptoms. Spinal infection and tumour excluded. Examined were lumbar MRI postop day 1, preop lumbar MRI, preop VAS scores of the waist and lower limbs with postop day 3 and 3 months and ODI score preop and at last follow up. Clinical efficacy was evaluated by modified MacNab score at the last follow-up. **Results:** Average time and intraoperative bleeding 60-110 min and 10-20 ml. LOS averaged 5-8 days. 18 patients were significantly better postop with 2 cases of numbness and discomfort which resolved after symptomatic treatment. Lumbar MRI postop day 1 showed degree of compression reduced or disappeared in 19 cases. In 1 case however, the compression was still present but was less than 50% of canal. VAS scores of waist preop, postop day 3 and 3 months 4.0 ± 1.05 , 2.1 ± 0.99 and 1.4 ± 0.96 respectively. VAS scores of lower limbs preop, postop day 3 and 3 months 6.4 ± 0.97 , 2.5 ± 0.85 and 1.9 ± 1.13 respectively. ODI scores were $(52.23 \pm 18.56)\%$ and $(13.45 \pm 4.97)\%$ for preop and postop 3 months respectively. Preop indexes were significantly lower than postop with difference being statistically significant ($P < 0.001$). Modified MacNab score in the last follow-up, patients evaluated as excellent, good, fair at 3 months postop were 15 (75%), 3 (15%) and 2 (10%) respectively and overall good rate was 90%. **Conclusion:** PELD via transforaminal approach treatment of GLDH

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Session: Paediatrics Short Free Papers

Time: 08:00 - 10:00

Room: Meeting Room 8

Abstract no.: 53767

MASAIPLASTY FOR OPEN IDIOPATHIC OSTEOCHONDRITIS DISSECANS OF THE FEMORAL HEAD IN ADOLESCENT.

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Background: Idiopathic Osteochondritis Dissecans of the femoral head (IOCDFH) is uncommon in children. Open lesions lead to severe functional impairment and early arthrosis. The purpose of this study is to describe a surgical procedure of osteochondral graft mosaicplasty and to evaluate the outcome. Methods: Two adolescents aged 14 and 15 years presented hip pain with limited internal rotation and abduction and limp. The mean follow-up was 4.6 years. The Grade III ICRS of IOCDFH was diagnosed on MRI and arthroscanner. The femoral head was exposed through a Watson-Jones approach with dislocation of the hip. The pads of osteochondral graft were taken from the ipsilateral femoral condylar ramp. Harris Hip Score (HHS), Merle d'Aubigné Score (PMAS), MRI with the MOCART score were used to evaluate the results. Results: The first patient had a 2 cm² anterosuperior open lesion treated by six osteochondral pads. The second had a 1.5 cm² anterosuperior open lesion reconstructed with five osteochondral pads. Cancellous bone addition was used to fill the gap. At the last follow-up, the functional scores were improved: 65 to 96 points HHS and 12 to 18 points PMAS for the first patient; 53 to 100 points HHS and 14 to 18 points PMAS for the second. MRI showed a complete integration of osteochondral grafts with reconstruction of the joint surface. The mean MOCART score was 80/100. Conclusion: Autologous osteochondral mosaicplasty to treat open IOCDFH \leq 2 cm² in adolescent is a reliable procedure to restore articular surface with good functional outcome.

Date: 2019-12-07

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Time: 08:00 - 10:00

Room: Meeting Room 8

Abstract no.: 52931

PERCUTANEOUS LOW ENERGY OSTEOTOMY IN TREATMENT OF PATHOLOGICAL CORONAL KNEE DEFORMITIES IN PAEDIATRICS

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Objectives: the aim of this study was to assess the effectiveness of percutaneous low energy osteotomy and casting in treatment of pathological coronal knee deformities in children equal or younger than 6 years. **Design:** A prospective non-randomized case series study. **Methods:** 62 patients (109 limbs) with pathological coronal knee deformities were treated by percutaneous low energy osteotomy and casting and observed over 3 – 10 years. The pathological nature was variable (rickets, Blount's disease, dysplasia, post trauma or infection). The average age at time of surgery was 4.5 years (range 3 – 6 years). Clinical and radiological outcomes were evaluated annually and at the end of follow up period. **Results:** There were a statistical improvement of the clinical appearance and the radiological parameters as regard mechanical axis deviation (MAD) and tibiofemoral angle at the end of follow up period. **Conclusion:** Percutaneous osteotomy is a simple effective option in the treatment of children with coronal knee deformities equal or younger than 6 years.

