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ABSTRACT BOOK

Short Free Papers

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 49999

INDIRECT TRANSFER OF THE STERNAL HEAD OF THE PECTORALIS MAJOR WITH AUTOGENOUS SEMITENDINOSUS AUGMENTATION TO TREAT SCAPULAR WINGING SECONDARY TO LONG THORACIC NERVE PALSY

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Background: Scapular winging resulting from long thoracic nerve palsy is uncommon but debilitating, and the choice of surgical treatment is inconsistent. The autogenous semitendinosus tendon plays a key role as an interposed tendon graft, although its use in the indirect transfer of the sternal head of the pectoralis major during the treatment of scapular winging has rarely been reported. Methods: A retrospective review was performed during a 9-year period from the data of 28 shoulders with indirect transfer of the sternal head of the pectoralis major with the interposition of an autogenous semitendinosus tendon graft for dynamic stabilization of the scapula. The range of active movement (forward elevation, abduction, and external rotation), American Shoulder and Elbow Surgeons score, visual analog scale score, and complications were evaluated with a mean of 47 months of clinical follow-up. Results: Patients' active shoulder movements (forward elevation, abduction, and external rotation), American Shoulder and Elbow Surgeons score, and visual analog scale score showed significant improvements ($P < .01$). One seroma developed and resolved with extraction. Four shoulders had adhesive capsulitis and recovered after physiotherapy. There was no recurrence of scapular winging in any patient. Conclusion: Timely treatment, often surgical, is vital to the recovery of scapular winging secondary to long thoracic nerve palsy. Our results suggest that indirect transfer of the sternal head of the pectoralis major with interposition of the autogenous semitendinosus tendon can effectively treat scapular winging due to long thoracic nerve palsy with limited sequelae. Widespread use of this technique is recommended.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 51944

BIOMECHANICAL COMPARISON OF INTRAMEDULLARY HUMERUS NAILS WITH DIFFERENT DISTAL LOCKING MECHANISMS

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Introduction: In this study, we aimed to compare the biomechanical resistance and rotational and axial forces of a conventional locking nail with a newly designed intramedullary humeral nail developed for humeral shaft fractures and with a secure locking mechanism through the distal part of the nail. **Methods:** An InSafeLOCK humeral nail system (group 1, TST, Istanbul, Turkey) and an Expert humeral nail system (group 2, DePuy and Synthes, Bettlach, Switzerland) with the same measurements (9 × 300 mm) were examined. In all, 24 fourth-generation humerus sawbones were used. Osteotomy was performed from the humerus shaft region, and a defect was created by removing 1 cm of bone. Distal interlocking was performed with an endopin in group 1, while a double cortex screw control was used in group 2. **Results:** All samples successfully passed the cyclic loading phase. A significant difference was found between axial failure load values, indicating that the samples from group 2 were more stable ($p = 0.004$). However, no significant difference was found when the failure load values were compared after torsional loading ($p = 0.055$). **Discussion:** The results provided a biomechanical demonstration of the adequate stability of both nails after axial and rotational loading. The reliability of the newly developed InSafeLOCK humeral nail system, which does not require scope control and additional cutting for distal locking, would be supported by clinical use.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 52339

STUDY OF FUNCTIONAL OUTCOME OF TOTAL ELBOW REPLACEMENT USING SEMI-CONSTRAINED ELBOW PROSTHESIS IN ADVANCED RHEUMATOID ARTHRITIS

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Background: Total Elbow Replacement is considered when there is disabling arthritis of the elbow. Various etiologies are responsible for this arthritis, commonest being Rheumatoid Arthritis. Other causes include, post traumatic arthritis, tumor affection of elbow, rarely haemophilic arthritis. Indications also include distal humerus fractures/nonunion in select elderly patients. Materials and Methods: 10 patients of Rheumatoid arthritis were operated for Total Elbow Arthroplasty at our institute between 2013-2015. There were 4 males and 6 females in our study. Baksi sloppy hinge prosthesis was implanted in all our patients. Results: Evaluation of patients was done at 6, 12, 18 months and final evaluation was done at 24 months in all our patients. Significant improvement in functional score, stability and range of movement was documented. Total Elbow Replacement is not a routinely performed surgery as such and has a steep learning curve which is a technical challenge. No major complication was noted in our study. Conclusion: Total Elbow Replacement provides stable, painfree elbow with functional range of movement and negligible complications if performed with technical expertise.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 50881

EFFECTIVENESS OF INTRA-ARTICULAR CORTICOSTEROID AND PLATELET-RICH PLASMA INJECTION IN THE TREATMENT OF ADHESIVE CAPSULITIS: AN EXPERIMENTAL COMPARATIVE STUDY IN RATS

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The treatment of adhesive capsulitis is crucial in preventing shoulder arthritis. The aim of this study is to compare the biomechanical and histological effectiveness of intra-articular (IA) Platelet Rich Plasma (PRP) and corticosteroid (CS) injections for the treatment of the adhesive capsulitis in rats. 48 adult rats were analyzed in 3 groups (n=16, apiece). Adhesive capsulitis model in rats was created after internal fixation of the left shoulders with sutures. After 8 weeks of immobilization, all sutures were removed and IA injections were performed (first group with saline solution, second with CS, third with PRP). After 4 weeks, all groups were sacrificed. Range of motion (ROM) and histological examination were performed and the outcomes were statistically compared between the groups. Adduction, abduction and total ROM was significantly better for both CS and PRP groups compared with Saline. The comparison between CS and PRP groups revealed that CS group had significantly better ROM than PRP group. Although the histological evaluation of CS and PRP groups revealed that vascular proliferation and type 3 collagen deposition scores in the CS group was better than PRP group, no statistically significant difference was found between these two groups. In conclusion, CS and PRP injections are both effective and safe for the treatment of adhesive capsulitis. Although they have almost similar histological results. CS injection is more effective compared to PRP with better ROM gain. So we prefer to choose CS injections rather than PRP for the treatment of adhesive capsulitis in clinical practice.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 50102

CORRECTIVE OSTEOTOMY AND IN SITU FUSION FOR LATELY PRESENTED NONUNIONS OF LATERAL CONDYLE OF THE HUMERUS IN ADULTS (REPORT OF OUTCOME AND LITERATURE REVIEW)

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Background: Late presentation of lateral condylar fractures of the humerus in children and to lesser extent in adults are not uncommon problem. To fix the fracture, correct the deformity, or even anterior transposition of ulnar nerve as a single procedure or in combination is still a controversial topic with Lack of literature dealing with this especially in adults. Always fear of loosing the available preoperative range of motion, nonunion and AVN make the surgeons in maze. Methods: In 19 patients with late presentation of lateral humeral condyle fracture, we assessed the results of corrective osteotomy and internal fixation with lateral incision only and without anterior transposition of ulnar nerve with regards to deformity correction, union and functional results using Mayo elbow performance index with at least 24 months follow up. All patients are Milch type 2 , 14 male and 5 females with average age 29.1 years , 18 patients with cubitus valgus and only one with cubitus varus deformity and 8 patients with tardy ulnar nerve symptoms. Results: The lately presented lateral condylar fractures can be managed surgically with our procedure alone even if they have a tardy ulnar neuritis with excellent results in 17 pt and good in 2 patients. Conclusion: In situ fusion, deformity correction and internal fixation is a valuable method for the management of lately presented lateral condylar fractures in adult age group.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 52297

PATIENT-REPORTED OUTCOMES IN PATIENTS TREATED WITH SUBACROMIAL SPACERS FOR IRREPARABLE ROTATOR CUFF TEAR

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Rotator cuff tears are one of the most common causes of non-traumatic upper limb disability in patients over the age of 50. In the UK, it is estimated that the number of patients presenting in primary care with shoulder complaints is around 2.4%, of which, between 30-70% are due to disorders of the rotator cuff. This is helpful in assessing the impact irreparable cuff tears have on the patients quality of life. Various treatment options are available, the one assessed is the biodegradable subacromial spacer (InSpace balloon). Aim: To evaluate the outcome of surgery on the patient's quality of life following the treatment of irreparable rotator cuff tears with InSpace Balloon. Method: Patients being treated with InSpace balloon for irreparable rotator cuff tears completed the oxford shoulder score pre-surgery. and post surgery. The total sum value on the questionnaire were extrapolated and compared to the ranges described on the OSS pro-forma. The two results were then compared. Results: Out of the total number of 15 patients between 2015-2017, the average OSS score pre-surgery was 20 which increased to 31 at 31 months post-surgery (55% increase). All patients treated showed improvement in their scores. Discussion: The mean acromiohumeral distance of the patients being treated was 2.625mm (<7mm), which categorises them into having irreparable rotator cuff tears. The results show a 55% increase in scores. This extrapolation from the OSS shows some success of the intervention. Conclusion: We found a 55% improvement in OSS post-surgery which indicates some success to the procedure being used.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 52288

EVALUATION OF TRANSFUSION RATE AND LENGTH OF STAY AFTER SHOULDER ARTHROPLASTY SURGERY

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The incidence of Shoulder arthroplasty surgery in the UK has doubled over the past 5 years. This study aims to identify factors associated with need for blood transfusion and prolonged length of stay (LOS) post shoulder arthroplasty. A retrospective multi-centre study was conducted. All shoulder arthroplasty cases over a period of 2 years were included (08/2015-08/2017). Data was collected from clinical and radiological recorders. Patients' demographics, type of surgery, indication, LOS, pre and post-operative haemoglobin, haematocrit and Total blood loss (TBL) were recorded. Multivariate analysis, SPSS v19, was performed. A total of 100 cases were included (49 Reverse Total Shoulder Replacements (TSR), 28 anatomic TSR, 12 Hemi-arthroplasty and 11 revisions). The average and mode age were 74 and 71 years respectively [25,90]. Drain was used in 41 cases. The average LOS was 4 days [1;17, outliers 31 and 60]. Twenty-eight patients were discharged on day 1 post-operatively, 50% by day 2 and 63% by day 3. Factors associated with prolonged LOS were anticoagulation and social factors. Transfusion rate was 9% with anaemia and fracture treated with reverse TSR as risk factors. The average LOS for transfused patients was 6 days [2;14]. The average haemoglobin drop was 21 [3,56] and the TBL (using Hb-balance method) average was 160mls [22,367]. This did not correlate with need for blood transfusion. Patients with pre-existing anaemia and those with fractures treated with reverse TSR have a higher risk for requiring blood transfusion and prolonged LOS post shoulder arthroplasty. Those may benefit from targeted optimisation protocols.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 51606

HOW DOES THE LITERATURE REPORT INTERNAL ROTATION AFTER REVERSE SHOULDER ARTHROPLASTY?: A SYSTEMATIC REVIEW

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Background: There are different methods to assess shoulder internal rotation (IR) including several clinical measurements and IR patient-reported functional outcomes (IR-PRFO). We hypothesize that there is a lack of consistency in the measurement and report of IR after RTSA. Methods: We searched MEDLINE and EMBASE for English original articles reporting clinical outcomes after RTSA. Studies that reported at least one IR outcome were included. Methods used to measure and report IR in each study were assessed and described. Results: A total of 174 studies were considered for inclusion. Sixty-two studies (36%) were excluded because they did not report any IR outcome. Of the 112 included studies, 99 (88%) reported only IR clinical measurements and 13 (12%) reported both clinical measurement and IR-PRFO. The most common clinical measurement was the range of motion (ROM) (N=111/112; 99%). IR ROM was measured by three different methods: vertebral level (85%); degrees of IR at 90 (14%); and 3D motion analysis (1%). Five different methods to report the vertebral level were found. Other clinical measurements were IR strength (N=5/112; 4%) and subscapularis tests (N=2/112; 2%). IR-PRFO was assessed by several methods including questions extracted from shoulder scores (ASES-SST), customized questionnaires, functional 3D motion analysis and toileting questions. Conclusions: There is an under-report of IR in the published studies after RTSA. Studies that reported IR after RTSA lacked consistency in the methods used for its measurement and report. It is advocated that IR measuring and reporting after RTSA requires consistency to allow data comparison or meta-analysis.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 51312

PROXIMITY OF THE AXILLARY NERVE DURING KEYHOLE TENODESIS OF THE LONG HEAD OF THE BICEPS TENDON: A CADAVERIC STUDY

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Aim of the Study :The long head of the biceps is subject to tenosynovitis as it has a synovial sheath and follows a very constrained path in the bicipital groove. It is a common cause of shoulder pain. Apart from the various medical and physical therapy, the surgical treatments described are the arthroscopic decompression, biceps tenotomy and tenodesis. The aim of the study was to evaluate the distance between the proximity of axillary nerve and the LHBT tenodesis. **Material and Methods:** We performed anatomic dissection over 8 cadaveric upper extremities. The bicipital groove was identified along with the long head of the biceps tendon. The axillary nerve was dissected and identified. A 2mm Kirschner wire was used to make the drill holes. The first hole was drilled into the bicipital groove at the level of attachment of the transverse ligament and the second drill hole was made at a distance of 1 cm from the articular margin into bicipital groove. The distance from these drills and the axillary nerves were measured using digital calipers. **Results:** The first drill hole was found to be at a mean distance of 15.1mm (Range 14.8mm to 15.3mm) from the axillary nerve and a mean distance of 14.2mm was recorded from the axillary nerve to the second drill hole. **Conclusions:** It was observed in our study that a proper placement of the entry site can avoid damage to the axillary nerve and avoid compromise in shoulder function. LHBT keyhole procedure is a safe procedure.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 49792

CLAVICULAR BLOCK WITH LOCAL ANAESTHESIA IN ACUTE MIDSHAFT CLAVICLE FRACTURE OSTEOSYNTHESIS

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This work aim is to evaluate the local block of midshaft clavicle fractures in selected patients and to verify the analgesic results in the surgical act (osteosynthesis with plates). A prospective study of a series of 70 selected patients with ASA Score I - II, between 19 and 42 years old from January 2016 to December 2017, was performed. All patients who underwent clavicle midshaft osteosynthesis under general anesthesia (24 patients) were also evaluated during this period of time, evaluating the surgical time from admission(ST) to the operating room, operative and postoperative pain in both groups. Technique: A preparation with Lidocaine 2% without Epinephrine (15 ml) + Bupivacaine 0.5% (10 ml) + 0.9% physiological solution (20 ml) is infiltrated directly into the fracture focus, soft tissue adjacent to the fracture plus subcutaneous infiltration in the surgical approach area. Results: Clavicular Block Group (CBG): 65 patients had a Facial Expression Scale (FES 0) during the procedure, and good operative and postoperative analgesia according to the Visual Analogue Scale of Pain (VAS 0). General Anesthesia Group (GAG): all patients obtained good operative analgesia (FES 0). In postoperative, 6 patients reported VAS 0, 15 (65%) VAS 4, and 3 (13%) VAS 6. The ST was 1 hour, 10 minutes in the CBG, and 2 hours 15 minutes in the GAG. Conclusion: The CBG had good operative and postoperative results, with better postoperative analgesia and lower ST, the patient can be discharged from hospital on the same day of surgery without pain.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 49674

PAIN AND FUNCTIONAL OUTCOME OF SHOULDER MANIPULATION UNDER ULTRASOUND-GUIDED INTERSCALENE BRACHIAL PLEXUS BLOCK IN CASES WITH ADHESIVE CAPSULITIS SHOULDER

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Introduction: Shoulder Adhesive capsulitis is a common problem encountered by orthopaedic surgeon in day to day practice. Shoulder manipulation done under general anesthesia which had increased morbidity when compared to regional block. Objectives: We evaluated the efficacy of ultrasound guided interscalene brachial plexus block in the treatment of adhesive capsulitis shoulder. Methods: This study was done during 2015 to 2016. Out of 131 patients 78 females and 49 males who failed to improve by conservative management were included in the study. Pre and post treatment pain and functional outcome was assessed using Visual Analogue Scale (VAS) and University of California in Los Angeles (UCLA). All shoulder manipulations was done by a single surgeon and interscalene block was given by a single anesthetist. Following manipulation same shoulder exercise protocol was followed for all. Results: The average pre treatment VAS and UCLA scores were 8.07 and 18.36. After one month UCLA scores plummeted to 31.26 VAS scores dipped to 4.41. However, at the end of 3, 6 and 12 intervals VAS score was 2.10, 1.66 and 1.12. UCLA scores were 31.45, 32.19 and 32.76. From the above data we could infer that VAS and UCLA scores showed a slight rise when compared to the former scores. Following interscalene block, two patients exhibited signs of Horner's syndrome which resolved spontaneously within an hour without any intervention. Conclusions: Advantage of using interscalene block in adhesive capsulitis was safe and effective treatment especially in elderly patients with comorbids could be treated with less morbidity.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 49471

**INTRAOPERATIVE PARAMETER FOR HUMERAL ROTATIONAL
OSTEOTOMY IN BRACHIAL PLEXUS PALSY: SURGICAL TECHNIQUE
AND PRELIMINARY RESULTS**

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Even though one of the most frequently used surgical approach for humeral derotational osteotomy is through the deltopectoral approach, an intraoperative parameter to determine the appropriate degree of rotation to correct are not yet defined. We present our experience using the anterior fold of the elbow to quantify the correct rotation of the humerus in 5 cases with brachial plexus injuries. All patients had a functional elbow, a stable shoulder but an external rotation deficit. We performed a deltopectoral approach using the elbow fold as a surgical parameter to determine the degree of exorotation of the humerus, in order to obtain a better placement of the hand in the space. After surgery an increase of elbow flexion range and also a better hand-to-face movement was registered meanwhile the internal rotation was preserved for performing midline function , the mean elbow flexion prior surgery was 71,00° and 102° post surgery, the mean of degrees of correction achieved were 69°. We propose the anterior fold of the elbow as a reliable intraoperative parameter, to determine the degree of intraoperative external rotation necessary for each patient to restore the plane of hand-face movement.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 52368

VASCULARISED FIBULAR GRAFT FOR UPPER LIMB RECONSTRUCTION

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Introduction: In 1975 Taylor contralateral fibula bridging a tibial defect of 12.5cm. From then on the use of free vascularized bone grafts became a fairly popular procedure. In the upper limb, the two main sites for bone defect reconstruction are the humerus and forearm bones. Large defects of the humerus are better managed with a free vascularised fibula bone graft. Patients and methods: two groups of patients, group I post neoplastic resection (24 cases) and group II post traumatic defects (21 cases). All cases underwent radiological evaluation including X-ray, CT +/- MRI. Results: assessment included viability of the graft, union, and hypertrophy. Assessment was done using MTSRS. The hypertrophy is mainly dependent on the mechanical loading which is affected basically by the age of the patient, time of union, and the presence of freely mobile joints of the upper limb. No significant statistical difference between the use of vascularized fibular graft in post-traumatic bone defects and the bone defects after tumor resection as regards the time of fibular graft union. Grafts with ensured viability are essential to obtain satisfactory graft union and functional results. Refinements of the internal fixation techniques result in early restoration of function and do not prevent graft hypertrophy.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 52103

**STUDY OF THE ROLE OF PROSTHETIC REPLACEMENT FOR
COMMUNUTED FRACTURE OF THE HEAD AND NECK OF THE RADIUS**

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Introduction: Radial head fractures account for 1.7%-5.4% of all fractures and 1/3rd of all elbow fractures. It is frequently associated with injury to ligamentous structures of elbow. There are several patterns of complex injury that include a fracture of the radial head whose identification can help guide treatment. Radiographic evaluation alone may not disclose associated ligament injury. Intra-operative examination after removal of radial head is important to avoid missing injury to the intraosseous ligament of the forearm. In our study, cases of comminuted fracture of head and neck of radius were studied prospectively after replacement with radial head prosthesis. Material: The present study consists of 30 patients of type III and IV radial head and neck fractures according to Morrey modifies Mason's classification, by radial head prosthesis. This was done to study the epidemiology of radial head and neck fractures and to testify the anatomical and functional outcomes of the treatment. Patients were followed up fortnightly post-operatively. Results: 13.33% were associated with ULCL injury and 10% with MCL injury. Post-operative ROM showed significant improvement in 6 weeks of follow-up. 66.67% of patients had MEPI score (Mayo Elbow Performance Index) >90, 23.33% had MEPI score 75-89, 6.67% had MEPI score 60-74, 3.33% had MEPI score <60. 93.33% patients had no post-operative complications. Conclusion: The modular radial head press-fit prosthesis is an ideal method of treatment in both type III and IV radial head and neck fracture. Complications can develop months or years after initially successful treatment.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 51853

SCAPULAR OSTEOCHONDROMA WITH WINGING

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Introduction: Osteochondroma, a type of cartilaginous tumour, is the most common benign tumour affecting the bone. These tumours usually arise around the knee, proximal humerus, and pelvis, but very rarely occur at the scapula. Osteochondromas are usually asymptomatic and uncomplicated, but must be treated by surgical resection. Presentation of Case: we present a rare case of a symptomatic scapular osteochondroma associated with scapular winging in a 30-year-old man. This tumour exhibited positive radiological findings and was treated surgically, leading to a complete resolution of the patient's symptoms with no history of recurrence. Discussion: This case was unique because although the patient presented in his fourth decade of life, he had not noticed any signs indicative of lesional growth during adolescence and the maturation process. Additionally, this case was symptomatic and involved an unusual site. Conclusion: By reporting this rare case of a ventral-side scapular osteochondroma that presented with scapular winging, we aim to increase the awareness of the unusual manifestations of osteochondroma, particularly atypical sites, signs, and symptoms. Furthermore, we have described the surgical treatment of this case in detail to assist other surgeons who face similar cases.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 51581

CAN PATIENTS MANAGE TOILETING AFTER REVERSE TOTAL SHOULDER ARTHROPLASTY?: A SYSTEMATIC REVIEW

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Background: A major concern for patients undergoing reverse total shoulder arthroplasty (RTSA) is managing toileting after surgery. The goal of this systematic review was to determine the ability and degree of difficulty of patients to manage toileting after RTSA. Methods: Medline, EMBASE, Google Scholar, and the Cochrane Central Register of Controlled Trials were searched for studies reporting the ability to manage toileting after RTSA. We calculated the weighted mean proportion of patients able to manage toileting, those who reported difficulty, and those able to manage toileting after unilateral versus bilateral RTSA. Results: Only 3% of all papers published on the clinical results of RTSA by June 2017 reported upon toileting. Six studies with at least 12 months of follow-up were included, yielding 183 patients (105 unilateral RTSA, 78 bilateral RTSA). Most patients (92%; 95% confidence interval, 87%–95%) were able to manage toileting after RTSA. Some degree of difficulty with toileting was reported for 20% of all shoulders. Almost all patients with bilateral RTSA were able to manage toileting with at least 1 arm (weighted mean proportion 97%; 95% confidence interval, 88%–99%). There was no significant difference in the proportion of patients able to manage toileting after unilateral versus bilateral RTSA ($P = 0.08$). Conclusions: With the available evidence most patients were able to manage toileting after RTSA, although one-fifth reported some degree of difficulty. Ability to manage toileting was similar after unilateral versus bilateral RTSA. In the future this variable should be a standard question after shoulder arthroplasty.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

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Room: Room 518c

Abstract no.: 49579

COMPARISON OF PLATELET-RICH PLASMA WITH STEROID INJECTION IN TENNIS ELBOW

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Introduction: Lateral epicondylitis, also called as Tennis Elbow is the main cause of aching pain involving extensor origin of forearm. Repetitive movements are considered to be the root cause of this disorder. The basis for diagnosing lateral epicondylitis is very clear clinically. The strategy of injecting steroid locally has proven to dispense predictable and transient relief of pain. Recent treatment involve Platelet Rich Plasma (PRP) administration locally. Study Design: Prospective study. Duration: 01-07-2014 to 30-06-2016. Setting: Department of Orthopedic Surgery Allied /DHQ Hospital Faisalabad. Subject and Methods: Total of 38 patients aging 25-60 years with either gender with Lateral Epicondylitis who met inclusion criteria were enrolled in this study and divided in two (2) groups A (Steroid) and B (PRP). Outcome was analyzed on the basis of Visual Analogue Scale of pain and function using qDash scores at baseline, 6 weeks and 12 weeks. Results: In Group A, baseline VAS was 7.3 + 2.1 and q DASH was 83+1.2. At 6 weeks and 12 weeks VAS was 5.3+ 3.1 and 6.1+1.2 respectively. qDash scores were 78 + 4.2 and 63 + 1.6 at 6 and 12 weeks respectively. In Group B VAS was 7.2+ 2.2, 5.3 +1.3, 3.2+ 1.2 at baseline, 6 weeks and 12 weeks. While qDash Scores were 81+3.2, 74+3.7, 58+1.2 at baseline, 6 weeks and 12 weeks respectively. Conclusion: Steroid and PRP are effective equally but PRP is ranked superior to steroid for its long term effectiveness in controlling pain and improve functional outcome.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (I)

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 50718

REHABILITATION EXPECTANCY IN ROTATOR CUFF ARTHROSCOPIC REPAIR

Amirreza FARHOUD¹, Amirreza FARHOUD¹, Mohammad Reza GUILTY²,
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Background: Postoperational rehabilitation is one of the most orthopedic specialists concern after massive rotator cuff tear (MRCT) repair. Predicting quality of functional outcome have been very crucial for both patients and surgeons. Objectives: In this study, the relationship between factors affecting arthroscopic MRCT's repair has been evaluated by a prospective Case Control study. Materials and Methods: Fifty four patients with massive rotator cuff tears that repaired arthroscopically were included in the study. Patients functional outcome have been examined one year after surgery by scoring systems including Gottlieb / Fuchs Rotator Cuff Classification, Visual Analogue Scale (VAS) for pain, American Shoulder and Elbow Score (ASES), Simple Shoulder Test (SST) and Constant Shoulder Score (CSS). Results: Forty five MRCTs was seen in dominant hand. ASES>80 was obtained in this study. Multivariate analysis demonstrated that none of them are able to predict poor functional outcome ($p>0.05$). No significant relationship was observed between number of the ruptured tendons and patient's functional outcome. Conclusion: Based on this study, no independent factors able to predict the functional improvement of patients preoperatively, but acromiohumeral distance postoperatively may be the only partially effective factor in the functional outcome of patients.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (II)

Time: 10:30 - 12:00

Room: Room 518c

Abstract no.: 51534

SHOULDER PARTIAL DENERVATION: AN ANATOMICAL STUDY OF THE FEASIBILITY AND SURGICAL PERSPECTIVES

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Articular denervation of the shoulder have been proposed by few authors in case of shoulder pain. The source of shoulder pain has never been defined but has been assumed to be related to musculoskeletal injuries or arthritis. We present an anatomical study, to evaluate shoulder denervation and the surgical perspectives. Materials and methods: 30 specimens (15 fresh/frozen cadavers), all had vascular injections with RTV colored silicone. The study was conducted by two protocols: 1) Extensive dissections for 10 specimens in order to identify: nerve landmark and all articular branches from the ansa pectoralis, axillar and suprascapular nerves. 2) For the following 20 specimen: 3 surgical approaches around the shoulder was performed, (1) anterior subclavicular ; (2) axillar fossa ; (3) posterior at scapular spine. Most of the presumptive articular branches have been identified. Results: The nervous articular branches from the pectoral nerves have been well identified. Capsular branches from axillar nerve varied in numbers, destined to glenohumeral inferior recess. Articular branches from suprascapular nerve vary according to their number and pattern destined to acromioclavicular and glenohumeral joints. Conclusion: The execution of these three routes, not extensive and simple, it is possible to identify the articular nerves of the shoulder to practice a partial denervation in case of recurrent pain of the shoulder. Surgical indications are rare but present. Each case must be discussed to provide a surgical program "a la carte"!

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (II)

Time: 10:30 - 12:00

Room: Room 518c

Abstract no.: 51370

IS PRP INJECTION ALONE SUFFICIENT TO TREAT PARTIAL ROTATOR CUFF TEAR?

