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ABSTRACT BOOK

Short Free Papers

Surgical method for treating symphysitis in women

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Trauma Short Free Papers, Main Congress Hall ABC, September 25, 2024, 13:30 - 14:30

Currently, there is growing interest in such a little-studied problem as symphysitis. According to the literature over the past decades, discrepancies and ruptures of the pubic symphysis occur in 0.2–4% of cases. This problem does not have clear development factors, which also poses difficulties in diagnosis and treatment. The main clinical manifestation is pain, often combined with diastasis of the pubic symphysis. In 30% of cases, symptoms include signs of destabilization of the anterior semi-ring of the pelvis, dyspareunia, irritation and signs of bladder overactivity. Methods: In 25 patients, at the initial stage of surgical treatment, to eliminate destabilization of the pelvic ring, fixation of the pubic symphysis with an plate in the anterior part of the pelvic ring was used with resection of the inflammatory process zone of the structure of the pubic symphysis to healthy tissue. The volume of the resulting cavity after resection was filled with granules of a complex alloplastic preparation based on hydroxyapatite. All patients were discharged with improvement for outpatient treatment. Results: the results were assessed 6 months after surgical treatment. According to X-ray data, high reliability of fixation, elimination of pain, expansion of motor activity, orthopedic regimen and improvement in the quality of life of patients were noted. A Russian Federation patent was received for the developed methodology: “Method of surgical treatment of the pubic symphysis of the pelvic ring”. The choice of surgical treatment is determined individually, which requires additional consideration of treatment results

Outcome determinants for Coronal Shear Fractures of the Distal Humerus

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Trauma Short Free Papers, Main Congress Hall ABC, September 25, 2024, 13:30 - 14:30

Purpose: Coronal shear fractures of the distal humerus involving the capitellum and trochlea are rare injuries. Internal fixation with Herbert screws provides a stable construct facilitating early mobilisation. Our study aimed to identify the key determinants of both radiological and functional outcomes of patients with distal humerus coronal shear fractures treated with internal fixation. Methods: A retrospective analysis of 61 patients with distal humerus coronal shear fractures who were treated surgically was done. Demographics, fracture morphology, time to surgery, operative details such as surgical approach and implant used, quality of reduction, time to union and associated complications from hospital records. Radiological outcomes were assessed using plain radiographs, and the functional outcomes were by Oxford Elbow Score (OES), Mayo Elbow Performance Index (MEPI). Results: Patients with anatomical reduction of the fracture had better functional outcomes and range of motion. The presence of posterior comminution of capitellum resulted in poorer outcomes (p =0.03). Delayed presentation did not alter the outcome when the anatomical reduction was achieved. Myositis ossificans was noted in 9 patients and non-union in 5 patients. Two patients developed avascular necrosis of the capitellum and arthritis of the elbow joint. Conclusion: Anatomical reduction and posterior comminution are the two key determinants of the functional outcome in these coronal shear fractures of the distal humerus. Early mobilisation following a stable fixation is crucial in achieving a good outcome.

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Evaluation of Acetabular Fracture Fixation: Clinical and Functional Outcomes Assessed with the Modified Harris Hip Score – Insights from a Single Trauma Center Experience

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Trauma Short Free Papers, Main Congress Hall ABC, September 25, 2024, 13:30 - 14:30

Objective: This study sought to assess the clinical and functional outcomes of acetabulum fracture fixation, utilizing the modified Harris Hip Score as the evaluation tool. Methodology: Conducted at the SMBB Institute of Trauma from 2019 to 2021, this retrospective study focused on 73 patients who underwent acetabular fracture fixation. After excluding those who expired or were lost to follow-up, the final sample comprised 52 patients. Data included patient demographics, injury mechanisms, treatment details, and complications. Acetabulum open reduction and internal fixation were performed by an experienced surgeon in pelvic and acetabulum surgeries. Clinical and functional outcomes were assessed using the modified Harris hip score. Results: The study involved 52 patients with a mean age of 37.5 +/- 11.9 SD years, including 39 men and 13 women. Road traffic accidents were the leading cause of acetabular fractures (90.4%), followed by falls (9.6%). Associated injuries with acetabulum fractures included extremity fractures and chest injuries (13.5%) and hip dislocations (5.8%). The modified Harris hip score at the 2-year follow-up indicated excellent outcomes in the majority of patients (73.1%). Complications included surgical site infections (9.6%), hip osteoarthritis (3.8%), and nerve injuries (3.8%). Conclusion: This study underscores the intricate nature of acetabular fractures and emphasizes the positive outcomes of surgical intervention, as assessed by the Harris Hip Score. Ongoing follow-ups and management are essential for complications such as hip osteoarthritis and nerve injuries. Acknowledging study limitations, including its retrospective design and sample size, this research demonstrated excellent clinical and functional outcomes following acetabular fracture fixation.

Traumatic iliac fracture with caecum herniation

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70 years old male with history of L4 laminectomy and L4-L5 foraminectomy, dyslipidemia and hypertension, was admitted to the ER in hemorrhagic shock after being struck by a vehicle. Patient was conscious with dyspnea, hypotension, abdominal pain, pelvic instability and visible right lower limb deformity. After resuscitation, CT-scan showed fractures of multiple cervical and lumbar transverses processes, L1 burst fracture without neurological deficits - AO Spine A4, right thorax rib fractures with pneumothorax, hepatic and mesentery lacerations, with laceration of the right renal artery and right iliac fracture showing caecum extrusion, without perforation or ischemia. X-ray of right lower limb showed a femoral segmental fracture (neck and shaft). Patient was taken to the OR with general surgery and orthopedics for exploratory laparotomy, chest tube placement and femoral fracture closed reduction and long intramedullary nailing. Mesentery hemorrhage was controlled, right colon was mobilized and integrity was confirmed. Bone fragments were removed from the iliac and pelvic binder was applied. Patient was admitted to the ICU for 48 days and underwent percutaneous lumbar fixation (D12,L1,L2) on the 17th day of hospitalization. Evolved with prolonged extubation due to muscular weakness, needing tracheostomy. Hospital stay was complicated by blood-stream infection from CVC, cellulitis and abscess superficial to the iliac fracture, upper GI hemorrhage, intubation associated pneumonia, and pressure ulcers. Patient needed a long course of rehabilitation and was discharged two months afterwards able to bear weight in both legs and walk with modified autonomy, with a walker. Follow-up in out-patient setting unremarkable without complications.

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The outcomes of bone reconstruction with Masquelet induced membrane technique for Gustilo 3B Tibia open fracture cases.

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Trauma Short Free Papers, Main Congress Hall ABC, September 25, 2024, 13:30 - 14:30

Introduction: In patients with Gustilo 3B open fractures of the lower leg who require a free flap, it is unknown whether local blood flow is sufficient for bone reconstruction using the Masquelet induced membrane technique (IMT). This study aims to investigate the outcomes of patients who underwent reconstruction for Gustilo 3B open fractures of the lower leg with IMT. Patients and Methods: We retrospectively investigated the outcomes of 10 limbs that underwent bone reconstruction with IMT for Gustilo 3B tibial open fractures using medical records. Results: The mean age of the patients was 49.2 years, and 7 plates and 3 intramedullary nails were used for internal fixation. Soft tissue defects were reconstructed with 6 free flaps, 3 free muscle flaps, and 1 pedicled muscle flap. The mean Radiographic Apparent Bone Gap (RABG) was 39.7 mm. All autogenous bone was obtained from cancellous bone from the iliac bone, and artificial bone was mixed in 8 cases. Three cases developed deep tissue infection after bone grafting, 2 of which were amputated, and 1 was re-reconstructed with IMT. Only 2 cases were successfully unionized, and the implants were removed. Discussion: In this study, the outcomes of Gustilo 3B patients' bone reconstruction with IMT were less successful than other reports about IMT. This result may be due to insufficient blood flow around the bone or the use of artificial bone. Conclusion: The results of Gustilo 3B open fracture patients' bone reconstruction with IMT were poor.

Supracondylar fractures in children: a comparative analysis between Gartland type 2 fractures treated surgically and conservatively.

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Trauma Short Free Papers, Main Congress Hall ABC, September 25, 2024, 13:30 - 14:30

Introduction: Supracondylar fractures are the most common elbow fracture in children. This study aims to compare clinical, functional and radiographic outcomes between patients with Gartland type 2 fractures treated surgically and conservatively. Methods: Patients between 2 and 15 years-old with supracondylar fracture of the humerus were considered from 2010 to 2020. Age, gender, type of fracture, treatment, pre- and post-treatment radiographic parameters and functional outcomes were evaluated. Results: 87 patients were included. The average age was 6-year-old (2-15) and 44 fractures were treated conservatively (group A) with plaster (6-36 days- average 23.89); 43 were treated surgically (group B) with closed reduction and percutaneous pinning (CRPP). Kirschner wires were removed at an average of 24.5 days ($p=0.57$). Among all, 48 fractures were 2a (Wilkins sublclassification) and only 3 of them were treated surgically. 3 cases of group B required re-operation (3.45%) and 2 had postoperative nerve complications (2,3%). Fractures with better postoperative radiographic criteria (Baumann angle and humero-capitellum distance) had better functional outcome according to Flynn criteria ($p<0.05$). Conclusions: There is a lack of evidence in the literature to guide the surgeon regarding the correct approach in Gartland type 2 fractures. In the majority of conservatively treated Gartland 2 fractures, good radiographic and functional results were obtained. The fractures surgically treated had more unfavorable radiographic parameters at presentation and this could represent a type of approach for this type of fractures.

Improving Completion Rates of Treatment Escalation Plan (TEP) in a London Teaching Hospital: A Quality Improvement Study

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Trauma Short Free Papers, Main Congress Hall ABC, September 25, 2024, 13:30 - 14:30

Background Treatment escalation plans (TEPs) provide enhanced clarity in planning appropriate decision-making in the management of deteriorating patients by explicitly defining a limit of care. These decisions are discussed with patients or their relatives and mutually agreed upon. We aimed to improve staff adherence to the completion of TEPs upon the admission of patients to the orthopaedics wards in a London teaching hospital. Methods This study employed the Plan-Do-Study-Act (PDSA) methodology to investigate the efficacy of interventions implemented within a hospital setting for adult inpatients receiving orthopaedic treatment. The approach adopted was cross-sectional, where a comprehensive audit was conducted on all adult inpatients admitted to the hospital. The initial cycle of the study was conducted in March 2022, followed by the implementation of interventions in the form of an internal algorithm. Subsequently, the second cycle of the study was conducted in November 2022. Results We sampled a total of 50 patients (PDSA 1, n=27; PDSA 2, n=23). Following the implementation of a designated local TEP pathway, the proportion of patients with incomplete TEPs fell from 30.4% (n=7, PDSA Cycle 1) to 11.76% (n=2, PDSA Cycle 2). Conclusions The study has demonstrated that interventions such as institutional algorithms and departmental meetings can be useful in improving the adherence of staff to complete TEPs. Ongoing training and education can help overcome some of the barriers to TEP completion.

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The association between nail canal ratio and early postoperative neck shortening after intramedullary nailing of trochanteric fracture: a retrospective cohort study

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Trauma Short Free Papers, Main Congress Hall ABC, September 25, 2024, 13:30 - 14:30

Purpose: Early excessive neck shortening after internal fixation of trochanteric fracture is associated with a higher risk of cutout. Little is known about the association between nail diameter and the incidence of postoperative excessive neck shortening. Methods: At a single trauma center from July 2010 to August 2017, trochanteric fractures fixed by short femoral nails among the elderly were retrospectively evaluated. We divided the patients into four groups according to the quartile range of nail canal ratio (NCR), defined as the ratio of the nail diameter to the canal diameter at the level of distal locking screw. The primary outcome was the neck shortening of more than 6mm within two weeks of surgery. After stratification with the displaced lesser trochanteric fragment, we estimated the influence of NCR on the primary outcome after adjusting the possible confounding factors by logistic regression model. Results: Of the 949 patients, the outcome was evaluated in 712 patients. Excessive shortening was found in 89 patients (13%). In cases with posteromedial support (n=398), there was no significant difference in the excessive neck shortening between each NCR group (p=0.63 to 0.99). On the other hand, in cases without posteromedial support (n=319), the excessive neck shortening significantly increased in the lowest NCR group (NCR < 0.73) against the highest group (NCR > 0.86) (adjusted odds ratio 2.4, p=0.05). Conclusion: When nailing unstable trochanteric fractures, orthopaedic surgeons should be careful not to choose a narrow-diameter nail to avoid early excessive neck shortening leading higher risk of cut out.

An analysis of the predictors of outcome in distal femur fractures treated with only locking plates based upon the radiological parameters and implant construct

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Background: Non-union following distal femur fractures treated with lateral locking plates have been associated with various factors. We focussed on construct related variables, mechanical variables, types of fracture and complications that affect the outcome. Methods: A retrospective observational study of 298 distal femur fractures treated with lateral locking plates was performed. We analysed implant and mechanical characteristics of fixation, patient demographics, co-morbidities, injury characteristic (open vs closed, AO type), and complications such as infection. Univariate analysis and multiple logistic regression analysis were performed to analyse the prediction of outcomes. Result: Non-union rate was found to be 19%. Stainless steel implants were a more rigid construct compared to titanium implants. 17.44% of non-union cases were found in comminuted fractures and 1.67% in simple fractures. Fractures with a medial bone gap of more than 10 mm were found to have a high risk of non-union in this study. The number of empty holes near the fracture site was found statistically significant in simple non- union fractures. Open fractures, deep infection, and type C comminuted fractures were also related with non- union with statistically significant value. Conclusion: A locking compression plate is an excellent treatment method for distal femur fractures with good outcomes. Our study showed that stainless steel implants were more rigid compared to titanium implants and the
greater the number of holes near the fracture site in simple fractures resulted in an increased risk of non-union.
Open fractures were found to be the most significant factor in determining outcomes.

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Which Surgical Treatment for femoral neck fractures in children with osteogenesis imperfecta?

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Trauma Short Free Papers, Main Congress Hall ABC, September 25, 2024, 13:30 - 14:30

Introduction: Femoral neck fractures are challenging to diagnose and treat in osteogenesis imperfecta (OI) patients. We aim to describe surgical management techniques and outcomes of femoral neck fractures in a cohort of OI. Methods: Between 1976 and 2022, we retrospectively reviewed children's medical records with OI and femoral neck fracture evaluated at our institution. We reviewed their treatment and outcomes. We included patients who had surgical treatment. Results: We found eight patients, five boys, and three girls, with surgical treatment for femoral neck fractures with a minimal follow-up of 24 months. Age varied from seven to eighteen. 6 children had type III, and two had type IV OI. Three patients had medialization subtrochanteric osteotomy, one closed reduction and internal fixation with screws, and four had open reduction and fixation with a valgus effect plate. All patients had fixation of the femoral epiphysis. Four children regained their pre-operative ambulation status six months following the surgery. All patients had achieved bony union after a mean period of 8 months (range 6-12 months). One girl had revision surgery for failure of fixation. After six months, she was reoperated to modify the fixation construct with fibular autograft. She had an excellent result and achieved bony union six months later. One girl developed 24 months later bilateral hip stiffness due to aggravation of her AP. We didn’t observe any infection or malunion. Conclusion: our variety of surgical techniques for femoral neck fractures in OI patients seems appropriate, achieving bony union with good results and outcomes.

Pelvic fractures – the impact of concomitant thorax trauma. A 1000 consecutive patient series from a UK Major Trauma Centre from 2012-2020.

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Trauma Short Free Papers, Main Congress Hall ABC, September 25, 2024, 13:30 - 14:30

Background

Pelvic fractures are associated with high energy trauma. This study intends to retrospectively evaluate the 30 day mortality, whilst considering the impact of concomitant injuries.

Method

A consecutive series of 1000 patients were identified within the TARN database for St Mary's Hospital, London, between 2012 and 2020. Univariate and stepwise multivariate logistic regression were used to determine which of the following factors was associated with 30-day mortality; AO/OTA score, Glasgow Coma Score on admission (15, 10-14, <10), abdominal trauma, haemothorax, long bone fracture, arterial injury and an open pelvis. Additional co-variates included in the final model were age and gender.

Results

The mean age of patients was 52.2 years (SD 23.5), 449 men and 551 women. The risk of 30-day mortality was 5.2% (95% CI: 3.9–6.8). The final multivariate model demonstrated a significant association between the presence of a haemothorax and 30-day mortality (OR 2.4; 95% CI 1.1–5.0). A GCS of less than 15 was associated with 30-day mortality ($p< 0.001$). The OR for GCS <10 was 27.2 (95% CI; 11.8–62.3).

Conclusion

Pelvic fractures and a concomitant haemothorax injury are significantly associated with an increased risk of 30 day mortality. This shows that urgent identification of a haemothorax and emergent treatment is critical in the management of pelvic fractures. Furthermore, identifying a GCS below 15 was associated with 30 day mortality. Future collaborative investigation of 30 day mortality for major trauma centres may improve risk stratification of concomitant injuries and development of a scoring system for predicting mortality.

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Pelvic Ring Injuries- Recipe for good outcome

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Trauma Short Free Papers, Main Congress Hall ABC, September 25, 2024, 13:30 - 14:30

Objective of the study is to correlate between the radiological and functional outcome in patients with pelvic ring fractures postoperatively. Thirty patients who were admitted for pelvic ring fractures treated surgically or by conservative management during 2011 to 2021 were reviewed. The fractures were classified according to the Tile classification. The patients were sent a questionnaire based on the items of the functional pelvic score of Majeed, Orlando score and the SF-12. 8 (26.66%) patients underwent External fixation + iliosacral percutaneous CC screw surgery. ORIF + iliosacral percutaneous CC screw done in 6 (20%) patients. Whereas 4 (13.33%) patients each were underwent for external fixatior – Pelvic and iliosacral percutaneous CC screw management. CRIF with iliosacral percutaneous CC screw done in 2 patients, and Internal Fixation with iliosacral percutaneous CC screw surgery performed in 1 patient. Conservative management done for 5 (16.66%) patients.Quality of reduction was checked by SI joint displacement which was <4mm in 2 patients and 4-10mm in 28 patients. However, Chronic pain was registered for 1 (3.33%) patients and Sexual dysfunction registered for 1 (3.33%) patient. Mean Majeed score was 98.4, 94.2 and 91.65 for Tile Type A, Type B and Type C fracture respectively. Two experienced pelvi-acetabular surgeons and use of a dedicated post-operative rehabilitation protocol, support from the Intensive care , plastic and general surgery were able to achieve good to excellent functional and radiological outcome in all of our patients, with all of them regaining their pre injury occupation.

Treatment of the Disruption of Knee Extension Mechanism after TKA

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Knee Short Free Papers, MR 11, September 25, 2024, 13:30 - 14:30

【Purpose】In this study, we report on a retrospective study of the outcomes of 13 patients with a failed knee extension mechanism after TKA. 【Subjects and methods】 1712 patients who underwent TKA between 2011 and 2019 were included. Of these, 11 patients with knee extensor mechanism injuries and 13 joints that were observable were included.The breakdown of extension mechanism failure sites included eight patellar fractures, four patellar tendon ruptures and one quadriceps rupture. Three patellar fractures with fracture dislocation and extension lag were treated surgically and five patients were treated conservatively. Four patients with patellar tendon rupture and one with quadriceps rupture were treated surgically. 【Results】 The range of motion after surgery in the four patients with patellar tendon ruptures averaged 0° in extension and 97.5° in flexion, with an extension lag of more than 10° in one case. One patient with quadriceps rupture had flexion limitation of 0° in extension and 75° in flexion, but no extension lag. In three patients with patellar fractures who underwent surgical treatment, bony fusion was achieved in one case and extension lag of more than 10° was observed in two cases. Conservative treatment resulted in bony fusion in 3 out of 5 cases, and extension lag of more than 10° in 1 case. 【Discussion】 Aggressive surgical treatment is recommended for quadriceps ruptures and patellar ligament ruptures, while careful selection of treatment strategy is necessary for patellar fractures, as there have been cases of revision surgery.

Total knee arthroplasty on genu varum. Why was the osteotomy not planned? Survey of 100 women

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Knee Short Free Papers, MR 11, September 25, 2024, 13:30 - 14:30

Background : The tibial valgus osteotomy is a conservative intervention that has proven its worth for beginner arthritis on varus axis deviation. Despite its prominent place, many patients reach advanced stages without benefiting from it and only arthroplasty becomes a savior. The purpose of this study was to identify the reasons that would explain why patients with a little osteoarthritis on a varum did not achieved an osteotomy in time. Methods : We investigated 100 women with knee osteoarthritis on a varum, in witch a primary total knee arthroplasty was firstly conducted. Results : Our survey found favorable socio-economic conditions: 73% urban, 95% homeowners, 91% near hospitals. Despite early consultations (48% within a year), treatment guidelines for gonarthrosis were often disregarded. 65 received no dietary advice, 60 had arthroplasty without rehabilitation. Only 3 of 100 potential osteotomy candidates were informed. Clinical findings pre-arthroplasty showed treatment inadequacies: 77% had reduced walking perimeter, 27% had flessum, mean varus was 13.8°. Conclusion : Knee osteoarthritis is a pathology whose evolution can be slowed down by conservative surgery. In practice this management is still insufficient and several shortcomings have been noted. An organized clinical and radiological follow-up and a hierarchy of therapeutic means must be instituted.

Transdermal Buprenorphine patch versus Ketoprofen patches for post-operative analgesia in total knee arthroplasty

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Knee Short Free Papers, MR 11, September 25, 2024, 13:30 - 14:30

We designed this randomised controlled trial to compare buprenorphine patch (BTP) and ketoprofen transdermal patches(KTP) in controlling postoperative pain after primary total knee arthroplasty. Patients in the BTP group received a BTP (10 mcg/h) patch which was changed on the 7th day and was continued for 14 days. Patients in the KTP group received a KTP (20 mg) on the day of surgery, and was changed daily for 14 days. Pain intensity was measured using the VAS score.
VAS scores at rest were significantly lower in the BTP group for the initial 5 days, p=0.0027, p=0.0001, p=0.0050 at Day 1, Day 2 and Day 3 respectively . VAS scores on activity were also found to be significantly lower in the BTP group for the initial 5 days . There was no significant difference in VAS scores at day 14 p=0.5437 at rest and p=0.3170 at activity. ROM in BTP group at all days postoperatively were higher as compare to that in KTP group but values were not statistically significant
On all days of admission, the patient satisfaction scores were statistically higher in the BTP group at 12 hours (p=0.0002) , at day 2 (p=0.0012), at day 3 (p=0.0000) as compared to the KTP group (Table 5). Patient satisfaction score were comparable in both BTP and KTP group at day 14 (p=1.0000)
The incidence of adverse effects was not statistically significant between the two groups. However, the incidence of PONV, urinary retention and constipation were higher in the BTP group.

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Are Robotic Assisted Total Knee Replacements going home faster than conventional Total Knee Replacements?

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Knee Short Free Papers, MR 11, September 25, 2024, 13:30 - 14:30

With the advent of robotic arm assistance, Total Knee Arthroplasty (RATKA) has produced largely predictable outcomes. However, the cost effectiveness of using a robot routinely for TKA hasn't been followed up enough in the literature. We aim to evaluate whether RATKA are associated with lesser length of stay (LOS). A consecutive series of 248 patients (n=330 knees) were studied from 1st January 2021 to 1st June 2024 in a tertiary care hospital in India. 166 unilateral (uni) and 82 (n=164) bilateral (B/L) were performed by 14 experienced surgeons. 47% (n=153) were RATKA and 53% were done by conventional techniques. A benchmark of 3 days for unilateral and 5 days for bilateral TKA, was determined by local statistical policies from the preceding years, as the anticipated stay of patients undergoing TKA. A total of 71.16 %(58.33% uni, 84% B/L) RATKA managed to fall within the benchmark as opposed to 80.35% (70.71% uni, 90 % B/L) in cTKA. The reasons for delayed discharge included pain & physiotherapy (10%), altered haemodynamic status post-operatively (18%) and patient requests (9%). To bring about a standardisation in health care policies, a town hall meeting for TKA patients with patient testimonials, distributing discharge handouts and conducting clinical audits is the way forward. In conclusion, RATKA did not significantly alter the LOS as compared to cTKA. The pain and rate of haemodynamic instability was similar in both groups. The patient requests were due to sociopath-economic factors.

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Double cut tibial technique for management of tibial defect in revision of unicompartmental knee arthroplasty to total knee arthroplasty after aseptic loosening.