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Room: Meeting Room 8

Abstract no.: 54254

**COMPLICATIONS OF THE SURGICAL TREATMENT OF SCFE, 5-YEARS
RETROSPECTIVE STUDY**

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This is a retrospective review of all patients who had surgical intervention for SCFE during the period between 01/09/2013 to 30/07/2018. Patients with endocrinal or metabolic diseases were excluded. Basic data as chronicity, severity and stability of the slip, treatment choice and complications were collected. Forty-five patients were suitable for inclusion, 25 males. Thirty-six were stable slips and 9 unstable slips. The contralateral hip pinned in 20 patients. The surgical interventions were in situ pinning in 56 hips (36 slips + 20 contralateral sides), Smith-Petersen open reduction in one case and surgical hip dislocation in 8 patients. The complications in this series were 6 cases with AVN with at least 6 months follow up (6 out of 36 - 17% - 2 in the surgical dislocation group 28%), progressive coxa vara in males \leq 9 year old (4 out of 65 - 6%), 2 dislocated hips following Ganz surgical dislocation (2 out of 8 - 25%), significant heterotopic in one patient (1 out of 8 - 13%) and one fracture proximal femur (1 out of 65 - 1.5%). The AVN rate with surgical hip dislocation is lower than what reported for the in situ fixation of unstable SCFE and it should be the choice in those cases. Postoperative hip instability is a risk and can be managed by capsular repair and distal transfer of the greater trochanter or with the use of hip distractor. Progressive coxa vara can be prevented with the use of growing screws in young patients.

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Abstract no.: 53654

WEBER-BOOSTER-SURGERY FOR TIBIAL HEMIMELIA

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Introduction: The longitudinal reduction deficiency of the tibia is a very rare and challenging disease in paediatric orthopaedics. Before the introduction of my Weber-Classification of tibial hemimelia, the existence of a cartilaginous anlage was unknown in the literature as well as the valuable role it can play in the construction of joints. Patients: The largest collection of patients in the literature is presented as essentials of 28 years' experience in limb (re) construction. Methods: My Booster Technique is used to enhance the sleeping growth potentials of the cartilaginous anlage in tibial hemimelia for the creation of joints and to improve the function of the malformed limbs in the Weber-Types III-B, IV-B, V-B, VI-B and VII-B. Results: With the Booster Surgery, former useless anatomic aplastic structures without joints are constructed to useful joints which develop their own functioning growth plates. Conclusions: With the Weber-Booster-Technique amputations in the Weber-Types III-B, IV-B, V-B, VI-B and VII-B are unnecessary.

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Abstract no.: 54619

STUDY ON FUNCTIONAL OUTCOME OF ELASTIC NAILS FIXATION IN FEMORAL FRACTURES OF CHILDREN AND ADOLESCENTS

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Objective:To study the functional outcome as measured by Flynn's outcome scoring following the use of Flexible nails for femoral shaft fractures in children & adolescents.**Methods:** 26 patients in the age group of 5-15 yrs with femoral shaft fractures were stabilized using flexible nailing Patients were followed up clinically and radiologically for a minimum period of 6 months. The final results were analysed using Flynn's criteria. Technical difficulties and complications associated with the procedure were also analysed.**Results:**The final outcome was excellent in 17 (65.4%) cases, satisfactory in 8 (30.8%) cases and there was one patient had poor outcome. The average hospital stay was 8 days with union achieved in all cases with an average duration of 11.05 weeks. Common complications noted were skin irritation at entry site in 4(15.4%) cases and limb length discrepancy with significant lengthening in 3(11.5%) and significant shortening in 1(3.8%) case. Other complications noted were 1(3.8%) case with varus angulation, 1(3.8%) with superficial infection at entry site.**Conclusion:** We believe that with proper operative technique and postoperative care elasticstable intramedullary fixation may prove to be an ideal implant for pediatric shaft of femur fracture fixation. The most of the complication associated with the procedure are infact features of inexact technique and can be eliminated by strictly adhering to the basic principles and technical aspects.