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Background :Though not a life-threatening injury, the pain and discomfort associated with RCTs and restriction of shoulder movements can significantly decrease the value of a patient's lifestyle, hindering one from performing daily activities and accomplishing goals as adequately and frequently as one would like. The aim of study is to achieve healing of partial thickness rotator cuff tears by Ultrasound guided platelet rich plasma injection. Material and methods: This study was conducted in the Department of Orthopaedics. PRP injection was done using ultrasonography guide via anterior subacromial approach. Demographic data were obtained in all patients before the study, and shoulder function was evaluated using the Visual Analogue Scale (VAS) for pain, Quick Disabilities of the Arm, Shoulder and Hand Scale (DASH) score, Oxford shoulder score. Results: Total 87 cases of partial RCTs (diagnosed by USG) were enrolled in this study. Pre injection mean VAS score, DASH score, OSS score was 6.78 ,53.97, 26.48 respectively and post injection at 6 month VAS score, DASH score, OSS score was 0.32,1.54 ,46.8 respectively. Significant improvement was observed after injection. All tears were healed. None case had retear. Conclusion: The use of PRP as a minimally invasive treatment option with the prospect of a speedier recovery time and less morbidity post-treatment, as opposed to surgical interventions, is thus a highly attractive option and one that ought to be further investigated.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (II)

Time: 10:30 - 12:00

Room: Room 518c

Abstract no.: 51173

COMPREHENSIVE© REVERSE SHOULDER SYSTEM: EVALUATION OF OUTCOMES AND NOTCHING IN DIFFERENT AETIOLOGIES AT A MEAN FOLLOW-UP OF 32 MONTHS

Ahmed A. ELSHEIKH¹, Ahmed A. ELSHEIKH¹, Amanda WOOD², Amanda WOOD², Simon FROSTICK³, Simon FROSTICK³

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This study documents the outcomes of the Comprehensive Reversed Total Shoulder arthroplasty (RTSA), a modified RTSA designed to improve function and reduce complications. 109 patients (117 shoulders), were available for review, 34 men and 75 women received 65 primary and 52 revision replacements. Comprehensive© RTSA baseplate was implanted inferiorly, 10° to 15° inferior tilt with eccentric glenosphere in all patients. Mean age at surgery was 68.6 years (range: 44-89 years), and mean follow-up was 32 months (range: 6-71 months). ROM measurements, Oxford Shoulder score, Constant score, pain and limitation were recorded pre- and post-operatively. Radiological review of loosening, notching and other adverse findings used the Nerot-Sirveaux classification. The postoperative functional improvement was highly significant ($p=0.000$) in both mean forward flexion to $99.6^{\circ}\pm 39.5^{\circ}$ and lateral elevation to $85.2^{\circ}\pm 36.5^{\circ}$. OSS nearly doubled from 13.9 ± 9.8 to 27.4 ± 13.6 postoperatively while CS doubled from 21.1 ± 11.3 to 46.3 ± 19.1 (both $p<0.000$). Significant decreases in pain to 3.5 out of 10 ($p=0.000$), and limitation to 4.6 out of 10 ($p=0.000$) were measured postoperatively; mean postoperative satisfaction was 7.8 ± 3.3 out of ten. No significant difference in the outcomes of primary or revision arthroplasties or between different underlying pathologies was detected. Complications were rare; 4 shoulders (3.4 %) demonstrated notching, 3 grade-1 and one grade-2; one dislocated shoulder and one disassociated component required revision; no radiolucent lines were detected. Significant improvements in functional outcomes and pain relief, together with a very low incidence of complications, are achievable in many different shoulder aetiologies.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (II)

Time: 10:30 - 12:00

Room: Room 518c

Abstract no.: 51172

CEMENTLESS TOTAL ELBOW REPLACEMENT: OUTCOMES AT A MEAN FOLLOW-UP OF FIVE YEARS

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This clinical study reports the outcomes of the cementless Discovery elbow system. The available literature on the use of a cementless total elbow arthroplasty (TEA) design and its results are limited. Twenty-four patients (25 elbows) Patients were operated on by a single surgeon between 2003 and 2017, three women (1 bilateral TEA) and twenty-one men. The age of the patients at surgery ranged from 27 to 75 years (mean, 47 years). The mean follow-up was 5 years (range, 8 -169 months). Patients were assessed for range of motion, pain, and satisfaction level. Outcome scores included the Mayo Elbow Performance Score, the Liverpool Elbow Score, and the 12-Item Short Form Health Survey (version 1). Radiographs were reviewed to evaluate for loosening. The mean Mayo Elbow Performance Score was 84, and the mean Liverpool Elbow Score was 6.99. The mean flexion range was 120°, and the mean extension lag was 35°. The mean pronation was 67°, and the mean supination was 45°. On radiologic evaluation, there were no signs of loosening; however, in 2 elbows (0.08%), non-progressive radiolucent lines were observed. No signs of infection were detected at final follow-up, and no elbows were revised. 88% of patients were satisfied/very satisfied with the overall outcome. 64% of them had no pain, 12% had mild pain. Only one patient (0.04%) had long-term ulnar nerve sensory symptoms. The cementless TEA offers a reliable option for treatment of varying elbow diseases. Long-term results are needed to assess the survivorship of this design.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (II)

Time: 10:30 - 12:00

Room: Room 518c

Abstract no.: 51169

MID-TERM OUTCOMES OF REVERSE SHOULDER REPLACEMENT: A MAJOR TRAUMA CENTRE EXPERIENCE

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¹Northern deanery, wigan (UNITED KINGDOM), ²SRFT, Manchester (UNITED KINGDOM)

Reverse shoulder replacement (RSR) has gained wide popularity in modern orthopaedics and its indications have expanded. We aimed to study the midterm outcomes of reverse shoulder. Arthroplasty for different indications; acute trauma, massive rotator cuff tear and osteoarthritis. Method: 101 patients had undergone RSR between 2009 and 2016, were studied retrospectively. The primary outcome measure was revision to any cause and was analysed by Kaplan-Meier survivor test. Data of clinical and radiological assessment, constant shoulder score, and Nerot-Sirveaux grading system for scapular notching were analysed. Results: the mean age at the time of the index procedure was 72.02 years (range 43-90). Sixty five (65.3%) were females. Fifty one (50.5%) had arthroplasty for massive cuff tear, twenty seven (26.7%) for osteoarthritis, and twenty three (22.8%) were indicated for acute trauma. The mean follow up was 3 years (range 1-7.4). Sixty nine (68.3%) were cemented stems. One patient (0.9 %) had deep infection. Sixty eight (67.3%) had no scapular notching, fifteen (14.9%) were grade 1, fifteen (14.9%) had grade 2, and Three (3%) were grade 3. Constant score had improved from a mean of 30.4 pre-operative to 52.5 at 12 months. The mean range of motion was 132.65° for forward flexion, 110.31° for abduction at 12 months post-operative. The survival rate at a mean of 3 years follow up was 98.02% (95% confidence interval: 2.6 - 3.3 years). Conclusion: the midterm results of reverse shoulder replacement are promising for different indications; particularly in the setting of massive cuff tear and acute trauma.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (II)

Time: 10:30 - 12:00

Room: Room 518c

Abstract no.: 51059

COMPARISON OF THE CLINICAL EFFECT OF THE INTERNAL FIXATION COMBINED WITH BONE GRAFT AND THE REPLACEMENT OF THE HUMERAL HEAD WITH THE SEMI-SHOULDER ARTHROPLASTY FOR THE TREATMENT OF THE PROXIMAL HUMERUS FRACTURE

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Objective: Comparative analysis of allogeneic bone grafting with locking plate fixation and semi-shoulder arthroplasty for the treatment of the proximal humerus fracture of Neer three or four fracture. Methods: Retrospective analysis of July 2010 to July 2015, our hospital treated 49 cases of age ≥ 60 years old proximal humerus Neer three or four fracture of patients' clinical data, of which 27 cases with allogeneic bone graft with locking plate fixed treatment (bone graft LCP group), semi-shoulder arthroplasty (SSA group)22 cases. The patients were followed up for 8-24 months. The operation time, intraoperative blood loss, Constant score, Neer score, VAS pain score and complication were recorded and compared between the two groups. Results: There were no complications such as infection, nerve injury, prosthesis loosening, fixation screw detachment and fracture around the joint. There was no significant difference in operation time and intraoperative blood loss between the two groups. There was no significant difference between the mean total score of Neer, the average score of Neer and the SSA group in the LCP group. There were significant differences in VAS score between the two groups ($P < 0.05$). The difference of VAS score between the two groups was statistically significant. Conclusion: Allogeneic bone transplantation to strengthen the locking plate fixation and semi-shoulder arthroplasty is an effective treatment, similar efficacy between the two groups. The final choice of treatment options should be based on the patient's physical condition, proximal humerus blood destruction, bone conditions and the experience of the surgeon comprehensive decision.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (II)

Time: 10:30 - 12:00

Room: Room 518c

Abstract no.: 50850

HINGE EXTERNAL FIXATOR COMBINED WITH INTERNAL FIXATION IN THE TREATMENT OF COMPLEX ELBOW FRACTURES

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Objective: To explore the effect of hinge external fixator combined with internal fixation in the treatment of complex elbow fractures. **Methods:** 26 patients underwent external fixation combined with external fixator (external fixator group), 20 patients were treated with internal fixation combined with adjustable protector (adjustable protector group). All patients underwent open reduction and internal fixation, the external fixator group was fixed with the hinge external fixator, the adjustable protector group was treated with adjustable protector after internal fixation. We usually fixed or replaced radial head, fixed ulnar coronoid and olecranon, repaired joint capsule and ligaments in the operation. The elbow function was evaluated at the last follow-up by Mayo elbow performance score (MEPS). **Results:** 46 patients were followed up from 10 to 24 months (average, 16.8 months). All the patients obtained bone union, healing time of external fixator group was 8 to 14 weeks (average, 12.4±2.4 weeks), adjustable protector group was 10 to 16 weeks (average, 13.8±3.6 weeks). There're no significant differences (P>0.05). At the last follow-up, for the external fixator group, MEPS was 91 points (58-96 points), 21 patients were excellent, 2 good, 2 fair, and 1 poor, the excellent to good rate was 88.5%. For the adjustable protector group, MEPS was 82 points (55-92 points), 10 patients were excellent, 4 good, 2 fair, and 4 poor. The excellent to good rate was 70.0%. There're significant differences (P<0.05). **Conclusions:** The internal fixation combined with metal hinge external fixation can get better functional recovery for the complex elbow fracture.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (II)

Time: 10:30 - 12:00

Room: Room 518c

Abstract no.: 50849

COMBINED SURGICAL APPROACH OF THE ANTERIOR AND POSTERIOR FOR ULNAR CORONOID FRACTURE OF O'DRISCOLL TYPE IIIb

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Objective: To explore the clinical efficacy of combined surgical approach of anterior and posterior for treatment of ulnar coronoid fracture of O'Driscoll type IIIb. Methods: From December 2013 to March 2015 . 18 patients with ulnar coronoid fracture of O'Driscoll type IIIb were treated in our department. They were 12 males and 6 females. 29 to 52 years of age (mean, 38.6 years). All the patients were treated through combined surgical approach of anterior and posterior, using micro plate and anatomical plate to fix ulnar coronoid and olecranon fracture respectively. Reduction, reduction loss, fracture healing time and complications were documented. The elbow function was evaluated at the last follow-up by Mayo elbow performance score (MEPS). Results 16 patients were followed up for 9 to 20 months (average, 16.2 months), and 2 patients were lost. All the 16 patients obtained bony union after 6 to 16 weeks (average, 11.8 weeks). At the last follow-up, elbow flexion ranged from 108° to 125° (average, 115°), elbow extension from 0° to 38° (average, 8°), forearm pronation from 55° to 85° (average, 78°), and supination from 70° to 87° (average, 84°). According to MEPS, 12 patients were excellent, 1 good, 1 fair, and 2 poor. The excellent to good rate was 83.2%. None of the patients had deep wound infection. One patients appeared elbow stiffness, one patients appeared elbow heterotopic ossification. Conclusions: Combined surgical approach of anterior and posterior for treatment of ulnar coronoid fracture of O'Driscoll type IIIb can result in good efficacy because it allows reduction under direct vision, leads to rigid fixation.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (II)

Time: 10:30 - 12:00

Room: Room 518c

Abstract no.: 52390

TOTAL ELBOW REPLACEMENTS IN A DISTRICT HOSPITAL IN THE EAST OF ENGLAND: TEN-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 to 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: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (II)

Time: 10:30 - 12:00

Room: Room 518c

Abstract no.: 51886

ACCURACY OF DIGITAL TEMPLATING IN REVERSE GEOMETRY SHOULDER REPLACEMENT WITH AND WITHOUT MARKER

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Background: The aim of the study was to determine how well pre-operative size selection for reverse geometry shoulder replacement (Delta Extend-Depuy Synthes) using digital templating with and without referencing marker correlated with the actual size implanted. **Methods:** Twenty-two patients underwent reverse total geometry arthroplasty with a single prosthesis using Mackenzie approach. Three independent blinded surgeons (two experienced and one shoulder fellow) used pre-operative digital radiographs and Orthoview templating software to generate templates for the glenosphere, poly insert and humeral stem for each patient. Accuracy was assessed by comparing templating to actual implant sizes. Fourteen patients had pre-operating Non-Scaled templating and eight patients had Scaled marking templating. The resulting images and reports were saved and the data of actual implant used is collected by going through the post-operative notes of the patients. **Results:** The templated reverse geometry stem length and head offset matched the actual implant in 100 % of cases in marker and non-marker cases. The cup size and glenosphere matched the actual implant in 50 % of the cases without the marker but improved with the marker in 62 % of the cases. In relation to stem size the non-marking templating matched the actual implant in 71% of the cases and 12 % of the cases with the marker used. **Conclusion:** This is the first study to evaluate the reliability and accuracy of preoperative digital templating of glenosphere in reverse total arthroplasty as well as the first to evaluate templating of any kind for polyethylene humeral spacer insert.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (II)

Time: 10:30 - 12:00

Room: Room 518c

Abstract no.: 51296

UTILISING TOPAZ™ (MICRODEBRIDER) FOR LATERAL EPICONDYLITIS: MEDIUM-TERM OUTCOME IN A DISTRICT GENERAL HOSPITAL

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Aims: To evaluate the patient report outcomes of microtenotomy, using the radio-frequency micro-debrider device 'TOPAZ', as a surgical technique in the treatment of chronic lateral epicondylitis. **Method:** This is a retrospective single-centre clinical study on patients who received microtenotomy for lateral epicondylitis. All patients were under the care of a single surgeon between September 2010 to December 2013 in a district general hospital. Using our electronic patient record, we recorded details of the patients demographics and prior treatment. We contacted the patients up to 6 years postoperatively, to re-evaluate the long-term outcome of this surgical technique. **Results:** 44 patients were identified and 42 patients were included (response rate 95%). 2 patients declined participating in the study. The mean total abbreviated Quick DASH score for all patients was 14.95, which when compared to the literature is similar or marginally better than other surgical techniques in the treatment of lateral epicondylitis. Of the 42 patients, 67% said that they were 'satisfied' with the procedure 3-6 years post-operatively, with a mean Quick DASH score of 5.03. A further 24% felt 'partially satisfied' with a mean Quick DASH score of 30.73, while 9.5% felt 'dissatisfied' with mean Quick DASH score of 44.9. **Conclusion:** Microtenotomy is an effective minimally invasive surgical technique in the long term treatment of lateral epicondylitis. In this case series, surgery closer to the onset of symptoms improved the long term outcome of patients with chronic lateral epicondylitis.

Date: 2018-10-11

Session: Shoulder and Elbow Short Free Papers (II)

Time: 10:30 - 12:00

Room: Room 518c

Abstract no.: 51153

IS THERE A CORRELATION BETWEEN INFERIORISATION OF THE HUMERUS AND THE FINAL FUNCTIONAL OUTCOME IN REVERSED ARTHROPLASTIES IN THE TREATMENT OF COMPLEX HUMERAL FRACTURES?: A RETROSPECTIVE STUDY

Luis LUIS PIRES¹, Luis LUIS PIRES¹, Barbosa LUIS¹, Barbosa LUIS¹, Coelho ANA², Coelho ANA², Andre BARROS³, Andre BARROS³, Carlos MAIA DIAS³, Carlos MAIA DIAS³, Eduardo CARPINTEIRO³, Eduardo CARPINTEIRO³, Raul ALONSO², Raul ALONSO²

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Introduction: The first objective of this study is to verify if there is a correlation between the variability of the height of the humerus in the treatment of proximal fractures with reversed arthroplasty, with the functional results. Material and Methods: Between 2012 and 2014, 22 total inverted arthroplasties were consecutively performed in patients with humerus fractures in 3 or 4 parts. Mean age of 70 years, 90% female. , with follow-up average of 11.8 months. Using the center of the acromio-clavicular joint and the calcar of the humerus as points of reference for height variations. The functional outcome of the arthroplasties was satisfactory with results of Constant 79,5; SSV 85%; ASES 84.7; Quick DASH 13.2. When we compared the values differences with the highest and lowest inferiorizations of the humerus we found an absence of correlation between the lower values with the better functional results and vice versa. Discussion: We hypothesized the relationship between lowering the humerus and the final function which were not confirmed. In this arthroplasty design there seems to be other biomechanical factors, namely medialization of the center of rotation or lateralization of the humeral shaft, which influence the final functional result. Conclusion: The mean value of inferiorization of the humerus in the inverted arthroplasty in the treatment of fractures proximal of the humerus is 8 cm. The variability of this lowering of the humerus height, after the inverted arthroplasties in the treatment of the proximal humerus, does "not per se" influences the function.

Date: 2018-10-11

Session: Tumours Short Free Papers

Time: 14:00 - 15:30

Room: Room 518c

Abstract no.: 50714

CLINICAL OUTCOMES OF DEFORMITY CORRECTION OR DISTRACTION OSTEOGENESIS USING AN EXTERNAL FIXATOR AFTER TUMOUR RESECTION

Katsuhiro HAYASHI, Katsuhiro HAYASHI, Norio YAMAMOTO, Norio YAMAMOTO, Hidenori MATSUBARA, Hidenori MATSUBARA, Akihiko TAKEUCHI, Akihiko TAKEUCHI, Shinji MIWA, Shinji MIWA, Kentaro IGARASHI, Kentaro IGARASHI, Hiroyuki TSUCHIYA, Hiroyuki TSUCHIYA
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Deformities and defects after bone tumor surgery are common. The aim of this study was to investigate the clinical outcomes of 53 patients who underwent surgery using an external fixator following bone tumor excision. Since 1987, 34 patients have undergone reconstruction using an external fixator, such as distraction osteogenesis, after bone tumor resection. Nineteen patients have undergone salvage using an external fixator for complications, such as deformity, after bone tumor surgery. The patients included 26 males and 27 females, with a mean age of 22.9 years. Tumor types included 23 osteosarcomas, 7 giant cell tumors, 3 osteofibrous dysplasias and 20 other tumors. As for reconstruction, bone transport was used in 27 cases, bone lengthening in 8 cases and shortening distraction in 7 cases. The average follow-up period was 6 years. The mean external fixation period was 297 days (92-789 days). In patients who underwent distraction osteogenesis, the mean distraction length was 8 cm (2- 26 cm) and the external fixation index (EFI) was 41 days. Spearman correlation between distraction length and EFI was -0.432 ($p=0.0068$), indicating that longer distraction did not result in delayed consolidation. Twenty-two patients were followed over 10 years and the average Musculoskeletal Tumor Society functional score was 92%. Fourteen patients were able to play sports without any difficulty. Reconstruction by bone distraction requires both time and effort, but can provide excellent long-term outcomes, resulting in a stable reconstruction that functionally restores the natural limb.

Date: 2018-10-11

Session: Tumours Short Free Papers

Time: 14:00 - 15:30

Room: Room 518c

Abstract no.: 49903

SCHWANNOMA IN THE EXTREMITY: CLINICAL FEATURES AND MICROSCOPIC INTRA-CAPSULAR ENUCLEATION

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Purpose: Schwannoma is the most common neoplasm of the peripheral nerve. Enucleation is a standard surgical procedure, but this sometimes results in iatrogenic nerve injury even with atraumatic procedures. In this study, we present the clinical characteristics of schwannoma arising in the extremities and discuss clinical outcomes for the techniques of extra- and intra-capsular enucleation. **Patients and Methods:** We reviewed 122 schwannomas surgically treated in our institute. Schwannomas arising from the minor nerve (n=30) or intramuscularly (n=15) were all operated using the extra-capsular technique. Of the 77 major nerve schwannomas, 62 were treated using the intra-capsular technique and 15 using the extra-capsular technique. In the intra-capsular technique, the schwannoma was resected piece-by-piece as much as possible through a longitudinal incision in the epineurium under surgical microscope. **Results:** Neurological deficit following enucleation was significantly lower using the intra-capsular compared to the extra-capsular technique. Patient age, duration of symptoms, maximum tumor diameter and site of occurrence were not associated with subsequent neurological deficit. With both techniques, no tumor recurrence was observed at the final follow-up. **Conclusion:** These results support the use of intra-capsular micro-enucleation as a safe and reliable treatment for every type of schwannoma. To minimize the risk of nerve injury, en bloc resection should not be used because the main purpose of schwannoma surgery is the relief of symptoms, not tumor resection.

Date: 2018-10-11

Session: Tumours Short Free Papers

Time: 14:00 - 15:30

Room: Room 518c

Abstract no.: 49516

DIAGNOSTIC VALUE OF TUMOUR-FASCIA RELATIONSHIP IN SUPERFICIAL SOFT-TISSUE MASSES ON MAGNETIC RESONANCE IMAGING

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Introduction: Many surgeons participate in the management of superficial soft tissue masses, and a preoperative incorrect diagnosis frequently results in dismal oncological outcomes. The aim of this study was to identify distinguishing magnetic resonance imaging (MRI) features between malignant and non-malignant lesions. Methods: The clinicopathological data for 219 patients (men 114; women 105) with superficial soft tissue masses treated from January 2007 to December 2016 in our institution were retrospectively analyzed. The median age at the first visit was 55.6 years (range 1–90 years). MRI findings of tumor size, margin, lobulation, intratumoral hemorrhage, peritumoral edema, and tumor-fascia relationship were compared with the final histological diagnosis and tumor grade. Results: A significant relationship was observed between histologically malignant lesions and tumor size ≥ 5 cm ($p=0.033$), positive peritumoral edema ($p=0.031$), and tumor-fascia relationship ($p=0.0002$), but not margin ($p=0.076$), lobulation ($p=0.13$), and intratumoral hemorrhage ($p=0.094$). A significant correlation between the tumor-fascia relationship and malignancy ($p=0.0002$) was observed; such a relationship was, however, not observed for tumor grade ($p=0.43$). Conclusions: Tumors measuring ≥ 5 cm, peritumoral edema, and the tumor-fascia relationship on MRI are highly indicative of malignancy. When superficial soft tissue masses cross the superficial fascia and form obtuse angles with the fascia, sarcoma should be considered. The tumor-fascia relationship can offer surgeons useful information regarding the status of superficial soft tissue masses.

Date: 2018-10-11

Session: Tumours Short Free Papers

Time: 14:00 - 15:30

Room: Room 518c

Abstract no.: 50800

SURGICAL SITE INFECTIONS AFTER RADIATION THERAPY: AN UNBELIEVABLE CHALLENGE

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Introduction: Radiation therapy has become a common modality of treatment for management of soft tissue tumours. We decided to assess the challenges faced during management of Local infection after Radiation therapy. Materials & methods: Retrospectively reviewed the records of patients who presented with infected wounds after high-dose-rate radiation therapy for soft tissue tumours in a span of 4 years. These patients were operated previously for excision of tumour mass, after which they received radiation therapy following they developed surgical site infection. We reviewed their serial cultures, antibiotic sensitivity, wound sizes as well as secondary procedures like skin grafts and flaps that were additionally required in these patients. Results: 5 patients were included in the study, all males aged between 16 to 54. On an average the patients required 4.5 vac application. The mean time for wound healing was 5.4 months. 2 patients required additional wound coverage in the form of skin flaps. 1 patient had reinfection with flap failure. 4 out of the 5 patients had a polymicrobial infection 3 had antibiotic resistance and sensitivity only to colistin. All the patients developed infections post radiation therapy that were resistant to the standard modes of treatment. Conclusion: post radiation therapy induced infected wounds require multiple debridement and additional wound coverage, they posed great challenges in terms of infection control, wound coverage and required multiple interventional procedures in addition to VAC application. Encouraging results have been achieved by using VAC in patients with post radiation therapy induced wounds in terms of closure and control of infection.

Date: 2018-10-11

Session: Tumours Short Free Papers

Time: 14:00 - 15:30

Room: Room 518c

Abstract no.: 49926

INTRALESIONAL CURETTAGE FOR GRADE 1 CHONDROSARCOMA OF LONG BONES

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Aim: Diagnosis and treatment of grade 1 chondrosarcoma remain controversial. We performed a review of a single-centre series with the aim of assessing the oncologic outcome of these patients, verifying if intralesional curettage can be adequate treatment, and defining clinical criteria to support the surgeon and the oncologist in decision-making for surgery and subsequent follow-up. **Material and Methods:** A retrospective study of 8 cases of grade 1 chondrosarcoma of long bones of lower limb which were treated with intralesional curettage was performed. Intralesional curettage with high speed burr was supplemented with fibular strut graft taken from opposite side. Standard clinical follow-up contained regular visits to the orthopaedic department, physical examination and radiological follow-up with plain X-rays and CT -Chest. **Results:** Minimum follow-up was 24 months. No patients developed local recurrence. No distant metastases were observed. Radiologically the fibular graft incorporation within the defect was successful. Functionally all patients are doing well, no skin problems, no joint stiffness were observed. All of them were started on touchdown weight bearing by six weeks, partial weight bearing by 12 weeks and full weight bearing without support by 16 weeks. **Conclusion:** Grade 1 Chondrosarcoma of the appendicular skeleton with no aggressive imaging features can be treated with intralesional curettage and fibular strut grafting. However, when aggressive biologic behavior is evident on imaging, segmental resection following surgical principles of malignant bone tumors seems more appropriate. This technique is a viable option in the reconstruction of cavitory bone defects following intralesional curettage of grade 1 chondrosarcoma.

Date: 2018-10-11

Session: Tumours Short Free Papers

Time: 14:00 - 15:30

Room: Room 518c

Abstract no.: 49699

FUNCTIONAL OUTCOMES OF ENDOPROSTHETIC RECONSTRUCTION AFTER RESECTION OF PRIMARY BONE TUMOURS AROUND THE KNEE

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Introduction: Limb salvage using endoprosthesis for primary bone tumours is the treatment of choice. In this study, we sought to assess the functional outcomes and early complications associated with endoprosthetic reconstruction for tumours around knee. Material and methods: 20 patients who underwent tumour resection and endoprosthetic reconstruction around knee were followed up at 6 weeks, 6 months and 1 year from surgery. Functional outcomes were evaluated using Musculoskeletal Tumour Society (MSTS) scoring system, Toronto Extremity Salvage Score (TESS) and Short Form-36 (SF-36) questionnaire. Complications were also recorded and analysed. Results: In 8 patients proximal tibia, in 12 patients distal femur endoprosthetic reconstruction was done. At 6 weeks, mean MSTS% scores was 71.29% and 57.86%, TESS was 55 and 23 and SF-36 questionnaire had significant differences in physical functioning, social functioning and pain scores for distal femur and proximal tibia group respectively. All three scores improved over 6 months and 1 year but difference between two groups remained with better outcome in distal femur group which was statistically significant ($p < 0.01$). There were 2 cases of local recurrence from the biopsy tract, 1 each in case of distal femur and proximal tibia osteosarcoma. In both the mass was excised with clear margins. Conclusions: We conclude that endoprosthesis replacement for primary bone tumours around knee have early good to excellent functional outcome, better in distal femur compared to proximal tibial reconstruction. Parallel recording of the MSTS score, TESS and SF-36 scores provide a better measure by combining objective and subjective parameters.

Date: 2018-10-11

Session: Tumours Short Free Papers

Time: 14:00 - 15:30

Room: Room 518c

Abstract no.: 49927

RECONSTRUCTION USING STERILISED TUMOUR BONE FOR PRIMARY MALIGNANT TUMOURS OF THE UPPER LIMB

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Background: Delivery of lethal dose radiation to resected tumour bearing bone, and re-implantation of the resultant dead autogenous graft, is a selectively used option for limb preservation. We report an analysis of 6 patients treated likewise in our institution. Methods: This is an analysis of 6 patients who underwent extra-corporal radiation therapy between March 2012 and December 2015. After en-block resection, the bone was cleared of tumour, subjected to 50 Gray single dose radiation and re-implanted. Bone cement was used to fill the medullary canal. Patients were evaluated for surgery related complications, resultant delay in adjuvant therapy, bone union, recurrences, functional outcome using MSTS scoring system and deaths. Results: The median age of study patients was 12 years (1-34). 5 had osteosarcoma and one patient had Ewing's sarcoma. The involved bone was humerus in all the cases. Trucut biopsy was used for tissue diagnosis in all patients. All patients received neoadjuvant chemotherapy. The mean length of bone resected was 10.57cm (9-18). Bone and marrow margins were free of tumour in all cases. One patient had surgery related complications, wound hematoma, which required wound wash out. Bone grafting as a second surgery was done in 2 patients. Adjuvant chemotherapy was started within 3 weeks of surgery in 5(83.83%) patients. There were no local recurrence. One patient developed lung metastasis. The mean MSTS score of study population was 26.33. Conclusion: Extracorporeal radiation therapy is an oncologically safe option with satisfactory functional outcome for selected cases. It ensures effective tumour kill and spares surrounding tissues of radiation.

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Abstract no.: 49646

EXTRACORPOREAL IRRADIATION AND RE-IMPLANTATION OF THE BONE IN BONE TUMOURS

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Background – Bone tumours have a high recurrence rate. Conventionally, curettage and bone grafting or cementation and wide excision are used for treatment of bone tumours. Extracorporeal radiotherapy is a new modality for treatment of these tumours. We report here a case series of 8 patients treated by extracorporeal radiotherapy. Material and methods – 8 patients including 6 cases of giant cell tumour and 2 cases of osteosarcoma were treated with extracorporeal radiotherapy. Extracorporeal radiation was given to affected bone after excision of the tumour and thorough curettage of the tumour cavity. Cured tissue was sent for histopathological examination. Re-implantation of irradiated bone was done. Tumour cavity was filled with bone graft. Appropriate fixation was done and the extremity immobilised till there was union at the osteotomy site. Arthrodesis was done wherever required. Patients were followed at monthly intervals for evidence of recurrence, osteonecrosis and other complications. Post operative chemotherapy was given to patients of osteosarcoma. Results – One of the 8 patients developed local recurrence in follow up of 3 years. No patients showed evidence of distant metastasis and any other complications. 7 out of 8 had good union at osteotomy site. Conclusion – Extracorporeal radiotherapy and re-implantation of excised bone is a good treatment modality for bone tumours as it is difficult to fill bone defects with massive bone grafts. It is a good option for patients who cannot afford custom-made prosthesis. Systemic side effects of radiotherapy are minimized. Further evaluation of this treatment modality is needed.