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Knee Short Free Papers, MR 11, September 25, 2024, 13:30 - 14:30

Introduction : Aseptic loosening (AL) is one of the leading causes for revision of failed primary unicompartmental knee arthroplasty (UKA). The failed UKAs may need special implants like augments or constrained or Hinged total knee arthroplasty (TKA) . In this study, we described a novel surgical technique of conversion to TKA using double cut tibial technique (DCT). Methods: This prospective, observational study took place in a tertiary care hospital during May 2022 – June 2024 under single surgeon. DCT technique was used to manage tibial defect. All the patients were followed to latest follow up. Mean follow up duration was 6 months. Outcomes were assessed using the Knee Society Score (KSS). The radiological assessment was done using CT scan at 3 months. Results: The study included 8 revision TKAs (4 females, 4 males; mean age: 58 years) performed following failed aseptic UKA. The Mean preoperative KSS was 52.2 and 82 after TKA. There were 3 excellent, 4 good and 1 fair results. We observed less need of augments during management of tibia defect using DCT technique in UKA revision. Conclusion: This surgical technique is useful resulting good functional and radiological outcome during UKA revision to TKA after aseptic loosening without the need of special implants.

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Study on post-operative drop in haemoglobin in patients undergoing Robotic Arm assisted Total Knee Arthroplasty: a single center retrospective study

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Knee Short Free Papers, MR 11, September 25, 2024, 13:30 - 14:30

Robotic Assisted Total Knee Arthroplasty (RATKA) claims to have superior results in having lesser surgical trauma and hence lower estimated blood loss. Post operative anaemia is a underrated complication following TKA having an incidence of 53.2%. We conducted a clinical audit at a tertiary care hospital in India with to compare our management guidelines with the global standards. 176 consecutive RATKA were identified from January 2022 to April 2024 performed by a single surgeon using CORI robotic system. We considered moderate anaemia for a haemoglobin (Hb) value between 8 to 11 mg/dl and severe anaemia below 8 mg/dl. The Post operative Moderate to Severe Anaemia (PMSA) rate in our series was 72.72%, out of which 63.63%(n=112) constituted for moderate and 9.09% (n=16) for severe levels. The average pre-operative Hb was 12.03 mg/dl and the average drop in Hb post operatively was found to be 2.09 mg/dl. Bilateral TKA constituted 50.56%(n=89) and 49.44 % were unilateral TKA (45 right, 42 left).

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Echoguided tenotomy of the popliteal tendon conflicting the tibial tray in a total knee prosthesis - a novel technique

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Knee Short Free Papers, MR 11, September 25, 2024, 13:30 - 14:30

Conflict between tendons and implants in total knee prosthesis often is a reason for a chronic pain and long-term disability in knee prosthetic patients in the below described technique ultrasound is used to diagnose the condition this imaging modality far outcomes the CD or MRI all the steps are followed in this presentation it's a novel technique with 100% guaranteed excellent outcome is properly applied under ultrasound guidance the tendon is identified then cut through using the Kamis knife from Newclip techniques images and a minincision is the only surgical portal. In my series 7 patients are included all underwent the aforementioned procedure with an excellent outcome and pain-free a day behind the surgery no complications so far.

Evaluation of Sleep Disturbance and Its Effects on Functional Outcomes and Quality of Life After Total Knee Arthroplasty: A Prospective Cohort Study

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Knee Short Free Papers, MR 11, September 25, 2024, 13:30 - 14:30

Introduction: This prospective study investigated the patterns of sleep and daytime sleepiness following total knee arthroplasty (TKA), evaluating the factors affecting sleep and their impact on functional outcomes and health-related quality of life.
Methods: The sleep quality of 68 TKA patients was monitored using the Pittsburgh Sleep Quality Index (PSQI) and the Epworth Sleepiness Scale (EPSS) at various intervals: preoperatively, 1 week, 2 weeks, 6 weeks, 3 months, and 6 months post-surgery. Concurrent evaluations of pain, anxiety, and functional outcomes were conducted using the Visual Analogue Scale (VAS), Hospital Anxiety and Depression Scale (HADS), and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC).
Results: PSQI scores initially rose from a baseline of 11.37 to 15.13 at one week, indicating worsened sleep patterns immediately post-surgery. Scores peaked at two weeks but gradually improved, returning to baseline by 3 to 6 months and surpassing initial values by six months ($P<0.01$). Daytime sleepiness also showed notable peaks at two weeks and six weeks. Regression analysis identified increased pain, anxiety, and depression as factors negatively impacting sleep and functional outcomes, correlating with poorer WOMAC and SF-12 PCS and MCS scores. Furthermore, female gender and an ASA grade > 2 were predictors of poorer sleep quality, with no significant differences noted between unilateral and bilateral TKA patients.
Conclusion: Sleep cycle disruption following TKA is common but temporary, typically resolving within 3 months and improving beyond preoperative levels after six months. Key factors associated with poorer sleep outcomes include female gender and higher comorbidity scores (ASA>2).

The importance of component rotation in total knee arthroplasty: A revision changing only tibial component rotation changed the outcome

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Knee Short Free Papers, MR 11, September 25, 2024, 13:30 - 14:30

Introduction: Total knee arthroplasty (TKA) is gold standard treating knee arthritis with satisfactory results. The incidence of unexplained pain after TKA ranges from 8-19% with most of cases reporting peri-patellar pain. Etiology is sometimes difficult to establish. When the cause is identified, 80% of revision surgery are successful. Component malrotation may lead to an unexplained anterior knee pain. Methods: Clinical case 70 yo male who made a TKA in 2022. Always complained for anterior knee pain. No signs of infection, no instability, range of motion 0-100º. CT scan revealed tibial component internal rotation of 30º. Results: We performed a revision surgery where only the tibial component was replaced for a new one with external rotation (with short stem due to bone loss). 1 month after surgery the range of motion is 0-90º and the patient has no anterior pain. Discussion: A painful TKA is a huge challenge in knee surgery. Systematic approach is very important to identify its cause and treat it successfully. Many are subtle with no evident complication in plain radiographs. Extrinsic cause, infection, patellar maltracking, component malalignment, instability, stiffness due to scar tissue and trauma should be excluded. In our case we could only find tibial internal rotation. Some studies found that component rotation alone was not significant for anterior pain but most of them defend that it is responsible for patellar maltracking. Conclusion: Painful TKA should be approached in a systematic way and if there is an identifiable cause, revision should be performed expecting good results.

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Do obese patients have raised inflammatory markers post-total Knee Arthroplasty? A Prospective Comparative Study

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Knee Short Free Papers, MR 11, September 25, 2024, 13:30 - 14:30

Obesity has been reported as a pro-inflammatory state with elevated baseline CRP, ESR, & Interleukin-6 values. The study is a prospective observational design conducted from Nov 2022 to Aug 2023 in patients who underwent primary TKA for osteoarthritis. A total of 240 patients were included. The difference in IL6, CRP and ESR levels between the obese (BMI ≥ 30,108 patients) and non-obese (BMI ≤ 30, 132 patients) was analyzed at preoperative, 48 hours, day 30 and at 3rd month along with knee function scores.
The preoperative IL – 6 in non-obese vs obese patients was 6.58 ± 6.02 vs 9.42 ± 13.4(p 0.04), CRP 5.24 ± 6.92 vs 9.70 ± 16.14(p 0.01) & ESR 26.03 ± 17.43 vs 39.37 ± 22.18(p 4.53).
Obese patients (BMI > 30) had a higher range of inflammatory markers in the perioperative period at 48 hours. The mean 48 hours IL – 6 in non-obese vs obese patients was 45.2 ± 35.69 vs 55.53 ± 59.49(p 0.05), ESR 31.6 ±19.4 vs 38.8± 21.8 (p 0.008) & CRP 51.5 ±29.4 vs 51.76 ±34.2 (p 0.92).
There was no significant difference at 30 days and 3 months including the KSS value. The incidence of superficial SSI was 2 % in both groups. There was no deep infection.Patients with BMI > 30 can have higher preoperative and 48 hrs postoperative inflammatory markers primarily because of obesity. This should be interpreted with caution and should be followed up to avoid unnecessary over-treatment.

Outcome of complex primary and revision knee arthroplasty for remotely located patients: A NHS Highland (Scotland) Rural health experience

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Knee Short Free Papers, MR 11, September 25, 2024, 13:30 - 14:30

Introduction: Complex primary or revision TKA is challenging procedure requiring expertise and special resources. NHS Highland is the largest health boards in Scotland providing secondary Orthopaedic care with a catchment area of 32500 km2 (larger than Belgium). As per Scottish arthroplasty project data 2023, 4833 TKAs were done, knee revision within first 5 years accounted 1.5%. We analysed demographic and the geographic data with outcomes for patients who underwent complex and revision TKR living in rural and remote areas. Objective: The aim of this study is to evaluate patient location, ASA grade, average waiting time for surgery, length of stay (LOS), AORI classification. Secondary outcomes were measured. Method: A retrospective cohort study was performed and 16 patients (n=16) who underwent this procedure from January 2022 to February 2024 were included in the study. Descriptive statistics was used to summarise the patient demographics, distance from hospital, average waiting time and complication rate. Paired t test and non parametric equivalents were used to analyse the changes in ROM and PROM. Results: T1 defect was most common (AORI classification criteria). The average LOS was 7.8 days, average distance from the hospital to the patient's listed address was 42.88 miles (69km), the average waiting time was 8.13 months, the median ASA grade was 2 and the average BMI was 29.9 Conclusion: This is a unique study conducted in the Scottish highland, the geographical context and the impact of covid pandemic on Revision knee service for remotely located patients providing a valuable insight.

Interest of antifibrinolytics in Primary Total Knee Arthroplasty: Comparative and Controlled Study

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Knee Short Free Papers, MR 11, September 25, 2024, 13:30 - 14:30

Total knee arthroplasty (TKA) is an effective solution to treat end-stage knee OA.The application of antifibrinolytic agent such as tranexamic acid (TXA) in TKA can significantly decrease total blood loss and transfusion requirement without increasing the incidence of deep vein thrombosis (DVT). Therefore, we realized the present study to perform a preliminary evaluation of the efficacy and safety of TXA in primary TKA .
We retrospectively reviewed a consecutive series of patients with primary unilateral TKA. Patients were divided into TXA group and control group (who did not receive TXA). Outcome measures included drainage volume; hemoglobin and hematocrit levels recorded preoperatively and during the first 5 postoperative days; amount of blood transfusion and the presence of thrombosis. 96 cases were included in the study. Demographic data, general health status, and preoperative conditions were comparable between the two groups. However, significantly lower drainage volume ($P < 0.001$), blood loss ($P < 0.001$), and blood transfusion volume ($P = 0.046$) were noted in the TXA group. Hemoglobin and hematocrit levels were significantly higher in the TXA group on the first postoperative day ($P = 0.006$), but overall the decline in hemoglobin and hematocrit levels during the first 5 postoperative days was similar between groups ($P = 0.763$), as did the incidence of VT ($P = 0.794$).
TXA has a positive role for patients in the setting of primary total knee arthroplasty, TXA decreases blood loss and the need for blood transfusion, which seems mainly effective on the first postoperative day of TKA.

Robotic-arm knee arthroplasty: What does it give?

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Knee Short Free Papers, MR 11, September 25, 2024, 13:30 - 14:30

Primary total knee arthroplasty has long been proven effective in the treatment of stage 3–4 knee osteoarthritis. It is well known that this intervention not only improves the quality of life, but also helps to restore the function of the joint and eliminate axial deformities. Purpose: To compare early results of total knee arthroplasty using robot-assisted technology with conventional manual technique. Materials and Methods: 20 patients diagnosed with stage 3 osteoarthritis of the knee joint and varus deformity of the knee joint axis were included in a prospective randomized study. Patients were divided into 2 representative groups, 10 subjects underwent robot-assisted knee arthroplasty, and the conventional manual technique was used in the other 10 patients. For clinical assessment, functional scales KSS, WOMAC, Lysholm Score were used, postoperative radiographs were evaluated.

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The functional outcome of rotator cuff repair with biceps tenodesis In comparison to isolated rotator cuff repair: a prospective cohort study.

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Sports Medicine Short Free Papers, MR 4, September 25, 2024, 13:30 - 14:30

Background: Arthroscopic rotator cuff repair (RCR) with long head biceps (LHB) tenodesis become a common combined procedure in shoulder surgeries.
Methods: This is a prospective cohort study aimed to compare the functional outcome of patients who underwent RCR with or without LHB tenodesis in King Abdullah Medical City in Makkah from January 2017 until March 2023 using ASES and UCLA scoring questionnaire at 3, 6,9, 12-month period post-surgery.
Results: Cohort of 102 patients, 66 had rotator cuff repair with biceps tenodesis and 36 without biceps tenodesis. The mean age (SD) was 54.5 (9.8) years. Mean BMI was 30.36 (5.1%). The mean (SD) at the baseline 3-month period for RCR with versus without LHB tenodesis for ASES score and UCLA score revealed no statistically significant deference between the two groups, P value 0.67. Paired t-test used to compare the progress in scores, arthroscopic RCR with and without LHB tenodesis both demonstrated no statistically significant deference in mean enhancement in both outcome measures: ASES (mean, 41.32 vs 39.96; P= .000; 95% CI, 36.59, 44.32), and UCLA (mean, 12.35 vs 11.59; P = .000; 95% CI, 10.77, 12.96) at 1-year follow-up. By using the ANOVA test there was no statistical difference in ASES, UCLA score mean (SD) in each time period at 3,6,9, 12 months period between both groups (p>0.05).
Conclusion: Adding LHB tenodesis to the arthroscopic RCR has no statistically significant improvement in the functional outcome as reported by patient using ASES, UCLA score systems.

Posterior Tibial Slope does not stay constant: An Anthropomorphic Study Examining its Dynamic Nature.

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Sports Medicine Short Free Papers, MR 4, September 25, 2024, 13:30 - 14:30

Background: There is a paucity of literature regarding the age-related changes in PTS. This study aims to identify the trend in the variation of PTS with age and its role in the incidence of ACL injury. Methods: Data for 312 patients (423 knees) were assessed, of which there were 189 males (232 knees) and 123 females (191 knees). Medial Posterior tibial slope (MPTS) and Lateral Posterior tibial slope (LPTS) were measured using digital software on the true lateral view radiographs of patients. Patients were then grouped into various age groups- up to third decade (18-30 years), fourth decade (31-40 years), fifth decade (41-50 years), and sixth decade (51-60 years). Results: The MPTS varied between 5.30°-21.60° (mean=12.437°±2.79°) while the LPTS varied between 3.00° and 18.10° (mean=9.527°±2.65°). MPTS demonstrated a trend of first increasing and then decreasing with aging, while LPTS demonstrated a trend of decreasing with aging. There was no significant gender-based variation of PTS across age groups. MPTS and LPTS variation were independently associated with ACL injury in the age group 18 to 40 years ($p<0.05$) and 18 to 30 years ($p=0.01$), respectively. The slope values (MPTS and LPTS) were higher in subjects with ACL injury. Conclusions: Posterior tibial slope is a dynamic entity, and its value is different across age groups. Lateral radiographs of the knee are feasible and cheap, enabling large sample sizes for assessing PTS in a population. These trends need to be taken into account while analyzing risk factors, treatment planning, and surgical techniques.

Kinesiophobia is not associated with worse IKDC and KOOS scores 6 months and 1 year post ACL reconstruction

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Sports Medicine Short Free Papers, MR 4, September 25, 2024, 13:30 - 14:30

Background: Studies suggest poorer long-term function and decreased return to sports in anterior cruciate ligament reconstruction (ACLR) patients with kinesiophobia. However, we postulate that in our Asian, generally less athletic population, preoperative kinesiophobia does not have a significant impact on postoperative patient reported functional scores at short-term follow-ups. Methods: We prospectively recruited 168 ACLR patients and followed them at 6 months and 1 year postoperatively. We documented Tampa Scale of Kinesiophobia (TSP-17), International Knee Documentation Committee (IKDC) and Knee Injury and Osteoarthritis Outcome (KOOS) scores. We compared differences in preoperative and postoperative 6 months and 1 year IKDC and KOOS scores between patients with higher TSP-17 scores and those with lower TSP-17 scores. Results: Median TSK-17 score was 46. Mean TSK-17 score decreased by 3.4 points at 6 months postoperatively (P <0.001) and by 5.2 points at 1 year postoperatively (P<0.001). Comparing patients with TSK-17 score above median (≥47,n=70) with those below median (≤ 46,n=93), there were no statistically significant differences in changes in KOOS-symptom, KOOS-Sports, KOOS-pain and KOOS-QoL at 6 months as compared to preoperative baseline. At 1 year postoperatively, there were no significant difference in KOOS and IKDC between the high TSK-17 group (≥47, n= 52) and the low TSK-17 group (≤ 46, n =72) as compared to preoperative baseline. Conclusion: In our Asian, non-athletic population, TSO-17 decreases significantly at 6 months and 1 year postoperatively. Increased TSP-17 score is not associated with worse IKDC and KOOS scores at short-term follow-ups of 6 months and 1 year postoperatively.

Functional Outcome of Arthroscopic Bone Block Stabilisation Using Distal Clavicular Autograft

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Sports Medicine Short Free Papers, MR 4, September 25, 2024, 13:30 - 14:30

Objectives: Arthroscopic distal clavicular autograft (DCA) is an effective alternative to coracoid or iliac autograft in shoulder instability with glenoid bone loss. This study aims to report the outcomes of arthroscopic anterior bone block glenohumeral stabilisation with distal end clavicle autograft.

Design and Methods: This is a single-centre retrospective, observational study of anterior bone block stabilisation with lateral clavicle bone graft done by a single surgeon (TB). Data were collected on patient demographics, post-operative PROMs (Oxford Instability Score OIS) and complications. Post-operative CT scans were analysed to assess the position of bone graft and union.

Results: 23 patients with a mean age of 32 years (±8), who presented with recurrent shoulder instability underwent stabilisation with this technique and had a minimum follow-up of 6 months. 9 (50%) patients had medium to large Hill-Sachs defects and 6 patients had previously failed soft tissue stabilisation. Average glenoid bone loss was 10%. The average pre-operative OIS was 21 (±7). The mean follow-up period was 10 (±3) months. The average post-operative OIS at the last follow-up was 36 (±8). 21 patients had a union of the graft confirmed by post-operative CT. 2 patients had partial-union of graft although had remained stable thus far. No cases experienced donor site morbidity (ACJ pain or instability).

Conclusion: The lateral clavicle provides an excellent alternative bone graft to previously established options with no donor site morbidity and cost-effective than allografts. Healing is equivalent to other techniques and early clinical results are reassuring.

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Effect of Previously Failed Rotator Cuff Repair on Surgical Outcomes of Superior Capsular Reconstruction With A Fascia Lata Autograft For Irreparable Massive Rotator Cuff Tears

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Sports Medicine Short Free Papers, MR 4, September 25, 2024, 13:30 - 14:30

Purpose: This study aimed to investigate the effect of previously failed rotator cuff repair (RCR) on surgical outcomes of superior capsular reconstruction (SCR) with a fascia lata autograft. Methods: A total of 79 patients with irreparable massive rotator cuff tears who underwent SCR between 2018 and 2023 were included. Of these, thirteen patients were found to have previously failed RCR. Clinical outcomes were collected and evaluated, including the American Shoulder and Elbow Surgeons score, Constant score, visual analog scale score, and range of motion. Radiological outcomes were evaluated using radiographs and MRIs, including acromiohumeral distance, rotator cuff tear arthropathy, and graft integrity.
Results: Patients undergoing primary SCR showed significantly improved outcomes in all functional scores and AHD (all $P < 0.001$). However, patients undergoing SCR after failed RCR only showed significant improvements in the VAS and ASES scores after surgery. Furthermore, patients undergoing SCR after failed RCR showed worse VAS, ASES, Constan and graft integrity scores than those undergoing primary SCR. Only the difference in Constant scores exceeded the MCID threshold. For patients who underwent SCR after failed RCR, those with intact grafts showed significant improvements in VAS score and AHD compared with those with torn grafts. Patients undergoing SCR after failed RCR showed significantly worse VAS and Constant scores. Conclusion: The results indicated that SCR using fascia lata autograft contributed to improvements in surgical outcomes regardless of previously failed RCR. However, SCR after failed RCR showed a significantly worse outcome and higher graft tear rate compared to primary SCR.

Does Anatomy of Ones Knee Pose as Risk Factors for ACL Injury: A Retrospective Comparative Observational Study of Normal and Injured MRI In Young Nepali Adults

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Sports Medicine Short Free Papers, MR 4, September 25, 2024, 13:30 - 14:30

Introduction: One of the most prevalent knee disorders these days is anterior cruciate ligament (ACL) injury. There is ongoing debate over the connections between the anatomical structures and ACL injuries. The purpose of this study was to use magnetic resonance imaging (MRI) of the knee to discover the anatomical risk factors of ACL injury. Method: A retrospective analysis of MRI of patients who were clinically and radiologically diagnosed as ACL injured (non-contact injury) was conducted. As controls, there were additional individuals who had no biological injuries to their knee joints. The intercondylar notch's width and notch index, intercondylar roof angle and the medial and lateral tibial plateau slope were assessed in MRI images and compared. All the statistical analysis was done using SPSS. Results: A total of 100 patients (50 ACL injured and 50 normal) were included in the study. The ACL injured group of patients had significantly ($P<0.05$, CI95%) smaller notch width (1.54 +/- 0.19 compared to 1.66+/- 0.22), smaller notch width index (0.22 +/- 0.02 compared to 0.24 +/- 0.02), smaller intercondylar roof angle (34.9 +/- 2.4 compared to 39.56 +/- 1.99) and larger medial (6.71 +/- 1.94 compared to 4.88 +/- 1.51) and lateral (6.74 +/- 2.21 compared to 4.56 +/- 1.41) posterior tibial slope as compared to the normal group. Conclusion: In summary, the chance of an ACL injury can be predicted in patient with smaller intercondylar notch and index, smaller intercondylar notch angle and greater posterior tibial slopes.

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A comparative study on arthroscopic superior capsule reconstruction using fascia lata autograft with and without biceps tendon augmentation: Two-year patient-reported outcomes and radiographic analysis

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Sports Medicine Short Free Papers, MR 4, September 25, 2024, 13:30 - 14:30

The study aimed to compare patient-reported outcomes and radiographic data between patients undergoing arthroscopic superior capsule reconstruction (ASCR) with and without long head of biceps tendon (LHBT) augmentation. Forty-three patients who underwent ASCR between 2016 and 2020 were included, with 27 in the augmentation group and 16 in the nonaugmentation group. Patient-reported outcome measurements (PROMs) and radiographic data were collected and compared between the two groups, including satisfaction, functional scores (ASES, Constant score, SANE, VAS), and radiographic findings (MRI, plain radiographs).

Results showed significant differences in functional scores favoring satisfied and improved patients in both groups, except for VAS scores. However, there was no significant difference in the percentage of patients achieving clinically significant outcome (CSO) thresholds between the groups for most functional scores, except for the maximal outcome improvement (MOI) for ASES score, where the augmented group had a higher percentage.

Furthermore, the mean acromiohumeral distance (AHD) was slightly greater in the augmentation group, but the graft tear rate did not differ significantly. The study concluded that while there were no significant differences in PROMs and CSO thresholds between the two groups, a higher percentage of patients achieved maximal outcome improvement in the augmented group. However, further evaluation is needed to determine any long-term benefits of LHBT augmentation in superior capsule reconstruction.

Clinical Outcomes of Arthroscopic Surgical Intervention in Femoroacetabular Impingement (FAI) Amongst the Asian Population: A Systematic Review and Meta-analysis

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Sports Medicine Short Free Papers, MR 4, September 25, 2024, 13:30 - 14:30

Purpose: In Asian populations, increased prevalence of hip dysplasia as well as activities of daily living which require increased hip range of motion (such as squatting) may impact outcomes of arthroscopic surgery for femoroacetabular impingement (FAI) when compared to their Western counterparts. Thus, we aimed to conduct the first systematic review and meta-analysis that examines outcomes of arthroscopic intervention in Asian patients with FAI. Methods: Major databases such as PubMed, Embase, CINAHL, SCOPUS and Cochrane Library were reviewed. Case series or cohort studies assessing outcomes of arthroscopic intervention in FAI were included. Pooled analysis of modified Harris Hip Score (mHHS), Visual Analogue Scale (VAS) and adverse events were conducted. Rate of revision surgery and conversion to total hip arthroplasty (THA) were analysed. Results: Six studies (5 case series, 1 cohort study) of high methodological quality involving 498 patients were included. Age of patients ranged from 20s to 70s, with a balanced gender ratio. Pooled patient-reported outcomes improved significantly postoperatively. VAS at the last follow up mark improved by -4.28 (95% CI, -4.49 - -4.08, $P < 0.00001$) and VAS at the 12-month post-operation mark improved by -4.11 (95% CI, -4.34 - -3.88, $P < 0.00001$). The mHHS at the last follow up mark improved by 23.37 (95% CI, 20.29 - 26.45, $P < 0.00001$). Revision surgery rate was low at 2.8% and conversion to THA rate was 0.3%. Conclusions: Arthroscopic intervention in FAI provides favourable outcomes in the Asian population that is comparable with outcomes seen in the western population.