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Abstract no.: 55007

COMPLEX RADIOLOGICAL FINDINGS IN CONGENITAL PSEUDARTHROSIS OF THE TIBIA

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Objective: To study changes of bone and soft tissues in patients with congenital pseudoarthrosis by MSCT and MRI. Methods: We studied condition of bone and soft tissues at the site of congenital pseudoarthrosis of the tibia before commencing treatment, using radiographic methods- multi slice computed tomography (MSCT), magnetic resonance imaging (MRI) in order to make prognosis of treatment outcome and recurrence of the disease. Results: 25 patients with congenital pseudoarthrosis of the tibia (CPT) in the age group 8 to 40 years were examined by above mentioned radiographic methods, multi slice computed tomography (MSCT), magnetic resonance imaging (MRI) before treatment and after recurrence. The peculiarities and changes in structure of tibial and fibular cortex, periosteum and muscles at the site of pseudoarthrosis. We derived at complex findings and changes that cause recurrence, of pseudoarthrosis after deformity correction, or treatment. We developed criteria for evaluation of bone quality in patients with CPT. Conclusion: Structural changes in the soft tissue and the bone at the site of CPT, detected by MRI and MSCT, allow for rather precise interpretation of condition of bone, periosteum, muscles during various stages of treatment and this information can be used to choose appropriate technique and methods of treatment.

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Abstract no.: 52824

ARTHROSCOPIC LAVAGE FOR THE TREATMENT OF SEPTIC ARTHRITIS OF THE HIP IN CHILDREN

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The goal of this study is to present the results of arthroscopic drainage and lavage together with a short course of antibiotics administration for the treatment of septic arthritis of the hip in children over the age of five years. Kocher's criteria together with C-reactive protein (CRP) levels were used to calculate the predicted probability of septic arthritis. Children with 2 Kocher predictors or more, and with CRP levels >20 mg/L underwent joint aspiration with fluoroscopy in the operating theatre. White cell count with differential, gram stain and cultures were obtained. A three-portal arthroscopic technique was used for drainage and irrigation in eight children with septic coxitis. Continuous intra-articular irrigation was not performed, nor were decompression drains used. The children were treated with intravenous antibiotics for 4-5 days, followed by oral antibiotics. The children were followed weekly. Antibiotic treatment was stopped when CRP levels were <20 mg/L. All children were followed clinically and radiologically for 24 months. Staphylococcus Aureus was the infecting organism in all cases. All patients had a rapid postoperative recovery; they all had excellent clinical and radiological results. All of them had a full range of motion of the affected hip. No complications occurred in this group of children. Three directional arthroscopic surgery combined with large volume irrigation and a short course of antibiotics administration appeared as an effective treatment modality in cases of septic arthritis of the hip in children older than 5 years. It is less invasive than arthrotomy, and offers low post surgical morbidity.

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Abstract no.: 53841

MANAGEMENT OF CLUBFOOT BY DIFFERENTIAL DISTRACTION

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With the use of Ponseti's technique, majority of children with clubfoot do not need operative treatment however some severe clubfoot including neglected, recurrent and resistant forms cannot be managed by conservative methods and needs surgical intervention. The foot becomes rigid with soft tissue surgery and bony operations can make the foot even more smaller. To avoid it a simple alternative is to use the principle of controlled differential fractional distraction histogenesis. JESS distractors allow gradual distraction of contracted soft tissues and align all the joints of the foot so as to bring corrections of all aspects of deformity of the foot simultaneously. This study was done to analyse the role of differential distraction in correcting cases of clubfoot in terms of cosmetic, functional and anatomical outcome which were assessed by ICFSG scores. Total of 6 Clubfoot underwent Differential fractional distraction. Patients were assessed preoperatively for morphology, functionality and radiologically by ICFSG score. Period of correction varied from 5-8 weeks. Once correction is obtained then apparatus for differential distraction (Joshi type external stabilization system) is locked in that position for same period and later converted to cast in plantigrade for maintenance and followed up regularly. The results were analysed with ICFSG score. Excellent to Good results were obtained in all the cases which were assessed by ICFSG score. There were only minor complications in patients. Differential Distraction by JESS frame is simple, versatile and cheap method suited for correcting clubfoot deformities which were neglected, resistant and recurrent.

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Abstract no.: 55151

PONSETI METHODS OF TREATMENT FOR NON-IDIOPATHIC CLUB FEET :- A RETROSPECTIVE EVALUATION.