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Session: Tumours Short Free Papers

Time: 14:00 - 15:30

Room: Room 518c

Abstract no.: 51871

**PNEUMOTHORAX IN PATIENTS WITH LUNG METASTASES OF
ADVANCED SOFT-TISSUE SARCOMA TREATED WITH PAZOPANIB**

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Pneumothorax is one of the critical adverse events for patients with lung metastases during pazopanib administration. In phase 3 clinical trials of pazopanib (PALETTE study), treatment with pazopanib was complicated by the occurrence of a pneumothorax in 8 of the 246 patients (3.2%). However, after pazopanib was approved for the treatment of STS, occurrence of pneumothorax appears more likely than that in the PALETTE study. The present study aimed to evaluate the incidence and features of this complication in all consecutive patients treated with pazopanib at our institution. Pazopanib was administered to 22 sarcoma patients with lung metastases, and 5 patients (22%) developed pneumothorax during pazopanib treatment. The common characteristics of all patients who developed pneumothorax were presence of juxtapleural or subpleural metastases and cavitation of lung metastasis. Four of 5 patients experienced multicystic pneumothorax, and a total of 18 occurrences of pneumothorax were observed in 5 patients. CTCAE grading of pneumothorax was grade 1 in 4 cases, grade 2 in 5, grade 3 in 8, and grade 4 in 1. The 22% incidence of pneumothorax at our institution was higher than the previously reported incidence. Once pneumothorax becomes severe, it could be a fatal complication. Especially in high-risk patients such as those with juxtapleural or subpleural metastases, periodic examination should be performed. The risk of pneumothorax during pazopanib therapy should be also discussed with the patient before initiation of treatment for a pulmonary metastasized sarcoma, and physicians should be alert to the occurrence of such an event.

Date: 2018-10-11

Session: Tumours Short Free Papers

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Room: Room 518c

Abstract no.: 51731

INCIDENCE OF WRONGLY PLACED INCISIONS IN BONE AND SOFT-TISSUE TUMOURS SURGERY: EXPERIENCE FROM 150 CONSECUTIVE CASES FROM A SARCOMA UNIT

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Bone and soft tissue tumours are rare and management should be by multidisciplinary team. Any surgical treatment should be performed by a surgeon trained in sarcoma surgery including biopsy. Principles of biopsy have been defined and extensively published and should be adhered to when biopsy is performed. A wrongly placed biopsy will compromise the outcomes of surgery and can result in ablative surgery in cases where limb salvage is possible. The aim of this study was to evaluate the incidence of wrongly placed incisions for biopsy in a series of 150 consecutive patients. Data was collected retrospectively from a prospectively held database. 150 patients were included in this study, of which 98 were males. The average age of the cohort was 43years. The commonest bone tumour was osteosarcoma and commonest soft tissue tumour was synovial sarcoma. 64 Patients had biopsy performed at our institution either directly or under the supervision of our sarcoma surgeon after planning. None of our cases had wrongly placed biopsy and our standard technique for bone tumours was core needle biopsy and trucut biopsy for soft tissue tumours. The over all incidence of wrongly placed incisions was 36% percent which were performed by generalists at district general hospitals. This study confirms that there is still an unacceptable incidence of wrongly placed biopsies. We suggest that these cases should be referred to a sarcoma unit and biopsies should be performed by a trained surgeon so that outcomes are not compromised.

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Session: Tumours Short Free Papers

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Room: Room 518c

Abstract no.: 51955

**THE EFFICACY AND SAFETY OF APATINIB IN PATIENTS WITH
SYNOVIAL SARCOMA: A SINGLE-INSTITUTIONAL EXPERIENCE**

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Background: Apatinib, an oral tyrosine kinase inhibitor targeting VEGFR-2, has been shown to be effective in the treatment of soft tissue sarcomas. This retrospective study aims to assess the efficacy of apatinib in patients with synovial sarcoma at our institution. Methods: Data were collected from the observational study in patients with local advanced, recurrent or metastatic synovial sarcoma after surgery. The study objective was to determine to what extent patients responded to apatinib. The tumor responses and the safety profiles were observed. Results: From May 2016 to Aug 2017, 13 patients were enrolled. 2 (15.4%), 10 (76.9%) and 1 (7.7%) were treated in adjuvant, one-line and second-line settings, respectively. Initial dosages of 500 and 250 mg/d were given to 12 (92.3%) and 1 (7.7%) cases, respectively. Median age was 27 (range 8-71), and male to female was 7:6. Most patients (9, 69.2%) were metastatic to lung. As of 2017/11/28, the median therapy duration was 5.7 months (range 2.1-10.8). Among 12 assessable patients according to RECIST v1.1, 8 achieved partial response, 2 stable disease, 2 progressive disease, and no complete response. The objective response rate (ORR) was 66.7% and the disease control rate (DCR) was 83.3%. The most frequent adverse events were hand-foot syndrome (HFS) (6, 46.2%), mucositis (4, 30.8%), vomit (3, 23.1%), anorexia (3, 23.1%), and wound healing delay (3, 23.1%). Conclusions: Apatinib was well tolerated and demonstrated activity as a one- or later-line treatment in patients with synovial sarcoma, which deserves further prospective trials.

Date: 2018-10-11

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Room: Room 518c

Abstract no.: 51597

A FIVE-YEAR REVIEW OF MANAGEMENT OF NEOPLASM REFERRALS TO A UNIVERSITY HOSPITAL ORTHOPAEDIC DEPARTMENT: ARE UK NHS CANCER PLAN TARGETS BEING MET AND HAVE LOCAL POLICIES HELPED?

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Introduction: A UK University Hospital Orthopaedic Department services were assessed for NHS Cancer Plan 2000 targets, local aim of 35days tertiary referral, 14days clinical review and MRI and if MRI service improved following 2014 intervention of regular educating senior and junior Orthopaedic and Radiology doctors. Methods: A 5year retrospective analysis was undertaken of new suspected bone and soft tissue neoplasm referral data prospectively collected from 1st January 2012 to 31st December 2016. Results: Each subsequent year referred suspected neoplasms increased (mean 93.8) and was 103.4% greater in 2016 versus 2012. The yearly majority were GP (mean 79.7%). A mean 39.5% of all cases were referred to tertiary centre. The yearly majority, except 2016, were non-GP (mean 51.02%) versus GP (mean 35.5%). Mean time to first orthopaedic review from GP referral met 14days target (mean 10.3days). Range improved in 2015, 2016 versus 2012, 2013 (mean range 0-74.5days versus 1.5-117days). However, mean time deteriorated from 8.4days to 13.1days. A consistent yearly decrease in mean time from first orthopaedic review to tertiary centre review from 20.4days to 7.4days since 2014 was identified. A high yearly proportion required MRI (mean 70.02%). Mean timing over all years was 9.4days. Since 2014 intervention timings decreased 47.9% in 2016 to 4.5days and 34% in 2015 with 50% increased patient workload. Conclusions: Management met NHS Cancer Plan & local guidelines. Change in local processes ensured reduced times of GP referral to first Orthopaedic review, tertiary centre review and to MRI scan, even with increasing yearly workload.

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Session: Tumours Short Free Papers

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Abstract no.: 52241

AGGRESSIVE FIBROMATOSIS IN A PAEDIATRIC POPULATION: A RETROSPECTIVE ANALYSIS

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Introduction: Aggressive fibromatosis or Desmoid fibromatosis is a benign tumor which originated from mesenchymal tissues of the body. This tumor has strong potential of recurrence and infiltration but it does not metastasize to other organs of the body. Pediatric fibromatosis is presented in children in age group of 6-15 years of age. This study is focused to determine the treatment outcomes for pediatric patients of aggressive fibromatosis. Methodology: It is a retrospective study conducted on 7 patients presenting to section of Orthopedics, department of surgery, Aga Khan University hospital, Karachi. We included all the cases of pediatric patients of age 1 to 16 years, with biopsy proven fibromatosis that were treated at AKUH from January 2000 to December 2015. Results: Out of 7 pediatric patients, there were 6 (85.7%) males and 1 (14.3%) female patient. The median age was 6 years IQR (5-11) years. Gluteal region was the most common site of disease. Four patients (57.1%) had positive tumor margins while three (42.9%) had negative margins. Out of 7 patients, 4 patients (57.1%) had recurrent disease. The median Disease Free survival time was 14 months and there was no expiry of patients.

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Room: Room 518c

Abstract no.: 51005

A ONE-CENTRE EXPERIENCE OF INTERSTITIAL PERMANENT I125 BRACHYTHERAPY FOR EXTREMITY SOFT -ISSUE SARCOMAS

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Introduction: The goal of this study was to evaluate the efficacy of interstitial permanent brachytherapy (BRT) using I125 seeds for patients undergoing combined modality management of soft tissue sarcomas (STS) in our institution. Methods: From January 2007 to January 2012, 110 adults 18–86 years of age (median =44 years) with extremity STS who underwent interstitial permanent brachytherapy using I125 seeds as part of local regional treatment were included in this review. The media number of I125 seeds implants is 30. Complications were assessed in terms of wound complication, and peripheral nerve damage. Results: After a median follow up of 43.7 months, the local-control (LC), disease-free survival (DFS), and overall-survival (OS) for the entire cohort was 74%, 54%, and 77% respectively. The actuarial rates of wound complications requiring reoperation, and nerve damage were 4.5%, and 1.8%, respectively. Conclusions: Interstitial permanent brachytherapy with I125 after function-preserving surgery results in satisfactory outcome in patients with extremity STS, and the complication rate is low that compares favorably with data reported for external beam radiation and brachytherapy in other modality .

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Room: Room 518c

Abstract no.: 51288

THE IMPACT OF A COMMUNAL MULTIDISCIPLINARY TEAM ON THE MANAGEMENT OF SOFT-TISSUE SARCOMA

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Background: In the developing world the management of extremity soft tissue sarcoma is more challenging in the absence of coordinated multidisciplinary teams (MDT) for prompt case recognition, diagnosis and appropriate treatment. Method: Consenting patients presenting with musculoskeletal tumours from tertiary referral centres in the Lagos metropolis were included for MDT discussion at monthly meetings, under the aegis of the Lagos Musculoskeletal Oncology Network [LAMON]. Decisions about surgery, chemotherapy, radiotherapy and timing of the modalities, were planned at the meetings in adherence with international standards. All patients reviewed at the LAMON MDT from October 2012 to September 2016 were included in this prospective study. Results: Over the 48 months, the LAMON MDT reviewed 642 patients with suspected musculoskeletal tumours. The age range of the patients was 3-95 years. The duration of symptoms varied from 2 weeks to 10 years and only 26% of the total number of patients were directly referred from the primary care providers hence many had inappropriate treatment prior to referral. The common locations of tumours were in the thigh (48%) and the leg (13%). The common malignant tumours were liposarcoma, fibrosarcoma and pleomorphic sarcoma . Limb salvage was possible in 67% of surgically treated patients. The local recurrence rate was 8.5% at minimum 18months follow up. Discussion: The communal MDT resulted in better data collection , follow up, and improved limb salvage for extremity sarcoma. Perhaps, with better advocacy and support, communal tumour boards like LAMON may translate into a model for multidisciplinary sarcoma care in developing countries.

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Session: Tumours Short Free Papers

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Room: Room 518c

Abstract no.: 52485

THE USE OF 3D PRINTED SCAFFOLDS IMPREGNATED WITH DOXORUBICIN FOR LOCAL DELIVERY TO BONE METASTASES SECONDARY TO PROSTATE CANCER

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Approximately 80% of primary breast, lung, and prostate cancers metastasize to the spine. High systemic doses of chemotherapeutics such as doxorubicin (DOX), cisplatin or paclitaxel often have severe side-effects. Although effective as a last resort in some, surgical resection of vertebral tumors is frequently plagued by tumor recurrence and significant structural insufficiency of the vertebra due to the large void post resection. To address the shortcomings of current treatment paradigms, we designed an approach for local chemotherapeutic delivery within 3D-printed scaffolds which could also potentially serve as a bone substitute. Cells from prostate cancer cell line LAPC4 and patient-derived spine tumor cells underwent direct treatment with 0.01 μ M DOX. Exposure to 0.01 μ M DOX significantly reduced proliferation, migration and spheroid growth in both types of cells. Uptake and release of DOX was quantified in a series of porous 3D-printed scaffolds on LAPC4 cells as well as patient-derived spine metastases cells. Over 7 days, 60-75% of DOX loaded onto scaffolds could be released, which significantly reduced proliferation of both LAPC4 and patient derived cells, while unloaded scaffolds had no effect. Porous 3D-printed scaffolds may provide a novel and inexpensive approach to the local delivery of chemotherapeutics in a patient-specific manner at tumor resection sites. The use of scaffolds as a targeted drug delivery system could reduce systemic side-effects, enhance bone repair, and improve patient outcomes.

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Abstract no.: 51935

RECONSTRUCTION OF THE KNEE EXTENSOR MECHANISM FOR A CASE WITH LARGE RECURRENT SOFT-TISSUE SARCOMA

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Aims: This study reports the surgical technique and clinical outcome of reconstruction of the knee extensor mechanism with artificial ligaments in a case with large recurrent soft tissue sarcoma. **Materials and Method:** A 48-years-old female complained a recurrence of fibrosarcoma in front of the left knee for 6 months after the preliminary surgery. The size of the tumor was 13 x 10 x 5 cm. During the revision surgery, the knee extensor mechanism was completely resected, the joint cavity defected. With LARS artificial ligament, the stumps of the quadriceps tendon was sutured, the joint capsule repaired, and the distal end of LARS fixed in the tunnel through tibial tuberosity. The gastrocnemius medial head muscle flap covered the tuberosity. The rotated skin-fascia flaps covered the starting proximal part of the artificial ligament. The skin was grafted over the residual defect and secured by a closed vacuum device. Knee brace was applied for stability. **Result:** The blood loss was about 200 ml during the 5-hour surgery. The defect was well closed. Two months after surgery, patient accepted six-cycles chemotherapy. Follow-up at 1, 3, 6, 12 and 18 months after operation showed no local recurrence or distant metastasis. At the recent follow-up, the patient had a normal gait with 80-degrees knee flexion of and 15-degree extension latency. **Conclusion:** It remained challenging that reconstruction of complete deficiency of the knee extensor mechanism. The application of artificial ligament and local soft-tissue flap was a feasible method for functional reconstruction and the clinical results are satisfactory.

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Abstract no.: 51936

**INCISION NEGATIVE PRESSURE WOUNDS THERAPY DECREASED THE
INCISION COMPLICATIONS OF SACRAL TUMOUR POSTERIOR
RESECTION: A CLINICAL STUDY**

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Aims: This study reported the clinical outcome of applying iNPWT to decrease the incision complications of sacral tumor posterior resection. **Materials and methods:** During 2014 to 2017, the authors' institution admitted 17 patients with the sacral tumor. The male and female ratio was 10:7. The average age was 30 ± 6 years old. The involved levels and patients number were S1 (1), S2 (11) and S3 or below (5). The pathological diagnoses were composed of 11 cases of chordomas, 5 giant cell tumors, and 1 MPNST. All patients archived tumor-free-margin resection through a posterior Y-shaped incision. The average operation time was 4.5 ± 3 hours. The average blood loss was 460 ± 420 ml. Regular adhesive dressings were applied in 10 cases (control group). iNPWT were applied in 7 cases (iNPWT group) and uncovered 7 days after surgery. Incision complications were compared between two groups. **Results:** The involved level, operation time and blood loss had no significant difference between groups. In the iNPWT group, 6 patient archive definitive healing 7 days after surgery; Superficial epidermal necrosis was found in one patient without infection. In control group, five cases archive definitive healing 7 days after surgery, four cases epidermal necrosis, and one incision dehiscence with deep infection. There were significant differences in incision complications between two groups. **Results:** iNPWT decreased the incision complications of sacral tumor posterior resection. However, due to the limitation of the design and sample size of this study, it could be necessary to dig deeper for more solid evidence.

Date: 2018-10-11

Session: Trauma Short Free Papers

Time: 16:00 - 17:30

Room: Room 518c

Abstract no.: 51243

WALKING AND FUNCTIONAL RECOVERY AFTER HIP FRACTURE

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Objective: to assess the recovery of walking ability and function after a hip fracture in elderly patients. Methods: We prospectively evaluated the functional status previous to a fracture and up to twelve months after the event. New Mobility Score (NMS), Katz and Barthel scales were applied. We enrolled patients between 65 and 85 years of age that were previously capable of autonomous walking. Results: 33 hip fracture patients completed the initial and the twelve-month assessment. Three of those had new lower limb fractures, and were excluded from this analysis. On the initial analysis, 70% of patients had a maximum NMS and Katz score, as well as 63,3% with the Barthel score. Twelve months after the fracture, there was a decrease from the initial score in 60% of patients as by the NMS scale, 20% with Katz, and 53% with Barthel. Paired Wilcoxon test was used to compare results, and the difference found for the decrease in NMS and Barthel scores was significant ($p < 0,0005$ and $p = 0,002$) for lower function after hip fracture. Conclusion: We observed that after twelve months there was a statistically significant loss of functional ability after a proximal femur fracture. Our study highlights the impact of these fracture regarding their long term morbidity.

Date: 2018-10-11

Session: Trauma Short Free Papers

Time: 16:00 - 17:30

Room: Room 518c

Abstract no.: 51506

OUTCOME OF LONG REAMERS IN IPSILATERAL NECK AND SHAFT FEMUR FRACTURE

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Introduction: Incidence of non-union in ipsilateral neck and shaft femur fracture is 30-45% with use of single implant. We carried out this study with aim to compare non-union rates with use of 480 mm and 580 mm reamers in such fractures. Methods: This case-control study was carried over 15 years. 25 cases (Group A) underwent reaming with 580 mm reamer while 25 cases (Group B) underwent reaming with 480 mm reamer. Fixation was carried out with cephalomedullary nail. Patients were followed up at 1, 3, 6 months and then annually by clinical examination and radiography. Non-union was defined as absence of healing after 8 months. Results: Average age of patients in Group A and B was 38.18 years and 39.37 years respectively. Mean time to union was 5 months (range 4–8 months). In Group A, 20 patients had intertrochanteric fracture, 5 patients had basal neck femur fracture while comminution was seen in 20 of 25 patients. Whereas in Group B, 18 patients had inter-trochanteric fracture, 7 patients had basal fracture and comminution was seen in 16 of 25 patients. There were no cases of osteonecrosis of femoral neck. At final follow-up, 3/25 patients in Group A had non-union while 8/25 patients in Group B had non-union. Dynamization was needed in 6 cases in Group B and none in Group A. Femoral shaft non-union was managed by reaming, augmentation plating. Conclusion: Use of 580 mm reamer minimizes distraction during nailing resulting into better union rates.

Date: 2018-10-11

Session: Trauma Short Free Papers

Time: 16:00 - 17:30

Room: Room 518c

Abstract no.: 51484

FLAP DELAY: A VERY SIMPLE PROCEDURE TO COVER THE LARGE SOFT-TISSUE DEFECT AND EXPOSED DISTAL TIBIA FIBULA AND FOOT

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Introduction: Management of large soft tissue defect with exposed distal leg with fracture, exposed Heel with foot following trauma Initially manage by surgical debridement and application of Uni-axial Ex-Fix. Although many options like extended sural flap, muscle flap and free flaps are there. But these all are difficult to perform in all the situations. In these circumstances coverage of that part is possible by flap delay procedure and can be done by all orthopaedic surgeons. Method: Random pattern fasciocutaneous flap with sural vessels and nerve augmented Flap was done and inset done with delay for 3-7 days. After assessing the viability of the flap, marginal necrosis of the flap, reposition and coverage of the wound was done. The donor areas were covered by partial thickness skin graft. Total 240 cases were included in the study. Among them male were 210 and female were 30. The study period was between July 2002 to Dec 2016. Age range was 10 – 75 yrs. But most patients were between 15 to 55 yrs. Cause of the injury was mostly MVA (90%) Nature of the injury were - Gustillo III A&B. Result: Satisfactory results were obtained in 95% cases, bone union occurred without any secondary procedure in 20% cases. Marginal necrosis was found in 19 cases. Rest of the cases were managed by application of Ilizarov external fixator with or without corticotomy. Conclusion: Flap delay is an easy procedure to increase the flap survival and attain reliable coverage of the wound.

Date: 2018-10-11

Session: Trauma Short Free Papers

Time: 16:00 - 17:30

Room: Room 518c

Abstract no.: 50085

TREATMENT OF PATELLA FRACTURES USING HA/PLLA SCREWS AND FIBRE-WIRES

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Objectives: The purpose of this report is to present our surgical technique using HA/PLLA screws and Fiber-Wires for patella fractures, and to verify the advantages of this device using postoperative radiographs. **Methods:** Using a longitudinal 5-cm skin incision the fracture is reduced and temporarily fixed by using a patella cramp. According to the drilling and the tapping, 2 cannulated HA/PLLA screws are inserted and the patella cramp is removed. Then, a No. 2 Fiber-Wire Loop with a needle is passed through the each hole of the screws by handing the needle and tightened using double-loop sliding knot technique. Thirteen patients were treated using this method. Radiographs were evaluated for fracture healing, radio-opacity of the screws, and radiolucent zones around the screws. The range of motion of the knees and the postoperative complications were assessed. **Results:** All fractures were united. Shadows of all the screws were observed and there were no radiolucent zones around the screws at the final radiographic follow-up. The average ranges of flexion and extension of the knee were 132.7 degree and -4.6 degree, respectively. Postoperative complications were not observed in any of the patients. **Conclusions:** The radio-opacity of HA/PLLA devices is a major advantage of this device. No radiolucent zones were present around the screws, no osteolysis was observed on postoperative radiographs, and there were no postoperative complications. Re-operation for removal was unnecessary. Open reduction and internal fixation using HA/PLLA screws and Fiber-Wires offers several advantages in treating patella fractures.

Date: 2018-10-11

Session: Trauma Short Free Papers

Time: 16:00 - 17:30

Room: Room 518c

Abstract no.: 49965

DOES THE DIFFERENCE IN TYPE OF SHORT FEMORAL NAIL AFFECT EARLY POSTOPERATIVE PAIN, MUSCLE STRENGTH AND WALKING ABILITY IN ELDERLY PATIENTS WHO HAVE SUSTAINED A TROCHANTERIC FRACTURE?: PROSPECTIVE RANDOMISED STUDY

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Objectives: We evaluated the influence of different types of short femoral nails on early postoperative pain, muscle strength, and walking ability in elderly patients sustained trochanteric fracture in a prospective randomized study. Methods: InterTan (group I), Affixus (group A), or Gamma (group G) nails were used in 20 patients each. Pain on weight bearing (VAS), muscle strength, and walking ability were prospectively compared. Results: The average VAS (cm) at postoperative weeks 1, 2, and 8 were 4.7, 3.6, and 0.8 in Group I, 5.7, 4.1, and 3.7 in group A, and 5.1, 3.0, and 1.5 in group G, respectively. The average Isometric maximum muscle strength (N) at postoperative weeks 1, 2, and 8 were 44.3, 58.4, and 101.0 in group I, 44.0, 65.3, and 90.6 in group A, and 46.2, 63.3, and 121.9 in group G, respectively. The average 10 m walking time (sec.) at postoperative weeks 1, 2, and 8 were 34.0, 37.6, and 32.1 in group I, 32.9, 28.4, and 25.9 in group A, and 41.1, 37.4, and 19.9 in group G, respectively. The average limb maximum load rate (%) at postoperative weeks 1, 2, and 8 were 52.9, 67.5, and 76.5 in group I, 51.5, 63.6, and 76.9 in group A, and 53.5, 71.0, and 74.9 in group G, respectively. There was no statistically significant difference in all comparisons. Conclusions: The differences in type of short femoral nail did not affect early postoperative pain, muscle strength, and walking ability in elderly patients in our prospective randomized study.

Date: 2018-10-11

Session: Trauma Short Free Papers

Time: 16:00 - 17:30

Room: Room 518c

Abstract no.: 49620

GUNSHOT WOUNDS TO THE HIP

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Background: Bullets entering around the hip joint are likely to cause damage to the peritrochanteric region and cause fractures of the head or neck of femur. Gunshot wounds (GSWs) to the hip have a high incidence of associated visceral organ, neurologic, or vascular injuries. We present the largest series of operations to date. We aim to report on complications in patients who have suffered GSWs to the hip resulting in injuries to the head and neck of femur, including the peritrochanteric region. Methods: 25 patient's notes were retrospectively reviewed who had suffered a GSW to the hip between 2010 and 2015. We analysed the outcomes of treatment for fractures to the head of femur, neck of femur or peritrochanteric region. 23 males and 2 females were included with a mean age of 27.2 years (range 18-42). Results: 25 orthopaedic procedures were performed on 23 patients. The overall union rate for primary fixation was 64%. 2 patients underwent revision surgery for failed primary fixation. Discussion: Preservation of the femoral head's blood supply is essential in this young patient group to avoid the need for arthroplasty. 2 cases where primary fixation had failed were revised to total hip replacement (THR) successfully. Long-term follow-up is necessary in assessing the success of these procedures. Conclusion: GSW to the hip present the orthopaedic surgeon with a formidable challenge. They are potentially serious injuries which should be treated in a major trauma centre with access to a full range of surgical specialties.

Date: 2018-10-11

Session: Trauma Short Free Papers

Time: 16:00 - 17:30

Room: Room 518c

Abstract no.: 51525

AFTER EMERGENCY DEPARTMENT DISCHARGE, HOW QUICKLY ARE PATIENTS REVIEWED IN A VIRTUAL FRACTURE CLINIC?: AN AUDIT OF BOAST 7 GUIDANCE

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Fractures are a common cause for presentation to the Emergency Department (ED) with an estimated age standardised annual fracture incidence rate of 3.6 per 100 persons. Current NHS England targets to see and treat ED attendances within 4 hours patients are increasingly being treated initially in ED with specialist review in a suitable fracture clinic. BOAST (7.1) states such patients should be seen in a new fracture clinic within 72 hours of presentation in ED. Methods: This was a retrospective analysis of patients seen via the virtual fracture clinic (VFC) in the 7 months leading to February 2018. Inclusion criteria was all patients reviewed under parallel audit (ID 8989). Results: 214 patients met the inclusion criteria during the study period of which 50 had their notes reviewed. Mean time from discharge to review in VFC was 58 hours 55 minutes \pm 2.3 hours (1.S.D) with range 15 hours 5 minutes to 325 hours 2 minutes. 42/50 (84%) of patients were seen within 72 hours. Discussion: Through robust IT systems VFCs create a medium for orthopaedic consultants to safely review a high volume of cases in significantly shorter time than face-to-face clinics. To meet targets of 72 hours to review rapid referral from ED to the VFC is required. In patients not discharged directly but for admitted, for example, to a short term clinical decisions ward, a possibility arises for the well-established referral pathway to break down. This may account for the cases reviewed in the VFC outside 72 hours.

Date: 2018-10-11

Session: Trauma Short Free Papers

Time: 16:00 - 17:30

Room: Room 518c

Abstract no.: 51519

AFTER A FRAGILITY FRACTURE HOW WELL DOES A VIRTUAL FRACTURE CLINIC REFER TO FALLS LIAISON SERVICES?: AN AUDIT OF BOAST 7 GUIDANCE

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Introduction: Fragility fractures are defined by the WHO as a fall from standing height[1] with 300,000 occurring annually in the UK.[2] Many patients reviewed at the Royal London Hospital virtual fracture clinic sustain such injuries with BOAST guidance (7.8) stating fracture clinics should have 'fully integrated' fracture liaison service permitting screening and onward referral where appropriate. Methods: The audit was registered with Barts NHS Trust under project ID 8989. A retrospective analysis of the virtual fracture clinic (VFC) in the 7 months leading to February 2018 was undertaken. Inclusion criteria was ≥ 60 years of age, referred to VFC after discharge, a clearly documented mechanism of injury and a discharge letter from VFC to patient's GP. Results: 214 patients met the inclusion criteria and had their notes reviewed. 50 (23.4%) of these sustained a fragility fracture. The mean age was 72.7 ± 11.5 (1.S.D) years. Common sites of injury were the radius (26%) humerus (24%) metatarsals (16%) and ankle (10%). Of the 50 patients discharged from the VFC 0% had a referral to a fracture liaison service. Discussion: Fragility fractures are common and debilitating injuries with UK estimated costs of all fragility fractures believed to reach £5.5 billion by 2025.[3] The Royal London VFC provides a rapid and accurate service for diagnosis and treatment of fragility fractures in patients discharged from the Emergency Department. An opportunity exists for the VFC to improve the long-term outcome of such patients through a minor change in practice by ensuring adherence to BOAST (7.8).