Internal bracing to lateral extra-articular tenodesis the Evolution of ACL augmentation surgery.

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Aim: ACL reconstruction (ACL-R) fails in upto a third of patients. High re-rupture rates, variable outcomes and an improved understanding of the modes of failure has led to an evolution in strategies to augment ACL reconstruction. This study sought to compare the outcomes ACL augmentation techniques. Methods: All skeletally mature patients under 30 undergoing ACL-R with a minimum 12 month follow up were included. 3 cohorts were analysed to indicate the efficacy of each iteration of augmentation. Group 1 = first generation internal bracing, group 2 = Second Generation Internal bracing and group 3 underwent internal bracing and Lateral extraarticular tenodesis (LET). The primary outcome measure was clinical recurrence of symptoms, secondary outcome measures included tegner scores and secondary injury to the knee. Results:A total of 614 cases met the inclusion criteria. The main outcome measure was met in 23 / 280 (8.4%) patients in group 1, 12 / 237 (5.06%) patients in Group 2 and 0 / 97 patients in Group 3. Secondary injury was noted to be 9, 10 and 4 in the three groups respectively. Statistically fewer patients in group 3 achieved the primary end point than those in group 1 (fisher's exact $p=0.0011$) The tegner activity scale demonstrated clinically significant improvement in function in patients undergoing internal bracing and LET when compared to those undergoing generation 1 internal bracing $p<0.05$ (ANOVA). Conclusion. The addition of second generation internal bracing and an LET to augment ACL-R has led to clinically significant improvement in outcomes.

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The management for recalcitrant dislocation after reverse total shoulder arthroplasty: two case reports

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Shoulder & Elbow Short Free Papers, MR 6, September 25, 2024, 13:30 - 14:30

Introduction: Postoperative instability following reverse shoulder arthroplasty (RSA) is a common complication and continues to pose a clinical challenge. Currently, there are no specific methods available to address patients with this condition. In this study, we presented two cases of recalcitrant dislocation following RSA. Methods and results: Between 2014 and 2023, we conducted a retrospective search for reverse total shoulder arthroplasties (RTSAs) performed at our institution by a single surgeon employing a consistent technique. We identified instances of postoperative dislocations or symptoms of instability. Out of 182 patients who underwent RTSAs, two patients experienced recalcitrant dislocation. In these two patients, the preoperative diagnoses were an acute proximal humerus fracture in one case, while the other had a fracture malunion. One dislocation occurred after 3 weeks, while the other occurred after 2 weeks, with no apparent traumatic event preceding either incident. All dislocations required operating room intervention initially; none were successfully managed with simple closed reduction in the Emergency Room. Despite liner augmentation in both cases, dislocation persisted. Ultimately, open reduction followed by immobilization with a brace for 4 weeks was performed in there two patients. Following the last surgical intervention, none of the patients experienced subsequent dislocations. Conclusion: Recalcitrant dislocation following RSA remains a complication with limited salvage options. Open reduction followed by immobilization with a brace for 4 weeks may be a viable solution for recalcitrant dislocation.

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Comparison Between Osteosynthesis And Arthroplasty In Radial Head Fractures

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Shoulder & Elbow Short Free Papers, MR 6, September 25, 2024, 13:30 - 14:30

Optimal treatment strategies for radial head fractures remain a subject of debate and continue to challenge orthopaedic surgeons. We compared the results of radial head arthroplasty and osteosynthesis.

Between 2018-2022 identified patients with radial head fractures treated with osteosynthesis and arthroplasty. Studied mechanism of injury, classification of fracture, complications, type of osteosynthesis and configuration and revision surgery needed. Patients were evaluated regarding the Mayo Elbow Score, VAS for pain, Satisfaction score and ROM at a medium follow up of 12 months.

35 patients were enrolled in the study, 10 with simple fracture pattern and 25 with complex ones. 22 patients submitted to osteosynthesis (33% needed a revision surgery) and 13 to arthroplasty (28% revision surgery), no significant differences encountered. 33% complication rate reported in both subgroups. Regarding the Mason classification for fractures submitted to osteosynthesis there was 2 type I, 11 type II, 6 type III and 3 type IV and 7 type III and 6 type IV were submitted to arthroplasty. In the osteosynthesis group the medium Mayo Elbow Score was 84.82 and in the arthroplasty was 71.67, the VAS score for pain was 2 and 3.5 respectively, no statistically significant differences. Regarding the ROM it was complete in 36.4% in the osteosynthesis subgroup and in 16.7% in the arthroplasty.

Rates of arthroplasty were significantly higher in the context of associated injury and consequently the final ROM obtained was significantly lower in the subgroup submitted to arthroplasty. Regarding the need for revision surgery no statistically significant differences were encountered.

Immediate and short-term results of treatment of patients who underwent primary reverse shoulder arthroplasty with glenoid plane correction

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Purpose of the study:In reverse shoulder arthroplasty, positioning the components in the correct position is important. Our study assessed the results of treatment of patients requiring glenoid correction. Materials and methods: Retrospective study. Since October 2019, one surgeon has performed 97 implantations of shoulder joint endoprostheses, 39 of which involved correction of the scapular plane. Eccentric rimming – 10 cases, BIO-RSA plastic surgery – 14 cases, correction with titanium augment – 15 cases. Shoulder function was assessed by DASH, UCLA, and Constant-Murley preoperatively and at 6, 12, and 24 months postoperatively. Results and discussion: At follow-up 1 year after surgery, 26 cases were tracked. Of these, after 6 months, an improvement in function is determined by an average of 36.98 DASH points, 32 Constant-Murley points, and 11.6 UCLA points. 1 year after surgery, there was an improvement in function by an average of 41.73 DASH points, by 34 Constant-Murley points, by 11.9 UCLA points, which better results in patients without axis correction. During the entire observation period, there were no cases of instability of the endoprosthesis, infectious or other complications. Depending on the correction method, the degree of influence of “notching” was lower in the groups using augments and BIO-RSA than with rimming. Conclusions: To implant a reverse endoprosthesis in the correct position, it is necessary to take into account the position of the glenoid plane. We attribute the positive clinical results of treatment to the implantation of the scapular component in the correct position.

Analysis of Fracture Morphology of the Isolated Greater Tuberosity Fracture Associated with Shoulder Dislocation

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Isolated greater tuberosity (GT) fracture of the humerus has comprised 14% of proximal humerus fractures. However, which factors may affect shoulder dislocation with GT fracture is rarely established. Hence, we investigate fracture morphology to confirm the correlation between shoulder dislocation and GT fracture. We performed a retrospective study and evaluated 3D-CT in 132 cases of GT fractures, which developed from May 2011 to August 2015. Fracture morphology was evaluated 3D-CT. GT fracture was divided into anterior (supraspinatus insertion), middle (infraspinatus insertion), posterior (teres minor insertion), and fracture morphology was classified as avulsion (A), split (S), and depression (D). Two or more fracture fragments were defined as comminuted (C). Confirmed shoulder dislocation cases by x-ray were 40 cases (Group A) (27.3%). Anterior A, middle and posterior S (type 1) were 19 cases, and anterior CS and middle and posterior S (type 2) were 10 cases, and anterior and middle A (Type 3) were 10 cases. One case was the posterior S type. Shoulder dislocation was not confirmed in 92 cases (Group B), and types 1 and 2 were only 2 and 1 cases, respectively. There were statistically significant in types 1 and 2 between the two groups ($p<0.001$). Type 3 in group B was 32 cases, and statistical significance was not found between the two groups ($p=0.132$). This study showed that types 1 and 2 were highly associated with anterior shoulder dislocation. Therefore, these fracture patterns should be evaluated carefully with an MRI scan to find other shoulder pathology.

The Copenhagen Classification System for Distal Humeral Fractures is useful to identify patients who may require treatment with hemi- or total elbow arthroplasty

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Background: The purpose of classifying distal humeral fractures is to assist the surgeon in selecting the most appropriate treatment. Currently, there is a controversy regarding the reliability of classification systems for distal humeral fractures. The purpose of this study was to introduce a simple and clinically applicable classification–The Copenhagen Classification of Distal Humeral Fractures (CCDHF) and to compare the inter- and intra-observer agreement for this classification with the AO/OTA, and Sheffield classification systems. The primary objective of the new classification system is to distinguish fractures that may not be suitable for open reduction and internal fixation (ORIF), necessitating treatment options such as elbow hemiarthroplasty(EHA) or total elbow arthroplasty(TEA).
Materials and Methods: This is a single-center observer study. Five consultant elbow surgeons assessed a consecutive series of 105 sets X-rays of distal humeral fractures on two occasions with ten weeks interval. All X-rays were classified according to AO/OTA, Sheffield, and the CCDHF systems. The CCDHF system has been developed collaboratively by a panel of five experienced elbow surgeons. Based on consensus, the surgeons identified specific fracture characteristics where EHA or TEA might be needed.
Results: The mean inter-observer agreement was fair for AO/OTA classification and moderate for Sheffield and CCDHF. The mean intra-observer agreement was moderate for AO/OTA classification and substantial for Sheffield and CCDHF. Conclusion: The CCDHF demonstrated validity and clinical applicability, showing a moderate level of agreement among observers. The CCDHF can be used to assist surgeons in identifying fractures that may require treatment with EHA or TEA.

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Clinical Outcomes Of A Novel ‘all-Suture’ Fixation For Valgus Impacted Proximal Humeral Fractures (PHAST: Proximal Humerus All-SuTure fixation)

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Objective
Conventional techniques for the fixation of displaced proximal humeral fractures include the use of locking plates, intramedullary nailing, hemiarthroplasty, and reverse shoulder replacement. Valgus impacted fractures are a common subtype of proximal humeral fracture, but there is limited published work on outcomes of treatment. This study aims to review outcomes following an ‘all-suture’ technique for this fracture subtype without the use of trans-osseous sutures.

Design and Methods
All patients over the age of 18 who presented with 3- or 4-part valgus impacted proximal humeral fractures and who underwent ‘all-suture’ repair at our centre were included. We reviewed their post-operative imaging and collected data on post operative complications and patient reported outcome measures.

Results
We identified 15 patients who had undergone all suture fixation. The cohort’s mean age was 56 and 11 patients were female. Eight patients had 3 part fractures and seven patients had 4 part fractures. There were no major post-operative complications. All fractures united successfully. The mean Oxford Shoulder Score was 43.7 and the mean Single Assessment Numerical Evaluation score was 85.9 at final follow up.

Conclusion
Our results suggest that all suture fixation of proximal humeral fractures presents an attractive alternative to conventional techniques, whilst avoiding complications relating to metalwork implantation.

Effect of bidirectional bone grafting under arthroscopy for reverse hill-sacks injury

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Objective: Reverse hill-sacks injury is more common in posterior dislocation of shoulder joint. It is difficult to treat the joint by traditional incision method. In this paper, we discuss how to obtain better clinical effect by arthroscopic shoulder bone grafting from the iliac bone.Methods: Arthroscopic operation under general anesthesia was performed in lateral position, posterior, anterior and anterior superior approaches were taken, bone bed was cleaned, glenoid and humerus skull defects were evaluated, iliac bone was taken, and the corresponding correction was made for use. Rivet was inserted into the glenoid bed and humerus skull defect, and the bone graft was inserted over the tail line, and then the bone block was sent into the defect and fastened. Postoperative follow-up.Results: The preoperative UCLA score was 11.50±1.8, and the follow-up score was 28.80±2.7. Active shoulder joint abduction was 33.20°±15.80 before surgery and 141.35°±9.25 during follow-up. The differences were statistically significant.Conclusion: Traditional incision surgery for patients with reverse hill-sacks bone defect requires two anterior and posterior approaches, which is difficult to reveal and traumatic. In this study, the patient underwent arthroscopic surgery. The iliac bone from the body was transplanted into the bone defect area and fixed with rivets and stitches. We found that this fixation method was reliable and easy to operate. In addition, arthroscopy can comprehensively examine the intraarticular lesions, and at the same time, comprehensive treatment can be performed under arthroscopy to achieve better results.Key words: reverse hill-sacks injury, bone defect, bidirectional bone grafting, arthroscopy

Screening prediabetes in adhesive capsulitis patients: Should HbA1c Be Used as a diagnostic approach?

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Shoulder & Elbow Short Free Papers, MR 6, September 25, 2024, 13:30 - 14:30

Introduction: Prediabetes is a metabolic disorder with elevated glucose levels but not high enough to be classified as diabetes. There is a varying prevalence of prediabetes in adhesive capsulitis (AC) patients (8%-48%). Aim: To evaluate the prevalence of prediabetes in patients presented with shoulder AC. Methods: This is a prospective study with patients diagnosed of shoulder AC. According to medical history patients included as normoglycemics and diabetics. Fasting plasma glucose (FPG) levels and glycosylated hemoglobin (HbA1c) have been determined, knowing that ADA (American Diabetes Association) defines prediabetes as: FPG ≥100 o <125 mg/dL or HbA1c level of ≥5.7 to <6.5%. Patients were evaluated as range of motion(ROM), Visual Analogue Scale(VAS) for pain, and Shoulder Pain and Disability Index (SPADI). Results: Between 2021-2022, 82 consecutive patients diagnosed with primary AC. Mean age 58 years (28-75), 57% women and 52 % left-shoulder. Initially, 59 patients were normoglycemic and 23 were diabetics. Considering FPG: only 11,9% patients were prediabetics, but considering HbA1c: 50% of the participants were normoglycemic, 21,9% were prediabetics, and 28,1% were diabetics. The difference in mean HbA1c between the 3 groups was statistically significant ($P < 0.01$). No significant differences in age, gender, FPG, ROM, VAS, SPADI between the groups. Prediabetic patients have been referred to the Department of Endocrinology. Conclusion: There is a high prevalence of prediabetes (21,9%) in patients diagnosed with AC, initially considered as normoglycemics. HbA1c is an effective tool to detect prediabetes, meanwhile FPG estimation is not. Screening for prediabetes in AC patients should be performed.

Radiofrequency denervation in treatment of pain syndrome after reverse shoulder arthroplasty.

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Introduction: The suprascapular nerve provides up to 70% of the sensory innervation of the shoulder joint; branches extend from it to the acromaclavicular joint, the capsule of the shoulder joint, the supraspinatus and infraspinatus muscles, providing pain and proprioceptive sensitivity. The high efficiency of the radiofrequency denervation technique in terms of relieving pain in the shoulder joint, and, at the same time, the small number of scientific works devoted to the use of the technique in patients who have undergone reverse shoulder arthroplasty, determines the relevance of this study. Methods: At the FSBI «NMRC TO named after N.N. Priorova» of the Ministry of Health of the Russian Federation, radiofrequency denervation was performed on patients who had undergone reverse shoulder arthroplasty and had chronic pain syndrome. The follow-up period was 12 months. The criteria for inclusion of patients in the study were an anamnesis of reverse shoulder arthroplasty, the presence of incurable chronic pain syndrome, and the absence of absolute indications for revision surgery on the shoulder joint. The absolute criteria for excluding patients from the study was the presence of postoperative complications in the operated patients (infectious complications, instability and conflict of components). Results: Patients who underwent radiofrequency denervation of the suprascapular nerve were observed. All patients had a persistent positive effect throughout the entire observation period. Motor denervation of the shoulder joint was not observed in any of the patients. Conclusion. During the study, the developed RFD technique proved its effectiveness in relieving pain after shoulder arthroplasty.

Reverse total shoulder arthroplasty for proximal humerus fractures in the elderly

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Introduction: Proximal Humerus Fractures (PHF) is the 3rd most common fracture in patients >65 years old, occurring mainly in women. Most can be treated conservatively, however displaced multi-fragmented fractures are associated with a poor prognosis. The use of Reverse Total Shoulder Arthroplasty (RTSA) is increasing and has revealed satisfactory and reproducible results. Methods: Single-center retrospective study of patients treated between 2020-2022. Inclusion criteria: diagnosis of PHF, RTSA surgery, >65 years old. Demographic and clinical parameters were analyzed. Results: 46 patients were included. Mean age was 77.4 years. All patients were women. Dominant arm was affected in 63.6%. Mean follow-up time was 22 months. Mortality rate was 10.2%. 22 shoulders were clinical evaluated. Mean Constant-Murley score was 51 points and QuickDASH score was 29 points. Mean range of motion was 110,2º flexion, 36.8º extension, 87.9º abduction, 25.6º external rotation and 3,8º internal rotation. Discussion: Population evaluated and clinical results were similar to those reported in the literature. Mean subjective evaluation of Constant-Murley score was 28.1, presenting an important degree of satisfaction. Regarding mobility, the loss of external rotation and internal rotation compared to the contralateral is evident, however 68.1% of cases report being able to maintain their daily activities without major limitations. Conclusion: The study concludes that RTSA is a satisfactory treatment option for PHF in the elderly. Our hospital center has results comparable to those described in the literature.

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Three-part fracture dislocation and Four-part fracture dislocation of the Proximal humerus:

How different are the gleniod labrum and capsular injuries between them ?

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Background: Study aims to observe the possible association of capsular and/or labral injuries and their correlation with radiological features in 3 and 4 part anterior fracture dislocation of the shoulder.
Methods: The Clinic-radiological data of patients underwent ORIF for 3 and 4 parts anterior fracture dislocation were collected: Neer's type, fracture morphology, type of anterior dislocation and intra-operative finding about glenoid
labrum and/or capsule.
Results: Based on Neer's classification, 12 patients had 3-part
anterior fracture dislocation (3-part Group) with a mean age of 34±9 years, while 12 patients had 4-part anterior fracture dislocation (4-part Group) with a mean age of 46±7 years (p=0.001). 10 patients had subcoracoid type of dislocation in the 3-part Group, whereas preglenoid dislocation observed in 9 patients from 4-part Group (p=0.003). The head position was at a mean distance of 1.85 cm from the anterior glenoid rim in the 4-part Group, whereas the head was engaged at the anterior rim of the glenoid in the 3-part Group. The medial metaphyseal beak was present only in the 3-part Group (p=0.001). 92% of the included patients in our study had capsulo-labral injury. 11 patients in the 3-part Group had labral injury, whereas 10 patients in the 4-part Group had capsular stripping (p=0.001).
Conclusion: The 3-part fracture dislocation, long medial metaphyseal beak and subcoracoid type of dislocation had a strong association with labral injury, whereas the 4-part fracture dislocation, preglenoid type of dislocation and absent metaphyseal beak had a strong association with a capsular.

Custom Distal Humeral Replacement With Locked Flange To Manage Massive Distal Humeral Bone Loss In Re-Revision Total Elbow Arthroplasty

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Introduction: Management of bone loss in both primary and revision total elbow arthroplasty (TEA) is surgically challenging. Techniques used include mega prosthesis, large segment allograft struts +/- allograft prosthetic composites. These techniques have high complication rates. We present a novel solution of salvage TEA using a custom Intramedullary humeral prosthesis with a locking flange.
Methods: We prospectively reviewed data on 11 complex cases performed between 2017 and 2023. Electronic patient records, clinic letters, surgical logbook and the patient recorded outcome measures (PROMS) database were reviewed.
Results: All eleven cases were revisions of previously failed prostheses. Mean age was 64 (range 40-75). The mean number of previous arthroplasty procedures per patient was 6 (range 3-10). At a mean follow up of 29 months (range 2-81) ten of eleven prostheses remain fully in situ; however all humeral components remained well fixed. Clinical satisfaction was high with an improvement in visual analogue scale pain (VAS) from 8 to 1 postoperatively. Average function (SANE score) improved from 21% to 75% post-operatively. Oxford Elbow Scores improved from an average of 11 to 32. EQ-5D index improved from an average of 0.5 to 0.6. At most recent follow up there was no evidence of progressive radiographic lucency in any implant. One patient had the ulna component removed post-operatively for continued infection and remains on antibiotic suppression. The humeral component remains well fixed.
Conclusion: When faced with extensive humeral bone loss, customised distal humeral replacements with a locking flange offer an alternative solution with acceptable medium-term outcomes.

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Treatment of proximal humeral fractures with internal fixation and injectable calcium phosphate cement(CPC) in eldery patients

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Objectives: To evaluate the effect of the treatment of proximal humeral fractures with anatomic locking compression plate(LCP) and injectable calcium phosphate cement(CPC) in eldery patients.
Methods: From March 2021 to July 2023,Twenty-eight eldery cases of proximal humeral fractures were treated
with open reduction and interna1 fixation with anatomic locking compression plate,and meanwhile filled bone defect with calcium phosphate cement by injection.
Results: All patients were followed up for 5 to 14 months (average,12.3months).All patients obtained bone union after 12 to 18 weeks(average,16.6 weeks).The Constant-Murley scores was59~100(average,87.3). According to Hardegger shoulder score, 20 patients were excellent,3 good,4 fair,and 1 poor.The excellent to good rate was 82.1%.
Conclusion: LCP and injectable CPC in the treatment of proximal fractures in eldery patients promotes bone healing, allows early function exercise and has satisfactory clinical effect.
Keywords: Locking compression plate(LCP);Calcium phosphate cement(CPC);Bone substitutions; Proximal
humeral fractures

Surgical tratment of acromioclavicular dislocations: horizontal stabilization - does it really matter?

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Introduction: Surgical treatment of acromioclavicular dislocation is indicated mainly in high demand patients with horizontal and vertical instability. There are a lot of techniques to stabilize the joint but there is now evidence that an horizontal stabilization is important to decrease complications and revisions. The goal of this study was to compare only vertical stabilization (VS) with horizontal and vertical stabilization (VHS) in the treatment of this patients. Methods: Retrospective study including all patients that underwent to surgery for acromioclavicular dislocation in our hospital between 2020-2023. Inclusion criteria: Acute dislocation (<6 weeks), horizontal instability (Rockwood IIIB/V) and arthroscopic surgery. Exclusion criteria: Associated fracture. Statistics was made with IBM SPSSv29 (statistically significant difference $p<0,05$). Results: 27 patients, 89% men, mean age 43yo. 22% grade IIIB and 78% grade V. In 66% was made VS with double button and in 33% was added horizontal stabilization with non-absorbable suture in transosseous tunnels (acromion and clavicle). Mean time to surgery 10 days. From those with VS, 28% went to revision and in the VHS group none went to revision ($p<0,01$). Discussion: A mild loss of reduction occurs in a lot of patients with no difference between VS and VHS and there is no clinical issues. As with current literature, we verified that the system fails more with VS only, with no revision surgery in the group with VHS. Conclusion: In the treatment of acromioclavicular dislocations, horizontal stabilization is a determinant issue in preventing loss of reduction due to system failure and a revision surgery.

Infectious spondylodiscitis simulating a symptomatic herniated disc: diagnostic pitfalls

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Introduction: MRI is the best exam for analysing the intervertebral disc and detecting disco-vertebral infections. In some cases, MRI can lead to a false diagnosis. Presentation of the case: A 28-year-old man presented with progressively right L5 lumbosciatica, resistant to medical treatment, with no sensory-motor deficit. MRI was consistent with an intraspongiosa herniation of the superior plateau of L5 with a right paramedian L4-L5 disc herniation. The patient underwent a hemi-laminectomy L5. Intraoperatively, we noted a discharge of pus and the presence of infected tissues; intraoperative samples were negative. At one month post-operatively, the evolution was marked by the appearance of a swelling opposite the operative scar with reappearance of low back pain. MRI showed the appearance of infectious SPD at L4L5 and L5S1, with multiple epidural collections, one of which extended subcutaneously. The patient was taken for surgical drainage of the collection. PCR was positive for Mycobacterium tuberculosis. The patient was put on anti-tuberculosis treatment with a good clinical-biological evolution. Discussion: The radiological diagnosis of disco-vertebral infections is based essentially on MRI. Gadolinium injection increases the resolution of MRI and generally makes it possible to distinguish an infectious process from degenerative phenomena. Furthermore, in some cases, for Modic type 1 vertebral plateau signal changes, bone oedema gives a hypo-signal T1 and hyper-signal T2 appearance. These changes are not specific and may be difficult to differentiate from an infectious process. Some authors suggest disco-vertebral puncture to distinguish between a disco-vertebral infection and a degenerative process.