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Introduction: Management of non-idiopathic clubfoot is challenging as these feet are more rigid with high recurrence and conservative modalities have been considered ineffective. Newer studies suggest a trial of Ponseti method to decrease the severity of deformity. We sought to find if this could be reproduced in the Indian scenario at a tertiary referral institute. Material and methods: Patients were included only if a neuromuscular condition or a syndrome associated with clubfoot could be identified. 23 patients were retrospectively evaluated with 34 non-idiopathic congenital clubfoot that had been treated with the Ponseti method in our center from 2010 to 2016. Post cast management was by abduction braces and Ankle foot orthosis. Recurrence/failure cases were subjected to surgical intervention in form of limited posterior release or posteromedial soft tissue release. Results: The common associated anomalies were meningomyelocele and arthrogryposis multiplex congenita. Mean age of first presentation was 30 weeks of age with 192 weeks of mean follow-up. The mean number of casts was 16. 22 out of the 34 (67%) clubfeet underwent a percutaneous Achilles tenotomy. Recurrence occurred in 30% and these required surgery. The average time to recurrence was 16 months (9-20 months). Conclusion:- Ponseti method should be the first line of treatment for all clubfeet, irrespective of etiology. Recurrence rate has been higher, but deformity improved with re-casting in most cases. In our experience, once a complex clubfoot is corrected, the rigidity of the soft tissue lessens, the skin creases and puffiness disappear and the foot develops normally.

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Abstract no.: 54665

IS THE DENNIS BROWN SPLINT A MYTH? A RANDOMISED CONTROLLED TRIAL IN CLUBFOOT MANAGEMENT USING DENNIS BROWN SPLINT VERSUS DAILY EXERCISE PROTOCOL: A LONG-TERM STUDY

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Background: The Ponseti technique is successful in idiopathic clubfoot management. However, the main cause of relapse and recurrence is nonadherence to the Denis Brown bracing protocol. This necessitates the need of more extensive soft tissue surgeries. Methods: Based on a detailed up-to-date search, we have found that no other studies provide such a modified Ponseti technique. This study is unique, as it depends on using specific stretching exercises instead of bracing during the course of management. Between August 2009 and June 2018, a consecutive series of 371 isolated idiopathic clubfoot patients were included in this study. The mean follow-up was 93 months (ranging from 72 to 146 months). All the patient underwent a clinical and a functional assessment using The Laaveg-Ponseti score and radiological assessments. Results: There were 132 boys (68.1%) and 62 girls (31.9%) with a male to female ratio of 2:1. The mean age at the initiation of treatment was 14.9 days. Follow-up range was 72 to 146 months, with a mean of 91.8 months. According to The Laaveg-Ponseti score, 51.7% yielded excellent results, 35.3% yielded good results, 11.55% yielded fair results, and 1.59% yielded poor results. Conclusions: Bracing non-compliance has been identified as a major cause for treatment failure. This presented exercise protocol not only eliminates the need for bracing and reduces the cost for the affected individuals, but also provides excellent clinical and radiographic end results, comparable to the original treatment protocol, using the Denis Brown brace.

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Abstract no.: 55058

: EFFECTS OF BOTULINUM TOXIN TYPE A IN TREATMENT OF UPPER LIMB SPASTICITY IN CEREBRAL PALSY - SHORT TERM FUNCTIONAL OUTCOME IN 30 UPPER LIMBS-A STUDY FROM INDIA

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INTRODUCTION: CP is the most common cause of chronic disability in childhood. Spasticity may result in contractures, pain and bone lesions with easy fractures. BTX-A is a potent neurotoxin which acts by preventing the release of acetylcholine(Ach) from presynaptic axon at motor end plate. The purpose of this study was to present an objective analysis of the effect of i.m. BTX-A in reduction of spasticity in the upper limb as well as functional outcome in children (4-12yrs) with spastic CP. **METHODS:** A total of 28 patients (30 upper limbs) of spastic CP with minimum follow up of 6months were included in the study. i.m. Botox was given in selected spastic muscle as per body weight. Functional classification was done by PRS(Physician's rating scale), MACS (Manual Ability Classification System) and Canadian Occupational Performance Measure (COPM) before treatment, at 3 and 6 months follow up. **RESULTS:** The change in values of PRS, MACS and COPM at 3months and 6months were significant with p value <0.001. **CONCLUSION:**botulinum toxin type A injection had significant improvement in both clinical and functional outcome measures. It is safe for spasticity of upper limbs in cerebral palsy and capable of reducing spasticity in upper limbs without major side effects. However, a long term follow up is required with the patients who had this injection to look for recurrence of spasticity.