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Session: Trauma Short Free Papers

Time: 16:00 - 17:30

Room: Room 518c

Abstract no.: 51711

**AUTOGENOUS CANCELLOUS BONE GRAFTING VERSUS
AUTOGENOUS CANCELLOUS BONE GRAFTING ALONG WITH
AUTOGENOUS GROWTH FACTOR RICH PLASMA IN NONUNION OF
FRACTURES OF LONG BONES**

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Introduction: Autogenous growth factors in platelet rich plasma and gel, injected subcutaneously into the non union site as well as directly implanted during surgery, has shown good results. Autogenous Cancellous Bone grafting till date remains gold standard. Aims and Objectives: Autogenous cancellous bone grafting versus autogenous cancellous bone grafting along with autogenous growth factor rich plasma (GFRP) in non union of fractures of long. Materials and Methods: This was a prospective study conducted in Dr. D.Y. Patil Medical College Pune from June 2015- September -2017. It included 40 patients of non-union of long bones which were divided into two groups having equal patients. Group A patients were treated autogenous cancellous bone graft and Group B patients were treated with autogenous cancellous bone graft mixed with (GFRP) Results: The results were assessed as per Hammer's criteria of radiological assessment. The result was Excellent in 40% in Group A as compared to 55% in Group B, Good in 40% in Group A as compared to 35% in Group B, Fair in 20% in Group A as compared to 10% in Group B, and Poor in none. Discussion: Chen et al in their study demonstrated that PRP can act as a growth factor cocktail to induce proliferation and differentiation and promote tissue-engineered nucleus formation regeneration via the Smad pathway. Conclusion: We conclude from our study that the addition of autologous GFRP as adjuvant to autologous cancellous bone graft enhances the union in the treatment of non union of fractures of long bones.

Date: 2018-10-11

Session: Trauma Short Free Papers

Time: 16:00 - 17:30

Room: Room 518c

Abstract no.: 51319

SUCCESSFUL TREATMENT OF INFECTED NONUNION: HOW WE DID IT

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Introduction: Infected non-union is a debilitating late complication of fractures. Close collaboration between orthopaedic surgeons and reconstructive microsurgions experienced in musculoskeletal trauma is essential in the management. We aim to present the key steps that contribute to successful treatment of infected non-union of the tibia. Methods: We analysed the outcomes of 303 patients with tibial fractures from 2013 to 2016. 11 patients with infected non-union were identified. Patient demographics, details of management and outcomes were studied. Results: The mean patient age was 46.5 years. All 11 patients sustained open fractures of the tibia. The median time from initial injury to the diagnosis of infected non-union was 26.4 weeks. A median of 4 debridements (range 1 – 9) was performed prior to definitive fixation. All patients received culture-directed antibiotics. 6 (54.5%) patients required soft tissue reconstruction after debridement: 4 had pedicle flaps while 2 had free flaps. Minor flap complications (e.g. superficial infection, hematoma and seroma formation) were seen in 3 of these cases, with no major complications leading to flap loss. 8 patients had definitive external fixation (6 ring, 2 monolateral fixators), 2 had internal fixation, while 1 patient achieved union after debridement and removal of existing internal implants. All achieved union and eradication of infection after treatment. The median treatment time to union was 62 weeks (range 10.9 -118.6). Discussion: Our 'recipe' for success encompasses multiple debridements, culture-directed antibiotics, meticulous soft tissue reconstruction by a reconstruction microsurgical team and appropriate choice of fixation.

Date: 2018-10-12

Session: Foot and Ankle Short Free Papers

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 49911

NEURECTOMY VERSUS DORSAL TRANSPOSITION FOR INTERDIGITAL NEUROMA: A COMPARATIVE STUDY

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Neurectomy is a standard treatment of interdigital nerve neuroma after failure of conservative treatment. The purpose of this study was to compare functional outcomes and complications of neurectomy versus dorsal transposition. Retrospective chart review along with prospectively collected data of 62 consecutive patients who were diagnosed with interdigital neuroma of the foot and underwent neurectomy (44 patients/ 50 feet / 55 neuromas) and dorsal transposition (18 patients / 20 feet / 22 neuromas) between 2012 and 2017. Pre- and postoperative FFI and pain (VAS) scores were obtained. Both groups demonstrated significant improvement of postoperative functional outcomes (FFI, SF-36, and VAS; $P < .001$, all) compared to the preoperative period. Dorsal transposition demonstrated significant improvement of pain compared to neurectomy as measured with VAS ($P = .002$); however, the operative time was longer than the neurectomy technique ($P = .001$). The rest of the functional outcomes measured were comparable between the 2 techniques. Complications in both neurectomy and dorsal translation were persistent pain (11.5% vs 2.5%, $P = .07$), revision rate (5.1% vs 0.0%, $P = .08$), and painful scar (5.1% vs 5.0%, $P = .83$). Both neurectomy and dorsal transposition demonstrated significant improvement in terms of functional comes as measured with the FFI, SF-36, and VAS in patients with interdigital neuroma. Although requiring a longer operative time, dorsal translation technique might offer superior pain relief.

Date: 2018-10-12

Session: Foot and Ankle Short Free Papers

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 49908

THE VALUE OF AXIAL LOADING 3D-CT AS A SUBSTITUTE FOR FULL WEIGHT-BEARING (STANDING) 3D CT: COMPARISON OF REPRODUCIBILITY ACCORDING TO DEGREE OF LOAD

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Full weightbearing (WB) three dimensional computed tomography(3D CT) is an excellent imaging tool. However, due to its high cost, it is only used in a few hospitals. We evaluated the usefulness and cost-effectiveness of axial loading (AL) 3D CT by comparing bony alignments with standing radiographs, and assessed reproducibility according to the degree of AL. Eighty patients(156 feet), who underwent standing radiographs and 3D CT with an AL device from January 2016 to May 2017, were investigated. According to the degree of AL(AL forcex100/body weight), the patients were randomly assigned to three groups: Group A(30-50%; n=21, 40 feet), Group B(50-70%; n=32, 63 feet), and Group C(70-100%; n=27, 53 feet). The following angles were measured three times by two orthopedists: hallux valgus (HVA), 1st-2nd intermetatarsal (IMA1-2), and talo-navicular coverage (TNCA), calcaneal pitch (CPA), talo-1st metatarsal (T1MA), and talo-calcaneal angle (TCA). Agreements between the two imaging methods were analyzed and compared according to the degree of axial loading in each group. Intra- and interobserver reliability was excellent (>0.75). In Group A(30–50% AL), all of the angles except HVA and IMA1–2 differed (p< .05). In Group B(50–70%), TNCA (p= .023), T1MA (p= .017), and TCA (p= .035) differed. In Group C(70–100%), none of the angles differed between the two imaging methods (p> .05). Higher agreement between the two imaging methods was realized when 70% or more (>70%) AL was applied. AL 3D CT with >70% axial load has full WB effects and can be substituted for expensive full WB 3D CT.

Date: 2018-10-12

Session: Foot and Ankle Short Free Papers

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 52346

A FIVE-YEAR RETROSPECTIVE AUDIT OF POSTERIOR MALLEOLAR FRACTURES

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

Date: 2018-10-12

Session: Foot and Ankle Short Free Papers

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 52286

A CROSS-SECTIONAL STUDY REGARDING PREVALENCE ESTIMATIONS OF FOREFOOT DEFORMITIES IN 3424 ADULTS

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Aim: To evaluate prevalence estimations of hallux valgus (HV), bunionette and hammertoe along with their relations to tight footwear and family history. **Material and Method:** This study comprises of 3424 volunteers, 2148 (%62.7) women and 1276 (%37.3) men [mean age 34.28±14.03 (range; 18-96)]. Referring to the figures presented on a predetermined questionnaire, the participants identified HV, bunionette and hammertoe deformities in their feet. In case of a need, their feet were assessed clinically. The subjects were stratified as, age 18-39 (69.1%) and 40≤ (30.9%). The correlation between the forefoot deformities and age, gender, footwear habits, along with family history were statistically analyzed. **Results:** The prevalence of HV, bunionette and hammertoe were found 53.2%, 13.4% and 8.7% respectively. Family history was positive in 54.1%, 57.2% and 52.7% of participants reporting these three deformities. In females, frequent high heel wear was proven correlated to HV. Positive family history is more pronounced in women with HV than in men. HV was found to be more prevalent in 40+ age group. **Conclusion:** Foot deformities are prevalent in general population and especially symptomatic in females and elderly. Bunionette and hammertoe tend to show robust concomitance with HV. Positive family history and tight shoe wear may be contributing to HV formation in females. Considering the financial drawbacks of therapies and cumbersome surgical corrections, acknowledging etiology of the forefoot deformities would prompt preventive and early onset interventional strategies.

Date: 2018-10-12

Session: Foot and Ankle Short Free Papers

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 52124

SURGICAL TREATMENT OF HALLUX VALGUS COMBINING SOFT-TISSUE INTERVENTION AND PROXIMAL DOMUS OSTEOTOMY OF THE FIRST METATARSAL

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The authors had the opportunity to treat by surgically 87 patients with hallux-valgus. 79 patients were female, 8 male. 68 patients had bilateral involvement. The age varied between 35 and 76 years old and the follow up were from 2 to 25 years. The surgical technique was as follows: three small incisions, one over the bunion medially, one over the first web and the third one over the proximal first metatarsal. The technique included bunionectomy, lateral capsulotomy of the MP joint, release of both heads of adductor the great toe muscle, correction of the varus deformity of the first metatarsal with proximal domus osteotomy and medial capsuloplasty. The osteosynthesis had done with two k-wires. Postoperatively no one patient from our series had pain. We put the foot in elevation for two days and in a short plaster for four weeks and patient starts walking with weight bearing after the first week of the operation. We removed the k-Wires when the osteotomy is healed usually eight to ten days The results were as follows : excellent and good we had in all cases. We had two complications, in one patient who had started to develop varus deformity about five degrees at two months and we corrected it with capsuloplasty medially and laterally in three months during the k-wire removal and another patient with scleroderma who had delayed healing of the soft tissue. Finally, all the patients were satisfied and they suggested the operation to their friends.

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Room: Room 518c

Abstract no.: 51817

**PLANTAR FASCIITIS: INTRALESIONAL STEROID INJECTIONS VERSUS
INTRALESIONAL AUTOLOGOUS BLOOD INJECTIONS**

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Objective: To compare intra-lesional corticosteroid injection versus autologous blood injection therapy in plantar fasciitis in terms of mean pain score by using pre and post treatment pain assessment by Visual Analogue Scale. Materials and methods: The study was conducted for a duration of 04 years from 19th September 2013 to 20th September 2017. A total of 480 patients with unilateral planter heel pain were included in this study. Patients were randomly allocated into two groups. Group A were injected 2ml corticosteroid injection in heel with 2ml of 2% lidocaine. Group B patients were injected in heel with 2ml of autologous blood mixed with 2ml of 2% lidocaine. The outcome was assessed by visual analogue score at 3 months. All the information was recorded on a performa. Results: A total of 480 patients with unilateral plantar heel pain were included in this study. The average age of the patients was 49.98 ± 11.26 years (95%Ci: 48.32 to 51.63). Out of 480 cases 50.6% were male and 49.4% female. At 12 week post treatment mean pain score was significantly high in group A than group B ($p=0.0005$). Conclusion: Patients with plantar fasciitis can be successfully treated with autologous blood injection into the plantar fascia and its efficacy is good in terms of improvement in at least one grade of pain on visual analogue scale at 12 weeks follow up.

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TREATMENT OF HEEL SYNDROME BY LOCAL INFILTRATION TO THE LATERAL PLANTAR NERVE AND MEDIAL CALCANEAL NERVE

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INTRODUCTION: Local injection of methylprednisolone given in the site of lateral Planter Nerve and Medial Calcaneal nerve for the treatment of Heel Syndrome was significantly successful to cure Heel Syndrome **METHODS:** Clinical study for 8 years of 480 patient aged from 27 to 63 year old with 72% female (347 Pt) . complaining of heel pain for a period of (1 - 5) months before they were seen in the clinic , 41% were given local injection in the heel as for heel Spur or plantar fasciitis, with almost no improvement or one month improvement prior to first visit. Local infiltration around Lateral Planter Nerve and Medial Calcaneal Nerve was injected from a point postero distal to medial malleolus using two syringes first one containing Lidocain 2% about 2 ml then without removing the needle from the injected site, injection of methylprednisolone 40 mg or Triamcinolone 40 mg was also infiltrated. The patient started on Non Steroid Anti inflammatory Drug for 10 -20 days. 19% needs to repeat the injection after 1-3 months. Follow up for 2-4 years. **RESULTS:** The healing rate was almost 91% for the follow up period. 78% didn't need a 2nd injection. The high cure rate give us a result that the cause of heel syndrome is compression of Lateral Planter Nerve and or Medial Calcaneal Nerve.

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SYNTHETIC CARTILAGE REPLACEMENT FOR FIRST METATARSOPHALANGEAL ARTHRITIS: A CASE SERIES

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Introduction: Arthritis of the first metatarsophalangeal joint (hallux rigidus) happens to be the second most common deformity of that particular joint. The causes are degenerative, trauma, inflammatory and auto-immune. The options for the surgical treatment of hallux rigidus historically involved arthrodesis which reduced pain but limited the mobility. This assumes a lot of importance since most of the weight transmitted to the foot is borne through the 1st metatarsophalangeal joint. A newer method is surgery with synthetic cartilage implants (SCI). There is very little literature on these implants. We present a case series of 18 patients for whom this procedure was done by Mr H DE Atkinson and team. Methods: This case series has a total number of 18 patients. There was no age criterion for inclusion and patients with Hallux Rigidus due to any aetiology were included. Patients with Grade 2 and 3 severity were operated on and included in the study. The synthetic cartilage implant used for this study was the Cartiva (trademark) implants. The Visual Analogue Scale for pain, the Manchester Oxford foot and ankle questionnaire, the EQ 5D and the Foot and Ankle Outcomes questionnaire were used for analysis. Result: We found significant improvements post-surgery as compared to the pre-surgery. These improvements were in terms of pain, mobility and function. Thus synthetic cartilage implants (SCI) offer a better solution as they improve both mobility and function as compared to arthrodesis.

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ADULT UNSTABLE ANKLE FRACTURES: EFFECTS OF DELAYED FIXATION ON THE OUTCOMES AND COMPLICATIONS

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Background: Incidence of Ankle fractures is around 9%, threefold increase incidence in the elderly. Despite anatomical reduction and stabilisation post-traumatic arthritis 14%. Information about effects of delayed surgery on wound complications is ambiguous. We aimed to study effects of delay in definitive fixation of ankle fractures on final outcomes. Methods: Consecutive, displaced adult ankle fractures treated from August 2015 to August 2016. Data collection from hospital electronic database, retrospective analysis. Initial appropriate primary management of ankle fractures, tri-malleolar and complex ankle fractures further investigated with CT scan. Tri-malleolar and complex fractures operated by experienced foot and ankle surgeons on a planned trauma list. Standard post-operative follow-up/rehabilitation protocol. Results: 85 patients included. Average age 52 years mostly females above 60 years of age. Majority fractures complex bi-malleolar and tri-malleolar. Reasons for delay for surgery-time for swelling to reduce, experienced foot and ankle surgeon and theatre space availability. 16% patients got operated within 24 hours, 77% within 2 weeks, 18% within 2-3 weeks and 5% beyond 3 weeks. 22% of the patients who underwent surgery after 2 weeks were tri-malleolar and bi-malleolar. Superficial wound infection 11%, removal of metal work 5%, and 4% delayed/non-union. Re-admission for the treatment of complications within 3 months 1% and after 6 months 2% from initial surgery comparable to current literature. Conclusion: Delay in surgery is associated with difficulty to achieve anatomical reduction and fixation, increased risk of wound infection. Increase in the costs to treat complications. Aim for early stable fixation and mobilisation for better outcomes.

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POST-TRAUMATIC ARTHRITIC INFECTED ANKLE: ILIZAROV ARTHRODESIS AS A SALVAGE PROCEDURE

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End-stage ankle arthritis is a challenging situation for which ankle arthrodesis is the most common procedure. Several techniques are used to achieve solid fusion; however, Ilizarov external fixation is preferable in complex cases such as those involving bone loss, infection, or poor condition of the soft-tissue envelope. Methods: Between 2010 and 2013, 11 patients with end-stage post-traumatic ankle arthritis complicated by infection, irrespective of bone loss status, were treated with Ilizarov external fixation. The average age was 32.5 yr (range, 16--52 yr), including eight male and three female patients. All cases were post-traumatic and exhibited infection, with three also showing bone defects. Bone lengthening after acute shortening was performed in three patients. Results: Solid fusion was achieved within a mean period of 21.5 wk in all the patients. Infection was eliminated in 10 patients. Most patients accomplished unassisted full weight-bearing activity, with the exception of two who required walking aids. Pin tract infection occurred in seven patients, with only one needing surgical treatment. Based on the modified American Orthopedic Foot and Ankle Society scoring system, the mean score was 74 (range, 62--85); the results were graded as excellent in three, good in six, and fair in two. Among the patients examined, nine (82%) were satisfied with the outcome of treatment. Conclusions: Ankle arthrodesis using the Ilizarov technique provides a successful salvage option for the treatment of complicated posttraumatic arthritic ankles by yielding solid fusion, eradication of infection, leg-length optimization, and compensation for bone loss.

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Abstract no.: 49910

ULTRASOUND-GUIDED NERVE BLOCK VERSUS GENERAL ANAESTHESIA FOR BELOW KNEE AMPUTATION: A COMPARATIVE STUDY

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Below knee amputation in many cases, general anesthesia can be difficult or inappropriate because of poor general condition patient. This study was performed to compare general anesthesia and US-guided nerve block for BK amputation and to evaluate the usefulness of US-guided nerve blockade in BK amputation surgery. In this retrospective study, 62 patients who underwent BK amputation between January 2011 and May 2017, two groups general anesthesia (n = 36) or US-guided nerve block (n = 26). All patients completed a questionnaire with three questions 2 weeks after surgery. For the nerve block group, femoral nerve, lateral femoral cutaneous nerve, and sciatic nerve block were performed under ultrasound guidance. VAS pain score of postoperative 1 and 6 hour was significantly different between the nerve block group (2.2 ± 1.5 and 3.0 ± 1.8 , respectively) and general anesthesia group (5.2 ± 3.9 and 5.4 ± 4.5 , respectively). 24 patients in nerve block group (92 %) and 17 patients in general anesthesia group (47 %) reported that they would prefer the same type of anesthesia in amputation again these differences were significant ($P < 0.05$). In nerve block group, there were no long-term complications. BK amputation was performed safely and effectively under US-guided nerve block. These results indicated that US-guided nerve block for BK amputation is a highly satisfactory and safe procedure without complications and is available for use by any orthopaedists, especially in cases of old patients with severe medical issues.

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ONLINE PATIENT RESOURCES FOR ANKLE INSTABILITY: AN OBJECTIVE ANALYSIS OF AVAILABLE MATERIALS

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Introduction: The Internet has revolutionized patients' access to health-related information. Because almost half of all orthopedic patients utilize the Internet for information about their respective ailments, our study evaluates the accuracy, quality and readability of online information regarding ankle sprains, one of the most common musculoskeletal injuries. **Methods:** Three websites (Google, Bing, and Yahoo) were searched for the terms "ankle sprain" and "ankle instability". The first 25 websites from each search were collected. A total of 56 websites were ultimately assessed for quality, accuracy, and readability by three orthopedic providers blinded to the search term utilized. **Results:** The mean quality of the websites written >7th grade level was statistically significantly higher than those ≤7th grade ($p=0.01$). The mean accuracy of websites written ≤7th grade level was statistically higher than websites written at >7th grade level ($p=0.01$). Website quality positively correlated with higher reading (grade) levels, use of the search term "ankle instability", websites written by physicians, and absence of commercial bias. **Conclusion:** This work highlights the poor quality and accuracy of online information related to ankle sprains, especially those with commercial bias. Furthermore, while websites written by physicians were found to be of superior quality, a majority of sites were found to have a reading level too advanced for many patients to comprehend. With the increasing dependence of patients on the Internet for information, it is critical to remember the physician's role in guiding patients to high quality, accurate, and comprehensible resources.

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COMPLEX FOOT AND ANKLE DEFORMITIES: MANAGEMENT WITH ILIZAROV METHODOLOGY, OUR RESULTS AND EXPERIENCE

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Complex Foot and Ankle deformities are multiplanar with or without shortening of foot and poor soft tissues complicated by problems like, limb length discrepancy, recurrent lower leg deformity, infection etc. Traditional methods like soft tissue releases, foot fusion and osteotomies often result in a stiff painful foot. An alternative approach to combat these problems is the Ilizarov methodology in these scenarios. In our study of 41 deformed feet in 37 patients with varying etiologies like neglected and relapsed club feet, post traumatic, leg length discrepancy and neuromuscular contractors were treated with Ilizarov frames. The average age of the patient is 18.2 years (7-55yrs) with an average follow up of 27 months. The average duration of frame application was 3 months. Corrections without bony procedures were achieved in 34 feet. All feet had prior TA lengthening and toe fixations at the time of frame application. Tibial corticotomy for achieving limb length were performed in 5 cases. Tibiotalar and mid foot fusion were performed in 3 feet. Commonly observed problems were pin tract infections, MTP joint subluxations of great toe, flexion contractures of toes. Pseudoaneurysm of posterior tibial artery was observed in one case, deformity relapse was seen in 2 feet. Compared to preoperative status patients gait was significantly improved and their confidence levels due to honourable walking was a big positive gain. Our results conclude that Ilizarov method is a suitable alternative method of achieving pleasing results in this complex clinical conditions.

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FUNCTIONAL OUTCOME OF POST-HIND FOOT ARTHRODESIS BASED ON NEW ALGORITHM IN CHARCOT ARTHROPATHY

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Introduction: Charcot arthropathy is a devastating condition which affecting one or more joints that is marked by joint instability, hypermobility and results from peripheral nerve damage. Methodology: This study is a cross sectional study done in patients, who were diagnosed with Charcot Arthropathy and underwent surgery for hind foot arthrodesis at the Universiti Kebangsaan Malaysia Medical Centre, from January 2011 to June 2016. The objective of the study was to review the feasibility of a new algorithm in managing Charcot arthropathy and to assess functional, clinical and radiographic outcome of Charcot joints treated with hind foot arthrodesis, of at least 6 months follow up using standardized and internationally accepted scoring systems, which are American Orthopaedic Foot and Ankle Surgery (AOFAS) score and SF36. Results: Out of 16 patients included in this study, 4 (25%) were male and 12 (75%) female patients. The mean age was 58.1 (20-71) years old. There was equal distribution for side of fusion. We achieved union in 13 out of our 16 (81%) cases followed up. Out of the 3 patients with non-union, 2 were attributed to deep infections. Another one case was attributed to the aseptic loosening of the screw. The AOFAS scores for hindfoot and midfoot showed significant improvement post operatively as well as the SF36 mental scores. The Physical Component of SF36 showed no statistical improvement. Conclusion: The treatment algorithm currently used in our centre is acceptable and shows good outcomes.

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MANAGEMENT OF MALUNITED PILON FRACTURES WITH JOINT-SPARING OSTEOTOMY

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PURPOSE: To explore the effectiveness and operative methods to treat various mal-united Pilon fractures with joint-sparing osteotomy. **METHODS:** Between January 2011 and October 2016, 21 patients with mal-united Pilon fractures were treated with joint-sparing osteotomy. There were 13 males and 8 females with an average age of 38.4 years (range, 22-48 years). 14 were left feet and 7, right. The time from injury to reconstructive operation was 4 months to 10 years. 17 received operative treatment previously, and 4 were treated by plaster fixation. According to Rüedi-Allgöwer classification, 16 were rated as type II (including 6 medial Pilon fractures, 5 anterior, 5 posterior) and 5, type III. All patients received standardized postoperative managements. **RESULTS:** All patients were followed up for more than 1 year. All the fractures were reunited in an average time of 13.8 weeks (range 9 to 18 weeks). The mean visual analogue scale (VAS) score was 2.42 (range 0 to 5) and the mean ankle and hindfoot scale of the American Orthopaedic Foot and Ankle Society (AOFAS) score was 78.81 (range 65 to 92) 6 months after operation. The VAS score was 5.27 (range 2 to 7) and the AOFAS score was 57.26 (range 20 to 81) before. Comparing to preoperative data, statistically significant difference was found postoperatively ($P < 0.05$). **CONCLUSION:** Results by joint-sparing osteotomy to realign and reconstruct articular surfaces of ankles are acceptable. Functions and symptoms are improved significantly after operation. Joint-sparing osteotomy can be a considerable option for treating mal-united Pilon fractures.

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TWO-YEAR OUTCOMES OF THE INFINITY TOTAL ANKLE REPLACEMENT

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Introduction: Previous generations of total ankle replacements have had varying results. The infinity is a new generation total ankle replacement introduced in 2014. The aim of this study was to assess 2 year functional outcomes and revision rates in patients with an infinity total ankle replacement. Methods: A single centre case series of infinity total ankle replacement. Patients had a pre-operative MoXFQ score completed and also at subsequent follow-up visits. Results: 19 infinity total ankle replacements were undertaken between 8/7/2014 and 3/9/2015. Mean age 71.3 (range 50-88). 10 males and 9 females. The indication was osteoarthritis in 18 cases and rheumatoid arthritis in 1 case. The complications patients suffered were 1 developed CRPS, 1 intra-operative medial malleolar fracture managed conservatively, and 1 lateral gutter pain successfully treated with a targeted injection. The mean pre-operative MoXFQ score was 63.1 (range 38-89), and the mean MoXFQ 2 years post surgery was 14.7 (range 0-42). The mean improvement in score was 51(range 12-69 range). No patients required revision surgery or further operations. No patients suffered implant loosening or subsidence. Conclusions: This is the largest case series in the UK of the infinity total ankle replacement and demonstrates excellent short term outcomes.

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TREATMENT OF HALLUX VALGUS USING THE ISHAM REVERDIN PERCUTANEOUS TECHNIC: A PERSONAL SERIES OF 368 MOROCCAN CASES

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INTRODUCTION: The aim of this study is to report the results of percutaneous osteotomy of M1 for the treatment of mild and moderate Hallux valgus using the Isham Reverdin technique and Akin osteotomy of P1 **OBJECTIVES:** Objectives are the same as those of open surgery: - Reorientation of distal articular surface of M1 - Reducing of volume of the exostosis - lateral arthrolysis of metatarsophalangeal joint - Reduction of the HAV of P1 **METHODS:** This is a prospective monocenter study. The same orthopedic surgeon. The technique was indicated for treatment of hallux valgus in 368 feet and 314 patients between June 2009 and March 2018 with an average of follow up of 15 months (18-34 months). Hallux valgus was included with an IMA between 15° and 20°. Exostosectomy was performed in all cases and also percutaneous adductor tenotomy. AKIN osteotomy was associated in all cases. Results were evaluated clinically and radiographic controls used AOFAS score. **RESULTS:** Very good 55,4%, Good 37,2%, Medium 5,8%, Bad 1,6%, 92,6% were satisfied, AOFAS: 52 to 92. **CONCLUSION:** S.ISHAM-REVERDIN osteotomy doesn't need internal fixation. There is no instability if the lateral cortical is preserved. Post op bandaging is important and made by the surgeon himself (50% of success of operation). Self rehabilitation decreases the loss of mobility of MP joint. MIS surgery is less aggressive, practicable in ambulatory. Perfect codifications of the indications. Very long learning curve. Courses on cadavar lab is very important. Mentoring is desirable.

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Abstract no.: 51157

EFFECT OF EXERCISE BANDS ON LOWER EXTREMITY VENOUS FLOW DURING ACTIVE ANKLE EXERCISE FOR PROPHYLAXIS OF DEEP VEIN THROMBOSIS

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Introduction: Deep vein thrombotic risk is reduced by physical methods, including active ankle exercise (AAE), without hemorrhage risk. We previously showed that AAE using a leg press machine with stronger calf contraction caused higher venous flow. However, an applicable method to increase calf contraction in clinical practice has not been established yet. We aimed to determine the appropriate band tension to increase the peak velocity (PV) in the superficial femoral vein during AAE. Materials and Methods: Eleven healthy young adult men repeated 40° ankle plantar flexions from the neutral position as AAE every 2 seconds in the supine posture without resistance as a control condition and with 4 bands (Sanctband Active™ Mini Loop Band: Pink, Purple, Violet, and Gray, with tensions of 17.7, 36.3, 67.7, and 98.1 N at 40° plantar flexed position, respectively). The metatarsal heads on the sole of the participants were equipped with the band in its natural length, in an ankle neutral position. We measured PV on pulsed Doppler ultrasonography and performed multiple comparisons with Bonferroni adjustment. Results: Pink significantly increased PV during AAE as compared with no resistance (mean ± SD: 46.6 ± 28.1 and 37.4 ± 25.1 cm/s, respectively), with a mean difference of +9.3 cm/s [95% confidence interval: 0.7 to 17.9], while Purple, Violet, and Gray did not (mean differences: +9.2 [-3.9 to 22.4], +8.9 [-1.9 to 19.7], and +14.9 cm/s [-2.5 to 23.3], respectively). Conclusion: Approximately 17.7 N may be the sufficient exercise band tension for enhancing the thromboprophylactic effect of AAE.