Spinal tuberculosis - a reemerging threat for the spinal column -

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Spinal tuberculosis, a form of extrapulmonary tuberculosis affecting the spine, has reemerged as a significant medical challenge in recent years. This reemergence can be attributed to factors such as increased global travel, migration, HIV co-infection, and the emergence of drug-resistant strains of Mycobacterium tuberculosis. Pain throughout the spine, neurological impairments, and deformities are some of the signs of spinal tuberculosis, which can cause serious morbidity if left undiagnosed and untreated.

Because of the nonspecific symptoms and the requirement for a high index of suspicion, early diagnosis is still a major difficulty. The diagnosis of spinal tuberculosis is greatly aided by imaging modalities such as MRI, which make hallmark signs like spinal cord compression, paravertebral abscess formation, and vertebral degradation visible. Generally, patients get treatment for a long time with a mixture of antitubercular medications; in cases of severe deformity or neurological damage, surgery is frequently included as a complement.

Improving diagnostic methods, raising public awareness, and guaranteeing access to high-quality medical care are all part of the fight against spinal TB, particularly in areas with low resources. Efforts to combat spinal tuberculosis include improving diagnostic algorithms, promoting public awareness, and ensuring access to quality healthcare services, especially in resource-limited settings. Collaboration between healthcare providers, researchers, and policymakers is essential to effectively address this reemerging threat and reduce its impact on global health.

We’ve conducted a literature review of spinal tuberculosis papers in Pubmed, Google Schollar and NCIB from 2016 to 2023.

metabolic disorders of bone tissue in patients with chronic osteomyelitis of long bones

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Abstract: Bone metabolism disorders are important pathophysiological component of chronic osteomyelitis (OM), including OM of the long bones. Gram-positive and gram-negative pathogens influence bone remodeling in a large spectrum of ways. Study of metabolic changes of the bone tissue in patients with OM is important for developing proper treatment strategy. Methods: 112 adult patients participated in a randomized cohort study. Both groups (control and main group, each N=56) received operative treatment of chronic osteomyelitis of long bones (humerus, femur, tibia) with antibiotic therapy. The main group received etiotropic metabolic disorders therapy according to laboratory test results. Bone metabolism was evaluated 1 week before treatment and 3 months postop, as follows: blood calcium, ionized calcium, phosphates, parathyroid hormone (PTH), 25-hydroxy-vitamin D, bone alkaline phosphatase, osteocalcin, b-cross-laps; urine calcium, phosphates, resorption marker DPID deoxypyridinium (DPD) to creatinine ratio (DPD/Cre ratio). Statistical comparison was made using IBM® SPSS Statistics 26 using Mann-Whitney U-test. Bone metabolism markers and consolidation time were evaluated. Results: in main group higher levels of osteocalcin were discovered (p=0.043), as well as lower PTH levels (p=0.043) and lower DPD/Cre ratio (p=0.041). Consolidation time for all anatomic segments was lower in the main group (humerus: 0.041; femur: 0.009; tibia: 0.041). Results indicate that during treatment the elevated bone resorption is partially inhibited towards physiological level, helping to preserve bone tissue during infection process. Metabolic disorders therapy can be considered an important part of complex treatment of chronic osteomyelitis of long bones.

Anterior approach to the upper thoracic spine – Elegant and painless.

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Introduction: Anterior approach to the upper thoracic spine serves as an advantage in direct access to the lesion, decreased intra-operative bleeding, lowering the risk of infection and eliminating use of posterior or combined approaches. Isolated anterior approach should be chosen very selectively to deal with upper thoracic pathology as it is a non-extensile approach. We retrospectively looked at patient's with lesions involving T1 to T3 levels which were approached anteriorly. Methods: Retrospective study of 4 patients who underwent surgery of pathology in T1 to T3 vertebrae. Inclusion criteria: Pathology of T1 to T3 vertebrae, symptomatic and radiological evidence of cord compression. Exclusion criteria: Lesions involving C7-T1. Discussion: Our observations were that the approach was quick, bloodless and allowed good vision of the pathology of the spinal cord. However patient selection with respect to thoracic kyphosis, level of the sternum in relation to the pathology, orientation of the affected disc in relation to the vertical and versatile implant availability were key to achieve a successful result.

Management of diaphyseal septic non-union of tibia and femur with - artisanal centromedulary nail coated with specific antibiotic loaded cement

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Backround: Artisanal coated intramedulary standard nails with a layer of antibiotic cement were used for osteosynthesis of the tibia or femur that had septic non-unions: case report series. Objectives To cure the septic non union, and mal-alignment with cement-antibiotic coated crafted nails in septic diaphyseal non-union of the tibia and femur. Methods: We operated 12 cases with tibial or femoral septic non-union. Four cases had severe malalignment (10 degrees-30 degrees). After debridement and reaming of the bone in excess by 4 mm thicker than the desired nail diameter, we performed the synthesis with cemented nails. We manually coated the intramedullary standard nails with a layer of antibiotic cement, efficient for the patient germs. In the cement, in 9 cases we added Vancomycin 2 g / dose and in 3 cases we used standard Erythromycin and Gentamicin cement. In 10 cases we were able to lock the cemented crafted nail. Results: Healing of the nonunion was achieved in all cases and restoration of alignment was obtained in 11 cases. In 4 cases we have added hydroxyl apatite locally preloaded with Tobramycin. Clinical and laboratory criteria confirmed the absence of sepsis. We were confident to extract the implant in only 4 cases. Conclusions: Good results have been obtained with this cement-antibiotic coated crafted nails in septic diaphyseal non-union of the tibia and femur. The one-step surgery managed to solve the non-union, septic, and malalignment. Our experience is limited, but in the future, it could be a valuable method.

Characteristics, diagnosis and treatment experience of Brucella spondylitis in non-endemic areas: a retrospective study in Guangdong Province, China

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A retrospective study was conducted on 32 patients with Brucella spondylitis between January 2015 and December 2022 at the Third Affiliated Hospital of Southern Medical University in Guangzhou of China. All the data was analysed including their medical history, clinical manifestations, laboratory indicators, imaging data, bacterial culture results, treatment plans and follow-up outcomes. We found that a low diagnostic rate of Brucella spondylitis was demonstrated in non-epidemic areas, especially in grassroots hospitals. Patients in these areas shared similarities with those in epidemic areas in terms of age, gender ratio, and urban-rural sources. However, there were differences in infection risk factors. In non-epidemic areas, foodborne infections were predominant (71.87%), with a relatively high proportion of non high-risk occupational groups (62.50%). Inflammatory pain (96.88%), neurological symptoms (50.00%), and fever (37.50%) were the most common clinical symptoms, with fewer fever cases and atypical intermittent fever. The positive rates of blood culture (54.5%) and lesion puncture culture (55.56%) were not particularly high. MRI examination is crucial for early diagnosis and differential diagnosis of diseases. The lumbar spine (56.25%) and lumbosacral region (18.75%) were most commonly affected, with a relatively mild degree of intervertebral space stenosis. It has been shown that conservative treatment was not only effective in many cases, but also reduced the economic burden on patients. Besides, surgical intervention was considered necessary, for patients with worsening symptoms of spinal cord/nerve compression as well as spinal instability caused by vertebral destruction.

Debridement and fusion combined with short-segment screws and rod fixation through anterolateral mini-access for the treatment of thoracic or lumbar infection

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Introduction: To evaluate the feasibility, efficacy and safety of debridement and fusion combined with short-segment screws and rod fixation through anterolateral mini-access for treatment of thoracic or lumbar infection. Methods: 48 patients with single segment thoracic or lumbar infection from December 2019 to January 2022 were included. There were 42 cases of tuberculosis (TB), 2 cases of brucellosis, 4 cases of escherichia coli. They underwent the fusion using cortical iliac bone, titanium mesh or cage abscess and short-segment screws and rod fixation through anterolateral mini-access after the abscess, infected and necrotic tissue were completely removed under direct vision. Operative duration, blood loss, incision length and hospital stay were recorded. Pre- and postoperative visual analog scale (VAS) pain scores, Oswestry disability index (ODI), complications and images were also recorded. Results: There were blood loss of 280(35-450) ml, operative duration of 173(95-206) min, incision length of 52±11cm and hospital stay of 6(4-8) days. VAS scores significantly dropped postoperatively ($P<0.001$) and ODI significantly decreased 2 years after surgery ($P<0.001$). No complication was found. Conclusion: Debridement and fusion combined with short-segment screws and rod fixation through anterolateral mini-access is a feasible, efficient and safe method in treating single segment thoracic or lumbar infection. It shows advantages of less surgical trauma and faster postoperative recovery.

Modified Masquelet technique with customised cement spacer for infected non union of humerus shaft fracture – A Case Report

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Introduction: Infective bone defect treatment in fractures is a challenge in modern orthopaedic surgery. Alain Masquelet described a 2-stages procedure in which a membrane is induced and formed around the bone defect. Using this technique, Masquelet and others described complete bone healing and restoration of limb function in several clinical cases. Case Report: A 47-year-old female patient who presented with pain, swelling, and a discharging sinus over her Right arm for 20 days following a road traffic accident resulting in a Fracture shaft of right Humerus managed with open reduction internal fixation with plate osteosynthesis. Immediate post op she developed discharging sinus and was subsequently diagnosed with an infected implant with implant failure. Patient underwent Emergency wound debridement with excision of avascular infected bone and external fixator application with appropriate antibiotic therapy. Patient had persistent discharge over the surgical site necessitating a secondary wound debridement with customized antibiotic cement spacer made with 20 cc syringe. After 2months patient underwent procedure for antibiotic spacer and fixator removal with plate osteosynthesis with Fibular strut and Iliac graft. Result: Patient was followed up for 2 years with no functional disability and return to her daily activities. Conclusion: This case highlights the challenges encountered in the management of complex surgical site infections with a multi-stage approach by Modified Masquelet technique and a customized antibiotic cement spacer using 20cc syringe for cylindrical shape of the humerus.

Rare encounter: elbow arthritis as initial presentation for tuberculosis infection

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Introduction: Tuberculosis (TB) infections of the musculoskeletal system are uncommon. While it may affect any joint,, TB of the elbow is a rare condition, particularly as the presenting symptom. Results: A 47-year-old man visited urgent care multiple times over 2 months with atraumatic elbow pain. Physical examination revealed swelling and skin ulceration with sero-hematic discharge. The patient had no history of consumptive symptoms and had not recently traveled. Laboratory findings showed negative leukocytosis and CRP. Imaging displayed extensive signs of bone destruction. An open arthrotomy with irrigation and debridement was performed. Histological and bacteriological examination confirmed osteomyelitis caused by tuberculosis. The patient followed a standard first-line oral regimen for extrapulmonary TB for a year. Two years later he reported clinical improvement and had resumed his professional activity with a satisfactory range of motion. Discussion/Conclusion: Elbow TB is insidious and delayed diagnosis leads to cartilage destruction, progressive joint deterioration and ultimately subluxation and ankylosis.One of the primary challenges lies in the differential diagnosis of chronic atraumatic elbow pain. Besides infection, a wide array of more common pathologies, such as inflammatory, autoimmune, or even tumoral conditions, must be considered. Furthermore, TB represents an uncommon infectious etiology, especially in non-endemic areas, with elbow arthritis serving as an unusual initial presentation. Anti-TB drugs are the mainstay of treatment; nevertheless appropriate surgical interventions may be required. This case underscores the importance of considering TB as a potential diagnosis: early recognition and prompt management are paramount in preventing complications and improving patient outcomes.

Dry Potts' spine - Is it an outlier in management of spinal tuberculosis: A systematic study

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Introduction: Tubercular-spondylodiscitis is a common infection in developing nations. It presents as chronic backache, with/without constitutional symptoms and neurological deficit. The treatment constitutes medical management with anti-tubercular therapy for 12-24 months depending on the sensitivity pattern, with surgical management being reserved for complications like increasing kyphosis, instability, or progressive neurodeficit. On radio-pathological examination, two predominant forms are known – the dry and the wet type. Wet forms have abscess formation as their predominant radiological presentation, whereas dry forms include caseation and sequestration with minimal exudation. We hypothesize that patients with dry lesions, even without significant mechanical compression, show poor neurological recovery even with surgical management, in addition to anti-tubercular therapy. Methods: Single-centre patient data of 6 years was analyzed and a retrospective, observational cohort study was performed. Out of 217 patients, 18 patients with dry Koch’s spine (Group 1) and 27 patients with wet Koch's spine (Group 2) were found, and their clinico-radiological parameters were compared. Results: Dry variety showed partial or no return to ambulation (55.5%, versus 14.8% in wet) at 12 months, and took more time to reach the final ambulatory level, despite having a lesser average Cobb’s angle (17.37 degrees, versus 28.99 degrees in wet), lesser mean canal-encroachment (28.33%, versus 43.62% in wet) and preserved posterior-CSF flow as compared to wet-type ($p<0.05$). Conclusion: Dry lesions of tuberculous-spondylitis are likely to have a poor functional outcome, possibly due to vasculitis or tubercular myelitis, rather than isolated mechanical compression, leading to neurological deficit non-responsive to therapy.

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Diagnostic difficulty of femoral hydatid cyst : a case report

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Background : Osseous ecchinococcosis is uncommun, rendering its diagnosis challenging and confusing with other diseases such as bone tumors. This work aims to display the difficulties in diagnosing such condition. Observation : A 54-year-old farmer has been experiencing mixed mechanical and inflammatory pain in the left knee for 2 months. Clinical examination reveals a complete but painful range of motion of the knee. Standard radiography and MRI results show a heterogeneous osteolytic metaphyseal-diaphyseal distal image spanning a length of 33 cm, with medial periosteal reaction. Biopsy of the distal femoral metaphysis, performed under lateral crural approch, confirmed the diagnosis of osseous echinococcosis. Discussion : The atypical appearance of hydatid cyst on MRI added to the diagnosis challenge, particularly in presence of lytic bone lesions and periosteal reaction. This unusual presentation could easily be mistaken for other conditions such as primary or metastatic bone tumors, infection and even inflammatory bone diseases. Conclusion : This case underscores the importance of acknowledging the diagnostic difficulty associated with osseous echinococcosis, especially when interpreting MRI findings that may deviate from typical presentations. A holistic approach, including a detailed medical history, thorough clinical examination, and careful interpretation of imaging studies, is essential for achieving an accurate diagnosis and initiating appropriate treatment in a timely manner.

Management Of 40 Cases with Acetabular Defects in Total Hip Arthroplasty And Their Functional And Radiological Outcome

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INTRODUCTION: Total hip replacement in cases with acetabular defects are always challenging. The goal is to provide a rigid fixation of the acetabular cup and restoring the center of rotation of the hip, thus increasing the survivorship. METHODS: A total of 40 cases of acetabular defects have been included in our study. These include post acetabular fractures either treated conservatively or fixation, primary arthritis, post hemiarthroplasty causing protrusion or aseptic loosening in THR, and two cases due to lytic lesions in the acetabulum. All our cases were approached posteriorly. Once the acetabulum is exposed, the defect is quantified. Cases with contained defect, impaction grafting was done. Augmentation was done with either allografts or augments, in cases with posterior or superior uncontained defects and fixed with screws. In cases of medial wall defects, mesh with impaction grafting and cemented cup was used. In cases with pelvic discontinuity with massive bone loss, cup cage construct was done. Trial component with full inherent stability is achieved., which couldn't be displaced by pushing on its rim or by trial reduction. Harris hip score was used for assessment and found to be comparable at one year follow up. Radiological evidence showed good integration of the grafts. DISCUSSION : In any method of augmentation., position of the acetabular cup must be ensured for stability of the acetabular component and restore the centre of rotation of the hip joint. These prevent migration, recurrent loosening and dislocation.

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Bone Stock Preservation and Femoral Stem Offset in Total Hip Replacement

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Appropriate stem offset is of utmost importance in total hip replacement, since it determines the hip forces, range of motion, leg length and implant survival. To preserve the natural hip geometry, preoperative planning is routinely performed. We are using five EcoFit (Implantcast) families of stems with various geometrical features, each family having 10 dimensions. We choose one of the stems with the aim to conserve as much bone stock as possible, i.e. we are planing for the medium head with resection of the neck 1-3 cm above the lesser trochanter, depending on individual situation. Greater volume of bone stock diminishes the incidence of periprosthetic fractures. With our reference mathematical model, we have calculated resultant hip joint force, abductor force, and contact joint pressures depending on the position of rotation center for various stems (offsets). The results are presented in nomograms. We find the five families of EcoFit stems suitable for optimal preoperative planning. Typical mistakes in total hip replacement, i.e. leg elongation and too short stem offset can be avoided. We advise preoperative planning on the contralateral side, since on the side of planned operation the hip tends to be in external rotation, which makes the stem offset falsely shorter. In bilateral cases 5-10 mm elongation should also be planned in order to compensate for the loss of articular cartilage and to restore the original length.

Risk of carcinogenicity related to metallic component of total hip arthroplasty, an observation of 20 years data

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Background: Metal implants have been preferentially used in THA due to its biocompatibility, mechanical stability and durability. Yet concerns have emerged regarding their potential to release metallic ions, leading to long-term adverse effects, including carcinogenicity. This study aimed to investigate the risk of cancer development in patients with orthopaedic metal implants in total hip arthroplasty (THA). Methods: Patients with THA conducted at a local tertiary implant centre from 2001–2008 were linked to the local cancer registry and followed up to the end of 2023. Standardized incidence ratios (SIRs) for cancer incidence and its confidence interval by Poisson distribution were calculated. Survival analysis was depicted using the Kaplan–Meier method, and the log-rank test was used to assess the differences across groups. Results: The study cohort included 388 patients and 53 cancers diagnosed during follow-up, at least 5 years post THA. All-site cancer risks were increased in patients with THA (SIR: 1.97; 95% CI: 1.48–2.46), validated with chi-square analysis (chi-square = 15.2551, N = 100,388, $p < 0.01$). A statistically significant increase in multiple site-specific cancers including haematological cancers were identified. Conclusions: Patients with THA were found to have an increased risk for cancer compared to the general population during a mean follow-up of 16 years.

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Use of CT Angiography and Temporary Balloon Catheter Placement to Prevent Vascular Complication in Case of Revision THR with Intrapelvic Hardware.

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Introduction: Performing a revision THR (Total Hip Replacement) surgery is always challenging. Acetabular cup loosening and intrapelvic migration of hardware close to branches of significant vessels and pelvic viscera makes it more prone to inviting life-threatening complications.
Case Series: We present a case series with intrapelvic migration of hardware in which a CT angiogram was used to find the proximity of hardware to significant vessels. The hardware I e screws placed in acetabular cup were found to be in close proximity to the Internal Iliac artery or its branches esp. Superior Gluteal artery. A Temporary Balloon Catheter was placed in the Internal Iliac artery for temporary occlusion of vessels so as to prevent intraoperative vascular complication. A posterolateral approach was used in both cases to remove the intrapelvic cup. The balloon catheter was inflated just prior to removal of hardware and deflated after removal of cup. No Vascular complication was encountered in any case.
Conclusion: Revision THR comes with miscellaneous intraoperative complications. Pre-operative CT angiogram and temporary occlusion of desired vessels gives the surgeon a liberty to perform such surgeries with ease and also a window period to call the vascular surgeon in case of any vascular injury.

Cementless Acetabular Cup Without Screw Holes achieved excellent survivorship at more than 20 years follow-up

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Introduction: In total hip arthroplasty (THA), cementless cup without screw holes has the putative benefits of maximizing host bone contact and reducing osteolysis by eliminating channels to backside wear particles. However, these theoretical benefits had not been proved previously. Materials and Methods: 74 hips in 60 patients receiving same model of cementless cup without screw holes from 1999 to 2003 were prospectively followed up. All patients were allowed to have immediate full weight bearing. Age at THA was 53 ± 13 years. Survivorship was assessed using revision of the cup as the end point. Radiological parameters, including lateral opening angle, vertical and horizontal migration distances of the cups were measured. Survival analysis is performed. Results: 51 hips were assessed at minimum 20 years follow-up. The mean follow-up was 22.6 (range 21 – 25) years. All the cups were well fixed. There were two cup revisions. Conventional polyethylene (PE) was used in both hips; Peripheral osteolysis occurred 17 and 18 years later. Both cups were well fixed but were revised, one due to cup mal-positioning, one due to need in upsizing the articulation. No cases having osteolysis at back of cups occurred. At 20 years, the survivorship of cups was 96.1%. Changes in lateral opening angle, vertical and horizontal migration distances were 0.44±1.59°, 0.01±1.52mm and -0.32±1.47mm respectively, without statistical significance. Conclusion: This study provided the first clinical evidence of cementless cup without screw holes achieving an excellent long-term survivorship. No cases developed central osteolysis due to its no screw holes design.

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Total Knee Arthroplasty with Plate Osteosynthesis Provides a Reliable Solution for Concurrent Acute Unstable Metaphyseal Stress Fracture and Osteoarthritis

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Purpose: Our aim is to find the functional and radiological outcome of TKA with plate osteosynthesis for acute unstable metaphyseal tibial stress fracture with severe osteoarthritis of knee. Methods: We have analysed acute unstable metaphyseal tibial stress fracture between April 2016 and March 2022. There were 8 patients included in the study group with a mean age of 65 years (range, 52–78 years). All patients had TKA with stem extension and augmentation with plate osteosynthesis and bone grafting. Demographic parameters, vitamin D, duration of complaints was retrieved from medical records. The functional outcome was assessed by the Knee Society Score (KSS) and Knee Society Functional Score (KSS-F). The radiological outcome analysed were tibio-femoral angle, grade of osteoarthritis and fracture union at the follow up. Results: The mean follow up was 3.1 years (range, 12 months to 71 months). The KSS and KSS-F, showed a significant improvement progressing from an initial value of 14.8 ± 6.8 and 23 ± 16.2 to 86 ± 8.7 and 85 ± 10.3, respectively ($p < 0.05$). All the fractures united at an average of 3.8 ± 1.4 months. The mean tibiofemoral angle improved from 18.27° varus to 1.8° valgus. One patient had deep vein thrombosis and one had superficial wound dehiscence that was treated conservatively. Conclusion: In patients presenting with acute unstable metaphyseal tibial stress fracture with severe osteoarthritis, TKA with stem and plate osteosynthesis reliably results in fracture union and gives an excellent functional outcome.

Accuracy of Offset Restoration Comparing Robotic Total Hip Arthroplasty with Manual Total Hip Arthroplasty

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Introduction: One of the purposes for total hip arthroplasty, is to restore hip biomechanics to the patients. Offset is an important parameter to determine hip implant position. Robotic assisted total hip arthroplasty has an important role to improve precision in hip implant position. This study aimed to compare offset parameter of robotic assisted total hip arthroplasty and manual total hip arthroplasty cases.
Methods: A cross section observational retrospective review study was conducted. 51 patients who underwent cementless primary total hip arthroplasty during 2021-2022 at Siriraj Hospital with normal contralateral hip were involved in our study. We grouped the patients into manual and robotic assisted total hip arthroplasty cases then evaluated radiographic parameters and reported functional scores at postoperative 6 months.
Results: There were not significantly difference in all offsets different, leg length discrepancy, cup abduction angle, operative time, blood loss and Modified Harris Hip Score, Hip disability and Osteoarthritis Outcome Score Short Form and The EuroQol 5 Dimension 5 Level at postoperative 6 months between robotic total hip arthroplasty and manual total hip arthroplasty.
Conclusion: Robotic assisted THA was not difference to manual THA in means of acetabular offset different, femoral offset different, global offset different, leg length discrepancy, cup abduction angle, operative time, blood loss and all 3 reported functional score at postoperative 6 months.
Keywords: Offset restoration, Robotic total hip arthroplasty, Manual total hip arthroplasty

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When to nail? – A dilemma in patients with femur shaft fractures with established Fat Embolism Syndrome

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Introduction: Fat Embolism Syndrome (FES) poses a significant challenge in the management of polytrauma patients. While various theories and diagnostic criteria exist, optimal management with regard to time and mode of fixation remains elusive, particularly when FES manifests before orthopaedic intervention. Methods: This retrospective cohort study examined 24 patients with femur fractures and diagnosed FES at a Level 1 trauma centre. Data on demographics, injury details, interventions, time between diagnosis of FES and final fixation, length of ICU stay and outcomes were analyzed. Results: Fixation using unreamed nail was undertaken once key surgical eligibility indicators normalized, including oxygen levels on room air and oxygen, GCS, blood gas picture, hemoglobin, and lactate levels. Mean time to final fixation after diagnosis of FES of 11.17 days. The average postoperative ICU stay was 3.25 +/- 1.75 days. No mortality was noted in the post-operative period and up to 12-months in our cohort. We achieved a union rate >90% without the need for further intervention and no residual complications of FESS or postoperative mortality. Conclusion: FES is an unavoidable complication in femur fractures. Once suspected, such a patient should be managed in an ICU and deemed fit for fixation once haemoglobin, SpO2, lactate and GCS are stable. In our study, these parameters stabilized on the 11th day when we undertook nailing. Also, post-operatively, all our patients were kept in ICU for monitoring. Hence, using our protocol, we found unreamed nail to be a safe option in patients with established FES with femur fractures.