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Abstract no.: 54431

PERITALAR RELEASE IN CURRENT CLUBFOOT TREATMENT

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Introduction Idiopathic pes equinovarus, also referred to as clubfoot, is a congenital deformity of the foot. At present, Ponseti method is mostly used for the treatment; it involves serial manipulation, a specific technique of cast application and a percutaneous Achilles tenotomy. In this situation question arises whether this therapeutic approach is optimal for all patients born with this anomaly. **Patients and Method** To answer this question, a total of 341 consecutive infants with 522 clubfeet (245 boys and 77 girls), who had been treated at our department in the period of 2005–2016 were included in this study. All patients, including relapses were initially treated with Ponseti method. If this therapy was unsuccessful, alternative surgical treatment was indicated (e.g. tarsal osteotomy, dorsal or dorsomedial release, osteotomy of the forefoot, supramalleolar osteotomy, and peritalar release). Surgical correction was performed in 30% of our patients according to Ponseti method and in 70% by alternative techniques. **Results** We have observed that in the case of complete relapse of deformity in children older than 3 years (after failure of the conservative treatment), the peritalar release was the best choice for treatment: success rate was 92% in comparison with conservative and/or other surgical methods (8%). In addition, as compared with the conservatively treated clubfeet, peritalar release significantly decreased the range of motion in ankle joint. **Conclusion** It follows from our results that it is impossible to cure all clubfeet with Ponseti method only. It proved necessary to use additional alternative surgical techniques.

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Abstract no.: 53003

PATIENTS WITH SCOLIOSIS IN THE SETTING OF CEREBRAL PALSY ARE AT A HIGHER RISK FOR NEEDING ASSISTIVE DEVICES

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¹Columbia University Medical Center, New York (UNITED STATES), ²Rutgers New Jersey Medical School, Newark (UNITED STATES)

Introduction: Scoliosis frequently affects patients with Cerebral Palsy (CP). Concomitant medical comorbidities are also common. Definitive evidence demonstrating the association between spinal deformity and these comorbidities is lacking. This study examines scoliosis severity and respiratory or gastrointestinal dysfunction in patients with CP. Methods: Patients diagnosed with CP and scoliosis from a single academic center between 2005-2016 were included. Clinical data was obtained by chart review and survey. Pulmonary and gastrointestinal dysfunction were proxied by assistive device use. Patients reporting use of assistive devices were compared to those who denied use by chi-square, t-tests, and logistic regression. Results: 94 of 344 surveys were returned. 24 (25%) reported use of respiratory aids (RA) and 38 (40.4%) patients reported needing tube feeding (TF). Average major coronal curves for patients relying on RA or TF were larger compared to non-reliant patients ($48\pm 28^\circ$ and $48\pm 25^\circ$, respectively, vs. $33\pm 18^\circ$ and $30.2\pm 16^\circ$, respectively; $p=0.031$ and $p<0.001$). GMFCS 1-3 patients relied on RA less than GMFCS 4-5 patients (8.3% vs. 31.4%, $p=0.025$); the same was found for TF (8.3% vs. 51.4%, $p<0.001$). Regression showed a 10.3x greater risk of RA use when major coronal curves $\geq 70^\circ$ and an 8.9x greater risk of TF when major coronal curve $\geq 65^\circ$ (controlling for GMFCS level and age). Conclusion: Currently, surgical correction is indicated for patients with curves $\geq 50^\circ$. Our results support the hypothesis that coronal plane curvature is associated with pulmonary and gastrointestinal decline and further justifies the current practice of preventing scoliosis progression in efforts to avoid comorbidity-associated complications.