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TRENDS IN TREATMENT OF HALLUX VALGUS: A SURVEY-BASED STUDY

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Hallux Valgus (HV) is a complex progressive triplanar foot deformity in which surgery is often indicated with higher intermetatarsal angles (IMA) and HV angles (HVA). The deformity is classified as mild (IMA<13°, HVA<30°), moderate (IMA>13°, HVA<40°), or severe (IMA>20°, HVA>40°). We surveyed members of the American Orthopaedic Foot and Ankle Society (AOFAS) to assess the variability of surgical procedures that exists between foot and ankle surgeons in the management of HV based upon the severity of the deformity. 1076 members of AOFAS were sent a 16-item survey assessing each surgeon's preferred surgical treatment for mild, moderate, and severe forms of HV in a 50-year-old female with and without second metatarsalgia (SM). Preferred fixation types for a distal metatarsal osteotomy (DMO), proximal metatarsal osteotomy (PMO), and Lapidus procedure were also assessed. A total of 183 (17%) surgeons completed the survey. There was significant diversity in regards to fixation options for various procedures. Surgeons' preferred treatment choices were also highly variable. Mild forms of HV with and without SM were the least controversial, with a >50% consensus on treatment. Treatment of moderate and severe forms of HV was more variable. The presence of SM resulted in less uniform opinions. For severe HV, a Lapidus procedure was the most common treatment. The level of disagreement that exists in the proper treatment of HV is commonly found in conditions where different therapies have been rigidly studied and found to have the same clinical outcomes, leaving surgeon preference as the ultimate determining factor.

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Abstract no.: 49863

MALNUTRITION IN THE CLUBFOOT PATIENT: PREVALENCE AND ITS IMPACT ON THE PONSETI TECHNIQUE IN KARACHI, PAKISTAN

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Objectives: The objective of this study was to analyze prevalence of malnutrition in clubfoot patients in Karachi Pakistan and evaluate its effects in management with Ponseti method in clubfoot patients with malnutrition. **Method:** From Jan 2016 to Dec 2016, 153 clubfoot patients were treated and the WHO classification of weight-for-age index was used to assess the nutritional status of patients and its impact on outcome of Ponseti technique recorded and analyzed. **Results:** Out of 153 patients, 112 (79.73) were found in good nutrition status and 42 (20.6%) were malnourished. 15 (36.58%) out of 41 patients with malnutrition had first degree, 14 (34.14%) had second-degree and 12 (29.26%) had third-degree malnutrition. The average number of casts per patient and 8+ casts given in undernutrition group was higher in malnutrition group than the number of 6+ casts given to good nutrition group. The number of Achilles tenotomy performed in undernutrition group was also high. **Conclusion:** A significant correlation between patient nutritional status and outcome of Ponseti technique is found, as it influences the number of casts, possible relapse and failure of treatment.

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Abstract no.: 51375

SURGICAL TREATMENT OF SYMPTOMATIC FLEXIBLE FLAT FOOT IN SKELETALLY IMMATURE PATIENTS: STUDY OF ABOUT 70 FEET, RESULT AT THE END OF GROWTH

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introduction: Osteotomies appear to be the best choice for symptomatic flatfoot in skeletally immature patients. The purpose of this study was to compare the clinical and radiographic outcome of the calcaneo-cuboid-cuneiform osteotomies (triple C) and the calcaneal-lengthening osteotomy (CLO) in the treatment of Symptomatic Flexible Flatfoot in skeletally immature patients. Methods: A prospective review was led on 42 prospectively enrolled patients with symptomatic flatfoot. A single surgeon performed the surgeries. The clinical and radiographic outcome was evaluated in 34 feet (21 patients) with a triple C osteotomy and 36 feet (21 patients) with a calcaneal-lengthening osteotomy. We used the Kitaoka (AOFAS) score for clinical assessment, which contains a subjective and objective test. We measured and compared 5 parameters on the anteroposterior and lateral weight-bearing radiographs. Results: Average follow-up was 2.29 ± 1.05 years in the triple C group and 2.26 ± 1 years in the calcaneal-lengthening group. There were no significant differences in the Kitaoka (AOFAS) score, (triple C: 85.76 ± 4.57 , calcaneal lengthening: 86.39 ± 3.97 , $P=0.52$). We found significant differences in all of the 5 radiographic measurements: anteroposterior talocalcaneal angle (triple C: 27.24 ± 2.31 , CLO: 22.76 ± 3.94 , $P=0.001$) and talonavicular coverage (triple C: 19.38 ± 4.34 , CLO: 22.9 ± 5 , $P<0.002$) and lateral talo-first MTT angle (triple C: 10.81 ± 2.06 , CLO: 11.93 ± 1.9 , $P<0.02$) and talohorizontal angle (triple C: 27.18 ± 4.11 , CLO: 20.21 ± 3.93 , $P<0.001$), and calcaneal pitch (triple C: 23.75 ± 2.68 , CLO: 21.35 ± 2.53 , $P<0.001$). There were 1 (2.9%) complications in the triple C group and 2 (5.5%) complications in the calcaneal-lengthening group. Calcaneocuboid subluxation was present in 18 (50%) feet of the calcaneal-lengthening.

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DOES A WEB-BASED SPINE PLATFORM FEATURING SOCIAL INTERACTION AND ANIMATED INFORMATION AFFECT PATIENT-REPORTED OUTCOMES IN PATIENTS UNDERTAKING LUMBAR SPINE FUSION SURGERY?: A RANDOMISED CLINICAL TRIAL

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Introduction: Approximately one third of patients going through spine surgery are found to have symptoms of anxiety and depression, correlating with surgical outcomes as greater pain, functional disability and lower quality of life. The use of web-based informative strategies before surgery and principles from cognitive behavioural therapy has been applied in other patient groups, facilitating mobility and encouraging beneficial coping behaviour. Aim: Examine the effect of a web-based Spine Platform featuring Interaction and Information by Animation (w-SPIINA) on symptoms of anxiety and depression, disability, quality of life and pain in patients undergoing lumbar spine fusion (LSF) surgery. Method: Randomized clinical trial. 114 patients going through 1-3 level instrumented LSF, randomized into two groups; a control group receiving a standard regimen, and an intervention group, in addition receiving access to w-SPIINA. Primary outcome: Change in Hospital Anxiety and Depression Scale (HADS) from baseline to 3 months follow-up. Secondary outcomes: Change in -HADS (6 months), - disability (ODI), -quality of life (EQ-5D-5L) -and back and leg (LBPRS) 3 and 6 months after surgery. Results: Minimal clinically Important differences (MCID) in HADS was not reached in either of the two groups. In both groups MCID was reached regarding LBPRS, ODI and EQ-5D-5L at follow-up. Comparing the two groups, no statistically significant differences were found in the overall outcomes. Conclusion: Providing patients with access to w-SPIINA in addition to a standard regimen has no additional effect on HADS and patient reported outcome 3 and 6 months after surgery.

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Abstract no.: 50770

HEMITLIF: ANALYSIS AND OUTCOME

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Introduction: A standard Transforaminal lumbar interbody fusion is a procedure done with insertion of pedicle screws bilaterally, and insertion of interbody cage device on one or both the sides. We have done TLIF, with insertion of pedicle screws unilaterally, cage insertion from only one side and had promising results in highly selective group of patients. Material and Methods: 61 patients who have underwent the procedure from the time period June 2013 to June 2015 were evaluated. The indication for the procedure is unilateral lower limb radicular pain either due to single level or two-level disease. Patients with grade 1 spondylolisthesis with unilateral lower limb radicular pain were also included. Patients with severe osteoporosis, facet arthropathy, severe grades of spondylolisthesis, morbid obesity were excluded. Patients were evaluated with visual analog scale[VAS], Oswestry disability index[ODI], preoperatively and along with radiological fusion and implant failure, during two years of follow-up. Results were tabulated, and statistical analysis was carried out. Results: The mean VAS reduced from 7.2 to 2.4, ODI improved from 44.7 to 17.5. All the patients had undergone radiological fusion, assessed by Bridwell criteria[Grade 1] at the end of two years. There were two patients who showed evidence of implant failure, during follow up, whom were revised to standard TLIF procedure. No neurological complications were encountered. Mean change in VAS and ODI were 66.66, 60.85% respectively [p = 0.032]. Conclusion: This procedure allows adequate decompression and fusion with less exposure, lesser blood loss, which provides earlier recovery and can be considered as cost-effective option to conventional TLIF in highly selective patients.

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Abstract no.: 50760

THE ROLE OF MRI NERVE ROOT SEDIMENTATION SIGN IN THE EVALUATION OF DEGENERATIVE AND COMBINED LUMBAR STENOSIS SURGICAL TREATMENT RESULTS

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The purpose of the study to determine the effectiveness of the MRI nerve root sedimentation sign in evaluation the results of degenerative and combined lumbar stenosis treatment. Material and methods: The study based on analysis of the results of treatment of 50 patients with degenerative and combined lumbar stenosis. The algorithm of examination included MRI in the axial plane in the T2 tse mode, performed before and 3 months after the surgery. All patients underwent reconstruction of the spinal canal at different levels (L3-5) with instrumentation. The clinical results evaluation based on VAS, ODI, SF36, Frankel scales using. Results: Analyzing the results, we used the previously described MRI nerve root sedimentation sign, as an indicator of the adequacy of the treatment performed. Sedimentation sign on the level of the reconstruction was negative in 46 cases. MRI nerve root sedimentation sign was positive on the level of the surgery in 4 patients. The neurological symptoms regress we found in 44 patients. All 44 patients had negative MRI nerve root sedimentation sign. Conclusions: MRI nerve root sedimentation sign is the indicator of the adequacy of the treatment performed in patients with degenerative and combined lumbar stenosis.

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Session: Spine Short Free Papers

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Abstract no.: 50742

IS POLYMETHYLMETHACRYLATE-AUGMENTED PEDICLE SCREW FIXATION SAFE FOR SPINAL TUBERCULOSIS PATIENTS WITH SEVERE OSTEOPOROSIS?: A CASE SERIES WITH A FIVE-YEAR FOLLOW-UP

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Introduction: For spinal fracture or degenerated disease accompanied with osteoporosis, polymethylmethacrylate augmentation could significantly increase the stability of pedicle screw fixation. However, could it be safe in the osteoporotic vertebral body for spinal tuberculosis patients? The aim of this retrospective clinical study is to evaluate the long-term outcomes of polymethylmethacrylate-augmented pedicle screw fixation in the management of spinal tuberculosis accompanied with severe osteoporosis. Methods: A total of 29 spinal tuberculosis patients with osteoporosis underwent polymethylmethacrylate-augmented pedicle screw fixation after anterior or posterior debridement and fusion were recruited between January 2009 and January 2013 (16 females and 13 males). For all patients, the bone mineral density is below -3.5. These patients were followed for a minimum of 5 years. All cases were evaluated clinically using the visual analogue scale (VAS) and the American Spinal Injury Association (ASIA) scale. Radiographs were performed for evaluating bony fusion, recurrence or internal fixation failure. Results: Besides a satisfactory improvement in VAS pain scores, all patients experienced at least one ASIA grades of improvement at final follow-up. The intraoperative complication, including intraspinal cement leakage, pulmonary cement embolism or neurovascular injury was not reported. Recurrence or internal fixation failure was not observed in follow up. All cases achieved solid bony fusion. Conclusion: After anterior or posterior debridement and fusion, polymethylmethacrylate-augmented pedicle screw fixation is safe and effective for the treatment of spinal tuberculosis accompanied with severe osteoporosis, which could not increase the risk of postoperative recurrence. In long-term follow up, the postoperative clinical and radiological outcomes is satisfactory.

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Abstract no.: 52506

MRI FINDINGS IN ADVANCED TUBERCULOUS AND PYOGENIC SPONDYLITIS

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We retrospectively reviewed 38 patients (age 24-80 years old) of advanced spinal infections. Patients were classified into: group A; 22 patients with TB spondylitis and group B; 16 patients with pyogenic spondylitis. The diagnosis and causative micro-organisms were proved by biopsy and culture obtained during surgery. Thoracic spine was the mostly involved in TB spondylitis (15 patients), the lumbar (4 patients) and the cervical, thoracolumbar and lumbosacral junctions (1 patient for each), while in pyogenic spondylitis, lumbar spine was involved in 12 patients, thoracic spine and lumbosacral junction (2 patients for each). Pedicle involvement was commoner in TB than in pyogenic spondylitis (74% and 45% respectively, p value 0.007). Incidence of vertebral body collapse was 71% in both groups with a mean collapse height of 41.6 and 21.8 respectively (P = 0.01). More than 50% vertebral body collapse was recorded in 56% in group A, while all cases of group B showed less than 50% collapse (P = 0.0001). Disc involvement in groups A and B were complete in 52% and 43%, and partial in 40% and 36%, respectively. Paravertebral and epidural abscess was present in 95% and 86.4 % in group A and 87.5% and 68 % in group B respectively. 68.2% of group A had kyphotic deformity with a mean angle of 28.6°. No kyphotic deformity was present in group B. Pedicle involvement in advanced spinal infection is more common in TB than in pyogenic spondylitis. Kyphosis and advanced vertebral body collapse are commoner in advanced TB spondylitis.

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Abstract no.: 49553

PREDICTIVE FACTORS TO DIFFERENTIATE BETWEEN PYOGENIC AND TUBERCULOUS SPONDYLODISCITIS: RETROSPECTIVE CASE CONTROL STUDY

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Introduction: Bacteria and Mycobacterium tuberculosis are the main pathogens of spondylodiscitis. The treatment regimen between Pyogenic spondylodiscitis (PS) and Tuberculous spondylodiscitis (TS) is completely different and more imperative if PS is suspected because of rapidly progressive of disease process. Parameters including patient history, laboratory data and radiographic findings have been introduced to distinguish between PS and TS, but no single finding shows good reliably. This study was aimed to realized strong predictive factors for differentiate between PS and TS. Materials and methods: Retrospective case control study was performed by reviewing medical records of patients in Ramathibodi Hospital from 2009 to 2015 who were diagnosed as infectious spondylodiscitis which was confirmed causative pathogens. Parameters including clinical findings, predisposing factors, laboratory data and radiographic findings were compared. Univariate analysis and multivariate logistic regression analysis were performed to determine the significant associations. Results: A total of 58 cases, PS (29) and TS (29) were included. Univariate analysis showed significant parameters including of fever, WBC < 12000 /mm³ , PMN < 80% , symptom > 3 months , ESR < 80 mm/hr., thoracic level involvement, present of paraspinal abscess, extension of paraspinal abscess, and anterior sub-ligamentous abscess. Using multiple logistic regression analysis found that only WBC < 12000 /mm³, ESR < 80 mm/hr., thoracic level involvement, and present of paraspinal abscess were significant predictors of TS. Conclusions: WBC < 12000 /mm³, ESR < 80 mm/hr., thoracic level involvement, and present of paraspinal abscess are predictive factors for suggestive of tuberculous spondylodiscitis.

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Abstract no.: 50548

RAPID BODY-WEIGHT REDUCTION PRIOR TO LUMBAR FUSION SURGERY ASSOCIATED WITH POORER POSTOPERATIVE OUTCOMES

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Background: Lumbar fixation surgery is commonly performed for low back pain in obese patients and spine surgeons are increasingly asking patients to optimize BMI prior to surgery to reduce obesity-associated risk of post-operative complications. Bariatric surgery is now a common treatment modality for obesity and spine surgeons are now increasingly operating on patients who have undergone rapid weight loss. This study aims to characterize the post-operative course of this understudied population following spine surgery. Methods: The American College of Surgeons NSQIP database was analyzed for patients who underwent lumbar fusion surgery between 2005-2015. Patients were stratified into groups based on whether they had 10% weight loss within 6 months prior to surgery. Patients with a history of malignancy or chronic disease were excluded. Patients in the weight loss (WL) group were randomly matched with a non-weight loss (non-WL) patient based on similar age, sex, smoking status, and BMI. Paired two-tailed T-tests were then used to compare surgical outcomes between the groups. Results: Of 39,742 patients identified, 129 patients (.32%) met WL criteria. Compared to the non-WL group, the WL group had a significantly longer length-of-stay (LOS) (9.7 vs. 4.0 days; $p < 0.05$), surgical site infections (SSI) (8.0 vs. 3.0; $p < 0.05$), number of blood transfusions (40.0 vs 5.0, $p < 0.05$) and DVTs (20.0 and 0.00; $p < 0.05$). Conclusions: On a nationwide scale, rapid weight loss prior to lumbar fusion surgery is associated with a higher rate of post-operative complications including SSI and DVT's, longer average LOS, and more frequent blood transfusions.

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**POSTOPERATIVE PELVIC INCIDENCE CHANGE MAY IMPACT
SAGITTAL SPINOPELVIC ALIGNMENT AFTER ADULT SPINE
DEFORMITY INSTRUMENTED SURGERY**

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Christopher CAIN, Christopher CAIN, Francisco RODRIGUEZ FONTAN,
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Optimal SSA criteria is PI - lumbar lordosis (LL) mismatch, $\pm 10^\circ$. Historically, postoperative correction of this parameter to optimal was observed in 51%; with a postoperative deterioration in 14%. Postoperative variability of PI as a potential confounding factor has not been studied yet. The purpose of this study was to assess PI preoperatively and postoperatively variability after instrumented ASD surgeries at short and long-term follow-ups. Inclusion criteria: age >20 years-old; ASD; long instrumented spinal fusion; radiographic evaluation, preoperative and postoperative at 3-, 12-, and 24-month follow-up. Parameters studied: sacral slope (SS), pelvic tilt (PT), PI, LL (L1-S1), and PI-LL. Statistical analysis: R² and variability (Var) as root mean square error by linear regression. Significance was defined as $P \leq 0.05$. Eighty patients were included: mean age, 62.3(SD, 11.1); male, 36%; previous spinal operations, 74%; osteoporosis, 35%; number of levels fused, 3-15; osteotomy, 43%. Correspondence between preoperative and postoperative PI was moderate and decreased with time: at 3mth, $R^2=0.65$ (Var., 7.3), $P < 0.001$; 12mth, $R^2=0.57$ (Var., 8.1), $P < 0.001$; and at 24mth, $R^2=0.45$ (Var., 8.9), $P < 0.001$. The postoperative changes of PI had opposite directions, exceeding $\pm 8^\circ$ in 25%, with maximum, $\pm 20^\circ$. These deviations of PI were caused by disproportional changes of SS and PT progressed during 2 years. Correspondence between postoperative changes of PI-LL and LL was moderate, $R^2=0.7$ ($P < 0.001$). Input into correction of PI-LL provided also changes of SS, $R^2= 0.1$ ($P < 0.003$) and PT, $R^2= 0.34$ ($P < 0.001$). PI may change after correction of ASD due to mobility of sacroiliac joint. This effect should be considered when planning correction.

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Abstract no.: 49905

VITAMIN D LEVELS AND LOW BACK PAIN IN PATIENTS PRESENTING TO A TERTIARY CARE HOSPITAL

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OBJECTIVE: To determine the number of patients with low back pain who have low serum Vitamin-D levels along with associated risk factors in our local population. **STUDY DESIGN:** Prospective cohort study. **DURATION:** At the Department of Orthopaedics for a duration of 01 year from 20th March 2016 to 19th March 2017. **PATIENTS AND METHODS:** 600 patients were included in the study who met the inclusion criteria, i.e. patients presenting to the Out Patient Department (OPD) with low back pain for a duration of less than six months aged between 15 to 55 years. Venous blood withdrawn and serum levels of Vitamin-D measured. According to serum Vitamin-D levels, categorized as deficient, sufficient or excess. **RESULTS:** Mean age of patients included in the study 44.21 11.92 years. Out of the total, 337 (56.17%) were males and 263 (43.83%) females. Out of the total, 20.67%, 26.17% and 28.83% had mild, moderate and severe Vitamin-D deficiency, respectively. Predominantly patients with severe Vitamin-D deficiency presented in winters (October – February) (17.16%) as compared to other seasons. The most pre-dominant risk factor in patients with low Vitamin-D levels was smoking (21.33%). **CONCLUSION:** Vitamin D plays a crucial role in the musculoskeletal framework of the body. The deficiency is more prevalent in the youth due to sedentary lifestyle and indoor preference.

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Abstract no.: 49728

EARLY TREATMENT OUTCOME OF LUMBAR SPINAL CANAL STENOSIS IN A RESOURCE SCARCE ENVIRONMENT

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Background: Lumbar spinal canal stenosis (LSCS), requiring surgery is a common orthopaedic presentation in Nigeria. However, there is paucity of reports on surgical treatment outcomes of LSCS in Nigeria. The study aims to report the early outcome of surgical treatment of LSCS. Methodology: Prospective observational study at the Ondo State Trauma and Surgical Centre. The study was done between January 2015 and June 2017. Preoperative and Postoperative data was collected from 32 patients with LSCS who had decompressive laminectomy with or without instrumented fusion after a minimum follow up of six months and analyzed for symptomatic relief, functional wellbeing and general health status using Visual Analogue Scale, Oswestry Disability Index and Short Form 36 (SF 36). Results: Excellent to good pain relief was reported by 31 (96.9%) and 30 (93.8%) patients for leg and back pain respectively, 3.1% reported a fair outcome for leg pain while 6.2% reported fair back pain. No patient had a poor pain relief. Functional outcome and general health status were also excellent or good for 28 (87.5%) and 29 (90.6%) patients respectively. There was no mortality or major cardiorespiratory event. However minor complications rate was high at 68.8% (22 patients). These include dural tears - 16 (50%), deep vein thrombosis—1 (3.1%), wound infection-20 (62%), wound dehiscence-10 (31%), reoperations 6 (18.6%), and 2 postoperative neurological weakness (6.2%). Conclusion: Although associated with early perioperative minor complications, surgical treatment of LSCS is an effective and safe therapeutic option with good short term clinical outcome.

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Abstract no.: 51050

CORRELATION OF SPINOPELVIC ALIGNMENT AND FUNCTIONAL OUTCOME OF PATIENTS WHO UNDERWENT LUMBAR FUSION

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Introduction: This prospective cohort study aims to determine the correlation between spinopelvic parameters and functional outcome of patients with lumbar spinal stenosis secondary to herniated nucleus pulposus or degenerative disc disease who underwent posterior lumbar fusion in a single center, tertiary specialty hospital. Methods: This study includes 21 patients, 7 males and 14 females with mean age of 52 who underwent lumbar spinal fusion (translumbar interbody fusion=13, posterolateral interbody fusion=6, Posterolateral fusion=2) and a mean follow up of 2.5 years. All surgeries were done by spine surgery consultant. A standing lateral radiograph of the lumbosacral spine that includes the femoral head were taken during the follow up period and radiologic spinopelvic parameters were measured which include pelvic tilt, pelvic incidence and sacral slope. Functional outcome using the Oswestry Disability Index (ODI) and Visual Analogue Scale (VAS) were correlated with measured spinopelvic parameters. Results: Only the results for the pelvic tilt is statistically significant ($p=0.032$). On average, ODI scores will increase by 1% for every 1.2 degree increase in pelvic tilt. Only the results for the pelvic tilt is statistically significant ($p=0.007$) for the VAS score. In every 7.37 degree increase in pelvic tilt results in a 1-point increase in VAS scores. Conclusion: The pelvic tilt has positive correlation on functional outcomes of patients who underwent lumbar fusion. In particular, the results show that pelvic tilt has a greater impact on ODI scores than VAS scores. Increasing lumbar lordosis increases pelvic tilt, thus, affecting ODI.

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Abstract no.: 52188

MINI-OPEN SACROILIAC JOINT FUSION WITH DIRECT BONE GRAFTING AND MINIMALLY INVASIVE FIXATION USING INTRAOPERATIVE NAVIGATION

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A retrospective study was conducted to describe a novel technique for sacroiliac arthrodesis using intraoperative navigation, direct bone grafting, and minimally invasive implants. The patients were collected in a single center, by two surgeons, and is IRB approved. All patients were 18 years or older, primary sacroiliac fusions, and underwent novel technique described. 50 patients underwent 57 surgeries. 12 male / 38 female patients. All received three sacroiliac implants. Average blood loss 42.8 ml. Average length of stay 1.9 nights. Statistically significant improvements in VAS scores (< 0.001) for all time periods 6 weeks, 3 months, 6 months, 12 months compared to preop. ODI and DSIIQ scores showed significant improvement at 12 months and greater than 12 months. The average ODI score at the pre-operative visit and visit greater than 12 months was 49.2 ± 16.0 and 20.8 ± 19.5 respectively. The DSIIQ scores were 53.2 ± 11.6 and 20.8 ± 21.0 at the pre-operative and greater than 12 months visit respectively. 2/57 (3.5%) complications were identified. No patients required surgical revision within the study window. Limited open sacroiliac arthrodesis using minimally invasive implants, intraoperative navigation, and direct open bone grafting is safe and demonstrates clinical benefit, similar to other techniques for minimally invasive sacroiliac arthrodesis. There is potential for improved long-term outcomes from increased union rates.

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Abstract no.: 51552

**CLINICAL OUTCOMES OF AN OPTIMISED VERTEBROPLASTY METHOD
IN PATIENTS WITH OSTEOLYTIC SPINAL LESIONS**

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Introduction: Vertebroplasty is an effective method for treatment of severe back pain, caused by different osteolytic spinal lesions. However, the rate of bone cement leakages in vertebroplasty for osteolytic lesions according to literature data reaches to 38% or more. Purpose: To investigate the clinical outcomes of the use of an optimized method of vertebroplasty. Methods: 31 patients aged from 24 to 70 years with back pain caused by osteolytic lesions in the spine were divided into 2 groups. 14 patients were operated using the classical technique of vertebroplasty, including the use of fluoroscopic guidance to monitor bone cement injection. 17 patients were operated on with the use of an optimized method of vertebroplasty, including a preliminary determination of volume of the pathological focus in order to determine the amount injected cement. The intensity of the pain syndrome according to VAS scores from 0 to 100 in terms of 1 and 12 months after the operation and the number of cases of extravertebral leakages of cement were evaluated in both groups. Results: In both groups, a significant decrease in the average values of the pain syndrome was achieved at 12 months after the operation (by 74.6 and 83.6 points, respectively, $p < 0.05$). The rate of the bone cement leakages in patients in the 2nd group (2) was statistically significantly lower than the rate in the 1st group (10) ($p < 0.05$). Conclusion: the use of an optimized method of vertebroplasty can reduce the rate of leakages of bone cement.

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Abstract no.: 49580

USE OF 3D PRINTING MODEL FOR SURGICAL CORRECTION OF SYNDROMATIC SCOLIOSIS: AN EXPERIENCE IN ARGENTINA

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Scoliosis is defined as the deformity of the spine, there is deviation in the coronal plane and vertebral rotation in the transverse plane. In those patients who are not candidates or who failed the conservative treatment, the correction plus vertebral arthrodesis, is the treatment to be performed. Currently to achieve total or partial correction, the use of pedicle screws and rod is the gold standard. The inadequate pedicle screw placement could lead neuro-vascular lesions or non-optimal fixation. We present our experience using 3D printing technology for the analysis and surgical correction of syndromic scoliosis in young patients. It is a cross-sectional descriptive study, three patients were enrolled. A whole-spine radiographs and a three-dimensional CT scan of the spine was performed and saved as a DICOM file type. The application of 3D printing on spinal deformities enhanced the analysis and study of the deformity, such as the surgical technique for the correction of spinal deformities. The use of the 3D printing models would allow the extracorporeal view, preoperative planning, surgical technique training and intraoperative procedure in a precise and customized manner considering to the pattern of deformities, mainly in those cases where fluoroscopic control would not be practical neither usable due to the degree of morphological distortion. However, we recognize that the sample is limited.

Date: 2018-10-12
Session: Spine Short Free Papers
Time: 10:30 - 12:00
Room: Room 518c

Abstract no.: 52050

NEUROPATHIC MEDICATION: A CAUSE OF URINARY SYMPTOMS MIMICKING CAUDA EQUINA SYNDROME

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Introduction: The authors recognised that patients presenting to the Orthopaedic Spinal Rapid Access Service with symptoms and or signs of cauda equina syndrome may not have the diagnosis confirmed radiologically. Altered sensation in the 'saddle area', bilateral sciatica, urinary incontinence or retention, altered bowel habit, and sexual dysfunction are well recognised symptoms of cauda equina syndrome. Recognised side-effects of neuropathic medications commonly prescribed for radicular pain include: altered sensation, urinary incontinence or retention, and sexual dysfunction. Method: 151 patients were referred to the service within a 6 month period. Case notes of 34 patients presenting with symptoms and or objective signs of CES in absence of positive radiological findings were reviewed. Data collected included the patient's age, sex, prescribed medications and presenting symptoms. Results: Of these 34, 9(26%) presented with altered bladder function and 'saddle area' sensation and 25 (74%) with isolated bladder symptoms. Mean age was 47 in both female and males, 26 females and 8 males. 16 (47%) were taking neuropathic medications, 7 (22%) anti-depressants and 9 (28%) anti-convulsant medications. Conclusion: 16 (47%) of patients presenting with CES in the absence of radiological evidence were prescribed neuropathic medications with known side effects that may contribute to their symptoms. Therefore clinicians should take due consideration of prescribed medications as a possible cause of CES signs and symptoms. Further work is required to analyse data from a larger patient population in order to identify if particular medications carry a higher risk.