Gait Analysis in Hip Resurfacing at 1 year postoperatively – Comparing Anterior and Posterior Approaches

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Background: Hip resurfacing arthroplasty (HRA) is commonly performed using the posterior approach (POS), which is familiar to most surgeons and allows excellent exposure. POS sacrifices the short external rotators and often the gluteus maximus, which may adversely affect gait. The anterior approach (ANT), which is muscle sparing has been shown to preserve more physiological gait patterns in total hip arthroplasty. Aims: We aim to compare the outcomes of POS and ANT using gait analysis and the Oxford Hip Score (OHS). Methods: Thirteen unilateral ANT and 20 POS HRAs were matched for age, BMI and pre-operative OHS. Patients underwent gait analysis using an instrumented treadmill at an average of 1.5 (0.9-1.8) years post-operatively. OHS were completed pre and postop. Kinematics and kinetics were recorded using motion capture and force plate data. Group differences were assessed using statistical parametric mapping. This data was compared to a group of 19 age, gender and BMI matched healthy controls. Results: Gait analysis revealed ANT group demonstrated significantly more hip adduction and less hip abduction compared to the POS from 25 to 57% (P = .003) of the gait cycle. Statistical parametric mapping revealed no differences in ground reaction forces across the stance phase. Both groups demonstrated similar top walking speeds. Average OHS for both groups postoperatively was 48. Conclusions: The ANT group exhibited differences in frontal kinematics compared to POS but both were within the range of healthy controls. ANT for HRA although technically challenging can produce excellent reported outcomes and restore normal gait patterns.

Characteristics of pelvic obliquity in dysplastic hip osteoarthritis

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Background: Factors affecting direction of pelvic obliquity (PO) in dysplastic hip osteoarthritis (DHOA) remains unclear. This retrospective cohort study evaluates morphological characteristics, spinal alignment, and hip function in patients with unilateral DHOA. Methods: Between 2018 and 2022, 104 patients with unilateral DHA were enrolled. Patients were categorized based on preoperative pelvic obliquity into flat (PO < 2°) (F-PO group), affected side (PO downward by ≥2°) (A-PO group), and unaffected side (PO upward by ≥2°) (U-PO group). Demographics, radiographic hip and lower limb parameters, spinal parameters, and functional scores were compared between the groups. Results: There were 39, 44, and 21 patients in the F-PO, A-PO, and U-PO group, respectively. The subluxation percentage of Crowe classification showed a significant difference among the three groups. The femoral head lateralization distance was significantly greater in the U=PO group than in the F-PO and A-PO groups. Furthermore, the hip adduction angle was significantly lower in the A-PO group than in the F-PO and U-PO groups. The lumbar scoliosis angle was significantly different between the groups. In multivariate analysis, hip adduction angle was extracted as an independent factor associated with the affected side PO. Age, subluxation percentage, and hip adduction angle were identified as independent factors associated with the unaffected side PO. The Japanese Orthopaedic Association hip score was significantly poorer in U-PO group than in F-PO group. Conclusion: The results of this study revealed that the degree of hip contracture and subluxation due to osteoarthritis affect the direction of PO in DHOA.

Preserved Proximal Femoral Bone Stock Volume in Total Hip Arthroplasty Significantly Reduces the Risk for Periprosthetic Fractures. A Novel Modelling Technique.

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Periprosthetic proximal femoral fractures (PPFFs) are one of the main causes for revision after total hip arthroplasty (THA), and are associated with some already known patient-/surgical-/implant-related risk factors. Despite the established increased risk of single and double-wedge femoral implants, the highest incidence in our institution has been observed with the anatomical cementless femoral component Anatomic Benoist Girard (ABG) II. The cumulative probability of PPFFs rose from 2.1% at 1 year to 6.5% at 10 years post-implantation, prompting comprehensive and multidisciplinary analysis. A novel parameter of preserved proximal femoral bone stock volume around implanted ABG II femoral stems (VPF) and the modelling technique for its evaluation on standing anteroposterior (AP) hip radiographs were introduced. Study was designed according to the standard protocol for matched case-control research. In the preliminary analysis, 5 age-/sex-/implant size-/surgeon-matched stratums, each comprising a case and 2 matched controls, were included. To calculate VPF, a mathematical model was constructed by composing parts of rotational bodies and a prism, subject to geometrical parameters of the proximal femur that were assessed from radiographs. The mean value of VPF in the group of cases was 113.9 (21.0) cm3 and significantly lower compared to 164.0 (38.4) cm3 in the control group ($P < 0.01$). Based on the preliminary results, the VPF seems crucial for the PPFFs prevention. The bone stock preservation should be emphasized and considered at all steps, starting from the preoperative planning. The novel parameter in THA, and the method for its evaluation were introduced and are further extensively analysed.

Audit on clinical documentation and radiological assessment in acute shoulder dislocations in a District General Hospital

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Research Short Free Papers, MR 11, September 26, 2024, 08:00 - 09:00

Introduction/Background: Historically, 96% of shoulder dislocations have been attributed to a traumatic episode with anterior dislocation accounting for 97% of these. Traumatic dislocation of the glenohumeral joint is the most common joint dislocation with an incidence of 8.2 to 23.9 per 100,000 per year. Acute Shoulder dislocations can lead to neurological injury and could possibly be missed on a single view Xray.

Aim: The aim of our audit was to check that shoulder dislocations of skeletally mature individuals are managed according to British Elbow & Shoulder Society (BESS) guidelines

-To Check whether there is documented Neuro-vascular(NV) examinations pre and post shoulder reduction

-To Check whether 2 standard X-ray views are done post shoulder reduction to assess the joint congruity

Materials and Methods: Our audit included 46 skeletally mature patients presenting to A& E with shoulder dislocation over period of 6 months from February 2021 until August 2021.

Results: In terms of Neuro-vascular(NV) documentation only 15 patients(32.6%) had both pre &post reduction NV status documented. 41 patients(89.13%) had both views X rays done post reduction.

Conclusion: Although there was good compliance with post-reduction 2 view X rays the compliance with NV documentation was less.

Recommendation: To improve compliance with documentation of NV status (both pre & post reduction) and two view post-reduction check X ray .

Disclosure: No conflicts of interest.

OrthoACCESS: Designing an International Orthopaedic Surgery Curriculum for Medical Students using a Hybrid Flipped-Classroom Model

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Due to limited undergraduate musculoskeletal education, students pursuing orthopaedics do not develop foundational orthopaedic knowledge until their first year of residency. To enhance learning on clinical rotations and ease the transition to residency, we designed OrthoACCESS (Ortho Acting-Intern Coordinated Clinical Education and Surgical Skills), a free, 16-week curriculum on fundamental orthopaedic topics for senior medical students. We sought to evaluate this curriculum's effect on students' orthopaedic knowledge. OrthoACCESS consists of weekly lectures, case discussions, and learning resources. Lectures were presented in-person for students at participating institutions with pre-recorded lectures available for others. Faculty-led case discussions were hosted on Zoom consisting of three case presentations and breakout rooms for discussion. Learning resources (e.g. Anki Cards, scut sheets) were posted to the website (bit.ly/orthoaccess). Registration was open to trainees internationally. The curriculum was evaluated using pre-curriculum, post-case discussion, and post-curriculum surveys. OrthoACCESS was held from June-October 2023 with 226 student registrants. 15% of students were from outside the U.S. 40 students attended at least 8 case discussions. After OrthoACCESS, 68% reported "quite" or "extremely" strong orthopedic knowledge, compared to 23% beforehand ($p < .001$). Post-case discussion surveys revealed significant increases in knowledge for each lecture and case discussion ($p < 0.5$). Student-reported benefits included broad coverage of orthopedic topics (n=41) and learning how to think like an orthopaedic surgeon (n=20). In conclusion, the OrthoACCESS curriculum improved medical student foundational orthopaedic knowledge internationally. This curriculum may be valuable for students across the world with limited exposure to orthopaedics.

Is autogenous tibia a feasible choice of pelvic reconstruction in hindquarter amputation: A retrospectively case-control study

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Introduction: Pelvic malignancy always induces terrible prognosis. For the advanced disease, limb salvage is impossible and hindquarter amputation (HQA) could be an alternative choice. Pelvic reconstruction in HQA was reported necessary and feasibility of reconstruction with autologous tibia was seldomly reported before. Method:We retrospectivel reviewed the patients who underwent hindquarter amputation from April 2013 to June 2019. Total sixteen patients were included and divided into two groups. Patients' characters, perioperative management details and complications were recorded. The limb function was evaluated through the Musculoskeletal Tumor society Rating Scale (MSTS) and the quality of life was through the World Health Organization quality of life questionnaire—brief version. Chi-square test and Mann-Whitney U test was used to compare the categorical variable parameters and count variable parameters, respectively. Results: The mean follow-up was 28.1 months in group A and 26 months in group B ($P>0.05$). No significant difference in the blood loss, surgical time, transfusion and hospitalization days between group A and group B ($P>0.05$). Median MSTS score was higher in group A with 18.00 than that in group B with 14.00 ($P<0.05$). Average QOL score in group A with 81.83 and 71.70 in group B ($P>0.05$). Complications were comparable between two groups ($P>0.05$). Conclusion: Autogenous tibia can be a feasible material in reconstructing the pelvic ring after hindquarter amputation, especially in the case that a suitable autologous femur is unavailable.

Finite Element Analysis of Sliding Compression configuration vs Length stable configuration of partial threaded cannulated Compression screws for Pauwels grade 3 fracture neck of femur

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Introduction: Compression screw fixation is done either as sliding compression or length-stable fixation according to the threads and orientation of the screws. This study aims to compare biomechanical properties of inverted Triangle (Sliding compression configuration) and BDSF & 4 cannulated lag screws (Length stable configuration) by Finite Element Analysis for Pauwels type-III FNF. Methods: DICOM format images of sawbone was used to build the 3-D geometric models which is hypermeshed to create models of Pauwels type-III FNF with angle of 65º. CAD models of screws are created as per AO specification and analyses for stress & displacement distribution of bone & implant, relative displacement between fracture planes & stiffness. Results: The peak stress near calcar region measured the yield of bone at fracture was found low in 4CLS, favouring fracture healing [▼CCS (95.45Mpa) > BDSF (90.64 MPa) > 4 CLS (79.69MPa)]. 4 CLS Configuration with less implant stress has lower risk of failure [CCS▼ (322.5MPa) > BDFS(262.8 MPa) > 4CLS (153.6Mpa)]. Less displacement of the fracture surface suggests better length stability in 4CLS. [CCS▼ (1.006mm) > BDSF (0.637mm) > 4CLS(0.35mm)]. The highest construct stiffness was found in 4CLS confirming stable & rigid construct. [CCS▼ (612.78N/mm) < BDSF (802.13N/mm) < 4CLS (1004.78N/mm)]. Conclusion: 4 CLS showed superior biomechanical properties in term of low stress, minimal displacement and lower relative displacement of fracture surface with high construct stiffness over other configuration. 4 CLS should be preferred configuration for Pauwels 3 FNF.

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It is time we started treating arthroplasty as a life-saving intervention: what have wearables, machine learning, and epidemiology taught us? (The UK Biobank)

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Background: Epidemiological studies suggest that people with arthritis die younger than non-arthritic aged-matched peers. However, the causal mechanism underpinning this association has not been conclusively demonstrated. One possible explanation is a lack of physical activity (PA) in those with end-stage lower limb arthritis. Given emerging evidence from large cohort studies using wearables and machine learning to estimate PA, is it time we considered arthroplasty a life-saving intervention? Methods: We conducted a harmonisation review, drawing upon recently published literature on PA and all-cause mortality (Strain et al., 2020), as well as PA and arthritis (Small et al., 2024), in the UK Biobank. The UK Biobank is a large population cohort study with 96,476 participants with wrist-worn accelerometry data, 3506 of whom have been studied independently as arthritis patients. We harmonised the literature to explore the potential mortality risk reduction conferred by arthroplasty in end-stage arthritis patients. Results: Small et al. demonstrate patients with an ipsilateral hip replacement have equivalent PA levels to their non-arthritic peers at more than 1-year post-surgery. Further, end-stage arthritis patients have significantly lower moderate-vigorous activity than non-arthritic peers. Strain et al. show that low PA and lower-intensity PA are strongly associated with all-cause mortality, suggesting that arthroplasty confers a significant all-cause mortality risk reduction. Conclusion: Extrapolation of recently published epidemiological studies using wearables and machine learning suggests that arthroplasty, through the restoration of PA, reduces all-cause mortality. Further studies are needed to evaluate the risk/benefit of early intervention vs. traditional orthopaedic considerations such as revision risk.

Estimation of Height from Lower Limb Anthropometric Parameters and Stride Length among Young Adults.

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Introduction: Anthropometry is the science of measuring physical body parts. Very few studies are available in the literature comparing stature with lower limb anthropometric parameters. This study aims to measure and correlate height from lower limb parameters, determining the most closely associated one. Objectives: To correlate the foot length, lower limb length, and stride length with height and to derive a formula to estimate the height from lower limb measurements. Methodology: An observational study was conducted at AIIMS Guwahati, after IEC approval and informed consent. A stadiometer was used to measure the height. A sliding caliper was used to measure the foot length. The subject was advised to place both feet in a shallow tray of color water and walk on a polished floor for 20 feet distance. With a trail of footprints, stride length was calculated. Result: 100 young adults aged 20-40 years, were included after screening. The mean height of individuals and age were calculated. The Pearson Correlation Coefficient analysis was done for height, limb length, and foot length. Results showed that height had a strong positive correlation with both limb length (R=0.8) and foot length (R=0.72). Conclusion: These parameters can be used to assess an individual's height by considering their lower limb length, foot length, and stride length. These parameters might be helpful, especially for forensic anthropologists in crime scene investigations, and will help to design artificial limb implants and limb prostheses.Keywords: Height, Lower Limb length, Foot Length, Stride Length.

Evaluation with allelic variants of single nucleotide polymorphism in patients undergoing stem cell therapy in knee osteoarthritis – Randomized controlled trial

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Background: Intra-articular injection of human mesenchymal stem cells (MSCs) for knee osteoarthritis (OA), RT-PCR assays indicated that the increase in expression of some of the genes was larger than the values obtained from the microarrays. The gene expression of human PTHLH increased 516-fold as early as day 1. On day 3 the increase in PTHLH was 443-fold. We aimed to correlate clinical presentation and therapeutic response to stem cell therapy with allelic variants in knee OA patients. Materials and methods: A randomized controlled trial was conducted with 52 cases of OA knee divided into 2 arms namely arm 1 with 26 diagnosed cases of OA knee who underwent stem cell therapy and arm 2 with 26 diagnosed cases of OA knee without any treatment. In all patients, 4 ml of venous blood was collected and subjected to DNA extraction and polymorphism studies using ARMS PCR and estimation of calcium and parathormone using E-CLIA. Results: The strength of association between polymorphism, and clinical and prognostic assessment of PTHLH rs267606985 gene between both the arms is 1.72 with 95% CI (1.19 to 2.49). A Kruskal-Wallis H test showed that there was a statistically significant difference with PTHLH rs267606985 gene polymorphism and calcium & parathormone $\chi 2(2) = 8.520$, $p = 0.014$. Spearman rank order correlation coefficient testing showed statistical significance ($rs(8) = 0.669$, $p = 0.035$). Conclusion: PTHLH rs267606985 gene polymorphism correlates clinical presentation and therapeutic response to stem cell therapy with allelic variants in knee OA patients.

Microwave-Assisted Glycidyl Methacrylate Grafted Silk Fibroin (SF-g-GMA) Injectable Hydrogel for Meniscus Tissue Engineering

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Inner meniscus tear is a challenging problem in orthopedics. Focus on surgeon preference, injectable or biphasic hydrogel which can be applied via arthroscopic surgery has been developed as a meniscus scaffold. This study aims to develop high molecular weight silk fibroin (SF) for use as SF based injectable hydrogel by microwave assisted (MA) technique and fabricate the SF based injectable hydrogel to be used for meniscus tissue engineering. It was shown that SF extracted from MA technique demonstrated significant higher molecular weight (444,592 kDa) than from conventional method (25,457 kDa). The different ratios of SF (40, 50 and 60 %W/V)from MA methods were used to synthesized SF-g-GMA using an epoxy ring opening reaction. Gel fraction of SF-g-GMA using 40%, 50% and 60% of SF were 98.12%, 98.56% and 95.66%, respectively. The highest compressive strength and compressive modulus of the hydrogel was obtained from SF-g-GMA using 50 % of SF (11.67 kPa and 53.20 kPa). The human chondrocyte stem/progenitor cells (HSPC) were seeded in SF-g-GMA using 50%SF injectable hydrogels and culture in Dulbecco's modified Eagle's medium (DMEM) to study the cell viability by live dead staining at 1, day 3 and day 7. SF-g-GMA injectable hydrogels demonstrated 78.80 % of cell viability at day 1 and increased to 89.80% at day 3 and 93.23% at day 7. The superior gel fraction, compressive strength and compressive modulus of the SF-g-GMA using 50% SF with the high viability of HSPCs demonstrates its potential application to use for scaffold in meniscus tissue engineering.

Early diagnosis of heterotopic ossification with a NIR fluorescent probe by targeting type II collagen

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Heterotopic ossification (HO) is a devastating sequela in which the pathologic extracellular matrix of cartilage and bone forms abnormally in soft tissues following traumatic injuries or orthopaedic surgeries. Early treatment is essential to inhibit the progression of HO but is currently limited by the absence of sensitive and specific early diagnosis. Herein, the study exploits the enrichment of type II collagen (Col2a1) in the HO cartilage formation stage towards developing a near-infrared (NIR) probe for early HO diagnosing, namely WL-808 by conjugating a Col2a1-binding peptide (WYRGRL) and a cyanine dye (IR-808). WL-808 exhibits high specificity for targeting the cartilage in vitro and in vivo with no apparent cytotoxicity. The NIR signal of WL-808 can be detected in the HO cartilage lesions as early as 1 week after injury when micro-CT cannot show any ectopic bone formation. Moreover, the probe is rarely distributed in the normal keen articular cartilage in vivo via the intravenous administration method. Taken together, WL-808 demonstrates great potential in early HO diagnosis under NIR imaging, facilitating early HO prophylaxis and treatment in the clinic.

Experience with successful treatment of chronic nonbacterial osteomyelitis in children with zoledronic acid

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The purpose of the study. To show the effectiveness of the use of zoledronic acid in the treatment of chronic recurrent multifocal osteomyelitis in children.
Currently, there is no etiotropic therapy for chronic recurrent multifocal osteomyelitis. Recently, more and more attention in the literature has been paid to the use of bisphosphonates in the treatment of chronic recurrent multi-focal osteomyelitis. Materials and methods. A group of 15 children aged 9 to 17 years with chronic recurrent multifocal osteomyelitis was recruited. All patients before the start of therapy and at each stage of treatment underwent MRI of the whole body in the STIR mode, CT of the pathological focus after 3 months, 6 months and 12 months after the start of therapy, a subjective assessment of pain on the VAS scale and the PedsQL 4.0 Generic Core Scales questionnaire.
Results. According to the immediate results (6 months- a year), all patients showed positive dynamics in reducing the number of foci by an average of 8 ± 4, reducing pain syndrome on the VAS scale by 4 ± 1 points and increasing the quality of life by 15 ± 2 according to PedsQL 4.0 Generic Core Scales.,
Conclusion. The preliminary results of our study show that the therapy of chronic non-bacterial osteomyelitis with bisphosphonates is quite promising. This research will be continued.

More anterior bone loss in middle vertebra after contiguous two-segment cervical disc arthroplasty

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Background: Contiguous two-segment cervical disc arthroplasty (CDA) is safe and effective, while post-operative radiographic change is poorly understood. We aimed to clarify the morphological change of the three vertebral bodies operated on. Methods: Patients admitted between 2015 and 2020 underwent contiguous two-level Prestige LP CDA were included. The follow-up was divided into immediate post-operation (≤1 week), early (≤6 months), and last follow-up (≥ 12 months). Clinical outcomes were measured by Japanese Orthopedic Association (JOA) score, visual analogue score (VAS), and neck disability index (NDI). Radiographic parameters on lateral radiographs included sagittal area, anterior-posterior diameters (superior, inferior endplate length, and waist length), and anterior and posterior heights. Sagittal parameters included disc angle, Cobb angle, range of motion, T1 slope, and C2-C7 sagittal vertical axis. Heterotopic ossification (HO) and anterior bone loss (ABL) were recorded. Results: 78 patients were included. Clinical outcomes significantly improved. Of the three operation-related vertebrae, only middle vertebra decreased significantly in sagittal area at early follow-up. The four endplates that directly meet implants experienced significant early loss in length. Sagittal parameters were kept within an acceptable range. Both segments had a higher class of HO at last follow-up. More ABL happened to middle vertebra. The incidence and degree of ABL were higher for the endplates on middle vertebra only at early follow-up. Conclusion: Our findings indicated that after contiguous two-segment CDA, middle vertebra had a distinguishing morphological changing pattern that could be due to ABL, which deserves careful consideration before and during surgery.

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Degree of postoperative recovery according to the duration of mild motor deficit in Lumbar spinal stenosis

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Controversy exists surrounding timing and benefits of surgery versus nonsurgical treatment when motor weakness occurs in spinal disorders. We sought to study relationship between duration of preoperative motor weakness and motor recovery. Study includes 22 patients who underwent surgery for weakness between 2018 and 2022 at single institution. Cases with causes other than lumbar spinal stenosis were excluded. Extent of recovery was assessed by comparing difference between preoperative muscle weakness and muscular strength at last follow-up, categorized as complete recovery, some improvement, no change, and deterioration. Total of 22 cases were identified, 10 patients experienced complete recovery, 4 showed improvement, and 8 exhibited no change in muscle strength. Among 22 patients, 15 patients had preoperative MRC grade 4 and the other 7 patients were below grade 4. 10 of 14 patients with weakness duration for less than 2 years made complete recovery, 4 patients made partial recovery and 1 patient made no recovery. However, all patients with symptoms for more than 2 years made no recovery. Mean duration of weakness in patients with complete recovery was 9.4 months(±7.82) and with no recovery was 44.62months(±19.85). Among 8 patients who made no recovery postoperatively, 5 patients had both MRC grade 4 weakness and weakness duration more than 2 years. In multiple, simple regression analysis, only duration of motor weakness was found to be associated with motor recovery($p=.002$, $p<.001$). Even in cases with mild motor deficits, surgical treatment of stenosis as soon as possible can improve the outcome.

Epidemiology of surgically treated patients with spinal dislocation – single Level 1 trauma center study

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Introduction:
The most common cause of spinal dislocations is high-energy trauma - motor vehicle trauma, fall from a height, and blunt trauma. The importance of these injuries comes from numerous of cases with spinal cord injury (SCI). Because of the instability of these injuries, surgical stabilization is required.
Material and methods:
A retrospective review of the surgically treated spinal dislocations during the 5-year period (49 patients) in the Department of Spine Surgery of the University Clinical Center of Serbia.
Results:
The most common levels of injury were C6/7 – 12 patients (24.5%), and Th12/L1 – 7 patients (14.3%). In 23 patients (46.9%) the cause of injury was motor vehicle trauma, in 22 (44.9%) falls from a height, and in 4 (8.2%) patients blunt trauma. In 35 (71.4%) patients, there were neurological deficits and in 14 (28,6%) patients neurological findings were normal (ASIA E). Of the patients with neurological deficits, 11 (31.4%) patients showed neurological improvement and 24 (68.6%) didn't. Our experience has shown that surgically treated patients had no neurological deterioration. There were 35 (71.4%) male patients and 14 (28.6%) female patients. The age distribution was as follows: <19 (4), 19-24 (4), 24-44 (23), 44-65 (15), 65-80 (2), >80 (1). Seven patients (14.2%) died during the initial hospitalization.
Conclusion:
Because of the high mortality rate during the initial hospitalization and the small number of patients with neurological improvement, these injuries have a significant socio-economic influence.