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Abstract no.: 55008

CONGENITAL POSTERO-MEDIAL BOWING OF TIBIA: DIFFERENCES IN LENGTHENING YOUNGER VS OLDER CHILDREN

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Introduction: Congenital Postero-medial bowing of tibia (CPMBT) is rare and presents with a large deformity which resolves over time and limb shortening which increases. Less than 50 segments have been lengthened and reported in the English literature. Patients & Methods: We lengthened 26 tibiae in 23 children. Mean Follow-up was 8.9 years (1.5 to 22). Patients fell into two groups: A; less than 5 years of age and B; more than 5 years. Mean age was 7.8 years (1.5 to 22yrs) Mean Leg Length Difference (LLD) was 3.77 cm with 3.13cm in Group A and 4.41cm in Group B. We used Ilizarov in 22, TSF fixator in 2 and LON method in 2 segments. Preoperative Oblique plane deformity was 20.6° in Group A and 13.5° Group B. We analysed length gain, external fixation duration (EFD), healing index (HI), and complications between the groups. Results: Mean length achieved was 4.1 cm (GrpA=3.4, GrpB= 4.8cm). Mean Percentage lengthening was 20.85% (grpA= 23.41, GrpB = 18.28). Mean EFD was 159.6 days (GrpA = 115.4, GrpB = 203.8 days). HI was 37.62 days/cm (GrpA=34.2, GrpB = 41.6 days/cm). We found a statistically significant difference in lengthening (p= 0.0104) and EFD (p=0.00093) and HI (p= 0.0368) between the two groups, but not in percentage lengthening (p=0.0998). We analysed complications by Paley's and Lascombes Triple Contract method. Two groups had similar complications (GrpA= poor regenerate and infection at regenerate in one, GrpB= pin osteomyelitis in one). Treatment was harder on older children as longer EFD disrupted education. Lengthening younger children was safe and reliable.

Date: 2019-12-07

Session: Paediatrics Short Free Papers

Time: 08:00 - 10:00

Room: Meeting Room 8

Abstract no.: 54695

MULTILEVEL CONTRACTURE RELEASE HAS AN ADDITIVE EFFECT TO GLUCOCORTICOID TREATMENT IN DUCHENNE PATIENTS

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Steroids are currently the main component of drug therapy for Duchenne muscular dystrophy(DMD),prolonging ambulation, preserving upper limb and respiratory function and avoiding scoliosis.Multilevel contracture release has been shown to effect ambulation positively in DMD.However,an independent effect of steroid treatment has not been evaluated and, to date, international guidelines do not include multilevel surgery.We analysed all DMD patients who consulted our outpatient clinic between 2013 and 2017,if they had sufficient quadriceps strength,i.e. $\geq 3/5$ MRC, and were able to rise from a supine position to standing in < 5 s. Results: 86 patients were included.Mean age was 16.3yrs (1.9-42).All patients received non-standardised PT. 44 had been treated with glucocorticoids (GC) for a mean of 5.6 yrs (0–18).Median age at loss of ambulation was 12yrs in patients treated with GC as opposed to 9 yrs in those without GC. 27 patients underwent Rideau's contracture release at a median age of 7.1 yrs (4–10).These patients lost ambulation at a median age of 12 yrs. We found a significant additive effect of both therapies: while patients having received neither GC nor surgery lost ambulation at a median age of 9 yrs, those with GC and surgery were able to walk independently until a median age of 14 yrs, hence 2 yrs longer than with only one of the two treatment options. Conclusion: Standard GC treatment and early multilevel contracture release in lower limbs have a positive effect on prolongation of ambulation in DMD. Combination of both therapies is significantly more effective than each single therapy.

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Abstract no.: 54957

MANAGEMENT OF PAEDIATRIC FOREARM FRACTURES AND THE ASSOCIATED REFRACTURE RISK

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Background: Paediatric forearm shaft fractures represents 6% of fractures presenting to A&E. Currently there is no consensus on the optimal treatment plan, the goal is to achieve acceptable alignment to allow remodeling at the fracture site- this then becomes a balancing act of immobilization vs risk of possible refracture . We aimed to evaluate current practice in a major trauma center in both, overall management of forearm fractures and to evaluate refracture rates. Methods: Retrospectively, we identified pediatric patients during a 10 years period, 2006-2016, who sustained a forearm fracture by reviewing the hospital radiology database (PACS). We identified those who then refractured within a two year period of the initial injury. Results: 456 patients were reviewed.19 refractures were identified, all occurring within a 1 year of the initial injury. There were equal numbers of boys and girls, with average age of 8 years. Initial treatment varied; 16 MUA, 1 TENS and 2 platings.. They were immobilized for an Average of 34 days (0-65). Time to refracture from initial injury was an average of 20 weeks (10 – 32). Conclusion We have identified a refracture rate of 4.1% which is in keeping with the published literature. There was a higher rate of a refracture in those children managed with application of plaster cast only. It is not possible to avoid all refractures in children but we conclude that children should be followed up for a minimum of 3 months post injury or until radiological union is seen on x-ray.