Date: 2018-10-12
Session: Spine Short Free Papers
Time: 10:30 - 12:00
Room: Room 518c

Abstract no.: 52246

EVALUATION OF HEALED STATUS IN TUBERCULOSIS OF SPINE BY FDG-PET/CT AND CONTRAST MRI

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Background: The healed status (end point of treatment) in TB spine is not defined; hence optimum ATT duration is unresolved. We for the first time prospectively evaluated the healed status in TB spine by FDG-PET/CT and Contrast MRI with the objective to define end point of treatment in TB spine. Methods: 37 patients of TB spine diagnosed on clinic-radio/imaging/cytology/histologically/molecular methods were enrolled,, treated and were evaluated radiologically, by Contrast MRI and FDG-PET/CT at 9 months. ATT was stopped on contrast MRI based healing or absence of FDG uptake on PET-CT. ATT was continued in active/resolving lesion. Repeat evaluation was done at 12,18,24,30 months till healing is demonstrated. Results: 28 patients achieved healed status out of which 11 demonstrated healed status on Contrast MRI and FDG-PET/CT both, 6 were MRI active (contrast enhancement) but FDG-PET/CT healed, 2 were MRI healed but FDG-PET/CT active (soft tissues SUV<2.0), 9 patients were MRI incompatible due to stainless steel implants (n=6) and in three could not be done due to financial constraints were declared healed on FDG-PET/CT (). Thus FDG-PET/CT showed healed bone lesion in 28/28 (100%) and on MRI 13/19(68.42 %) respectively. We had 6 patients whose spine was stabilized with stainless steel implants where MRI could not be performed. MRI was useful in 13/25 cases (52 %) to demonstrate healed lesion. 7,6,6,5 1, 2, 1 cases achieved healed status at 9,12,18,24,30,36,48 months of ATT intake respectively. Conclusions: FDG-PET/CT is more useful to demonstrate the healed status than MRI and is the only imaging to demonstrate healed status when MRI could not be performed due to metallic implants. All patients achieved healed status at.

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Session: Spine Short Free Papers
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Room: Room 518c

Abstract no.: 50827

INTRAWOUND APPLICATION OF VANCOMYCIN CHANGES THE RESPONSIBLE GERM IN ELECTIVE SPINE SURGERY WITHOUT SIGNIFICANT EFFECT ON THE RATE OF INFECTION: A RANDOMISED PROSPECTIVE STUDY

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PURPOSE: The impact of intrawound vancomycin on Surgical site infection (SSI) has not been strongly postulated to decrease the risk of surgical site infection. We designed study to determine whether intrawound vancomycin application reduces the risk of SSI in patients after spine surgery. **METHODS:** A prospective randomized control trial study to evaluate the patients with elective spine surgery in a period of 15 month was designed. Patients were divided into two groups based on whether intrawound vancomycin was applied or not. The relative risk of SSI within postoperative 30 days was evaluated. **RESULTS:** 380 patients were included in this study: degenerative spine pathologies and tumor 80% (304), trauma 11% (42) and deformity 9% (34). Intrawound vancomycin was used in 51% of patients. Prevalence of SSI was 2.7% in the absence of vancomycin use versus 5.2% with intrawound vancomycin. In multivariable regression model, those with higher number of levels exposed, postoperative ICU admission and obesity and use of instrumentation more than two levels had higher risk of developing SSI. In the treatment group Acinetobacter and Pseudomonas aeruginosa (20%) were the most common pathogens. In control group, Staphylococcus aureus and Acinetobacter (40%) were the most common organisms. **CONCLUSIONS:** Intrawound application of vancomycin after elective spine surgery was not associated with reduced risk of SSI in our patients. However, the use of intrawound vancomycin changed the responsible infection germ.

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Abstract no.: 52557

IDIOPATHIC ESCOLIOSIS OF ADOLESCENTS AND SIMILAR: NEW TOOL FOR GLOBAL MEASUREMENT OF THE CORONAL PLANE

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Objective: To create a method to measure the overall coronal plane of the spine, called the Sacral Clavicular Angle (SCA). Methods: A line is made at the base of the sacrum, a second central line is made perpendicular to the first in the proximal extension of the column. A third line is made passing at the upper meeting points of the clavicles with the two second ribs, forming two angles, the largest is measured, so the degrees exceeding 90° is the value of the SCA. This tool was tested retrospectively by 46 patients with idiopathic scoliosis, who underwent short, apical, single or multiple fixations. 3rd generation instruments were used, evaluating SCA in the pre and postoperative periods, which were compared with another group of 46 patients treated with the traditional technique.0, Belo Horizonte, MG. enguerbg@gmail.com

Date: 2018-10-12

Session: Research Short Free Papers

Time: 14:00 - 15:30

Room: Room 518c

Abstract no.: 51323

TRANEXAMIC ACID REDUCES HIDDEN BLOOD LOSS IN THE TREATMENT OF INTERTROCHANTERIC FRACTURES WITH PFNA: A SINGLE-CENTRE RANDOMISED CONTROLLED TRIAL

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Background: Hidden blood loss is a major concern for patients undergoing hip surgery for intertrochanteric fracture. The objective of this study was to investigate whether tranexamic acid (TXA) could reduce postoperative hidden blood loss in patients undergoing hip surgery for intertrochanteric fracture. Methods: A total of 77 patients with intertrochanteric fracture were enrolled in this randomized controlled study. Patients received either 200 mL (1 g) of TXA (n = 37) or normal-saline (NS) (n = 40) i.v. before hip surgery using proximal femoral nail anti-rotation (PFNA). Hemoglobin and hematocrit levels were measured preoperatively and postoperatively at day 1 and 3. Visible and hidden blood loss volumes were calculated at postoperative day 3. Results: On postoperative day 3, the transfusion rate was significantly lower in the TXA group compared to the NS group, although mean hemoglobin and hematocrit levels were not significantly different between the two groups. However, the estimated hidden blood loss volume (210.09 ± 202.14 mL vs. 359.35 ± 290.12 mL; $P < 0.05$) and total blood loss volume (279.35 ± 209.11 mL vs. 417.89 ± 289.56 mL; $P < 0.05$) were significantly less in the TXA group compared to the NS group, respectively. Conclusion: TXA significantly reduced postoperative hidden blood loss in patients with intertrochanteric fracture who underwent PFNA.

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Room: Room 518c

Abstract no.: 51009

EFFECTS OF MECHANICAL LOADING ON THE DEGRADABILITY AND MECHANICAL PROPERTIES OF THE NANOCALCIUM-DEFICIENT HYDROXYAPATITE–MULTI (AMINO ACID) COPOLYMER COMPOSITE MEMBRANE TUBE FOR GUIDED BONE REGENERATION

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Methods: This study focuses on a novel membrane tube for GBR, which was prepared by a nanocalcium-deficient hydroxyapatite–multi(amino acid) copolymer (n-CDHA-MAC) composite. The biomechanical strength and degradability of this membrane tube under mechanical loading after immersion in phosphate-buffered solution were investigated to evaluate the effects of mechanical loading on the membrane tube. The membrane-tube group with no mechanical loading and femora bone were used as controls. **Results:** The compressive strength and bending strength of n-CDHA-MAC membrane tubes were 66.4 ± 10.2 MPa and 840.7 ± 12.1 MPa, which were lower than those of the goats' femoral bones (69.0 ± 5.5 MPa and 900.2 ± 17.3 MPa), but there were no significant ($P > 0.05$) differences. In the in vitro degradability experiment, all membrane tubes were degradable and showed a surface-erosion degradation model. The PH of solution fluctuated from 7.2 to 7.5. The weight and mechanical strength of loaded tubes decreased more quickly than non-loaded ones, with significant differences ($P < 0.05$). However, the strength of the loaded group after degradation achieved 20.4 ± 1.2 MPa, which was greater than the maximum mechanical strength of 4.338 MPa based on goat femoral middle stationary state by three-dimensional finite-element analysis. **Conclusions:** n-CDHA-MAC membrane tubes have good biomechanical strength during degradation under mechanical loading. Therefore, this membrane tube is an ideal GBR membrane for critical size defects of long bones in goats for animal experiments.

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Session: Research Short Free Papers

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Room: Room 518c

Abstract no.: 50982

COCCYGODYNIA: AETIOLOGY AND PATHOGENESIS

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Introduction: There are many reasons of coccygodynia described in literature. Last etiologic classification of coccygodynia was proposed in 1986 and is out of date. Materials: The study is based on the results of examination and treatment of 129 patients suffering coccygodynia. Morphologically examined 70 coccyx samples removed from operated patients and 15 cadaver samples. Results: We identified the pathology of the coccyx in 129 patients with coccygodynia. These include traumatic injuries (from 1 day to 1 month after injury) - 30 people; primary degenerative changes in the coccyx region - 11 people; secondary degenerative changes in the coccyx area after traumatic deformations - 64 people; hypermobility - 18 people; osteomyelitis of the coccygeal vertebrae - 1 person; congenital malformation of coccyx - 1 person; malignancy of the coccyx region - 4 people. Based on our research and literature sources, we proposed a modern etiological classification of coccygodynia. We divided the coccygodynia syndrome into the primary one, which develops in the pathology of the sacrococcygeal region and secondary, when the etiologic cause of pain syndrome is not associated with the coccyx pathology. Morphological analysis of 70 coccyx samples removed from operated patients revealed the degenerative-dystrophic process involved the sacrococcygeal synchondrosis, bone, vascular and nerve formations. These morphological changes were not found in 15 cadaver samples. The degenerative-dystrophic process is the main pathogenesis factor in the development of the primary coccygodynia.

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Abstract no.: 50651

MOVEMENT OF THE TALUS BETWEEN THE DISTAL TIBIA AND FIBULA

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Introduction: Literature about the movement of the talus in the transversal and frontal plane during plantar- and dorsiflexion, is rare. The aim of this study is to describe these movements and to interrelate them. Methods: 26 sufficient dissected cadaveric, distal to the knee joint detached, preparations were examined. All soft tissue, except the interosseous membrane and the ligaments were dissected. The outer parts of the upper ankle joint have been measured. The range of motion of the specimen was examined in a custom made measuring apparatus. Results: The measured values have been added to describe the whole range of motion in every plane. In the sagittal plane (plantar- and dorsiflexion) the range of motion was $47,62^{\circ}9,17^{\circ}$ (max $64,4^{\circ}$ /min $27,9^{\circ}$). In frontal plane (outer-/inner-rotation) $23,73^{\circ}10,1^{\circ}$ (max $51,4^{\circ}$ /min $4,1^{\circ}$). In transversal plane (medial/lateral deviation) $22,17^{\circ}13,42^{\circ}$ (max 49° /min 3°). In plantarflexion there was always outer-rotation, in dorsiflexion inner-rotation. The comparison of the data showed that the dimensions of the outer part of the ankle joint correlate inversely with the plantarflexion. The width of the mortice correlated directly with the lateral division of the talus in dorsiflexion, so does the plantarflexion with the outer rotation of the talus. Discussion: The data collected in both the frontal and transversal plane showed remarkably high readings when it comes to absolute numbers in comparison to similar studies, but the relation was comparable and more similar to in-vivo studies. In contrast to former studies new degrees of relationship between the movements of the talus have been found.

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Abstract no.: 50559

APPLIED BIOINFORMATIC EVALUATION OF MICRORNAS ASSOCIATED WITH INTERVERTEBRAL DISC DEGENERATION REVEALS TWO DISTINCT FUNCTIONAL CLASSES OF MIRNA TARGETS

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Objective: To systematically evaluate existing data on the disease-related roles and cellular functions of miRNAs in intervertebral disc degeneration (IDD). **Methods:** A systematic review of miRNAs/IDD studies was completed using relevant key words in multiple databases. All identified articles were systematically assessed using specific inclusion and exclusion criteria. We performed bioinformatic analysis of quantitative expression data for IDD-related miRNAs, which are non-coding mRNAs suppressing protein expression. **Results:** Our review of published results (21 studies for >30,000 discs) reveals that miRNA data are inconsistent. Therefore, we performed hierarchical clustering and created heat maps to discern common expression patterns for miRNAs that are modulated in the intervertebral disc (IVD), including nucleus pulposus (NP), annulus fibrosis (AF) or cartilaginous endplate (CEP) from IDD patients. We find two unique signatures of miRNAs that are elevated or suppressed in IDD among different studies (set#1 and set#2). Bioinformatic assessment of putative targets of these miRNAs and the relatedness of these targets by gene ontology analysis reveals that each miRNA set has many common gene targets that form functional cellular networks. Strikingly, miRNA set#1 primarily targets transcription factors, while set#2 primarily target genes linked to cell metabolism and molecular transport. **Conclusion:** Comprehensive analysis of IDD associated miRNAs reveals a remarkable dichotomy in miRNA signatures, and indicates that there may be two biologically distinct classes of miRNAs that are associated with IDD. This finding suggests that miRNAs may be useful as diagnostic biomarkers and/or may provide new therapeutic targets in IDD.

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Abstract no.: 50541

REPORTING OF NEEDLE STICK INJURIES AMONG SURGEONS OF TERTIARY CARE HOSPITALS IN LAHORE

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Objectives: Pakistan is a country where hepatitis B and C is prevalent. Patients visits tertiary care hospital without screen. We conducted this study to determine prevalence of viral hepatitis B and C infections, their practices and awareness regarding associated risk factors amongst the patients undergoing Orthopedic Surgery procedures. **Methods:** This descriptive case series was conducted in 1294 patients who attended out-door patient, emergency departments and opted Orthopedic Surgery procedures at unit II King Edward Medical University / Mayo hospital Lahore. We used a pre-tested self-administered questionnaire emphasizing study objectives. Patients were inquired about their educational and economical status, their practices of shaving face and armpits routine, nose and ear piercing, history of blood transfusion, and later their knowledge, awareness regarding risk factors and disease outcome. **Results:** Out of the total 1296 participants, 356 (27.51%) were positive for HCV and 156 (12.1%) for HBV infections. Out of the total 552, 334 (60.5%) respondents were males and 218 (439.5%) females were hepatitis B and C positive. **Conclusion:** Hepatitis C is more prevalent that hepatitis B. Various risk factors were observed as common risk factors among anti-HCV and HBsAg positive patient in orthopedic Surgery procedure. The awareness of the patient was very low regarding risk factors and disease outcomes.

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Abstract no.: 50370

PROGRANULIN IS REQUIRED FOR ESTROGEN EFFECT ON POSTMENOPAUSAL OSTEOPOROSIS

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Estrogen is known to prevent bone loss during menopausal transition. We reported previously that progranulin (PGRN) also effectively prevented bone loss in inflammatory arthritis (Tang, et al, Science, 2011). Given that both estrogen and PGRN could inhibit osteoclast formation and bone resorption, this study is to determine whether PGRN plays a role in estrogen's protective influence in postmenopausal osteoporosis. Firstly, in both primary BMMs isolated from WT mice and RAW 264.7 macrophages, we found estrogen significantly upregulated PGRN expression. Secondly, in primary BMMs isolated from WT mice, estrogen markedly inhibited osteoclast formation and bone resorption, as well as levels of osteoclast differentiation gene markers. In contrast, estrogen's inhibitory effect on osteoclastogenesis was totally abrogated in PGRN-KO BMMs. Intriguingly, it is noted that pits of cells from PGRN-KO mice were much bigger than those from WT mice, indicating that loss of endogenous PGRN led to increased bone resorption. Thirdly, in BMSCs derived from both WT and PGRN-KO mice, estrogen slightly increased bone mineralization and osteogenic differentiation markers (no significant difference). In addition, bone mineralization of cells from PGRN-KO mice was markedly reduced compared to those from WT mice. Fourthly, estrogen pellets could not reduce the ovariectomy-induced bone loss in PGRN-knockout mice as that in WT mice. Lastly, by genome microarray analysis, it was revealed that estrogen receptor α (ER α) expression in the bone was significantly reduced when PGRN deficiency. Above all, this study indicates that PGRN is required for estrogen's effect on postmenopausal osteoporosis, via its interaction with ER α .

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Abstract no.: 50022

SAFETY AND BACTERICIDAL EFFECT OF 222-NM ULTRAVIOLET IRRADIATION

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Introduction: Ultraviolet type C (UVC) having short wavelength has a high bactericidal effect, but it has cytotoxicity. However, since UVC with a wavelength of 222 nm reaches only the stratum corneum, it does not affect the skin cells. The purpose of this research is to confirm the safety of 222 nm UVC irradiation and to examine their skin sterilization effect with healthy volunteers. Methods: The current trial was conducted on 20 healthy volunteers. The back of the subject was irradiated with 222 nm UVC at 50 to 500 mJ/cm², and the induced erythema was evaluated. Subsequently, the back was irradiated with the maximum amount of the UVC not causing erythema, and the skin swabs before and after the irradiation were cultured, and the number of colonies formed after 24 hours was measured. In addition, cyclobutene pyrimidine dimer (CPD) as an indicator of DNA damage was measured with skin tissue of nonirradiated and the irradiated regions. Results: No erythema appeared in all subjects at all doses. The back of the subject was irradiated at 500 mJ/cm², and the number of bacterial colonies in the skin swab culture was significantly decreased by UVC irradiation. There was no significant difference between CPD amount produced in irradiated area and the negative standard. Discussion: It was suggested that irradiation with 222 nm UVC at 500 mJ/cm² was a safe irradiation dose and had the bactericidal effect. In the future, 222 nm UVC irradiation is expected to contribute to prevention of perioperative infection.

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Session: Research Short Free Papers

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Room: Room 518c

Abstract no.: 49955

**OHA-COL II BIOMIMETIC GEL COMBINED WITH AUTOLOGOUS
CONCENTRATED BONE MARROW CELL FOR CARTILAGE DEFECT
REPAIR OF THE MINIPIG**

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Articular cartilage is an avascular, aneural and alymphatic structure, it has a limited self-repair potential. Cartilage tissue engineering is a promising approach for cartilage defect repair, however, there are still a lot of problems exist in this technology. Thus, it is of great significance to explore a more convenient repair strategy with better repair effect. We proposed a new one-step strategy to repair the cartilage defect by oxidized hyaluronic acid (OHA)- type II collagen (COL II) biomimetic gel combined with autologous concentrated bone marrow cell and it was injected into cartilage defect by one-step method. We used animal experiments to test the effectiveness and safety of this repair strategy. Concentrated bone marrow cell was extracted at the beginning of the surgery, and mixed with pre-prepared type II collagen gel. 8 millimeter diameter full-thickness cartilage defect in the femoral trochlea of minipig was created. Oxidized hyaluronic acid was added, followed by cartilage defect injection, the gel was cross-linked by Schiff's base reaction. At 1, 3, and 6 months postoperatively, the regenerated tissue was evaluated by MRI, macro- and microscopic observation, and histological analysis. Oxidized hyaluronic acid-type II collagen combined with concentrated bone marrow cell can be a promising option in the treatment of large full thickness chondral defects, the repair tissue was hyaline cartilage. Our data confirmed the feasibility and effectiveness of this one-step repair strategy, and implied its potential in clinical application.

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Session: Research Short Free Papers

Time: 14:00 - 15:30

Room: Room 518c

Abstract no.: 49735

LEARNING CURVES: THE IMPORTANCE OF UNDERSTANDING HOW WE DEVELOP OPERATIVE TECHNIQUES AND SKILL

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Background: Each surgeon will progress through a period of learning when performing a new procedure or technique. To help us as clinicians it is vital to understand this learning process and the time required to develop. Previous methods that model surgical learning curves are frequently descriptive and lack rigour to extract robust and meaningful information. We aimed to formulate a method to model learning tailored to the high variability seen in surgical practice, to monitor and improve surgical performance and outcome. Methods: We developed a novel method to analyse learning curves. Learning data was split into two linear phases and fit adjoining lines using least squares regression. These models were compared and significance tested by F-tests. We applied this method to navigated hip and knee arthroplasty, analysing operative time for a surgeon's first 50 and 60 cases, with subsequent testing against simulated learning data. Results: The proposed method of progressive model complexity successfully modelled the learning curve among real operative data. It was effective in deducing the underlying trends in simulated scenarios, created to represent atypical situations which can practically arise in any learning process. Conclusions: The novel modelling method can be used to extract valuable information from learning data displaying high variability, as in surgical practice. This method is accessible to researchers, educators and clinicians, providing a valuable insight into the time required to develop new techniques.

Date: 2018-10-12

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Room: Room 518c

Abstract no.: 49511

PRIMARY STABILITY OF TIBIAL PLATEAUS UNDER DYNAMIC COMPRESSION SHEAR LOADING IN HUMAN TIBIAS: INFLUENCE OF KEEL LENGTH, CEMENTATION AREA AND TIBIAL STEM

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The objective of our study was to evaluate the impact of the tibial keel length in surface- and full-cementation on the primary stability of a posterior stabilised tibial plateau (VEGA® Knee Aesculap, Germany) under dynamic compression-shear loading conditions in human tibiae. Two experienced knee surgeons performed the cemented tibial plateau implantations on 24 fresh-frozen human tibiae of a mean donor age of 70.7 years. The tibiae were divided into four groups of matched pairs; "TibiaSC40" (28 mm keel & 12 mm obturator, surface cementation), "TibiaSC28" (28 mm keel, surface cementation), "TibiaFC40" (28 mm keel & 12 mm obturator, full cementation) and "TibiaSC120S" (28 mm keel, surface cementation, 92 mm cementless stem), based on trabecular bone mineral density. To assess the primary stability under dynamic compression shear conditions, a 3D migration analysis of the tibial component relative to the bone based on displacements and deformations and an evaluation of the cement layer including penetration was performed by CT-based 3D segmentation. Within the tested implant fixation principles the mean load to failure of a 40 mm keel was 4700 N and of a 28 mm keel was 4560 N ($p=0.996$), whereas the mean load to failure was 4920 N in full cementation ($p=0.986$). From our observations, we conclude that there is no significant difference between the groups regarding the dynamic primary stability in terms of failure load and migration characteristics under clinical relevant test conditions. For tibial plateaus with additional stem we found less variability in all rotatory degrees of freedom.

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Room: Room 518c

Abstract no.: 52616

DO TNF-R2, TLR-4 AND IL-10 MODULATE THE ACTIVATION OF CD4+ T REGULATORY CELLS FOLLOWING TRAUMA?

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Background: Recently we demonstrated that platelets are able to modulate the adaptive immune system following trauma by interacting with CD4+ T regulatory cells (Tregs). Tregs have been shown to be key players of the anti-inflammatory host response following trauma. The mechanisms of the interaction between Tregs and platelets remain unsolved. Here we postulate, that activation pathways via TNF-R2, TLR-4 and IL-10 modulate the platelet induced Treg activation following trauma. Material/Methods: We used the murine burn injury model utilizing male mice background C57BL/6N or B6/129F2. Treg activation pathways were selectively addressed using TNF-R2-KO, TLR-4-KO and IL-10-KO mice, wild-type mice were used as controls. Mice were either treated inducing injury (third degree burn of 25% of the total body surface) or sham treatment. Lymph nodes were harvested one hour after the intervention. The early activation of cell signaling molecules of Tregs (ZAP-70, pZAP-70, PKC-theta, pPKC-theta) was analyzed using phospho-flow cytometry. Results: As compared to sham treatment, injury induced significant early activation of Tregs in lymph nodes in wild-type mice. In contrast to wild-type mice, disruption of TNF-R2 and TLR-4 resulted in a lower activity of Tregs following trauma. Interestingly, the absence of IL-10 had no significant impact on the activation of Tregs following trauma. Conclusion: TNF-alpha mediated signaling via TNF-R2 and TLR-4 pathways seem to play an important role in the activation of Tregs following trauma. In contrast we did not observe a role of IL-10 in the posttraumatic activation of Tregs. Our findings indicate, that TLR-4 and TNF-R2 might be potential targets in the immunomodulation of anti-inflammatory Tregs following trauma.

Date: 2018-10-12

Session: Research Short Free Papers

Time: 14:00 - 15:30

Room: Room 518c

Abstract no.: 52295

COMPARISON OF SERUM BONE SPECIFIC ALKALINE PHOSPHATASE LEVELS IN OPERATIVE AND NONOPERATIVE TREATMENT OF CLOSED TIBIAL DIAPHYSEAL FRACTURES

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The current study was undertaken to monitor the fracture healing with serial measurement of Bone Specific Alkaline Phosphatase (BAP) in isolated tibial diaphyseal fractures and compare their levels on operative v/s non-operative management. Fifty cases of closed diaphyseal fractures of Tibia in healthy young adults of 18-45 years age were included. Twenty-five cases underwent closed reduction with intramedullary interlocking nail and another 25 underwent closed reduction and plaster application. BAP was measured using enzyme immunoassay at time of injury, 4, 8 and 12 weeks. Radiological assessment was done simultaneously and at 18 and 24 weeks. Presence of bridging callus in 3 cortices was taken as fracture union. In non-operative group all the fractures united in 24 weeks. BAP increased from baseline by 40% at 4 weeks($p=0.005$), 71% at 8 weeks($p=0.001$) and 49.7% at 12 weeks($p=0.005$). In operative group BAP increased from baseline by 62% at 4 weeks($p=0.003$), 88.4% at 8 weeks($p=0.001$), and 52% at 12 weeks. At 24 weeks 18 patients had bridging callus at 3 or 4 cortices. Two patients had callus in 2 cortices, their BAP levels remained below baseline at 4, 8 and 12 weeks. Failure of BAP to rise above baseline may suggest delayed union and non operative management performed better than operative management in this study.

Date: 2018-10-12

Session: Research Short Free Papers

Time: 14:00 - 15:30

Room: Room 518c

Abstract no.: 51562

USE OF INCISIONAL NEGATIVE PRESSURE WOUND THERAPY DRESSINGS IN NON-THEATRE SETTING FOR ALL LOWER LIMB ARTHROPLASTY PROCEDURES: SPECIALIST ELECTIVE ORTHOPAEDIC HOSPITAL EXPERIENCE

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Aim: Wound complications following any orthopaedic procedure especially prosthetic joint replacements are of a growing concern. In this prospective study we look at the use of negative pressure dressing in a non theatre environment i.e outpatients. A total of 400 pts the dressing was used in 141 in out patients setting. 182 patients had one single routine appointment in the clinic. The use of negative pressure dressings in all non-theatre environments were as follows, the median times of using the dressing from the time of op was 6 days range (1-120 days), follow ups were 2 range (1-12). The 48 (15%) single procedures which were carried out were wound washout and debridement. 10 were primary THR, 8 primary TKR, 2 Medial Uni, 1 PFJ, 27 were for revision cases, 13 Revision Hips and 14 Revision Knees. 4 pts died of natural causes and 5 lost to follow up. 78 other procedures required the use of the NPWTd. 30 patients required further washouts. In out-patient setting A total of 141 pts with a grade 2 or above wound ooze had a NPWTd applied. 32 patients needed admission for wound washouts. 20,8,4 patients needing one two and three washouts respectively. Out of the 4 patients who needed three washouts 3 were revision total knee replacements. 1 patient was a revision Total Hip Replacement. Median hospital stay for the washout category of patients was 3 (1-14).

Date: 2018-10-12

Session: Research Short Free Papers

Time: 14:00 - 15:30

Room: Room 518c

Abstract no.: 51223

KARTOGENIN-INCORPORATED MULTIFUNCTIONAL HYALURONIC ACID COATED ULTRA-SMALL CERIA NANOPARTICLES USED FOR OSTEOARTHRITIS TREATMENT

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Increased oxidative stress plays an important role in the pathology of osteoarthritis (OA); antioxidants which are assumed to counteract the harmful effects of oxidative stress may interfere pathological process of OA. Ceria nanoparticles possess strong antioxidant properties through facile cyclic oxidation states that switch between Ce³⁺ and Ce⁴⁺. While, kartogenin (KGN) is a small molecule chondrogenesis inducing agent that significantly promotes chondrocyte differentiation of MSCs and enhance cartilage repair. Based on this, we developed an intra-articular (IA) drug delivery system to treat osteoarthritis (OA) that consisted of KGN based on hyaluronan-mediated biomineralization multifunctional ultra-small ceria nanoparticles (KGN-HA-USCNPs). Incorporation efficiency, in vitro cumulative release behavior of KGN and materials characterization was tested. Rat articular chondrocytes were used to test its biological effects, such as: cytotoxicity, uperoxide dismutase mimetic activity, chondrocytes uptake and sub-cellular localization. Rat bone mesenchymal stem cells (BMSCs) were used to test its chondrogenic differentiation inducibility in vitro. The in vivo therapeutic effects of KGN-HA-USCNPs were investigated using a surgically-induced OA model in rats. It showed that the nano-materials had stable structure and KGN release behavior. In vitro experiments showed high superoxide dismutase mimetic with good biocompatibility. Rat BMSCs chondrogenic differentiation was enhanced by KGN-HA-USCNPs in vitro. The rats treated with KGN-HA-USCNPs by IA injection showed much less degenerative changes than untreated control. In conclusion, KGN-HA-USCNPs can be useful as an intra-articular drug complex to treat OA.

Date: 2018-10-12
Session: Hip Short Free Papers
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Room: Room 518c

Abstract no.: 51103

THE EFFECT OF LATE RADIOTHERAPY ON THE PROGRESSION OF HETEROTOPIC OSSIFICATION FOLLOWING TOTAL HIP ARTHROPLASTY

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Heterotopic ossification (HO) is a well-recognized complication after total hip arthroplasty (THA). Preoperative or postoperative radiotherapy treatment has been shown to be an effective prophylactic treatment for high risk patients. However, there is no effective treatment for patients who did not receive prophylactic treatment and subsequently develop significant HO postoperatively. The goal of this study was to determine if late radiotherapy treatment can prevent the progression of HO following THA. This retrospective study evaluated patients who developed HO following THA and were treated with late radiotherapy. No patients had any well-established risk factors for HO preoperatively that would have warranted either pharmacologic or radiation prophylactic therapy. All these patients developed Brooker II or greater HO and received radiotherapy after their 6-week or 12-week postoperative follow-up. All patients were evaluated radiographically pre and 2 years post radiotherapy in order to determine if there was any progression in their HO. This was determined with Image J software that measure the difference in the surface area of HO that formed. A total of nine patients with a mean age of 64.5 years who developed HO following THA and required late XRT were identified. All these patients developed HO within 6 weeks or 12 weeks post-surgery and received later radiotherapy. Eight of the 9 hips (89%) treated with late radiotherapy demonstrated no further progression in the amount of bone formed. One patient with inaccurate shielding showed a very mild increase in bone formation at 2 years, however, this increase did not change the final Brooker classification and did not result in any loss of motion. Overall, there was an increase in the mean total surface area of HO by 19 mm² (2%), (p=0.12). Late, low-dose radiotherapy is effective in preventing the progression of HO in patients who unexpectedly develop significant HO.