A Comparative Study: Standard Microscopic Discectomy Versus Microdiscectomy with Novel Disc Cavity Curettage Technique for Lumbar Disc Herniation

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Introdation: Improving surgical outcomes reducing the risk of recurrence after microdiscectomy is still actual. Methods: A total of 1200 patients with single-level lumbar disc herniation were included, with 600 patients undergoing standart microdiscectomy (MD) and 600 undergoing microdiscectomy with novel disc cavity curettage technique (MDC). Preoperative and postoperative data, including visual analog scale (VAS) scores for pain, modified Suezawa and Schreiber Clinical Scoring System (MSS) scores, and evaluation based on the MacNab criteria, were collected and analyzed. MDC incorporates a new technique of disc cavity curettage, utilizing a special instrument with double-sharp edges and a unique petal-shaped design. This instrument facilitates quick and effective removal of part of the nucleus pulposus, potentially reducing the likelihood of future relapse by addressing underlying causes. Both groups demonstrated comparable demographics and distribution of disc herniation levels. Results:The average operative time was slightly shorter for MD compared to MD (75 minutes vs. 85 minutes, $p<0.05$). Postoperative complications, primarily dura mater injury, were slightly lower in the MD group but did not reach statistical significance ($p>0.05$). Notably, the recurrence rate of disc herniation was substantially lower in the MDC group (2%) compared to MD (8%), indicating a significant advantage for the novel technique ($p<0.05$). Conclusion, both MD and MDC are effective surgical techniques for lumbar disc herniation, providing similar outcomes in terms of pain relief and functional improvement. MDC offers the advantage of a potentially lower rates of postoperative complications in reducing recurrence rate.

Incidence of heterotopic ossification at 10 years after cervical disc replacement: A systematic review and meta-analysis

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Introduction: Heterotopic ossification (HO) is a common complication after cervical disc replacement (CDR) and may limit the range of motion of the artificial disc. As HO usually progresses slowly, long-term follow-up is required to better understand its incidence. This systematic review and meta-analysis aimed to assess the incidence of HO at 10 years postoperatively.
Methods: We searched PubMed, Medline, Embase, and Cochrane Library databases to identify eligible studies. The pooled incidence and 95% confidence intervals (CI) of HO were calculated according to study design, severe or mild HO, prosthesis type, and funding source. In addition, meta-regression analyses were conducted to identify factors contributing to heterogeneity.
Results: Eleven studies with at least 10 years of follow-up comprising 1,140 patients who underwent CDR were included. The pooled incidence of overall HO was 70% (95% CI: 60–81%) at 10 years postoperatively. The pooled incidence of severe HO (grade 3 or 4) was 37% (95% CI: 29–45%), and mild HO (grade 1 to 2) was 30% (95% CI: 17–44%) at 10-year follow-up. Pooled ROM decreased from 8.59˚ before surgery to 7.40˚ 10-year after surgery. Subgroup analysis showed that HO incidence differed according to the prosthesis type and funding source. Earlier publication was associated with a higher pooled incidence of severe HO in the meta-regression analysis.
Conclusion: This is the first meta-analysis providing detailed information on the pooled 10 years incidence of HO after CDR and showed that HO incidence increased with the extension of follow-up time.

Concurrent spine surgery and endovascular aortic repair (TEVAR): a systematic review

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Introduction:
Aortic injury are infrequent but a life-threatening complications of spinal surgery. The aim of this study was to explore the feasibility of endovascular management of pathology of the thoracic aorta in patients undergoing spine surgery.
Methods:
A review of literature was performed using the Medline database. Clinical studies on spine surgery with related TEVAR-interventions were included. Data on indications, treatment strategy, timing of surgery and outcome were extracted and compared.
Results:
A total of 122 studies have been identified, of whom 12 articles reported on the utilization of concurrent TEVAR and spinal surgery. Five studies on 16 patients reported on the treatment of iatrogenic intra-operative aortic lesions, one study described the utilization of TEVAR for traumatic aortic compression due to a Chance fracture. An additional study on 5 patients describes the successful simultaneous treatment of spinal and vascular pathology. Furthermore, 5 studies focused on endovascular treatment of post-surgical pseudoaneurysm. Both interventions in prone and supine positions were performed and no mortality has been described.
Conclusion:
This systematic literature review demonstrates that endovascular aortic repair is a safe treatment option for aortic pathologies related to spine surgery. Both post-traumatic aortic pathologies and iatrogenic aortic lesions were successfully treated be TEVAR. Future studies should focus on the development of guidelines for the treatment of vascular injuries during spine surgery. Endovascular techniques should be included

Impact of Dysplastic L5 Vertebra on Lumbosacral Stability among Patients with Low Back Pain

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Background:
Dysplastic (or hypoplastic) vertebrae, commonly associated with spina bifida occulta, are increasingly recognized developmental variants that cause disruptions in normal spine biomechanics, leading to degenerative spine changes and back pain. They are very common in the developing world, where many patients present with early-onset low back pain.

Methods
The study was conducted between January 2023 and December 2023. The requisite radiological materials included plain radiographs and MRI's of the lumbar spine. CT scans were rarely used. Patients were divided into two groups: those with dysplastic LV5 and those without. Key measurements were spinopelvic measurements, L5 vertebral body heights, and the wedge angle. Recorded observations were disc degeneration, pars fracture and vertebral slippage.
Results
Of the 217 patients with low back pain, 112 ineligible cases were excluded. Among the remaining, 51 had dysplastic L5 vertebrae, and 54 were normal. The dysplastic group revealed an increased frequency of sciatica ($p = 0.007$), increased disc degeneration, pars fractures and slippage in the dysplastic group as compared to controls ($p < 0.001$). There were also differences in the wedge angle, lumbar lordosis, sacral slope and pelvic index in the dysplastic group compared to the control group ($p < 0.05$). A significant correlation existed between those with dysplastic vertebrae and lumbar lordosis ($R = 67$).
Conclusion
Dysplastic LV5 vertebrae significantly impact the stability of the lumbosacral junction. Instability leads to disc disease, spondylolysis, and later facet joint disease. Early onset of low back pain and nervous tissue compression are common complications.

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Novel MRI signs of the atlantodental space in patients with atlantoaxial dislocation

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Objectives: The type of atlantodental space tissue in patients with atlantoaxial dislocation (AAD) can help doctors understand the possibility of reduction before surgery. However, relevant research on this topic is lacking. In this study, we aimed to summarise the atlantodental space classification of patients with AAD using magnetic resonance imaging (MRI) and explore their clinical characteristics.
Materials and Methods: Preoperative 3T cervical MR images of patients who underwent posterior reduction and fixation surgery for non-traumatic AAD between 1 September 2012 and 31 July 2023 were collected. Two radiologists read and recorded the MRI results based on the standard protocol. The kappa value was used to evaluate intra- and inter-observer agreements. The patient's age, sex, body mass index, clinical symptoms, Japanese Orthopaedic Association (JOA) score, and visual analogue scale information were obtained from medical records.
Results: A total of 135 patients with AAD (mean age, 51.3 ± 14.0 years, 52 men) were included in the analysis. The inter-observer agreement between the two readers was 0.818 ($P<0.0001$). The intra-observer consistencies were 0.882 ($P<0.0001$) and 0.896 ($P<0.0001$). Patients with hard tissue signs were older and had a higher incidence of abnormal spinal cord signals and JOA scores.
Conclusions: Novel MRI signs exhibited high inter- and intra-observer consistency and were associated with patient age, abnormal spinal cord signals, and symptoms.

Is there any correlation between the recovery rate of JOA and the increasing of cervical spinal cord area after Single-Door Cervical Laminoplasty?

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Objectives: This study aims to assess clinical and radiologic factors associated with long-term prognosis following single-door cervical laminoplasty (SDCL) by multivariate analysis.

Methods: 115 patients who underwent SDCL with miniplate fixation from November 2008 to June 2018 were analyzed. Postoperative follow-up averaged 17.3 months. Prognosis was evaluated based on the Japanese Orthopedic Association (JOA) recovery rate. The recovery rate of JOA ≤ 50% were classified as poor prognosis group (PP group) whose prognosis is relatively poor, and those> 50% were classified as good prognosis group (GP group) whose have a better prognosis. The clinical factors including gender, age, duration of symptoms, diagnosis type, blood loss, operative time, pre- and post-JOA score, etc. were recorded. The radiologic factors including sagittal canal diameter (SCD), the cervical curvature index (CCI), the range of motion (ROM), the spinal canal area and the increasing of cervical spinal cord area, etc. were collected before and after operation and measured by X-ray plain and computed tomography (CT) scan images. The univariate analysis and multivariate logistic regression analysis were performed.

Results: There were 62 patients in PP group and 53 patients in GP group. The multivariate analysis showed that the preoperative (OR=6.875, P<0.001) and postoperative JOA scores (OR=24.000, P<0.001), preoperative spinal canal area (OR=2.464, P<0.023) and the increasing of cervical spinal cord area (OR=5.438, P<0.001) maybe related factors to the recovery rate of JOA at the final follow-up.

Conclusions: Preoperative spinal canal area, increased cervical spinal cord area, pre- and postoperative JOA scores significantly influence long-term prognosis post-SDCL.

Comparison of the accuracy between TINAVI orthopaedic robot-assisted and free-hand pedicle screw placement in the treatment of lumbar spondylolysis in adolescents

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Objective：To compare the accuracy between TINAVI orthopaedic robot-assisted and free-hand pedicle screw placement in the treatment of lumbar spondylolysis in adolescents. Methods：The clinical data of 65 adolescents with lumbar spondylolysis who underwent surgery were analyzed retrospectively. All patients were treated with double segmental pedicle screw reduction and autogenous iliac bone graft. According to different screw placement methods, they were divided into TINAVI orthopedic robot-assisted screw placement group (robot group, n = 32) and free-hand screw placement group (free-hand group, n = 33). The satisfactory rate of pedicle screw placement and cortical penetration rate were calculated according to Neo standard, and the superior articular process invasion rate of screw was calculated by Babu standard. Results：All patients completed the operation successfully. A total of 128 screws were implanted in the robot group, and the rate of the screw placement satisfaction, cortical penetration and articular process invasion were 98.2%, 3.1% and 2.3%, respectively, while 132 screws were implanted in the free-hand group. The rate of screw placement satisfaction, cortical penetration and articular process invasion were 90.9%, 21.1% and 7.6% respectively, and there were significant differences between the two groups ($P < 0.05$). Conclusion：Compared with free-hand screw placement, TINAVI orthopedic robot assisted screw placement can improve the accuracy of pedicle screw placement.

Bone resorption around the annular closure device during a postoperative follow-up of 8 years

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Objective: The purpose of the study is as follows: to characterize bone resorption around the annular closure device (ACD). Methods: One hundred thirty-three patients underwent ACD implantation after microdiscectomy, and 107 of them were followed up for 8 years after surgery (ODI, VAS). Lumbar CT scans helped characterize the bone resorption area around the ACD. Results: The median of follow-up was 85 [74; 93] months (from 73 to 105 months). The prevalence of bone resorption around the ACD was up to 63.6%, and it was mainly around the polymer mesh of the ACD (70.6%). The resorbed bone volume increased with time and reached its maximum of 5.2 cm3 (12% of the vertebral body volume) once a sclerotic rim developed around the bone resorption area. No differences in VAS pain intensity or in ODI were found between patients with resorption and patients without it ($p > 0.05$). The volume of the intervertebral disc before surgery is a predictor of bone resorption (OR = 0.79, $p = 0.009$): if it is less than 13.2 cm3, the risk of bone resorption increases significantly ($p < 0.05$). Conclusion: The majority of patients (up to 63.6%) with implanted ACDs have vertebral bone resorption around them. The bone resorption area around the ACD mesh increases with time to up to 12% of the vertebral body volume, with no clinical evidence, though. If the volume of the intervertebral disc before surgery is less than 13.2 cm3, the risk of bone resorption increases significantly.

Two-step distraction and reduction (TSDR) for basilar invagination with atlantoaxial dislocation: A novel technique without traction

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Spine Short Free Papers, MR 5, September 26, 2024, 08:00 - 09:00

Background: The pathological changes of basilar invagination (BI) and atlantoaxial dislocation (AAD) include vertical and horizontal dislocations. Current surgical techniques have difficulty accurately controlling the degree of reduction in these two directions and often require preoperative traction, which increases patients' pain, hospital stay, and medical cost.
Objective: This study aimed to introduce a novel technique for accurately reducing horizontal and vertical dislocation without preoperative traction and report the radiological and clinical outcomes.
Methods: From 2010 to 2022, patients with BI and AAD underwent posterior two-step distraction and reduction (TSDR) and occipitocervical fixation. Radiological examination was used to evaluate the reduction degree (RD) and compression. Japanese Orthopedic Association (JOA) score was used to evaluate clinical outcome.
Results: A total of 62 patients with BI and AAD underwent TSDR and occipitocervical fusion. The clinical symptoms of 96.8% of them improved. JOA score increased significantly after the operation. Appropriate (50%≤RD< 80%) or satisfactory (RD≥80%) horizontal reduction was achieved in 93.5% of patients, and 91.9% obtained appropriate or satisfactory vertical reduction. Thirty-one patients did not undergo preoperative skull traction. There was no significant difference in radiological outcomes or JOA scores between the traction- and non-traction groups. However, the length of hospital stay in the traction group was longer than that in the non-traction group.
Conclusion: TSDR enables horizontal and vertical reduction. It is a safe, simple, and effective technique for patients with BI and AAD. Despite the absence of preoperative skull traction, the degree of reduction and clinical outcomes were satisfactory.

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Robotic assistance in spinopelvic fixation

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Spine Short Free Papers, MR 5, September 26, 2024, 08:00 - 09:00

Introduction The S2 alar iliac (S2AI) screw is currently the preferred Zone 3 pelvic anchor in spinopelvic fusions. It offers significant resistance to pull out, is in line with the lumbosacral pedicle screws and due to its recessed entry point, has less rate irritation due to implant prominence. Robotic assistance in spine surgery allows planning and execution of precise trajectories even in the presence of altered anatomy. Methods: Thirty-two robotic assisted S2AI screws were inserted in 15 patients with fusions to the pelvis. All surgeries, conducted by a single surgeon, involved intraoperative robotic registration and image acquisition. All S2AI screws were analyzed using postoperative O-arm scans. The time taken for insertion of the S2AI screws was noted. The mean craniocaudal, and mediolateral angulation during screw insertion was noted. The mean radiation exposure was also noted. Results: The most cranial UIV was T8 and required two sets of O-arm scans and the most caudal UIV was L4 in which a single scan was used. The mean time for S2AI screw insertion was 3.1 minutes. The mean radiation dose to the patient was 48.7mGy. The mean medial angle for insertion on the axial view was 37 degrees and the mean caudal angulation on the sagittal view was 17 degrees. All screws were completely within the bone and had no breaches. Conclusion: Robotic assistance provides additional safety and lowers risk of misplacement of the S2AI screw with reduced radiation to the surgeon.

A novel Uni-portal Arthroscopic Spinal Surgery combined with bone anchoring annular repair technique for the treatment of lumbar disc herniation with vertebral marginal rupture of annulus fibrosus

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Spine Short Free Papers, MR 5, September 26, 2024, 08:00 - 09:00

Introduction:A novel Uni-portal Arthroscopic Spinal Surgery (UASS) is a modification of the biportal endoscopic surgery. UASS technique utilizes a single incision, housing both the 30 degree arthroscope and the surgical instruments. This study aims to evaluate the clinical safety and efficacy of UASS technique combined with bone anchoring annular repair for the treatment of lumbar disc herniation with vertebral marginal rupture of annulus fibrosus.Methods: From December 2021 and December 2022 this study recruited 39 patients with lumbar disc herniation, who underwent UASS technique combined with bone anchoring annular repair technique. Bone anchoring annular repair is a novel technique which used annulus fibrosus repair device close the annular defects on the vertebral body edge.The pre/post-operation neurological function and pain status were evaluated by VAS and ODI.The assessment also data including: operation time, the quantity of bleeding and intraoperative and postoperative complications, were recorded. Patients were followed up at intervals of preoperative, postoperative 1 months, 3 months, last follow-up. Results:The procedure was successfully performed in all cases. Average operation time was 55 minutes, Average blood loss was 25.3±6.2mL. The preoperative symptoms were alleviated significantly after surgery. All the standardized measures improved significantly. At the last follow-up, including VAS score (7.9±1.2 to 1.1±0.5; $p < 0.001$) and ODI (75.3 to 9.6; $p < 0.001$). There was no postoperative complication and disc reherniation..Conclusion:Early results showed the use of the novel uni-portal arthroscopic spinal surgery combined with bone anchoring annular repair technique are beneficial for short term outcomes demonstrating reduction in symptomatic disc reherniation with low post-operative complication rates.

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Closed reduction of completely displaced lateral condyle fractures of the humerus according to Qiao classification in children

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Paediatrics Short Free Papers, MR 13, September 26, 2024, 09:00 - 10:00

Background：We report experiences of closed reduction and percutaneous pinning in these fractures, aiming to assess the results using our classification and algorithm for closed reduction.
Methods：We classified completely displaced fractures (amount of displacement ≥2 mm) into four types: completely displaced type, single rotated type, rotated and flexible type and dislocative type and created a corresponding algorithm for closed reduction of these fractures. From October 2021 to September 2023, We prospectively studied 53 completely displaced fractures, the radiographic and clinical results of patients with these fractures that were initially managed with CRPP.
Results：The radiographic and clinical results of 53 complete displaced fractures (in 32 boys and 21 girls) that were treated with closed reduction. 33 of 35 (94.3%) completely displaced type, which could have been reduced to within 2 mm of residual displacement, were treated with closed reduction and pinning with 2 or 3 Kirschner wires (K wires). 8 of 9 (88.9%) single rotated type, 5 of 7 (71.4%) rotated and flexible type, and 2 of 2 (100%) dislocative type fractures were treated with CRPP. If closed reduction failed, so open reduction and internal fixation(ORIF) was implemented. There were no complications.
Conclusion：Tateral condyle fracture that can be cured with CRPP and that lateral humeral condyle fractures with complete displacement and rotation can be initially treated with CRPP to achieve satisfactory recovery of the elbow. Kirschner wire (K wire) fixation is recommended to avoid reoperation or anesthesia for hardware removal.

Results of using supracondylar osteotomy together with the Ilizarov apparatus for the treatment of cubitus varus and valgus deformities

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Paediatrics Short Free Papers, MR 13, September 26, 2024, 09:00 - 10:00

Cubitus varus and valgus are frequently encountered pediatric deformities, which bear a cosmetically unsightly appearance. The aim of the study was to evaluate the results of acute supracondylar corrective osteotomy, using the principle of angulation-translation, stabilized using the Ilizarov apparatus, in the management of patients with post-traumatic cubitus varus/valgus deformities, and to study its impact on the range of motion (ROM), the Humerus-elbow-wrist (HEW) angle and the lateral prominence index (LPI). Methods: 12 patients, aged 7-16 years, with cubitus varus of ≥ 10° (n=9) and valgus (n=3) of ≥ 20 °, were retrospectively analyzed using the hospital's database. All patients had undergone acute correction using a mini-incision supracondylar osteotomy, by application of an Ilizarov frame. Results: The mean time to union was 12 (+/-2.5) weeks. The follow-up period ranged from 1-6 years (mean 2 years). Results were graded as excellent in 9 cases (75%), good in 2 (16.6%) and poor in one case (8.4%) using the grading system of Oppenheim. The mean HEW angle at final follow-up improved from 15 °of varus to 8° of valgus (in cubitus varus) and from 24 ° valgus to 14 ° valgus (in cubitus valgus). The mean flexion/extension improved from 121°/-3° pre-operatively to 125°/-4° at final follow-up. Complications encountered included pintract infections in 2 cases, lateral condylar prominence in 1 case and complete radial nerve palsy in 1 case.
Conclusion: The described method of acute corrective osteotomy coupled with the Ilizarov apparatus offers the unique advantage of post-operative adjustment and early active joint mobilization.

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Does the amount of preoperative displacement have an effect on the treatment of paediatric forearm fractures?

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Paediatrics Short Free Papers, MR 13, September 26, 2024, 09:00 - 10:00

Introduction: The aim of this study was to determine the etiological factors, the importance of preoperative displacement, fracture location and fracture type in the choice of open or closed reduction in percutaneous titanium elastic intramedullary nailing of forearm fractures in children. Methods: A retrospective, single center, case-control study of patients treated with titanium elastic intramedullary nailing for forearm fractures between May 2019 and January 2023. Demographic data, preoperative displacement, reduction status, fracture type, and fracture location were assessed. Range of motion and union time were also evaluated. The effect of open versus closed reduction on outcomes was also compared. Results: In this study, 148 patients were evaluated, including 112 males and 36 females. Of these, 92 underwent surgery on the left side and 56 on the right side. Patients with a preoperative displacement rate of 0-100% in the anteroposterior and lateral planes were statistically significantly less likely to undergo open reduction. However, this rate was significantly higher for open reduction with a displacement rate of 100-200% in the anteroposterior and lateral planes. Circadian rhythm of surgery, fracture location, fracture type and waiting time for surgery were not found to have a statistically significant effect on open or closed reduction. Open or closed reduction had no statistically significant effect on the likelihood of postoperative refracture and wrist and elbow range of motion. Conclusion: The most important effect on fracture healing and postoperative functional outcome was found to be the amount of preoperative displacement and the quality of intraoperative reduction.

Evaluating One-Week Post-Casting Alignment Checks and Surgical Intervention Rates in Pediatric Type IIA Supracondylar Humeral Fractures

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Introduction: This study aims to determine the surgical intervention rate in children with type IIA supracondylar humerus fractures (SCHF) after post-casting radiographic alignment check. We hypothesized that no cases would convert to surgery following alignment checks. Methods: We retrospectively reviewed pediatric patients (≤ 18 years) diagnosed with type IIA SCHF from 2019-2022. Patients were included if they were treated with initial long arm cast immobilization, followed by a one-week post-casting radiographic check. Fractures were graded using the Wilkins-Modified Gartland classification by three fellowship-trained pediatric orthopaedic surgeons. Alignment was considered acceptable or requiring surgery based on the treating surgeons' discretion. Exclusion criteria were patients with concomitant ipsilateral upper extremity fractures, with flexion-type fractures, lost to follow-up before cast removal, or with type I, IIB or III SCHFs. Results: Out of 128 fractures, 85 were classified as type IIA SCHF by consensus. The average age was 4.2 years (range: 1.1-10.2 years), with 52% male. Casting duration averaged 28.8 days. Alignment checks occurred an average of 10.3 days post-injury (±2.5 days). Alignment shifts were noted in 7.1% of cases (n=6). Of these, two were assessed by surgeons as having acceptable alignment. The remaining four cases underwent closed reduction
and percutaneous pinning. The conversion rate to surgery for type IIA supracondylar humerus fractures in our study was 4.7%. Conclusions: This investigation found that 4.7% of nonoperative type IIA SCHFs converted to surgery at the one-week post-casting alignment check. Future studies are warranted to determine specific risk factors for alignment loss in type
IIA SCHFs.

Surgical treatments and results of lower limb discrepancy and malalignment in Proteus Syndrome: a case report

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Paediatrics Short Free Papers, MR 13, September 26, 2024, 09:00 - 10:00

Introduction: Proteus Syndrome (PS) is one of the overgrowth syndromes that characterized with mosaic distribution of lesions, sporadic occurrence, and progressive course. The asymmetric overgrowth with skeletal defect could cause severe functional and cosmetic problems. There was not much evidence to guide the orthopedic management in PS. This article aimed to present a case of PS who underwent multiple orthopedic procedures and with rapid recurrence of deformities, and to provide experience of orthopedic management for this rare condition. Case Presentation: An age 5 female suffered from overgrowth of right lower limb and functional defect for 4 years. Dysplasia of left hip, oversized skeleton long of right lower limb, and bilateral genu valgum were revealed by X-rays, with a LLD of 5cm. Hypertrophy of cartilage-like tissue of right patella and distal femoral epiphysis were revealed by MRI. Staged orthopedic surgeries were performed, included: multi-level, 3D osteotomies of right femur and tibia, growth modulation with 8 plates, and resection of the patellar lesion. The outcome of surgeries kept being diminished because the uncontrollable etiology, and this patient was invited by a international clinical trial of biologic treatment at last. Discussion: Orthopedic management in PS children is challenging. Experienced surgeon and multi-disciplinary care are needed in decision making and surgeries. Osteotomies could address discrepancy and malalignment effectively in this obstinate condition while growth modulation was not adequate. The healing of OT sites was satisfactory with the tendency of increased bone formation and delayed remodeling. Radical procedures could be a choice for this situation.