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Abstract no.: 55140

THE MANAGEMENT OF DISPLACED PAEDIATRIC LIMB FRACTURES IN A&E WITH HIGH SUCCESS RATE AND HIGH PATIENT / FAMILY SATISFACTION

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Introduction: Isolated deformed limbs represent a frequent dilemma. Most of the emergency units find it difficult to manipulate such fractures due to lack of training and absence of clear guidance. Some clinicians prefer manipulation in theatre environment. In July 2018 we introduced a protocol designed to establish the management of a deformed limb within the children emergency department (CED). In this study we present our protocol and results with clinical and radiological evaluation as well as patient satisfaction survey outcome. Method: Data was collected between 08/2018 and 03/2019. Inclusion criteria; aged under 16 with an isolated deformed limb injury amenable to manipulation. All had manipulation as per protocol (Entonox / diamorphine). A prospective feedback was taken. A review of pre and post reduction radiographs was done by a senior orthopaedic surgeon. All were followed up until complete union. Results: 84 were included in the study, 66/84 received manipulation (79%) (56 forearm, 8 lower limb, 2 phalanx). 10 required a second manipulation. 17/84 went directly to operating theatre and 1 was conservatively managed. 56 patients avoiding theatre. 100% of the completed feedback happy with the procedure and willing to undergo the procedure again. None of the patients developed immediate or delayed complications. Conclusion: Our study provides strong evidence that manipulation of such fractures in CED is safe and provide excellent outcome with high satisfaction. This protocol is also cost effective as it results in reduced hospital admission and expected saving of more than £1000 per case compared to in theatre manipulation.

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Abstract no.: 54350

THE UTILITY OF LEUKOCYTE ESTERASE STRIP TEST IN THE DIAGNOSIS OF PEDIATRIC SEPTIC ARTHRITIS

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Background: Most tests used to diagnose pediatric septic arthritis are either not accurate, or do not produce rapid results. Leukocyte esterase strip test has previously been validated for the diagnosis of adult native and periprosthetic joint infections. The purpose of this prospective study was to: (1) evaluate the performance characteristics of the leukocyte esterase strip test in the diagnosis of pediatric septic arthritis (2) determine the false positive rate of leukocyte esterase strip test on aseptic synovial fluid. Methods: Between May 2016 to November 2018, synovial fluid was obtained from children who were hospitalized at our tertiary referral center based on suspicion of septic arthritis. All patients underwent arthrocentesis, and the aspirate was tested with leukocyte esterase strip test, leukocyte count, and culture. Twenty-five patients satisfied the inclusion criteria. Results: Nineteen joints were classified as septic and six as aseptic. Considering a positive leukocyte esterase strip test (“++” and “+++” readings) indicative of septic arthritis yielded a sensitivity of 100%, specificity of 83%, positive predictive value of 95%, and negative predictive value of 100%. In the second part, all 25 patients with an aseptic synovial fluid had a negative test result (“-” and “+” readings). Conclusions: The leukocyte esterase strip test appears to be a valuable additional tool in the diagnosis of pediatric septic arthritis. The leukocyte esterase strip test has the advantages of being inexpensive and simple, providing real-time results, and having a perfect negative predictive value to rule out the diagnosis of septic arthritis.

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Abstract no.: 53624

PROTEOMIC EVIDENCE OF INCREASED ANGIOGENESIS IN CLUBFOOT TISSUE

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Introduction: Idiopathic pes equinovarus, also referred to as 'clubfoot', is an isolated congenital deformity of the foot and lower leg defined as a fixation of the foot in plantar flexion, adduction, supination and varus, with concomitant abnormalities present at birth. The etiology of this disease remain unclear. Methods: We compared the concentration of proteins between clubfoot contracted (very stiff) tissue, i.e. the medial side of the foot, with non-contracted tissue, i.e. the lateral side. We used label-free mass spectrometry quantification. Results: Significant differences in protein composition were detected in clubfoot deformity between the contracted and non-contracted part of the foot. Three proteins were observed to be significantly upregulated in the contracted medial side: collagen VI, hemoglobin subunit beta and hemoglobin subunit alpha. Conclusion: Collagen VI is highly produced in media of blood vessel and hemoglobin subunit alpha and beta are produced also in endothelial cells. We suppose that overexpression of these proteins is affected by increased number of cells, which were multiplied during enhanced angiogenesis inside this pathological tissue. This study can contribute to better understanding of clubfoot etiology. Acknowledgements: The study was supported by the Ministry of Health of the Czech Republic, Department Program for Research and Development (n. 17-31564A) and the KZCR, a.s., IGP KZ (n.217116002).