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Time: 16:00 - 17:30
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Abstract no.: 52560

**ROTATIONAL ACETABULAR OSTEOTOMY VERSUS
TRANSTROCHANTERIC CURVED VARUS OSTEOTOMY FOR
DYSPLASTIC HIP OSTEOARTHRITIS**

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Objectives: We investigated the clinical and radiological outcomes of rotational acetabular osteotomy (RAO) and transtrochanteric curved varus osteotomy (TCVO) for dysplastic hip osteoarthritis. **Design and Methods:** Between April 2009 and April 2016, RAO were performed by one surgeon in 69 symptomatic hips (RAO group) and TCVO in 6 symptomatic hips (TCVO group). All patients were female with a mean age at surgery of 42 years (range, 22-56) in RAO group and 50 years (range, 43-62) in TCVO group. The mean follow-up duration was 36.0 months in RAO group and 41.6 months in TCVO group, postoperatively. **Results:** The mean JOA score improved from 67.8 points preoperatively to 95.5 points at the final follow-up in RAO group and from 64.5 points to 95.6 points in TCVO group, respectively. A mean operative time and intraoperative bleeding were 153 minutes and 296 ml in RAO group, 127 minutes and 263 ml, respectively. Concerning to RAO group, advanced osteoarthritis was observed in 1 hip converting THA because of progression to secondary osteoarthritis at 60 months postoperatively. One hip had infection and two hip suffered sciatic nerve damage, which improved. Ten hips had non-union and 5 hips developed fatigue fractures of the pubic arch, which healed within 6 months postoperatively, except for one case. Concerning to TCVO group, there was no complications. **Conclusion:** RAO and TCVO is an attractive joint preservation procedure for the dysplastic hip. Although TCVO is limitative indication, it is relatively simple and less invasive procedure compared with RAO.

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Room: Room 518c

Abstract no.: 52261

IS THERE A ROLE FOR HIP ARTHROSCOPY IN TÖNNIS II PATIENTS WITH FEMOROACETABULAR IMPINGEMENT?

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Femoroacetabular impingement (FAI) is proposed as a leading pathomechanic cause enrolled in pathogenesis of degenerative changes that lead to osteoarthritis (OA) of hip joint. Main objective of this study is to report clinical outcome following the arthroscopic treatment of patients with FAI in the presence moderate OA in form of radiological staging (Tönnis II) hips. Twenty nine patients underwent arthroscopic surgery for FAI; all with preoperative radiological signs of Tönnis II (two separate observers' agreement) were prospectively included in this study. With minimum one year follow-up, clinical assessment with Hip Outcome Score (HOS) and conversion rate to total hip replacement (THR) were addressed. The study included 29 patients (30 hips); 18 males, 11 females and age range was 18-61 years (mean 39.9 years). With mean follow-up 30.59 months, five patients (16.66%) had undergone total hip replacement at end point of one year, leaving 24 patients for the analysis. At last follow up, 24 patients (83.34%) reported that they were satisfied with the outcome of surgery, HOS mean preoperatively was 54.84 (average 15-93.4 points) and 77.69 (average 11.11-100 points) postoperatively with mean improvement 22.85 points. Arthroscopic treatment for patients with FAI in Tönnis II hips resulted in clinically relevant improvements regarding pain; function and quality of life in the majority of patients included in this study but leaving a considerable percentage of THR conversion at one year follow up.

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Abstract no.: 52026

IMPACTION BONE GRAFTING: A NOVEL TECHNIQUE IN THE TREATMENT OF NEGLECTED AND NONUNION NECK OF FEMUR FRACTURES

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Background: The purpose of this study is to evaluate the results of novel technique of impaction bone grafting, valgus subtrochantric osteotomy and dynamic hip screw fixation in young patients with neglected and non-union neck of femur fractures. Methods: A total of 44 patients with nonunion and neglected neck of femur fractures treated with impaction bone grafting, valgus subtrochanteric osteotomy and dynamic hip screw fixation from January 2009 to January 2016 were retrospectively analysed. Duration of neglect, Head shaft angle, pauwels angle, neck resorption ratio, time to union at non-union site and osteotomy site were analysed. Functional outcome evaluated by Harris hip score. Results: Mean age was 36.6 years (16 – 50 years) with 37 males and 7 female patients. The mean preoperative Head shaft angle (HSA) of 115.7° (91°-142.3°) increased to 145.2° (130.3° to 162.3°) after surgery. The mean preoperative Pauwel's angle of 66.64° (45.6° - 88.9°) reduced to 38.8° (26.6° - 49°) after surgery. The union rate was 95.5% (42 out of 44 patients). The mean time to union at fracture site and osteotomy site was 3.31 months (2 to 9 months) and 3.14 months (2 – 5 months) respectively. HHS was excellent in 13, good in 19, fair in 10, poor in 2 patients with a mean of 86 (69.3 – 97). Conclusion: Impaction bone grafting, valgus subtrochantric osteotomy and dynamic hip screw fixation is a simple and valuable technique to salvage neglected and non-union neck of femur fractures in young adults with high union rate.

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Abstract no.: 51579

INDICATION AND RESULTS OF THE DUAL MOBILITY CUP IN THA

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Introduction: Recently, there has been increasing interest in the use of dual mobility systems in the treatment of hip instability, or to prevent the high risk of dislocation. Methods: This retrospective study examines 74 patients who had surgery between 2014 and 2017 • We have : 18 osteoarthritis in hip dysplasia • 29 THA revision (aseptic loosening) • 12 tumoral hip reconstruction • 15 patients at very high risk for recurrent instability (Parkinson disease, stroke ,hip reconstruction ,after 70 years old). Results: Good to excellent pain relief was achieved in 70 of 74 patients at the 3 year follow-up. 2 dislocation after 3 months of the hip surgery. 2 patient dead after tumoral recurrent. 2 leg length discrepancy. Conclusion: Our study shows that primary or revision PTH using dual mobility implants in patients at high risk of hip instability provides satisfactory long-term results, with a very minimal risk of dislocation.

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Abstract no.: 52158

DISLOCATION RATE OF THA IN PATIENTS WITH NECK OF FEMUR FRACTURES: THE FIVE-YEAR MAJOR TRAUMA CENTRE EXPERIENCE

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Background: Total hip arthroplasty (THA) is the treatment of choice for medically fit patients sustaining neck of femur (NOF) fractures. However dislocation in THA remains a substantial problem encountered with up to 20% to 50% of dislocation rates (DR) being reported in NOF fracture patients in the literature. Our study assessed if a correlation was present in the DR in our NOF fracture population in comparison to surgical approach (SA) utilised. Methods: A retrospective study was conducted recruiting 123 patients that underwent primary THA after a NOF fracture between 2013-2018. Demographics, type of THA, operating surgeon's grade, SA (anterolateral vs posterior), prosthesis type (acetabular cup, stem type (Exeter V40™ vs CORAIL™) and offset) and mortality were recorded. Chi-square test was utilised for statistical analysis. Results: The median age of the cohort was 70 (28-90). The mortality rate at 1 year was 3% after the procedure. Overall dislocation rate was 10% whilst revision rate was around 4%. Approach: Posterior (n=93) vs Anterolateral (n=30). DR was 12% vs 3% respectively (p=0.312). Type of THA: cemented (n=51) vs reverse hybrid (n=66) vs uncemented (n=6). DR was 18% vs 3% vs 17% respectively. Femoral stem utilised: CORAIL™ (n=72) vs Exeter V40™ (n=51). DR was 4% vs 18% respectively (p=0.029). Acetabular cup and offset provided no significant correlation to our dislocations. Conclusion: Interestingly surgical approach had no statistical significance on our dislocation rate. The use of cemented Exeter V40 stems were significantly associated with increased dislocation in THA compared to uncemented CORAIL stems.

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Room: Room 518c

Abstract no.: 51624

DIFFERENT BEARINGS ON EACH SIDE HAVE A DIFFERENT INCIDENCE OF INFECTION IN PATIENTS WITH BILATERAL THA

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The challenge in studying the association between THA bearing surface and infection risk is adequately adjusting for confounding hospital, surgical, and patient related factors. We done the hypothesis that a difference in infection would be observed in patients who are at risk for infection (patients with sickle cell disease). Material and Methods: We reviewed arthroplasties performed in 535 patients (976 hips) with sickle cell disease (SCD) from the year 1981 to the year 2012. We selected in this population 325 patients (650 hips) who had bilateral arthroplasty with two different bearing on each side. 116 patients had Metal on PE (MoP) on one side and Ceramic on PE (CoP) on the contralateral; 106 patients had (CoP) on one side and Ceramic on Ceramic (CoC) on the contralateral; 103 patients had MoP on one side and CoC on the contralateral. The minimum followup was 5 years (mean 15 years; range, 2 to 35 years). All the patients received the same femoral cemented implants (same manufacturer), and received the same antibiotics. Results: During the observation period of 35 years (median 15, range 4 to 35 years), a total of 36 of 650 THAs (5.5%) were revised for infection. When late infection occurred in patients with bilateral arthroplasties and different bearing surfaces, MoP hips were associated with a significant higher risk of revision (26 infections among 219) for infection when compared with CoP (8 among 222; $p=0.0021$), and CoC (2 among 209 hips; $p=0.0004$). The difference between CoP hips and CoC hips was not significant ($p=0.0894$). Conclusions: when the contralateral hip of the same patient is the control, our results indicate that implants with articulations involving a metal component are more prone to becoming infected than those involving ceramic-on-ceramic or ceramic-on-polyethylene bearings, where no metal ion.

Date: 2018-10-12
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Abstract no.: 51285

MID-TERM RESULTS OF PREFABRICATED POROUS COATED FLANGED ACETABULAR CUPS IN REVISION TOTAL HIP ARTHROPLASTY WITH MASSIVE ACETABULAR DEFECTS

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Background: Revision hip arthroplasty of massive acetabular defect and pelvic discontinuity is challenging and gives unpredictable results. Acetabular cups and reinforcement rings have high failure rates because of lack of biological fixation. This study evaluates the midterm outcome and survivorship of a cementless acetabular cup having an ischial hook and three iliac flanges, in massive acetabular defects. Materials: Between January 2014 and May 2015, 14 acetabular revision reconstructions in 14 patients with AAOS Type 3 and 4 defects were done using allograft and a cementless porous-coated hemispherical cup with one ischial hook and 3 flanges. Results: At the minimum follow-up of 34 months, 13 of the 14 revisions had no clinical or radiographic evidence of loosening of the acetabular cup component. Their Harris hip scores improved from an average 45 at baseline to 82 at final follow up. One patient had resorption of structural allograft and subsequent cup migration, which needed revision surgery. Conclusion: Porous coated acetabular cups supplemented with flanges and hooks are better alternatives than cages which do not provide biological fixation. Compared to custom triflange cups, they are more economical, customizable to individual's anatomy, technically easier to implant and do not require any waiting period to be fabricated.

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Abstract no.: 52391

DIFFERENTIATED HIP REPLACEMENT IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Purpose: The purpose of this study is to improve the results of surgical treatment of hip joint in patients with rheumatoid arthritis (RA) by development of differentiated approach to total hip arthroplasty (THA) surgical methods. RA is usually accompanied with osteoporotic weakness of bone-tissue. And it is one of the most important risk factors, when the surgeon gets to choose the endopros-thesis fixation method between cemented and press-fit versions. Low bone-tussue density does not always allow the press-fit fixation. On the other hand, cemented endoprosthesis negatively influences on the state of bone-tissue and internal or-gans. **Methods:** 120 patients with RA were surgically treated in the period from 2010 to 2017. All of them went through THA (105 – unilateral, 15 – bilateral). 95 patients were females, 35 – males. 15 patient were at age of 25-35. 36-45 – 42 patients. 46-55 – 48 patients. 56+ - 15. 93 patients had cementless prosthesis, 27 –cemented. **Results** 106 (88.5%) patients were assessed with good results (Lower Ex-tremity Dysfunction Assessment System by Oberg), satisfactory results – 11 (9%), unsatisfactory results – 3 (2.5%) patients. **Conclusion:** The characteristic features of THA in patients with RA include the correct preoperative choice of sizes of implant's components, correct assessment of the hip (femoral canal, cortical layer's state), endoprosthesis fixation method's correct choice (cemented or cementless depending on osteoporotic bone loss). Differentiated approach to these criteria gave us 88.5% of good results.

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Abstract no.: 51969

CAPSULECTOMY OR CAPSULE REPAIR?: HISTOPATHOLOGICAL EVIDENCE OF ANTERIOR CAPSULE DISEASE IN HIP JOINTS UNDERGOING ELECTIVE TOTAL HIP REPLACEMENT

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The minimally invasive direct anterior approach to total hip replacement is becoming increasingly popular amongst arthroplasty surgeons. In the described technique it is stated that one may excise the anterior capsule or it may be opened as flaps and repaired as part of the closure. Theoretically the anterior capsule of hips with known, symptomatic arthritis has become diseased and inflamed over time and its retention may contribute to future stiffness and impaired mobility of the replaced hip joint. Aim: To evaluate for histopathological evidence of inflammation in the anterior capsule of joints with known osteoarthritis in comparison to those without prior evidence of arthritic disease. Methods: 40 samples were collected in total, 20 from patients undergoing hemi arthroplasty following acute fracture with no prior history of osteoarthritis and 20 from hips undergoing elective total hip replacements for arthritic disease. Samples were analysed for inflammatory changes. Results: Of the 20 samples obtained from the total hip replacements there was evidence of chronic inflammation in 16. Of 20 hemi arthroplasty samples there were 2 with evidence of inflammation. Intraoperatively the hips with known arthritis were observed to have thickened, fibrotic capsules in comparison to those undergoing hemi arthroplasty. Conclusion: The anterior ligamentous capsule of hip joints with known arthritis have chronic inflammatory changes in contrast to capsules of those without known arthritis. Further studies are required to more closely examine the mechanical differences and elasticity between the 2 groups and to clarify the extent of impaired range of movement amongst patients.

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Abstract no.: 51761

MODIFIED ANTEROLATERAL SURGICAL APPROACH IN TOTAL HIP REPLACEMENT

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In this paper, we have studied the difference between classic Watson Jones anterolateral approach and modified anterolateral approach started in our institution from 2004 y. in group of patients with BMI more then 30 - 412 patients, mean age was 66,5 y., male -157 (38.2%), female - 255 (61,8%). Primary diagnosis were: Idiopathic osteoarthritis - 379 (92%), Rheumatoid osteoarthritis - 16 (4%), DDH - 12 (3%). All surgeries were performed on supine position. All surgeries were performed by single surgeon. In 321 (78%) of cases modified approach was used. Only uncemented implants from Zimmer-Biomet were used. In our study we conclude that the differences between these two approaches were hip flexion, gluteus medius partial detachment and oblique incision of the skin, but these three point makes the approach much more easier to perform because in flexed position M. Gluteus Medius and M. Tensor Fascia Lata are more relaxed and in 4th position oblique incision protects the skin from damage caused by femoral rasp.

Date: 2018-10-12
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Abstract no.: 51551

ARTERIAL INTIMAL DAMAGE IN DIRECT ANTERIOR TOTAL HIP ARTHROPLASTY: REPORT OF FOUR CASES

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Backgrounds: Arterial injury is rare during total hip arthroplasty (THA) and this may make the diagnosis and treatment extremely challenging. To our knowledge, there is no previous report of femoral arterial injury during THA via direct anterior approach. Methods: A thousand primary THAs were performed by the orthopedic department of Imam Khomeini Hospital, Tehran University of Medical Sciences Between 2013 and 2017. Four cases of vascular injuries during surgery were recognized. Demographics of the patients, type of injury, time to diagnosis, and management approaches were recorded. Results: Four arterial injuries developed in 4 separate patients (3 female and 1 male patient). The time of recognition of injury was 0-10 hours after surgery. All injuries involved intimal damage, and all of them were managed by thrombectomy and bypass with venous interposition or onlay grafting by a vascular surgeon. One of the patient died because of developing disseminated intravascular coagulation (DIC) secondary to blood transfusion for massive bleeding. Two patients had dysplastic hip and two patients had primary hip degenerative disease. Conclusion: The incidence of vascular complications associated with THA via direct anterior approach was remarkably low in this series in a high volume orthopedic service. The only type of injury in our cases was intimal damage of femoral artery. Therefore, we recommend using blunt retractors in this site. Furthermore, we recommend to check the distal arterial pulses immediately after surgery in order not to delay diagnosis.

Date: 2018-10-13

Session: Sports Medicine Short Free Papers

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 51542

ADDITIONAL INTERVENTIONS REQUIRED FOLLOWING HIP ARTHROSCOPY

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Introduction: The adoption of arthroscopic hip surgery continues to increase. Satisfaction rates following surgery are high, but some patients will subsequently require further procedures or interventions for ongoing symptoms. At our institution, for patients who at follow-up either report or are noted to have stiffness and pain, a presumptive diagnosis of adhesive capsulitis is made, and a manipulation under anaesthetic (MUA) with injection is recommended. However, for pain without stiffness, an intra-articular injection alone is recommended, which is performed under local anaesthetic (for the presumptive diagnosis of pain due to chondropathy or synovitis without adhesions). Methods: We analysed all cases performed between January 2012 and December 2016 by 2 specialist hip arthroscopy surgeons at a single NHS hospital, with a minimum of one year follow-up. Patient demographics, operative indication, procedure performed and any further procedure or intervention were recorded. Results: 494 primary hip arthroscopies were performed in 285 females and 209 males, with an average age of 37yrs. Within 12 months of their arthroscopy, 73 (15%) underwent manipulation under anaesthetic with steroid injection, and 35 (7%) had injections performed under local anaesthetic. With a maximum of 5 years follow-up, 39 (8%) patients had repeat arthroscopies, and 22 (4%) had a total hip arthroplasty. Conclusion: Whilst conversion to arthroplasty is low, 22% require a further intervention within the first year following arthroscopy by high-volume surgeons with good rehabilitation support. We suggest that patients be advised of the common need for additional intervention within the first year after surgery.

Date: 2018-10-13

Session: Sports Medicine Short Free Papers

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 52067

IMPROVED REHABILITATION AND FUNCTIONAL OUTCOME WITH DEDICATED JOINT IRRIGATION AT THE END OF ACL RECONSTRUCTION

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Background: ACL is most common ligament injured during sports. Post operative pain and swelling is one of the major limiting factors for the rehabilitation of ACL reconstructed patients. Cryotherapy and intra-articular bupivacaine injection are few measures to reduce the pain. One of the main reason for pain is inflammatory mediators, by joint irrigation it reduce the inflammatory mediator that reduce pain and swelling. Method: We treated 33 patients of ACL injury with arthroscopic ACL reconstruction from July 2015 to April 2017. Post operative pain and swelling were assed with VAS and suprapatellar fullness. VAS assessment done on 1st day, 2nd day and 12th day and for swelling 2nd day and 12th day. We had used closed loop endobutton for femur and bioscrew for tibia. In twenty patients at the end of the surgery we used 2 liter saline for joint irrigation. Result: As a result of wash of pro inflammatory mediators and debris, there were reduced inflammation which reduces pain and swelling. Patients who received irrigation had less VAS score and suprapatellar fullness than the other group. There was better knee flexion on 12th day. Conclusion: Adding up a dedicated joint irrigation at the end of surgery does not deviate from standard surgical protocol. No studies have stress upon joint irrigation. It reduce the pain and swelling by reducing inflammation which gives better result.

Date: 2018-10-13

Session: Sports Medicine Short Free Papers

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 51541

RETURN TO SPORT IN THE RECREATIONAL ATHLETE FOLLOWING HIP ARTHROSCOPY

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Introduction: The adoption of hip arthroscopy continues to increase, and yet the only published papers providing evidence from which to advise the recreational athlete regarding return to sport following surgery are based on professional athletes or a questionnaire study of surgeons. We set out to determine the length of time to return to sport, and the ability to perform their sport after at least 6 months follow-up in the recreational athlete. Methods: We analysed all cases performed between June 2015 and May 2017 by 2 specialist hip arthroscopy surgeons at a single NHS hospital. Patient demographics, operative indication, and procedure performed were recorded. All patients received a booklet with a suggested rehabilitation protocol, plus weekly visits to a physiotherapist for the first six weeks were organised. We contacted all patients via postal questionnaire for their sport activities, return to sports timeframe and a HOS Sports scale. The patients were then grouped, matched for age, sex, and BMI, according to their sport. Results: The most common sports were Gym (15%), Cycling (11%), Swimming (11%), and Running (10%). Return to sport was achieved at an average of 5.4 months (Range 1-12, median 4.5), 3.9 (0-12, 3), 4.3 (1-12, 3), and 4.4 (3-9, 3) respectively. Average HOS Sports scales were 73.2, 78.5, 57, and 71.5 respectively. Conclusions: Recreational athletes can be advised that they can expect to return to sport by 3 to 5 months according to their sport. Good outcome scores are achieved following hip arthroscopy.

Date: 2018-10-13

Session: Sports Medicine Short Free Papers

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 51423

BILATERAL HIP ARTHROSCOPY: A SYSTEMATIC REVIEW

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Objectives: This systematic review examines the existing literature to ascertain the outcomes of bilateral hip arthroscopy and to compare bilateral staged hip arthroscopy to simultaneous bilateral hip arthroscopy. **Methods:** Three electronic databases (MEDLINE, EMBASE, and PubMed) were searched for English language, human studies of all levels of evidence that examined patients receiving bilateral hip arthroscopy and provided patient-specific outcomes. **Results:** Fourteen included studies examined 306 patients (612 hips). The most common indication for bilateral hip arthroscopy was bilateral hip pain, with 10 studies attributing this to femoroacetabular impingement. Other reasons for bilateral hip arthroscopy included bilateral septic hip arthritis and bilateral femoral head AVN. Three studies reported traction time. One compared 12 patients with simultaneous arthroscopies (time 90.8+/-21.9 minutes) to 69 staged patients (87.7+/-20.3 minutes) and found no significant difference. Another study found a time of 179.7+/-33.4 minutes for 26 simultaneous procedure patients, and a time of 87.9+/-19.8 minutes per side for 20 staged patients. A third study found a combined bilateral staged time of 70.3 minutes in 34 patients, compared to 34.4 minutes a hip unilaterally. Simultaneous hip arthroscopies do not seem to increase operative traction time over staged procedures. The studies showed low complication rates, with three cases of a transient neuropraxia (0.3%) that resolved. The overall revision rate (1.6%) and conversion to THA (0.3%) was low. **Conclusion:** Bilateral hip arthroscopy, simultaneous or staged, is safe and effective even when compared with unilateral hip arthroscopy.

Date: 2018-10-13

Session: Sports Medicine Short Free Papers

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 52130

ISCHIOFEMORAL IMPINGEMENT: TECHNIQUE AND OUTCOMES OF ENDOSCOPIC TREATMENT THROUGH QUADRATUS FEMORIS MUSCLE

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Introduction: Ischiofemoral impingement (IFI) is a rare entity defined as the narrowing of the ischiofemoral space causing painful clamping in the quadratus femoris muscle. Good results are obtained with conservative treatment, however, when it is insufficient, we proceed to surgical treatment. Method: A 47-year-old patient presents inguinal and gluteal pain that increases with extension, abduction and external rotation of the hip. After imaging studies (Rx, MRI) is diagnosed of IFI (ischiofemoral space less than 1.3 cm) and was treated in conservative form for 6 months, including corticoid injections. When this management is ineffective, endoscopic ischiofemoral decompression is decided. Surgical technique: Supine position. Peritrochanteric space approach and bursa cleaning. Identification of quadratus femoris and establishment of a specific IFI portal. Identification of sciatic nerve. Identification of vascular structures (circumflex femoral artery and femoral penetrating). Extirpation of tissue over the lesser trochanter. Partial removal of lesser trochanter. Check ischiofemoral space. Results: The patient improved after the surgery and no complications were registered. Performing the technique according to the steps allows to treat this pathology in a practical way, minimally aggressive and without complications. Discussion and Conclusions: In the endoscopic decompression of space there are different portals for access. Our patient was treated by through quadratus femoris or posterior approach technique, proceeding in this way to resect the lesser trochanter more easily than other approaches and respecting the neighboring neurovascular structures and psoas tendon. We performed a valid and reproducible treatment option with low morbidity and good results reported in the literature.

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Abstract no.: 52112

TREATMENT STRATEGIES FOR ISCHIOFEMORAL IMPINGEMENT: A SYSTEMATIC REVIEW OF CASE STUDIES

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Background: There has been relatively little information about the treatment for ischiofemoral impingement (IFI) because of its rarity as well as the uncertainty of diagnosis. Methods: A systematic review of the literature from Medline, Embase, AMED, Cochrane and Google Scholar was undertaken since inception to December 2017 following the PRISMA guidelines. Clinical outcome studies, prospective/retrospective case series and case reports that described the treatment outcome for IFI were included. Animal or cadaveric studies, trial protocols, diagnostic studies without any description of treatments, technical notes without any results, and review articles were excluded. Results: This systematic review found 17 relevant papers. No comparative studies were included in the records finally included for qualitative assessment, which means all the studies were case series and case reports. Eight studies (47.1 %) utilised non-surgical treatment including injection and prolotherapy, followed by endoscopic surgery (5 studies, 29.4 %) then open surgery (4 studies, 23.5 %). Mean age of the participants was 41 years (11 - 72 years). The mean follow-up was 8.4 months with a period of each study being distributed from 2 weeks to 2.3 years. No complications or adverse effects were found from the systematic review. Conclusion: Several treatment strategies are available for IFI, and most of them have good short to medium term outcomes with a low rate of complications. However, there are no comparative studies to assess the superiority of one technique over another, thus further research with randomised controlled trials is required in this arena.

Date: 2018-10-13

Session: Sports Medicine Short Free Papers

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 51462

RETURN TO SPORT AFTER SURGICAL MANAGEMENT OF PROXIMAL HAMSTRING RUPTURES: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Objective: The purpose of this systematic review was to evaluate the rate at which patients return to sporting activities after surgical management of proximal hamstring ruptures. **Data Sources:** Three databases, PubMed, MEDLINE, and EMBASE, were searched from database inception until October 7, 2017. The inclusion criteria were English-language studies that reported return to sport outcomes in patients undergoing surgical management of acute, chronic, complete, and partial proximal hamstring injuries. The rate of return to sports was combined in a meta-analysis of proportions using a random effects model. **Main Results:** Overall, 21 studies with a combined total of 846 patients (849 injuries) met the inclusion criteria, with a mean age of 41.4 years (range, 14 to 71 years), and a mean follow-up time of 37.8 months (range, 6 to 76 months). The overall mean time to return to sport was 5.8 months (range, 1 to 36 months). The pooled rate of return to any sport participation was 87% (95% confidence interval [CI] = 77% to 95%). The pooled rate of return to pre-injury level of sport was 77% (95% CI = 66% to 86%). **Conclusions:** Most patients returned to athletic participation. However, there was a notable proportion that were unable to resume activity at a pre-injury level of competition. Subgroup analysis showed similar return to sport outcomes after surgery for partial and complete, as well as acute and chronic proximal hamstring ruptures. High-level comparative studies are needed to make definitive conclusions.

Date: 2018-10-13

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Room: Room 518c

Abstract no.: 51450

OPEN VERSUS ARTHROSCOPIC LATARJET PROCEDURE: A SYSTEMATIC REVIEW OF COMPARATIVE STUDIES

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Background: The purpose of this study was to evaluate the clinical outcomes reported in the literature comparing the treatment of shoulder instability with an arthroscopic versus open Latarjet procedure. Methods: The electronic databases MEDLINE, EMBASE, and PubMed were searched for relevant studies. Only studies directly comparing open and arthroscopic Latarjet procedures were included. Results: There were 6 included studies, with a total of 555 patients treated arthroscopically and 341 patients treated with an open Latarjet procedure. Several papers found significantly better individual standardized outcome scores for either the open or arthroscopic procedure but these findings were not consistent across papers. Patients treated with arthroscopic Latarjet procedures had significantly lower initial post-operative pain, however pain scores became equivalent by one month post-operatively. Arthroscopic procedures (112.2 minutes) appear to take, on average, longer than open procedures (93.3 minutes). However, operative times and complication rates decrease with surgeon experience with the arthroscopic procedure. Overall 4.0% of the patients treated arthroscopically and 6.7% of the patients treated with the open procedure went on to have post-operative complications. Conclusions: Both open and arthroscopic Latarjet procedures can be used to effectively treat shoulder instability with similarly low rates of complications, recurrent instability and need for revision surgery. Arthroscopic Latarjet procedures are associated with less early post-operative pain but require increased operative time. At this time neither procedure shows clear superiority over the other.