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Post traumatic hallux varus reconstruction

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• Introduction:The 1
st metatarsal and the big toe are of great importance for good stability and gait so posttraumatic sever hallux varus is a disabling deformity results in major disturbance of foot function. However, few reports have documented the reconstruction of posttraumatic big toe deformity with metatarsophalangeal defect and contracted scared skin, reconstruction remains challenging.We present a case of posttraumatic sever hallux varus that is unique since the deformity is due to a big scar along the medial aspect of the foot with bony defect and pseudoarthrosis of metatarsophalangeal joint in 7 years old child. Method:We describe our surgical technique with a gradual distraction to length and correct the deformity of the 1st ray. We used our modified circular external fixator of two 5/8 rings fixed to the forefoot. Results: the frame removed after 4 months after full correction of the big toe and consolidation of the bone. Conclusion: We have two issues a bony problems and huge challenge about the soft tissue problem so the method of reconstruction is selected according to the site and size of the soft tissue defect after excision of the scar which can lead to fascial free flap which is a demanding technique with high risk for necrosis. Mechanical stretching with the gradual distraction can effectively increase the length and area of contracted scar. bone regeneration occurs according to to transchondroid ossification phenomena.the patient reports no limitations in performing activities of daily living and the cosmetic appearances of big toe was near normal

Orthopedic and genetic characteristics of large group of patients with diastrophic dysplasia

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Diastrophic dysplasia (DD) (OMIM #222600) is a rare congenital autosomal recessive skeletal dysplasia associated with homozygous or compound heterozygous variants in the sulfate transporter gene SLC26A2. Clinical and radiological description of DD in patients of different ages will help improve the diagnosis and orthopedic treatment.
To describe clinical and genetic characteristics of Russian patients with DD caused by previously described and newly identified pathogenic variants in the SLC26A2 gene the comprehensive examination of 28 Russian patients from 28 unrelated families aged from 3 months to 34 years with clinical and radiological examination was carried out. To confirm the diagnosis genealogical analysis, clinical examination, radiography and targeted research of the SLC26A2 gene using direct Sanger sequencing were used.
Typical clinical and radiological signs sufficient for diagnosing DD in newborns have been identified: rhizo/mesomelic shortening of the upper and lower extremities, congenital clubfoot, hand anomalies, multiple dislocations and joint contractures. In the patients we observed, 14 variants were identified in the SLC26A2 gene, 9 of which were first discovered. The most common variant identified in the Russian DD patients was c.1957T>A (p.Cys653Ser), which accounted for 50% of alleles. Clinical and genetic analysis of Russian patients with DD made it possible to identify the core of clinical and radiological signs and evaluate the polymorphism of clinical manifestations of the disease. In contrast to previously examined patients from European populations (including Finland with largest number of patients with DD), 50% of Russian population are caused by the c.1957T>A (p.Cys653Ser) homozygous or compound-heterozygous variant.

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Surgical correction of orthopaedic deformities in Cerebral Palsy

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Paediatrics Short Free Papers, MR 13, September 26, 2024, 09:00 - 10:00

Introduction: Cerebral Palsy (CP) is a non-progressive upper motor neuron disease due to injury to the immature brain and is one of the commonest neuromuscular disorders seen in children. As age advances, this disorder can lead to loss of muscular balance with a mixture of spasticity and contracture of affected joints. Materials and methods: This is a study of 177 CP patients treated by us from January 2004 to December 2022. There were 105 male and 72 female. Their age ranged from 2 to 49 years. The common presentation was spastic gait. Scissoring and equinus are common deformities in lower limb and pronation and wrist flexion deformity in the upper limb. Lower limbs were operated in 141 patients and upper limb in 39. Surgical procedures included soft tissue release, tendon transfer, corrective osteotomy and arthrodesis. 42 patients who presented with rigid deformities were treated with Ilizarov external fixator. Results 21 patients were lost in follow up. All patients improved significantly. Discussion: CP is quite common in developing countries like India due to poor socio-economic conditions. Surgical treatment indicated when deformities and/or contracture interfere with activities of daily living. In early stages, most of the deformities and contracture can be corrected with soft tissue release to tendon transfer. At a later stage when deformities are rigid, they can be safely corrected with Ilizarov Fixator. The results were better in younger patients. It is concluded What surgery can achieve in hours, physiotherapy cannot in years.

Correction of Leg length discrepancy in children after DDH surgery

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Paediatrics Short Free Papers, MR 13, September 26, 2024, 09:00 - 10:00

Introduction. Leg length discrepancy (LLD) is a common secondary deformity after hip surgery in children. The literature contains data on both limb lengthening and shortening. However, the exact factors for length changes have not yet been identified. Nowadays, correction of LLD is available by using the minimally invasive technique - guided growth. But in order to use it correctly, it is necessary to understand how exactly the length of the operated limb will change. The purpose of our study was to analyze patients operated on the hip joint after congenital hip dysplasia (CHD) and Perthes disease (PD), who subsequently underwent epiphysiodesis for correction of LLD. Materials and methods. The study included 38 patients (26-CHD, 12-PD.) with a mean age of 9 years (±2.24). The mean length inequality was 2.02±0.96 cm. 10 patients had positive Trendelenburg Test. Hip joint range of motions wasn't significant. The shortening or lengthening of the limb after surgery, quality of gait and complaints were assessed. Results. Shortening of the operated limb occurred more often than lengthening (p=0.019). There was no statistical dependence on the pathology and gender, but a dependence on age was detected (p = 0.049). A change in length after hip surgery was noted on average after 2 years (from six months to 9 years). Considering the results, it is advisable to wait about 1.5 years after hip surgery before deciding on epiphysiodesis. Close to the end of growth, it is advisable to use blocking of growth zones at an earlier date.

Quadriceps Tendon Harvest Learning Curve for Anterior Cruciate Ligament Reconstruction in Young Patients

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Paediatrics Short Free Papers, MR 13, September 26, 2024, 09:00 - 10:00

Background: Quadriceps tendon (QT) autograft has become increasingly popular for anterior cruciate ligament (ACL) reconstruction (ACLR), and many surgeons are considering adding QT to their surgical repertoire. Objective: To assess the intra-operative learning curve of harvesting and preparing a QT autograft for ACLR in young patients.
Methods: IRB approved retrospective case series from February 2020 to May 2023 included patients <20 yrs age who underwent primary ACLR with QT with a single surgeon. Demographics and intraoperative variables were collected. Descriptive statistics and learning curve analyses using a moving averages technique were performed.
Results: 132 consecutive patients met inclusion criteria. Mean age at surgery was 15.79 years, range 13 to 20 yrs. Moving averages showed statistical differences in all intra-operative variables at 30 procedures – incision length ($p<.001$), graft size ($p=.001$), harvest time ($p<.001$), and tourniquet time ($p=.005$). There were no differences in age, gender, or laterality between groups. Decreased capsular breaches approached significance at 30 procedures ($p=.077$) but became significant at 40 or more procedures ($p=.015$).
Conclusions: QT harvest for ACLR is an increasingly popular procedure that surgeons can expect to perform consistently after approximately 30 procedures. The learning curve in ACLR is a critical determinant of patient outcomes, and as surgeons advance along the learning curve, they refine their techniques, enhance anatomical understanding, and optimize patient care. As surgeons progress, they can expect their incision length, graft harvest time, and capsular beach frequency to decrease and their graft size to increase significantly.

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Early postoperative complications after the first stage of osseointegrative limb prosthetics in patients with the consequences of combat trauma.

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Miscellaneous Short Free Papers, MR 5, September 26, 2024, 09:00 - 10:00

Background: Osseointegration can be an effective method of prosthetics for short and defective limb amputation stumps. However, the problem of postoperative complications is relevant and requires further study, especially in patients who suffered in the course of hostilities. Aim: To investigate early postoperative complications after the first stage of osseointegration with the OPRA (Integrum) system in patients who lost limbs due to combat trauma. Materials and methods:
A total of 27 patients were operated on, 30 operations were performed. All patients were men, military personnel who took part in the russian-Ukrainian war. The reasons for amputations were analyzed: traumatic, secondary due to tourniquet syndrome, secondary due to unsatisfactory results of reconstructive operations. Results: Early postoperative complications occurred in 5 (18.5%) patients. Septic complications were observed in 3 patients (11.1%): revisions of postoperative wounds were performed in 2 patients, drainage of purulent hematoma was performed in 1 patient. Antibiotics were prescribed according to the sensitivity of the microflora. There was no need to remove the implants.
In 1 patient (3.7%) marginal necrosis of the skin in the area of the postoperative wound was observed. In 1 patient (3.7%) there was an allergic reaction to an antiseptic in the form of flucten around the postoperative wound. Conclusion: Among the early postoperative complications, septic ones dominated. Although this type of complication has been effectively treated without removal of implants, improvement of preventive measures is currently relevant.

The Application and Therapeutic Effect of Minimally Invasive Technology Using Tricalcium Phosphate Porous Bioceramic Rods for the Treatment of Ischemic Necrosis of the Femoral Head

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Miscellaneous Short Free Papers, MR 5, September 26, 2024, 09:00 - 10:00

This study aims to explore the therapeutic effect and clinical significance of minimally invasive ceramic rod technology in the treatment of early ischemic necrosis of the femoral head. Thirty patients diagnosed with femoral head necrosis and treated with minimally invasive ceramic rods were selected, including 20 cases in stage IIa and 10 cases in stage IIb. Calculate the patient's surgical time, intraoperative blood loss, perioperative complications, postoperative follow-up, analyze imaging data, VAS, and Harris score. The average surgical time was (40.80±5.75) minutes, the surgical bleeding volume was 20-50 mL, and there was no blood transfusion during or after the surgery. The average hospital stay was 7.5 days, and there were no postoperative complications such as wound infection, nerve injury, subtrochanteric fracture, or vascular embolism. All incisions in the patients were healed in the first stage. The average follow-up period after surgery was 12.3 months. Referring to Harris score, the excellent and good rate was 92.6%. There was a statistically significant difference ($P<0.05$) between VAS score and Harris score before and 3 months after surgery, as well as 3 months and 6 months after surgery; The X-ray of the hip joint shows stable performance, with no significant progression of femoral head necrosis. The use of tricalcium phosphate porous bioceramic rod minimally invasive technology for the treatment of early avascular necrosis of the femoral head has a short surgical time, minimal trauma, can improve clinical symptoms and prevent its progression, and the therapeutic effect is satisfactory.

A novel steerable PKP for treatment of thoracolumbar osteoporotic vertebral compression fractures:a study of the clinical efficacy and safety

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Miscellaneous Short Free Papers, MR 5, September 26, 2024, 09:00 - 10:00

A novel steerable PKP for treatment of thoracolumbar osteoporotic vertebral compression fractures:a study of the clinical efficacy and safety
Introduction:To explore the clinical efficacy and safety of a novel steerable percutaneous balloon kyphoplasty (S-PKP) for treatment of thoracolumbar osteoporotic vertebral compression fractures (OVCFs). Methods: From April 2022 to April 2023, a total of 29 patients(32 vertebrae) with thoracolumbar OVCFs were treated with a novel steerable percutaneous balloon kyphoplasty (S-PKP). All patients underwent S-PKP procedure using a unipedicular approach. Introduced the novel steerable curved bone expander from the puncture side, expansion and bending to the contralateral side then inserted and inflated the curved balloon tamp. After vertebral body reduction, the bone cement was injected into the vertebral body. Clinical efficacy of S-PKP treatment was evaluated by kyphotic Cobb's angle, ODI and VAS score. Bone cement leakage and postoperative complications were also observed.Results:The anterior vertebral body height of the fractured vertebrae, Cobb's angle was a significant improvement between pre-operative and post-operative values without spinal cord or nerve root injury. The VAS was 8.2±0.3 at pre-operative, 2.1±0.5 at post-operative, 1.8±0.3 at final follow-up; and the ODI was 86.3±2.2 at pre-operative, 32.1±2.9 at post-operative, 27.1±2.3 at final follow-up. There was statistically significant improvement in the VAS and ODI at the post-operative assessment compared with the pre-operative assessment. Asymptomatic leakage was seen in 3 vertebrae. Conclusion:The novel S-PKP technology is a safe and efficient way for the treatment of thoracolumbar OVCFs.

Application of the “Drill after judge”method in pedicle puncture technique during percutaneous vertebroplasty

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Introduction:Accurate pedicle puncture technique is very important for vertebroplasty. With the development of technology, the entry point and sagittal direction of the needle can be visually determined under the standard anteroposterior fluoroscopy. However, the needle’s horizontal direction usually requires the needle to be drilled into the pedicle first and then judged by both anteroposterior and lateral fluoroscopy, which is called the "Judge after drill (JAD)" method. In this study, a "Drill after judge(DAJ)" method was designed and its application value was evaluated. Methods: By adding a sliding metal marker on the calibrated needle,the shadow segment of a partial needle with the needle tip and the same length of the pedicle was obtained in the anteroposterior view. The end point of the reverse isometric extension line of this shadow segment represents the needle tip’s position when it just crosses the whole pedicle. After adjusting and judging that this position was near to the inner edge of the pedicle shadow, the needle was drilled into the pedicle. A total of 128 patients were enrolled in this prospective trial, 67 in the DAJ group and 61 in the JAD group. Results : The success rate of first puncture in the DAJ group (88.0%) was higher than that in the CAJ group (16.7%). The puncture times, fluoroscopy times and puncture time(min) in the DAJ group (1.12±0.33,5.61±1.37,5.20±1.94)were less than those in the CAJ group(2.33±0.87,12.72±3.04,11.18±3.07).The differences were all statistically significant (P<0.05). Conclusion: The CAJ method can further improve the minimally invasive technique of pedicle puncture.

Analysis of short-term efficacy of selective genicular artery embolization combined with platelet rich plasma injection in the treatment of knee osteoarthritis.

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To evaluate the efficacy and safety of selective genicular artery embolization (GAE) combined with platelet-rich plasma (PRP) in the treatment of knee osteoarthritis (KOA). 30 patients diagnosed with knee osteoarthritis with moderate to severe knee pain were prospective enrolled and divided into two groups according to random principle. The visual analogue scale (VAS) and the Western Ontario and McMaster University Osteoarthritis Index (WOMAC) were used to evaluate the clinical outcomes within and between groups. Knee joint fluid was extracted from patients before and after treatment to detect the changes of various inflammatory indicators. Our study finally completed 30 effective cases. The total effective rate of combined treatment group was higher than that of PRP treatment group. Preoperative VAS score and WOMAC score were not significantly different among all treatment groups ($P>0.05$), but 1 week, 1 month, 3 months and 6 months after treatment, the scores of combined treatment group were lower than those of PRP treatment group, and the differences were statistically significant ($P<0.05$). The expressions of IL-1β and TNF-α in joint fluid of GAE+PRP combined treatment group were significantly decreased compared with those before treatment, and the difference was statistically significant ($P<0.05$). No major surgery-related adverse events occurred in all patients. Selective genicular artery embolization combined with platelet-rich plasma can significantly improve the pain and function of KOA patients, effectively improve intra-articular inflammation, and delay the progression of knee osteoarthritis disease. The combination therapy adds a safe and feasible option to the stepwise treatment strategy for knee osteoarthritis.

Experience about Promotion of perforator flap by cadaver and surgery based learning course

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PURPOSE: To evaluation effect of our perforator flap course based on cadaver and surgery based learning.MATERIALS-METHODS: 40 senior doctor who have demand of perforator flap learning was recruit every year for 6 years. A cadaver and surgery based perforator flap course was practiced for 1 week every year. The questionnaire about the their perforator flap practice cases and effect was send half year after they took part in the course. Total 240 participates's data were collected and analyzed. RESULTS: The perforator flap rates increase significantly after participates took part in the course. The successful rate also increase significantly. After the training, 100% of student think the training is useful, it has the necessity to popularize this perforator flap training course. The gender, education background, the title level of doctor,resident training year do not have significant difference. CONCLUSION: It is necessary and meaningful for this perforator flap course based on cadaver and surgery based to popularize. The web-teach will be a convenient way to expand its participants.

Relationship between vertebral fractures and quality of life in the general population: epidemiological study

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Background： Vertebral fracture (VF) causes pain and deformity. However, their impact on quality of life (QOL) in the general population is unknown. This study aimed to clarify the relationship between VF and QOL in the general population. Materials and Methods: Subjects were participants in a physical examination who underwent a standing whole-spine X-ray. The VF from T4 to L5 was evaluated using the semi-quantitative quadrant (SQ) method, and grade 1 or higher was judged as having a fracture. QOL was evaluated using the SF-12, and deviation scores (<50 was defined as a decrease of QOL) for each subscale were calculated. The group with one or more VF was compared to those without fractures. Wilcoxon test, chi-square test, and Cochran-Armitage test were used for the statistical analysis. Propensity score matching was performed by age and sex and compared with or without VF. Results: Of the 877 patients (325 men, 552 women, mean age 68 years), 469 (53.5%) had one or more VF. In the 656 cases with propensity score matching, the general health perceptions (GH) score of 47.1+/-9.1 in the VF group was significantly lower than that of 48.9;/-8.9 in the no fracture group ($p<0.05$). In addition, the higher the number of fractures, the more significantly the cases of decreased role physical (RP), GH, and mental health (MH) ($p<0,05$). Discussion: The results showed that thoracolumbar VF in the general population was associated with lower QOLs. Preventing and treating VF, including secondary fractures, are essential for maintaining QOL in the general population.

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Linea Aspera as a guide to Rotational Alignment of Hip and Knee Endoprosthetic Replacement

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Introduction: Rotational alignment during proximal femur replacement (PFR) or distal femur replacement (DFR), where traditional parameters to guide version are missing due to deficient bone stock, can be challenging. This study hypothesise that Linea Aspera Axis (LAA) can be used as an important intraoperative landmark to aim for better rotation alignment. Methods: 40 CT scans of right femora were evaluated. LAA was compared with femoral neck axis and posterior condylar axis at 40, 50 and 60% of femoral length. Results: Mean anteversion (AV) was found to be 12.50 and mean LAA was 91.30, 91.250 and 87.50 to projected femoral neck axis at 40, 50 and 60% of femoral length respectively. LAA positively correlated with projected femoral AV at each level averaging 12.70, 12.50 and 11.60. The posterior condylar axis to LAA was on average 78.50, 78.70 and 75.80 at levels checked (mean 77.70). Conclusion: Unlike previous studies, this study is able to provide clear guidance on implant rotational orientation in PFR and DFR surgery in relation to Linea Aspera. Conventionally surgeons tend to dial in more AV in relation to a perpendicular to LAA to achieve anteversion in PFR. However this study shows that placing the PFR perpendicular LAA is more likely to achieve correct AV. Similarly in DFRs component is often placed at more external rotation to a perpendicular to LAA. Instead implant should be internally rotated by 100 in relation this perpendicular to achive rotation closest to the trans-epicondylar axis.

Focal Sclerosis Associated with Dread Black Lines in Atypical Femoral Fractures – A Sign of Non-Union?

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This study aims to describe the demographic, radiological and clinical features of the focal sclerosis seen in 'dreaded black lines' or radiolucent fracture lines (RFLs) of atypical femoral fractures (AFFs) associated with anti-resorptive therapy. Radiographs of AFFs between 2004 and 2020 were reviewed for appearance and location of lesions, and presence of endosteal or periosteal thickening. We collected demographical data, type and duration of anti-resorptive therapy, and progression to complete fracture or need for prophylactic stabilization. Study cohort was divided based on the presence of RFL, and then subdivided into groups of RFL with or without sclerosis. 100 femurs were reviewed and 17 sclerotic RFLs were observed. Majority of sclerotic RFLs were non-linear in fashion, located at subtrochanteric (41.2%) and proximal diaphyseal (35.3%) regions, and always associated with endosteal or periosteal thickening. All 17 sclerotic RFLs were observed in females with a mean age of 69 years. 16 femurs (94.1%) had a history of bisphosphonate therapy, and the remaining femur only had prior denosumab therapy, with mean duration of therapy of 66 months. 3 femurs (17.6%) progressed to complete fractures, whilst 6 femurs (35.3%) required prophylactic fixation. There was no difference between groups in terms of demographics, anti-resorptive therapy and surgical intervention. Focal sclerosis in RFLs has not been previously described in literature despite occurring in approximately a third of RFLs in this study. Its radiological characteristics draw similarities to sclerosis at fracture ends observed in fracture non-union, and future histological studies can be conducted to establish its clinical implications.

Vascular Intervention Combined with Core Decompression and Bone Grafting for the Treatment of Early Avascular Necrosis of Femoral Head

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To evaluate the efficacy of minimally invasive vascular intervention combined with femoral head core decompression and bone grafting in the treatment of early avascular necrosis of the femoral head (ANFH). Totally 98 patients with non-traumatic early avascular necrosis of the femoral head, including 32 cases of femoral head core decompression and bone grafting, 38 cases of minimally invasive vascular intervention, and 28 cases of combined treatment. Follow up was conducted until femoral head collapse or more than 3 years, to evaluate the value of the three treatment groups on the mid-term results of ANFH (joint surface collapse>2 mm) and the risk factors for postoperative joint surface collapse.

There was a statistically significant difference in the incidence and duration of joint surface collapse after different treatments (P<0.05). Among them, the incidence of joint surface collapse was lower in combination therapy, with a rate of 29.41% and a collapse time of 24 months. There was a statistically significant difference (P=0.002) in the occurrence of joint surface collapse>2 mm after ARCO stage I and II ANFH head preservation treatment. There was a statistically significant difference (P<0.05) in the postoperative joint collapse of ANFH patients treated with steroid hormones (>2 g/2-3m), heavy alcohol consumption (>100 g/d). ARCO staging is an independent risk factor (P=0.03) for ANFH head saving treatment of joint surface collapse>2 mm. Minimally invasive vascular intervention combined with core decompression and bone grafting has a good prognosis for early ANFH, which can effectively delay the progression of femoral head collapse.

Wrist Arthrodesis as A Good Choice in Treating Different Wrist Condition

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Wrist arthrodesis is operative procedure of fusion between radial end carpal bones. Thanks to that we make a strong construction which give a satisfactory range of motion of hand and fingers, preserve grip strength of them and achieve a pain relief.
Our target is research of functional results after wrist arthrodesis which was used in different groups of patients and with different types of devices.
We analyzed patients, operatively treated, in last four years in our department. We performed 20 total wrist fusion with deferent preoperative conditions
Functional results were evaluated with MAYO wrist and DASH score.
All patients had achieved pain relief, with great improved of grip strength of that on the contralateral side. They also improved overall quality of life and work capacity.
Key words: total wrist fusion, arthrodesis, arthrosis, spasticity

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Complications following the repair of the flexor tendons of the hand

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Flexor tendons of the hand play a key role in the already complex function of the hand. There are two flexor tendons, the deep (FDP) and superficial (FDS), for each finger from the second to the V finger and the flexor pollicis longus and brevis for the thumb (FPL and FPB). General causes of injuries are open cuts, crush injuries or avulsions. They are relatively common accounting for 33 injuries in 100.000 persons per year mainly in males between 20 to 29 years of age in zone II and the V finger being the most affected. They are generally treated surgically by primary repair mostly or by secondary repair in given cases when the primary diagnosis was missed in the first place or when dealing with injury or conditions that don't allow to repair the tendon primarily. Most of the complications that are met after surgery are the stiffness of the joints due to adhesions formation, and rupture of the repaired tendon. In this study, we will be presenting some of the complications that we do meet in our daily practice, prevention of such complications and when and how we deal with them.

Inhibition of Pyroptosis Mediated by TLR4/NF-κB/NLRP3 Signaling Pathway Enhances Skin Flap Survival

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Objective: Skin flap repair, a frequently utilized microsurgical intervention for wound coverage and functional reconstruction in clinical settings, encounters a prevalent and inadequately understood complication—distal necrosis of skin flaps. Comprising traditional Chinese medicinal leech and Dilong, Hirudo-Dilong Extract (HDE) exhibits hemostatic properties, fostering meridian circulation. This investigation seeks to elucidate the precise molecular mechanisms and pivotal targets governing pyroptosis via the TLR4/NF-kB/NLRP3 signaling pathway.