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THE OUTCOME OF SELECTIVE SCREENING OF DDH IN ARMED FORCES HOSPITAL, OMAN

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Abstract: Outcome of Selective Screening of Developmental Dysplasia of The Hip in Armed Forces Hospital, Oman **Objective:** This study is aimed to determine the outcome of selective screening of DDH using ultrasound in children born in Armed Forces Hospital (AFH), Muscat, Oman. **Methods:** a prospective cohort study evaluating all newborns delivered in AFH over two years. The screening methods are Physical examination and Ultrasound of hip. The physical examination is done by pediatricians with Ortolani and Barlow test for all newborns. The Ultrasound hip screening is done for all newborns with risk factors of breech presentation, positive family history or positive physical examination at age 6-8 weeks. All newborns with abnormal ultrasound findings are referred to the pediatric orthopedic surgeon. All newborns with congenital syndromes or neuromuscular pathology are excluded. The outcome data are placed in a designed data sheet and the information was obtained from the HIS of the hospital. **Results:** our prospective study showed an incidence of 1.54 which is similar to the incidence reported in other literature which vary from 1.5 to 2.5 per 1000 live births. 20 % of the DDH are breech delivered. Our screening method lead us to treat the newborns with Pavlik harness in 70% of the cases with a high success rate **Conclusion:** We recommend universal screening not to miss cases as we have a number of cases without risk factors. We recommend to have screening in other hospitals in the country in order to reach to a firmer position of screening.

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Abstract no.: 54404

DIAGNOSTICS AND THERAPY OF TRAUMATIC BIRTH FRACTURES

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Fractures during childbirth are rare and represent only a small number of all fractures in childhood. Neuromuscular and skeletal diseases, as well as a mismatch between maternal pelvis and birth size are considered risk factors. As part of a retrospective study, the data on traumatic birth fractures from 2005 to 2017 were obtained. Gestational age, birth size and weight, birth mode, risk factors, trauma mechanisms, therapeutic measures and complications were examined. A descriptive study was performed using SPSS. A total of 31 fractures were treated in 28 newborns. Compared to the average birth weight of 3200g, patients with clavicular fractures and a birth weight of $3893.4g \pm 442.6g$ were heavier, whereas patients with femur fractures and a birth weight of 2462.5g were significantly lighter. All newborns with femoral fractures were delivered by caesarean section and were often associated with prematurity. On the other hand, patients with clavicle fractures showed a shoulder dystocia and were usually delivered spontaneously. All fractures were treated conservatively. Clavicle fractures were treated using Gilchrist bandage, whereas femoral fractures were treated using extension, or the hip spica cast. Furthermore, in three cases a closed reduction was necessary. All fractures showed good healing results with a spontaneously axis correction. Multiple fractures at birth could only be detected in patients with neuromuscular disease. Traumatic birth injuries should be treated in a center. Post-natal joint swelling and restrictions on movement must be examined promptly. With an increasing number of caesarean sections, the incidence of femoral fractures may shift.

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Abstract no.: 55790

PAEDIATRIC UPPER LIMB FRACTURE MANIPULATION IN THE CHILDREN'S EMERGENCY DEPARTMENT UNDER 70% NITROUS SEDATION: A SUCCESSFUL TREATMENT THAT PROVIDES COST SAVINGS

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Background: BSUH Children's emergency department (CED) guidelines were implemented in December 2016; allowing reduction of forearm and distal radius fractures in CED using 70% nitrous sedation. We wanted to assess the success rate of this treatment and analyse any cost savings. Trauma theatre time is a valuable resource and in previous studies has been calculated to cost £24.77/minute. Methods: We analysed all wrist and forearm fractures presenting to CED from Feb-June 2017 and in Feb-June 2018. Fractures were identified using Bluespider databases and PACS. Demographics, treatment modality and timings were reviewed. Results: 113 patients were identified with 115 fractures. 56% were distal radius, 44% forearm fractures, 61% male, 39% female. Mean age 8.6yrs. 64 (57%) patients were suitable for MUA under nitrous. Of those 36 (56%) were manipulated with nitrous in CED. 5 (14%) of these patients required subsequent further treatment under general anaesthesia in the trauma theatre. By performing manipulation in CED 31 procedures under general anaesthetic were avoided. With an average MUA taking 30mins this confers a cost saving of £743 per case. Therefore over our study period total savings amounted to £23,033. Conclusion: Paediatric upper limb fracture manipulation in CED under 70% nitrous sedation is a successful treatment with low failure rates. This treatment also provides significant cost savings.