Date: 2018-10-13

Session: Sports Medicine Short Free Papers

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Room: Room 518c

Abstract no.: 50961

SEASONAL VARIATION OF ACHILLES TENDON INJURY

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Achilles tendon ruptures are increasingly common injuries. There are several known risk factors for Achilles tendon rupture, although little is reported on the seasonal variation of the incidence of these injuries. We sought to determine if there is any significant seasonal pattern of Achilles tendon ruptures. We queried billing records for CPT codes and ICD codes pertaining to Achilles tendon injury. Charts were screened and included if 1) the patient suffered an acute Achilles tendon rupture, and 2) the date of the injury could be determined from the records. Data was analyzed using a chi-squared test for categorical variables, binomial tests for dichotomous variables and Mann-Whitney-U or Welch t-test for continuous variables. Significance was determined by $p < 0.05$. Our database search yielded a total of 245 cases meeting inclusion criteria. The average patient age at the time of injury was 43.6 years. Sixty-six percent (66%) of injuries were identified as sports-related. When stratified by month, significant peaks occurred in April and July ($p = .036$, $.011$ respectively) with significantly fewer injuries occurring in October through December ($p = 0.049$). The highest rate of injury was seen in Spring ($p = .015$) and the lowest was seen in Fall (Figure 2, $p < .001$). Our results suggest a statistically significant seasonal variation in the incidence of Achilles tendon ruptures. Both sports and non-sports-related injuries followed a similar pattern, with the most injuries occurring during the Spring and Summer season and the fewest occurring during the Fall and Winter.

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Abstract no.: 50564

STUDY OF ANTERIOR CRUCIATE INJURIES IN ROAD TRAFFIC ACCIDENTS: AN INDIAN SCENARIO

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Introduction: Low velocity two wheeler motor vehicular accidents are important cause of anterior cruciate injury in India and are similar to sports injuries sustained by athletes in many ways. Methods: This prospective study was done to analyze two wheeler motor vehicular accidents in 51 patients who presented to our emergency and outpatient department at our centre and compared with age and sex matched controls group of patients sustaining sports injury. Results: Majority of accidents were of low velocity in nature with only 9.8% cases having other skeletal injuries. Most of the accidents were sustained by the motorcyclist (96%) and majority (90%) was not able to recall the position of lower limbs at the time of impact. Meniscal injuries were seen only in 56% cases, predominantly involving lateral meniscus (39%). Medial and lateral collaterals injuries were seen in 33% and 21% cases respectively. Conclusions: The study showed that highest number of victims were in the age of 20-40 years (63%), the most active and productive age group. It was also seen that 82.3% were males, this gender difference is probably related to both exposure and risk taking behaviour. Low incidence 9.8% of skeletal injuries also proves the less traumatic nature but potent enough to cause ACL injury. Lower extremities are more vulnerable to injury especially in motorcyclist because they are unprotected. An awareness is needed for Indian population and orthopaedics surgeons regarding this mode of anterior cruciate injuries.

Date: 2018-10-13

Session: Sports Medicine Short Free Papers

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 49670

PATELLAR TENDON LENGTH IS ASSOCIATED WITH PATIENTS' HEIGHT BUT NOT THEIR GENDER

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The aim of this study was to anatomically evaluate the patellar tendon length (PTL) with focus on gender differences and correlations with the total leg length (TLL) and the long bones of the lower extremity. The sample involved 50 paired lower extremities. The TLL was measured between the medial malleolus and the apex of the greater trochanter. The femoral length (FL) was evaluated as the interval between the latter and the distal margin of the lateral epicondyle of the femur and the tibial length (TL) from the distal apex of the medial malleolus to the proximal border of the medial condyle of the tibia. The PTL was measured from the apex of the patella to its proximal insertion point at the tibial tuberosity. Further, the Q-angle was measured. The PTL was at a mean length of 4.29 ± 0.49 cm (right side) and 4.20 ± 0.55 cm (left side) in females and 4.42 ± 0.53 cm (right) and 4.32 ± 0.55 cm (left) in males. There were no differences regarding gender ($p = .412$). The left PTL was significantly shorter in both sexes ($p = .022$). The PTL correlated positively with FL, TL, and TLL in both sexes and sides. The Q-angle did not correlate significantly with PTL, TL, and body size. PTL is significantly associated with patients' height but not their gender. Surgical interventions regarding patellofemoral instabilities should not be altered due to gender but solely be modified concerning patients' anatomy and height.

Date: 2018-10-13

Session: Sports Medicine Short Free Papers

Time: 08:00 - 10:00

Room: Room 518c

Abstract no.: 49448

PREDICTORS OF OUTCOMES IN DOUBLE-BUNDLE ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION IN AN ASIAN POPULATION

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Aim: to identify predictors of outcomes in double-bundle anterior cruciate ligament reconstructions (DB-ACLs) in an Asian population. **Materials and methods:** patients who underwent DB-ACL by a single fellowship-trained sports surgeon were included. Outcomes studied include flexion range, International Knee Documentation Committee (IKDC) score, Lysholm score, KT-2000 measurements, Tegner score and ligament grades. These were measured prospectively before surgery and at one-year postoperatively. A 'good outcome' was defined by previously reported values on range of motion, IKDC score, Lysholm score and KT-2000 side-to-side difference at one-year postoperatively. Regression analysis was then undertaken to identify predictors for a 'good outcome'. **Results:** 147 knees were included. There were 105 males and 42 females with a mean age of 27 years \pm 7.5. In all, 95% of our patients achieved more than 130° of flexion; 75% achieved an IKDC score of either A or B; 80% achieved a Lysholm score of more than or equal to 80; 74% achieved a KT-2000 side-to-side difference of less than or equal to 3 mm. Body mass index (BMI) was a significant predictor for postoperative flexion range of > 130° (odds ratio (OR): 0.83, 95% confidence interval (CI): 0.726 to 0.964). BMI (OR: 0.902, 95% CI: 0.822 to 0.990) and preoperative Lysholm score (OR: 1.024, 95% CI: 1.001 to 1.048) were significant predictors for IKDC grades A or B. Dominant leg injury (OR: 0.311, 95% CI: 0.112 to 0.863) was a significant predictor for KT-2000 side-to-side difference of \leq 3 mm. **Conclusion:** outcomes are good following DB-ACL in Asians up to one-year postoperatively. BMI, preoperative Lysholm scores and dominance of injured leg are significant predictors of outcomes following DB-ACL.

Date: 2018-10-13

Session: Knee Short Free Papers

Time: 10:30 - 12:00

Room: Room 518c

Abstract no.: 51804

ALPHA-DEFENSIN LEVELS IN NATIVE JOINTS IN PATIENTS WITHOUT INFECTION

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The number of total joint replacements has increased in the past decade and, consequently the number of complications of this procedure also increases. The most challenging complication is the periprosthetic joint infection (PJI). Diagnosis of PJI is very complex. The method used for diagnosis is the one proposed by Musculoskeletal Infection Society. Some synovial fluid biomarkers were described showing promising results in diagnosis of PJI. Alpha-defensin is a biomarker that has been studied widely with good results in PJI but there is a lack of studies to better understand its application on native knees. Our purpose of this study was to assess the levels of alpha-defensin in native knees without infection. 23 patients who were submitted to any invasive knee procedure were prospectively evaluated up to one year, so that diagnosis of infection could be definitely ruled out. Synovial fluid was obtained for alpha-defensin analysis. Additionally, when a suspicious synovial fluid aspirate was attained, other tests were requested to rule out infection. The alpha-defensin assay was optimized to operate at a cut-off value of 5.2 mg/L, according to previous studies. 22 patients had normal alpha-defensin levels in synovial fluid. One patient had abnormal levels of alpha-defensin (34.12 mg/L). However, the other tests for infection was normal. We considered her as a false-positive case. The specificity in our study was 95.6%. The alpha-defensin immunoassay was able to provide an acceptable result for our group. However, it is not clear how much additional evidence this test provides beyond usually accessible tests.

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Room: Room 518c

Abstract no.: 51558

CORRELATIONS BETWEEN CLINICAL MEASURES AND KINEMATICS IN END-STAGE KNEE OSTEOARTHRITIS PATIENTS

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Introduction: Kinematic assessment provides objective quantifiable information about knee function. A better understanding the relationship between kinematics and clinical evaluation would be contributive in developing personalized care pathways based on functional assessment. Methods: IRB approval was obtained for this non-interventional study. 143 knee osteoarthritis patients referred for orthopaedic arthroplasty consultation were enrolled in this study (60 men, 83 women, mean age of 65 years old, mean BMI of 32kg/m²). All participants underwent a treadmill kinematic assessment (KneeKGTM) and completed patient reported outcome measures (Oxford-12 Knee, EQ5D, PCS) as well as functional tests (Time up and Go) and clinical assessment (frailty scale). Statistical analysis was performed using Pearson correlation coefficients between biomechanical features and clinical evaluation. Analysis has been performed separately for males and females since kinematics differ between gender. Results: Only significant correlations ($p < 0.05$) with an absolute correlation coefficient higher than 0.4 ($|r| > 0.4$) were retained. Flexion/extension kinematics parameters, such as ROM during loading, angle at heel strike, maximum extension during stance, total gait ROM, shown to be correlated with the level of pain during specific tasks (Oxford-12, Q4&9), active range of motion, functional test and frailty index. For the same clinical measure, kinematic parameters correlating to it vary based on gender. Discussion: Results highlights correlations between kinematics and clinical measures relating to the patient's symptoms and function which shown to be gender dependent. Results help prioritize kinematic deficiencies to address to improve patients' symptoms and function.

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Room: Room 518c

Abstract no.: 49801

KINEMATIC ALIGNMENT IN TOTAL KNEE ARTHROPLASTY BETTER REPRODUCES NORMAL KNEE KINEMATICS THAN MECHANICAL ALIGNMENT

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Background: Mechanically aligned (MA) total knee arthroplasty (TKA) is affected by high rates of patient dissatisfaction, with significant gait abnormalities and residual symptoms. Kinematic alignment (KA) technique for TKA aims to restore the individual knee anatomy and ligament tension, in order to restore native knee kinematics and therefore improve clinical outcomes. The aim of this study was to compare knee kinematic patterns during gait of TKA patients operated by either KA or MA technique with a group of healthy controls. Methods: Eighteen KA TKAs were matched by gender, age, operating surgeon, and prosthesis to 18 MA TKAs. Post-operative 3D knee kinematics analysis performed with an optoelectronic knee assessment device (KneeKG®) was compared between TKA patients and healthy controls. Radiographic measures and clinical scores were also compared between groups. Results: The MA group displayed several significant knee kinematic differences compared to the healthy group: less sagittal plane range of motion (49.1° vs. 54.0°, p= 0.020); decreased maximum flexion (52.3° vs. 57.5°, p=0.002); increased adduction angle (2.0-7.5° vs. -2.8-3.0°, 0.7°, p<0.05) and; increased external rotation (by a mean of 2.3 ± 0.7, p<0.001). Conversely, the KA group showed no significant knee kinematic differences with healthy knees. The post-operative KOOS score was significantly higher in the KA group (74.2 vs. 60.7, p=0.034). Conclusions: The knee kinematics of patients with KA TKAs more closely resembled that of normal healthy controls than that of patients with MA TKAs. This may be the result of a better restoration of the individual's knee anatomy and ligament tension.

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Room: Room 518c

Abstract no.: 51705

A NOVEL METHOD FOR ASSESSING PROXIMAL TIBIOFIBULAR JOINT ON MR IMAGES IN PATIENTS WITH KNEE OSTEOARTHRITIS

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Objectives: To validate a pragmatic method to measure the morphological parameters of the proximal tibiofibular joint (PTFJ) and to describe their associations with knee structural abnormalities in patients with knee osteoarthritis (OA). **Methods:** A total of 408 participants with knee OA were selected. The morphological status of PTFJ were measured on coronal and sagittal magnetic resonance images (MRI). We calculated the contacting area of PTFJ (S), and its projection areas onto the horizontal (load-bearing area, S_τ), sagittal (lateral stress-bolstering area, S_φ) and coronal plane (posterior stress-bolstering area, S_υ), respectively. Knee structural abnormalities including cartilage defects, bone marrow lesions (BMLs) and cartilage volume were evaluated. Clinical construct validity was examined through describing the associations between the morphological parameters of PTFJ and knee structural abnormalities. The reliabilities were examined by calculating the intra- and inter-observer correlation coefficients. **Results:** The average PTFJ fibular S was 2.4 0.7 cm². The morphological parameters of PTFJ were associated with MRI-assessed knee joint structural abnormalities including reduced cartilage volume, increased cartilage defects and BMLs, as well as increased radiographic knee OA features, in medial tibiofemoral compartment. Intra-observer and inter-observer reliabilities of the morphological parameters of PTFJ measures were excellent (0.90). **Conclusions:** A novel method to assess the morphological parameters of PTFJ in MRI has been documented. This method is reproducible, and has clinical construct validity, but its predictive validity needs to be examined by future longitudinal studies.

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Abstract no.: 52064

A COMPARATIVE ANALYSIS OF TRANSDERMAL BUPRENORPHINE PATCH VERSUS INTRAOPERATIVE PERIARTICULAR COCKTAIL FOR PAIN MANAGEMENT IN JOINT REPLACEMENT SURGERY

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Introduction: One of the most significant concerns regarding total joint replacement is the anticipation of pain during the postoperative recovery period as inadequately managed pain is documented to have several pathophysiological as well as economic implications. **Objectives:** To compare the efficacy of intraoperative periarticular cocktail versus buprenorphine transdermal patch for pain management and rehabilitation in terms of duration of the pain-free period, relief in pain intensity, commencement of postoperative movement and rehabilitation and patient's satisfaction. **Methods:** This is a prospective comparative study of 460 patients, scheduled for joint replacement. Randomization was done regarding the mode of analgesia they received. The outcome was interpreted using a graphic visual analogue scale. **Results:** Mean VAS scoring at rest in Group A patients at 24 hours was 1.43 which decreased to 0.78 at 48 hours and 0.48 at 72 hours. Similarly, in group B, mean VAS score at 24 hours was 2.92 which decreased to 2.26 at 48 hours and 1.40 at 72 hours. Mean VAS scoring of walking in Group A patients at 24 hours was 2.02 which decreased to 1.18 at 48 hours and 1.04 at 72 hours. In group B, mean VAS score at 24 hours was 4.08 which decreased to 3.60 at 48 hours and 3.16 at 72 hours. **Conclusion:** Local infiltration analgesia provides significantly more effective pain management postoperatively, with less narcotic consumption, amount of drainage and side effects. Hence, providing a simple, practical and safe mode of analgesia, facilitating a rapid return to normal activities in joint replacement.

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Abstract no.: 49952

COMPARATIVE EVALUATION OF PERIARTICULAR INFILTRATION OF TWO COCKTAIL REGIMENS FOR ANALGESIA IN POSTOPERATIVE PATIENTS OF TOTAL KNEE REPLACEMENT

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Purpose: To compare the efficacy of two periarticular cocktail regimens for analgesia in post-operative total knee replacement (TKR) patients. Method: Randomized Control study was done. 25 knees were selected with inclusion criteria (All osteoarthritis patients planned for TKA) and exclusion criteria (inflammatory arthritis, patients allergic to local anesthetic) & divided in 2 groups. Group A: Ropivacaine, adrenaline, clonidine & cefuroxime. Group B: Bupivacaine, fentanyl, methylprednisolone & cefuroxime. Pre-op pain was assessed using VAS score. Combined spinal epidural anesthesia was given. After taking bone cuts & before the placement of implant, cocktail of drug was infiltrated using sterile technique into 9 specific sites. The patients were assessed on: Pain relief post-operatively at specific duration using VAS score & frequency of epidural top ups required. Knee ROM, quadriceps strength, extensor lag & Knee society score were assessed. Results: 4 (33%) out of 12 Group-A patient needed injection tramadol for 2-3 days and fentanyl patch 25mcg. In Group-B, one (8%) out of 13 patients required injection tramadol and fentanyl patch for 2-3 days. The difference in additional required analgesic and VAS score between patients of the two groups were statistically significant. Average KSS in group-A was 79.58 and in group-B was 83.99 and the difference were statistically significant. Conclusion: Both the cocktail regimens are effective in pain control post-operatively. The relief in pain with regimen-B was more striking in the first 24 hours. By the end of two days both regimens were found to be equally effective.

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Abstract no.: 50873

PLATELET HYPERREACTIVITY AND POSTOPERATIVE VENOUS THROMBOEMBOLISM IN TOTAL KNEE ARTHROPLASTY

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Background: It is suggested that platelet hyper-reactivity plays a role in the pathophysiology of arterial thrombi, but the link with venous thromboembolism (VTE) is not well defined. The aggregometry using a submaximal concentration of epinephrine is proposed as a reliable method to detect hyperreactivity. The aim of this study was to examine whether platelet hyperreactivity affects the development of VTE in total knee arthroplasty (TKA). Methods: Seventy-six patients (71.2±5.4 years, 61 women and 15 men) without previous VTE history were enrolled. The unilateral TKA was performed by one surgeon. Complete blood count, coagulation assay and platelet function were checked in automated analyzers. We performed platelet aggregation using Chrono-log (Chrono-log Corporation, USA) in the presence of agonist epinephrine (0.4 μM) in duplicate and measured maximal aggregation(%) for 10 minutes. Results: In aggregation response to epinephrine, 53 (69.7%) exhibited low platelet aggregation (<40%) and 11 (14.5%) demonstrated more than 60% aggregation, consistent with platelet hyper-reactivity. Platelet hyper-reactivity showed higher platelet count(P=0.040) and mean platelet volume (P=0.024) compared to group with low aggregation. The VTE was detected in 4 patients (5.3%) showing aggregation of 40% or more. The frequency of VTE was significantly lower in hyporeactivity phenotype group(P=0.008). Red blood cells loss, transfusion unit, CRP elevation, and delayed wound healing were similar among groups. Conclusion: We conclude that platelet reactivity is a helpful biological marker for the prediction of postoperative VTE after TKA. Postoperative blood loss, wound healing and the degree of inflammation are not related with platelet phenotype.

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Abstract no.: 52024

EARLY OUTCOMES OF ATTUNE KNEE REPLACEMENTS IN A NON-DESIGNER SERIES OF 436 KNEES

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Background: Recent literature has highlighted concerns regarding increased incidence of radiolucencies and aseptic loosening with the tibial component of this new knee system. Our study investigates the early outcomes of Attune knees. Methods: 436 consecutive cemented Attune knees done at state of art elective orthopaedic centre between June 2014 and October 2017 by single team of surgeons were analysed for their clinical and radiological outcomes. Satisfactory keel cementation was carried out in all 436 knees. Results: Component revision was done in only 0.9% patients (2 each for deep infection & fracture, none for aseptic loosening/debonding) at 1 year mean follow-up. 1.8% patients had reoperation (3 polyexchange for instability, 3 secondary resurfacing of patella and 2 washouts with poly exchange). The incidence of radiolucency with tibial tray (8%) was much lower than other existing knee systems (18 to 96%) and did not correlate with clinical outcome or revision rate. Only one patient (0.2%) had concerning progressive lucency who is now being investigated for infection. Incidence of unexplained pain (5%) is much lower than the standard incidence of 12-18%. Conclusion: Early results of this new knee system are promising in terms of incidence of post-operative and unexplained knee pain . There is no incidence of tibial component failure due to debonding/aseptic loosening. This is the first and the largest non-designer knee series of this new system. In our opinion, a good cementation technique is the key to obtain good results with any knee system.

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Abstract no.: 51399

THE ASTOUNDING RESILIENCE OF THE INDIAN PATIENT

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Post-operative infection is a dreaded complication of any surgery, more so with an arthroplasty, leaving the surgeon and patient with little option. Most large studies showed a 1-2% infection rate for arthroplasty. Multinational companies insist disposable instrument sets, disposable helmet systems and modular operation theaters (OTs) are paramount to good results especially in arthroplasty. Antibiotic prophylaxis in arthroplasty is a therapeutic gray zone with no consensus on their role, timing, dosage and type. Our operating conditions being far from ideal, we noticed a surprisingly low infection rate. Our OT is just an ordinary room with no laminar flow, no special flooring, poor air-conditioning and large windows that open to the outside environment. Ordinary bathing soap was used to get scrubbed by the surgical team. Reusable autoclaved cotton gowns and sheets were used. The OT and patient rooms were fumigated before every surgery. Linezolid and amikacin were used for prophylaxis. We reviewed 78 patients with 100 joints (hips and knees) and followed them for a mean of 1.5 years. This may suggest that if we have achieved infection rates on par (<1%) if not better than the best centers in the world at one fiftieth of the cost (< \$1000 vs. ~\$50000) it may be of great value to review factors that really lead to infection. Additionally, it could be encouraging to smaller centers without state of the art theaters, to be courageous in starting with joint replacements.

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Abstract no.: 52534

RETURNING TO WORK AFTER A JOURNEY II TOTAL KNEE REPLACEMENT

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Background: With a rise in state pension age to 67 years (Pensions Act 2014) in United Kingdom and about 51% patients having their total knee replacement before the age of 70 (NJR 2016), many may have surgery whilst in employment. Information regarding if and when they return to work may be of value in the shared decision making process. Method: We prospectively assessed the first 200 patients who received a Journey II TKR (Smith and Nephew, Memphis, USA) between July 2013 and October 2015, analysing pre- and post-operative outcome scores and return to employment. Results: Forty seven out of 55 patients (85.4%) who were in employment pre-operatively returned to work post-operatively at a mean time of 15.4 weeks. Five in the medium and three in the heavy work preoperatively did not return to work whilst all patients doing light work preoperatively returned to work. Those in light, moderate and heavy work returned to work at 11.8, 18 and 17 weeks respectively. No patient not working pre-operatively, re-commenced work post-operatively. In both employed and not employed groups, there was significant improvement in SF-12, WOMAC and Oxford scores post-operatively. Those in employment had significantly better pre-operative SF-12 (mental), WOMAC and Oxford scores than those not in employment but whilst both groups improved, those returning to employment maintained significantly better scores. Conclusions: Majority of the employed patients return back to employment after Journey II TKR. Employed patients have better pre-operative scores; whilst both groups improve, those in employment gain higher post-operative scores.

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Abstract no.: 52321

ANALYSIS OF THE FORGOTTEN JOINT SCORE AFTER UNICOMPARTMENTAL KNEE ARTHROPLASTY VERSUS TOTAL KNEE ARTHROPLASTY

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Introduction: When comparing functional outcomes of patients with Unicompartmental Knee Arthroplasty (UKA) versus Total Knee Arthroplasty (TKA), studies often report that patients receiving an UKA were more likely to forget their artificial joint. The purpose of this study is to determine the forgetfulness of TKA in comparison to UKA post-surgery. Methods: Between 2015 and 2017, 111 TKAs patients were retrospectively reviewed from two institutions. All procedures were done using the same prosthesis. Patient reported outcomes were measured using the FJS at 6 and 12 months following surgery (n= 51 and n=60 respectively). The FJS scores ranged from 0-100, with a higher score indicating a more natural artificial joint and lower level of awareness. The TKA scores were compared to historical data evaluating FJS after medial UKA. Student's t-tests were used to compare TKA versus UKA data. Results: Comparing UKA versus TKA FJS at one year did not show any significant difference (73.9 ± 22.8 versus 69.7 ± 26.5 , respectively). A significant improvement was observed in the FJS of TKA patients between 6 months and 1 year (55.4 ± 27.1 versus 69.7 ± 26.3 , respectively). Neither the UKA or TKA cohorts showed a significant increase in forgetfulness after one year. Conclusion: There is no significant difference between the FJS of patients who undergo UKA and TKA with a modern design. These designs of TKA can now achieve the natural feeling of artificial joint forgetfulness that is typically associated with joint-conserving surgeries such as UKA.

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DELAYING PHYSICAL THERAPY PROLONGS TOTAL KNEE ARTHROPLASTY RECOVERY

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Introduction: It is accepted that formal physical therapy (PT) is required following total knee arthroplasty (TKA). However, no consensus has been reached regarding an exact post-operative protocol. We investigated patient outcomes following immediate or delayed formal PT. Methods: A single center randomized controlled trial evaluating the timing of formal PT following unilateral primary TKA was performed. The control group received standard PT beginning within seven days of the knee replacement. The experimental group received PT in a delayed fashion. Patient outcomes were collected at six weeks following the TKA. These included knee injury and osteoarthritis outcome score (KOOS) and visual analog score (VAS). Data collected included range of motion (ROM), manipulation rates, number of therapy sessions and the timed up and go test (TUG). Results: Seventy-seven patients were randomized. Of these, 45 have completed their physical therapy sessions (22 in the delayed group, 23 in the immediate group). Eight patients from the immediate group performed delayed therapy; two from the delayed group performed immediate therapy. Twenty-eight patients ultimately completed delayed therapy, and 17 patients completed immediate therapy. There was no significant difference between the groups in the patient reported outcomes KOOS ($p=0.282$) and VAS ($p=0.342$). Additionally, there was no significant difference in objective data between the two groups: ROM ($p=0.160$), manipulation rate ($p=0.2864$), number of therapy sessions ($p=0.129$), and TUG ($p=0.965$). Conclusions: This study shows delayed formal PT following TKA is a safe treatment option for patients unable to perform immediate therapy. However, delaying PT may actually prolong patient recovery.

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Abstract no.: 51993

IS PREOPERATIVE MALNUTRITION ASSOCIATED WITH INCREASED SURGICAL COMPLICATIONS IN PATIENTS UNDERGOING A TOTAL KNEE ARTHROPLASTY?

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Introduction: Malnutrition in orthopaedics is an overlooked yet common occurrence, as the evaluation and management of malnutrition are poorly recorded by surgeons. Previous studies have shown up to 50% of elderly patients undergoing a primary or revision total joint arthroplasty were malnourished according to laboratory markers. This is important as malnutrition has been associated with increased risk of post-operative complications. The aim of this study is to evaluate the association between malnutrition and postoperative complication in patients undergoing elective total knee arthroplasty (TKA). Methods: A retrospective case review study was done on 472 males and 156 females (n=628), who underwent elective TKR from 2013-2017. The mean age was 67 years old (± 6.7 years SD). Pre-operative nutrition was assessed using their BMI, total lymphocyte count, total protein and albumin level. Post-operative complications including infection, thromboembolic event, wound healing and cardiorespiratory complications were recorded as the end outcome. Results: In total, 87 patients (14%) were found to be malnourished based on their BMI and/or serological markers. There were 38 cases (6%) of postoperative complications. Out of these, 19 patients were malnourished before their operation. The prevalence of postoperative complication in malnourished patients were 22% and the prevalence of postoperative complication in healthy patients was 3.5%. Conclusion: Malnutrition is common among patients undergoing elective TKA and significantly increased their risk of developing postoperative complications. Early identification of this at-risk group can potentially reduce morbidity following TKA.

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Abstract no.: 52028

EVALUATION OF CLINICO-RADIOLOGICAL PARAMETER IN MASSIVE VARUS DEFORMITIES IN NAVIGATION-ASSISTED TKA USING A CRUCIATE RETAINING IMPLANT

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Total knee replacement is the final solution for osteoarthritis of knee. Long term results of TKA depend mainly on achieving normal mechanical alignment of knee. Usually CR implants are avoided in massive varus deformities due to inability to achieve desirable correction after TKA. In this study CR TKA were performed in massive varus knee with tibio-femoral angle $\geq 20^\circ$ and results assessed. This was a prospective study from April 2015 to December 2017 done at Department of Orthopaedics at our institute. 23 patients were taken having tibio-femoral angle $\geq 20^\circ$. Informed and written consent was taken and pt taken up for surgery. In all these patients navigation assisted TKA was performed using CR implants. Radiological assessment was made on post operative films. With the use of computer assisted navigation and CR implants mean tibio-femoral angle pre op (23.0 to 80°) (range 21.0 to 28.0) was corrected to mean 2.70 varus. Mean knee society score improved from 21.4 (range $0-48$) to 80.6 (range $72-90$) and oxford knee score improved from 20.5 (range $15-26$) to 40.2 (range $36-50$).

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EFFECT OF DEXAMETHASONE ON POST-OPERATIVE PAIN MANAGEMENT IN PATIENTS UNDERGOING TOTAL KNEE ARTHROPLASTY

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Objective: To determine the efficacy of Dexamethasone in post-operative pain management in patients undergoing Total Knee Arthroplasty (TKA). **Methodology:** This Randomized Controlled Trial (RCT) was conducted for 02 years (7th September 2015 to 6th September 2017). All patients undergoing primary Unilateral Total Knee Replacement (TKR) for Osteoarthritis knee were included in the study. Patients with poor glycemic control (HbA1c > 7.6), Hepatic/Renal failure, corticosteroids/ Immunosuppressin drug usage in the last 06 months known, psychiatric illnesses were excluded from the study. All patients were operated by consultant Orthopaedic surgeon under Spinal Anaesthesia and tourniquet control using medial para-patellar approach. Patients were randomly divided into 02 groups; A and B. 79 patients were placed in each group. Group A given 0.1mg/kg Dexamethasone Intravenously 15 minutes prior to surgery and another dose 24 hours post-operatively while in group B (control group) no Dexamethasone given. Post-operative pain using Visual Analog Pain Scale(VAS), functional outcome, length of hospital stay and complications noted on a pre-formed questionnaire. Data analysis done using SPSS version 23. **Results:** A total of 158 patients were included in the study. Of the total, 98 (62.02%) were females and 60 (37.98%) males. Average BMI of patients 26.94 ±3.14 kg/m². Patients in group A required less post-operative analgesics (p<0.05), anti-emetics (p<0.05), better VAS score (p<0.05) and lesser hospital stay(p<0.05) as compared to group B. No post-operative complications were seen in both the groups. **Conclusion:** Use of Dexamethasone per- and post-operatively reduces the pain, amount of analgesics used and length of hospital stay in patients undergoing TKA.