Methods: An adapted McFarlane rat model in skin flaps was instituted. Seventy-two male Sprague-Dawley rats were randomly assigned to a control group (receiving equivalent saline) or experimental groups with low-dose (0.5 ml/kg/d), medium-dose (1.5 ml/kg/d) and high-dose (3ml/kg/d) Hirudo-Dilong Extract through continuous intraperitoneal administration for seven days. On the seventh postoperative day, skin flap survival area was gauged. Lead oxide/gelatin angiography appraised neovascularization. Furthermore, a HUVEC line established an ischemia-reperfusion model, with control, low, medium and high-dose groups (1 ul/kg/d, 5 ul/kg/d, 10 ul/kg/d). Immunofluorescence and western blotting ascertained TLR4, NF-κB, NLRP3, VEGF, IL-1β, L-6 and TNF-α expression in tissues and cells.

Results: Compared to the control group, the experimental group exhibited a significantly expanded skin flap survival area and neovascularization, with inter-group disparities among three groups ($p < 0.05$). In both animal and cell experiments, VEGF expression upregulated in the experimental group, while the expression of TNF-α, IL-6, IL-1β, TLR4, NF-κB and NLRP3 were downregulated ($p < 0.05$).

Conclusion: Hirudo-Dilong Extract enhances the survival of ischemic skin flaps by suppressing cell pyroptosis mediated through the TLR4-NF-κB-NLRP3 pathway.

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Treatment of severe limb injury with multiple injuries

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Abstract: Objective: To explore the experience and curative effect of treating severe limb injury with multiple injuries; Methods: Retrospective analysis the experience of treating severe limb injury with multiple injuries in zhengzhou renji hospital. Results: Through the application of 8 techniques and the concept of Damage Control Surgery (DCS), adhering to scientific injury assessment, thorough debridement, vascular reconstruction and fracture stability, limb survival was ensured in the first stage, and functional reconstruction in the second stage, so as to achieve limb preservation and reduction of disability. Conclusion: By establishing a large limb amputation treatment center, optimizing the treatment process of multiple injuries, adopting dynamic assessment of limb saving mode, active limb saving (decisive amputation), and combining multi-discipline and multi-technology to optimize the treatment strategy, the replanting rate and treatment success rate of severe limb trauma with multiple injuries can be improved, which is worthy of promotion and application.

Metacarpal neck fractures: treatment with a corrective sagittal plane K-wire

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Introduction: Fractures of the metacarpal neck are treated depending upon the angulation and displacement; which is in the sagittal plane, usually palmar wards with apex dorsal. The fixation is done by various methods, but implants are oriented in the coronal plane. Mechanically, this seems paradoxical and inefficient. I have been using a different method to overcome this deficiency. Method: 15 patients of angulated or displaced fractures of necks of metacarpal were treated by closed reduction and internal fixation with k wires. After manual reduction, a stabilizing wire was passed para-axially from the head into the shaft in an oblique direction. A second k wire was manually introduced from the palmar aspect into the fracture site. The angulation was levered dorsally back into position, and the wire was drilled into the shaft proximally. This is similar to the intrafocal method of Kapandji, but oriented in the sagittal plane, matching the plane of displacement. After confirming reduction, the hand was protected with a splint and cast. After union, the cast, splint and wires were removed; and movements begun. Results: There were no complications relating to the wires and immobilization when assessed after 4 months. Patients had a good grip, with restoration of the arch of metacarpal heads and good cosmesis. Conclusion: An intrafocal wire introduced from the palmar side helps reduce and maintain a palmar angulated fracture of the metacarpal neck, as both the displacement and correction device are in the same sagittal plane.

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The Safe Use of Reusable Gowns in Hand Surgery: Challenging Common Misconceptions

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Introduction: Important barriers against infection in any operation are the sterile protective drape and gowns. These can either be single-use or reusable. Recent reports have shown that disposable items are responsible for over 60% of carbon footprint in total knee replacements. Another review demonstrated a 60% reduction in carbon footprint on switching from disposable to reusable protective equipment. Furthermore, Overcash reported that reusable surgical textiles offer significant environmental benefits compared to the same disposable products. Our hand service has been utilising reusable gowns since January 2023 which is subject to rigorous quality assurance and frequent sterility checks.

Methods: Between April and May 2023, we retrospectively identified and collected demographic and follow up data (secondary care and community data) on n=210 consecutive patients operated on in our hand service, 38% of which were trauma patients. The average age was 58 years and the average follow up was 4 weeks. Our data reported an incidence rate of 5%(n=11) of infections, 1 of which was deep and required reoperations.

Results: The incidence of post operative infections was comparable to the data found in Wormald et al's review. Our data captured both secondary care and community follow up data and reflect the actual SSI incident as compared to other studies who investigated only secondary care follow up.

Conclusion: Reusable gowns and drapes in hand surgery does not increase the risk of postoperative wound or metalwork related infections. We feel confident our data would encourage the use of textiles among other orthopaedic services.

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In which joints of the wrist is osteoarthritis most frequently present?

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Not many studies have investigated which wrist joints most frequently have osteoarthritis. Scapholunate advanced collapse is considered the most frequent pattern. The aim of the study was to describe the patterns and prevalence of advanced osteoarthritis of the wrist. Bilateral wrist radiographs of 1,327 patients over 40 years old were screened. In 368 wrists of 228 patients end-stage osteoarthritis was present. Twenty-seven different patterns were found. The most common pattern was isolated osteoarthritis of the scaphotrapeziotrapezoidal joint (217 wrists)(59%), followed by isolated osteoarthritis of the radioscaphoid joint (45 wrists)(12%). In 251 (68%) wrists advanced osteoarthritis was only present in the midcarpal joint and in 115 (31%) wrists in the radiocarpal joint or combined in the mid- and radiocarpal joints. It can be concluded that advanced osteoarthritis may be more frequently present in the midcarpal joint than previously assumed.

External fixation assisted by bone cement as a frame in the case with ipsilateral metacarpal II-V fracture

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Introduction: Avoiding an extensive surgical approach in multiple hand fractures treatment reduces the possibility of major local scarring that would compromise hand function. Case: A 41-years old male patient was treated for comminuted metacarpals (mtc) II-V closed fractures of the right hand, with clinically noticeable shortening of the metacarpus. To mantain normal length of the fractured mtc bones, with as more less surgical incisions, external fixation was performed. Only one mini-external fixator was available at the moment of the surgery at the clinic. The frame of Mitkovic-type external fixator was used for temporary fixation of K-wires during the surgery, first on IV, and after on III mtc bone. During such temporary fixation, followed by X-ray checks, K-wires were connected by the bone cement separately for each mtc bone. After such fixation, mtc II fracture was fixed by the external fixator frame used. Free K-wires were used for mtc V fracture. During the external fixation period, the patient could use the injuried hand for writing or holding even 4 days after surgery. The implants were fully removed at the outpatient clinic 8 weeks after surgery and the patient was successfully performed physical therapy. Conclusion: Multiple mtc fractures can be succesfully treated by closed reduction and external fixation using bone cement to conect pins if an adaptable frame, as that is in Mitkovic-type external fixator, is used to hold the fracture replacement during the cement hardening.

A Study on Analysis of Functional Outcome of Percutaneous Release of Trigger Finger With 18 Gauge Spinal Needle Under Ultrasound Guidance - A Novel Technique

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Introduction: Trigger finger is one of most frequently encountered problem in the general population which affects the daily activities. However, with effective treatment like Ultrasound guided percutaneous trigger release a precise and possible improvement in the lifestyle can be achieved and assessed. This is a rapid and cost-effective method which saves a surgical procedure and results in better functional outcome. Aim: To investigate the effectiveness and functional outcome of ultrasound-guided release of the first annular pulley using our novel technique and compare results with the conventional open operative technique. Material & Methods: A prospective conventional study of 50 Adult Trigger finger with QUINNELL'S Grade 2 and 3 who have not responded to conservative treatment of age from 30 to 70 years using our novel technique in our Institute from 2021-2023. The follow-up included range of motion scoring, patient satisfaction and overall outcome of the procedure in terms of patient acceptance using QUINNELL'S & Q-DASH scores. The data was analysed to determine the functional outcome at three months. Results: There was complete release of A1 in all of our 50 patients undergoing ultrasound guided percutaneous release using our novel technique and significant patient satisfaction. No recurrence
was observed in those patients during follow up.
Conclusions: Ultrasound guided percutaneous release of trigger finger using our novel technique with a 18 gauge a spinal needle was not only associated with excellent functional outcome and recovery but in terms of patient satisfaction and range of finger motion post-procedure also and cost effective.

Flexion deformity of the fingers secondary to muscle lesion of the forearm: Xiangya experiences

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The article is to report flexion deformity of the ulnar digits caused by pseudo-Volkmann contracture and lesion of the forearm flexor muscles, and to discuss the characteristics, differential diagnosis, and treatment of these two symptoms and Volkmann's contracture. We retrospectively reviewed 17 patients with flexion deformity of the fingers. There were eight males and nine females, with an average age of 18.4 years. The median duration from the onset of symptoms to the operation was 13 years (ranging from 1.5 months to 30 years). The patients were divided into three groups: flexion deformity of the ulnar digits， pseudo-Volkmann contracture, and Volkmann ischemic contracture, according to their medical history, physical examination, radiographs, and intraoperative findings. The operative effects of the three groups were evaluated. The mean follow-up period was 1.5 years (ranging from 1 year to 10 years). Eight patients with flexion deformity of the ulnar digits and three with pseudo-Volkmann contracture achieved excellent hand function. The functional outcomes of 4 patients with Volkmann contracture were excellent/good, and one with moderate Volkmann contracture and severe neuropathy and one with severe Volkmann contracture were poor. The flexion deformity of fingers caused by different etiology can be differentiated by analyzing the history, physical examination, radiographs, and intraoperative findings. After different surgical treatments, most patients have a good outcome and high satisfaction.

Comparison of One-year Outcome among Different Low Dosage Triamcinolone Acetonide Injections for Trigger Finger

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Introduction: This study was designed to compare the one-year outcome among the groups with different low-dosage triamcinolone acetonide injections for trigger finger. Methods: In the study period, trigger digits were initially injected with 2, 4, 8 mg triamcinolone acetonide. We checked whether they had a second injection or surgery during the following year by either patients' revisit or telephone interview. The groups with different injections were compared according to recurrency and symptom relief period. We also assessed the six-week outcome to confirm the short-term improvement. Results: One-hundred ninety-eight digits were finally enrolled. About 60% of the injected fingers required additional treatment in each group without significant difference. The interval between the initial injection and additional treatment in the recurrent cases averaged 5 months in the 2 and 4 mg triamcinolone acetonide group, being significantly extended for short term of 1.5 months in the 8 mg group. All the groups showed a significant improvement of the patients' clinical severity at six weeks after injection without any difference among the groups. There was no adverse event. Conclusions: Low dosage triamcinolone acetonide injection for trigger finger within 8mg yielded satisfactory results, not being inferior to those with higher dosage up to 40 mg in the comparison with previous reports. Our findings implied that increasing triamcinolone acetonide dosage might bring short-extended symptom relief, however, not reduce the recurrency. While not offering great benefit, lower dosage triamcinolone acetonide injection for trigger finger can be chosen aiming for cost-effectiveness, safety, and small injection site pain.

A case report: Replacement of a femoral defect during post-traumatic osteomyelitis with a non-vascularized fibula autograft

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Background: This clinical case presents the combined technique of the induced membrane technique Masquelet with bone autoplasty of the fibula and fixation of fragments with the Ilizarov frame. Case Presentation: The patient, a 33-year-old female, was injured in a traffic accident. She was hospitalized with an open, multi-comminuted fracture of the right femur with displacement of bone fragments. Primary skeletal traction of the femur was applied. Osteomyelitis developed in the early period following the injury. The patient underwent several revision surgeries with the use of the Ilizarov apparatus, resulting in the formation of a 9.5 cm femoral bone defect. After the first stage, which was the Masquelet technique, the second stage was performed, involving the free autotransplantation of a fragment of the fibula to replace the bone defect of the right femur. The follow-up period for the patient was 60 months. The patient ambulates with full weight-bearing on the operated lower extremity, using a cane for support. The range of motion in the right knee joint is limited, with extension of 180 degrees and flexion of 30 degrees. After 60 months, control radiography of the femur revealed consolidation and integration of the autograft of the fibula. Conclusion: The Masquelet technique allows for the creation of a channel in the area of the defect. The combination of this method with the Ilizarov frame has the potential to prevent tissue perforation by the graft and to reduce the risk of infection around the pins.

Modified medial gastrocnemius myocutaneous flap with extended boundaries: anatomical research and a clinical series

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Introduction:This study aimed to investigate the vascular anatomical basis and clinical reliability of the modified MGM flap with extended anterior, inferior and/or posterior boundaries. Methods: Five fresh lower limb specimens from patients with recurrent tumors in the thigh were immediately irrigated and perfused.The stripped integuments were radiographed.The pretibial skin was equally divided into nine zones.The modified MGM flap viability was documented in 33 patients. Results: True anastomotic connections existed among the branches of the saphenous artery, the perforator from the inferior medial genicular artery and 3–5 (mean, 4.5) perforators from the posterior tibial artery in the upper two-thirds of leg. The anterior margins of 26 modified flaps with extended anterior boundaries exceeded the medial edge of the tibia by 1.0–4.5 cm (mean, 2.1 cm). Fourteen modified MGM flaps were used to repair the defects involving the lower third leg, whose distal edges were located in the seventh (n = 8) or eighth (n = 6) zone. A 1–169 month follow-up was conducted for 33 patients. Of the 33 flaps, 29 (87.9 %) survived completely, partial necrosis occurred in four flaps with extended anterior (n = 2) or inferior (n = 2) boundaries. Conclusions: Multiple source vessels are the vascular anatomical basis of the modified MGM flap with extended anterior, posterior and/or inferior boundaries.The modification of the MGM flap is feasible and reliable, broadening the applicable scope of the flap. The modified MGM flap can be applied to repair more distal, wider and larger-area defects with a simpler design and procedure.

Picroside II promotes skin flap survival in rats by inhibiting NLRP3 inflammasome activation and pyroptosis via promoting mitophagy

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Skin flap repair is a commonly used microsurgical method for wound repair and functional reconstruction in clinical settings. Nevertheless, distal necrosis of skin flaps remains a prevalent issue, with its mechanism not fully understood. Ischemia and hypoxia damage the mitochondrial structure and function in vascular endothelial cells, leading to pyroptosis and skin flap necrosis due to secondary reactive oxygen species, lipids, and peroxide metabolism disorder. Picroside II (PII), a glycoside derivative, a large number of studies have demonstrated the therapeutic potential of PII for the prevention and treatment of inflammatory diseases. In this study, we characterized the therapeutic potential of PII against inflammation and distal flap necrosis and elucidated the underlying mechanisms. We showed that pre-treatment with PII dose-dependently inhibited NLRP3 inflammasome activation in CoCl2-primed human skin fibroblasts (HSF) and human umbilical vein endothelial cells (HUVEC) and improved the flap survival rate in the modified McFarlane flap model, evidenced by attenuated cleaved caspase-1 and mature IL-1β release, reduced ASC speck formation, and subsequent gasdermin D (GSDMD)-mediated pyroptosis. Moreover, PII treatment reversed the diminished mitochondrial activity and ROS production after NLRP3 activation and elevated the expression of LC3-II. Hematoxylin-eosin staining and assay kit results showed that PII treatment reduced tissue pathological damage and oxidative stress levels. In conclusion, PII inhibits NLRP3 inflammasome activation and pyroptosis by promoting mitophagy. These results suggest PII is a promising drug candidate for the treatment of distal flap necrosis and inflammation-related disorders.

C7 motor fascicle transfer to spinal accessory nerve for trapezius reanimation: a case series

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Microsurgery Short Free Papers, MR 12, September 27, 2024, 09:00 - 10:00

Introduction: Spinal accessory nerve (SAN) paresis is disabling and painful. We aimed to reanimate the spinal accessory nerve using the motor fascicle from the C7 nerve root. Methods: Surgical technique consisted of an anterior supraclavicular approach, divided omohyoid, exposure of upper and middle trunks prior to identify a C7 motor fascicle. Preference was given to a fascicle innervating latissimus dorsi on stimulation. SAN was then identified and cut proximally, with distal end brought through to meet with C7 motor fascicle. Neurorrhaphy was performed with 9/0 nylon suture and fibrin glue. Results: 5 patients with SAN dysfunction were selected for surgery over an 18-year period (2005 onwards). All right-handed, 3 males and 2 females had a median age of 40 years (±8; IQR: 33-48; 95% CI: 27-53), waited for a median time of 22 days (±17; IQR: 7-101; 95% CI: 0-197) until first clinic appointment and decision to surgery, median time of 38 days (±37; IQR: 1-66; 95% CI: 0-101) until surgery from presentation, first clinic follow-up at 12 weeks, and a median follow-up time of 38 months (±3; IQR: 36-40; 95% CI: 4-73). Patient outcomes at first follow up at 3 months included improved pain in 4 patients. By time of discharge shoulder forward flexion was possible between 110-150 degrees in 3 patients while 1 patient has yet to attend her 3-month follow-up. Conclusions: C7 motor fascicle transfer to SAN for its reanimation is a useful and effective procedure to improve range of movement and neuropathic pain.

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Protective effects of geniposide on the survival of random flaps and the underlying mechanism.

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Background: Random skin flaps have many applications in plastic and reconstructive surgeries. However, distal flap necrosis restricts wider clinical utility. We evaluated whether geniposide can prolong the survival rate of random skin flaps.
Methods: Modified McFarlane flap models were established in 48 male Sprague-Dawley rats assigned randomly to three groups: a low-dose geniposide group (5 mg/kg/day), a middle-dose geniposide group (25 mg/kg/day), a high-dose geniposide group (50 mg/kg/day) and a control group. On day 7 after flap construction, the survival percentage of the flap model was calculated. H&E was used to evaluate the histopathological status of the flaps and MVD. LDF was used to detect blood perfusion. The levels of SOD and MDA in the middle areas of the flaps were measured to show the level of oxidative stress. The expressions of TLR4, NF-κB, IL-1β, IL-6, TNF-α and vascular endothelial growth factor (VEGF) were detected by immunohistochemistry.
Results: geniposide significantly increased the average survival percentage of the flaps and reduced ischemia and necrosis of the distal end of the flaps. SOD activity significantly increased, while MDA significantly decreased, indicating that geniposide reduces oxidative damage. The expression of inflammatory immunoregulatory proteins (TLR4, NF-κB) was downregulated, and the levels of inflammatory factors (IL-1β, IL-6 and TNF-α) were lower. In addition, geniposide upregulated VEGF expression, promoted angiogenesis, and increased blood perfusion.
Conclusion: In random flap transplantation, a high dose of geniposide is beneficial to flap survival.
Keywords: Flap; geniposide; TLR4/NF-κB signaling pathway; angiogenesis; inflammation; ischemia/reperfusion injury.

Bipedicled fibular flap results in distal tibia bone and soft tissue defects

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Purpose: To evaluate the effectiveness of reconstruction with bipedicled fibular flap in patients with distal tibia bone and soft tissue defects. Materials and Methods: 10 patients with distal tibia bone and soft tissue defects were included . The aim of the treatment was to control infection and restore defective bone integrity. Functional, radiographic results and complications were evaluated according to Paley criteria. Results: 6 of the patients were men. The average age was 33 years (range, 25-50). The patients were followed for an average of 24 months (min 6, max 36 months). In deep tissue cultures of patients; Staphylococcus aureus (n:5), pseudomonas aeruginosa (n:3) grew, and bacteria did not grow in 2 patients. Superficial skin necrosis developed in one patient postoperatively. In one patient, the infection continued even though union was achieved. Union was observed in all patients after 12 months (min 7-max 11 months). According to Paley criteria, 6 patients (60%) had excellent radiological scores, 2 patients (20%) had good radiological scores, and 2 patients (20%) had reasonable radiological scores. In terms of tibial function, excellent results were obtained in 6 (60%) patients. Conclusion: The distal tibia is a region where reconstruction options are quite limited. We think that the bipedicled fibular flap is a reliable technique in the repair of bone and soft tissue defects in the distal 1/3 of the tibia. Minimal bleeding, short operation time and short learning curve are among the advantages of this technique.
Key words: Distal tibia, bone defect, bipedicled fibular flap

Dorsal metacarpal artery perforated takecopter flap for stump salvage in consecutive multiple-finger necrosis/damage proximal to proximal interphalangeal joint

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Background:
Smash, avulsion or laceration injury to multiple fingers becomes more and more common. In the group of patients who suffered these injuries to the proximal phalanges, a few of these patients, luckily, received replantation surgery but some of them resulted in avascular or infectious necrosis, while others did not possess indications for replantation. Radical amputation to these fingers may leave inadequate stump bud for prosthesis wearing. Hence, we introduced our dorsal metacarpal artery perforated takecopter flap surgical technique for multiple proximal phalanges salvage and investigated its functional benefits.
Materials and methods:
From 2019 to 2023, 18 fingers of 7 hands in 6 patients received first-stage dorsal metacarpal artery perforated reversed takecopter flap surgery for sectional coverage in consecutive multiple proximal phalanges stumps and second-stage spliting dactylylosis 6 to 8 weeks after the flap surgery. Control group was consist of 10 patients, who received consecutive multiple amputation that left no finger buds for prosthesis wearing. HISS scoring system was used to evaluate the severity of the initial injury and outcomes of these finger stumps were analyzed using DASH scoring system.
Results:
HISS score showed no significant difference in these 16 patients ($P=0.638$). However, DASH score was significantly improved in takecopter flap surgery group over the control ($P<0.01$). Temporary infection and abduction limitation was seen in two of the patients in flap surgery group.
Conclusion:
Dorsal metacarpal artery perforated reversed takecopter flap is an ideal method for phalangeal stump salvage, which would be beneficial for prosthesis wearing and hand function remodeling.

β-Caryophyllene promotes the survival of random skin flaps by upregulating the PI3K/AKT signaling pathway

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Background: Flap transplantation is a widely used plastic repair method in surgical operations to fill skin defects caused by various wounds and diseases. However, due to insufficient blood supply, ischemic necrosis often occurs in the distal flap, which affects wound healing and repair. β-Caryophyllene (BCP) has been proven to reduce oxidative stress and inflammatory reactions, have neuroprotective and analgesic effects and play a protective role in organs or tissues that undergo ischemia-reperfusion injury.
Methods: In this study, we built a modified McFarlane random flap model on rat dorsal to evaluate the effect of BCP on the survival of random flaps. After 7 consecutive days of gavage with different doses of BCP, we measured the survivable area ratio, angiogenesis and blood perfusion, tissue inflammation level, apoptosis-related protein, and PI3K/AKT signaling pathway expression of the random flap.
Results: This study found that BCP treatment increased the survival area of the flap in a dose-dependent manner after random flap transplantation in rats. BCP mainly promotes the formation of tissue blood vessels, improves flap blood perfusion, limits the local inflammatory response, and reduces apoptosis. In addition, we demonstrate that BCP works primarily by promoting the expression of PI3K/AKT signaling pathway-related proteins while enhancing the phosphorylation of AKT at Ser473. By using Wortmannin, a selective inhibitor of PI3K, the effects of BCP are eliminated.
Conclusion: BCP can promote the survival of random flaps by upregulating the PI3K/AKT signaling pathway, increasing tissue blood perfusion, and limiting inflammatory response and apoptosis.

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Single stage Great hallux reconstruction with Free wraparound medial Plantar artery flap with Iliac bone graft - A case report

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Hallux is one of the most important structure in the medial longitudinal arch.Loss or major defects in the hallux can result in abnormalities in the gait cycle.Common cause leading to loss /defect of hallux is trauma.Usual treatment modality for such cases is partial or complete amputation of the toe, leaving it permanently lost. . In the case of tissue loss over hallux, it is very common to treat the soft defect conservatively or do skin grafting. But the loss of tissue leaves a shortened, hypersensitive, and deformed hallux .(1)The main aim of reconstruction is robust soft tissue cover with minimal contour abnormality to permit normal footwear and mobility.
We had a young female presented with gangrenous hallux, Single stage hallux reconstruction with Free wraparound medial Plantar artery flap with Iliac bone graft done.Postoperative period was uneventful resulting in a stable discharge.Patient was able to attend work and function in her premorbid capacities well with a good cosmetic and functional outcome.

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The reliability of a WeChat mini program-based method for the movement monitoring of patients with total brachial plexus injuries

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Background: Patients with total brachial plexus injuries (TBPI) usually need long-term follow-up. The frequent hospital visiting could be exhausting for these patients. With the help of social media platforms and human pose estimation algorithms, it is possible to monitor the motor function recovery of TBPI patients at a distance. However, the reliability of this method is still unclear. Materials and methods: We established a WeChat mini program to deliver the tele-assessment service for TBPI patients. To verify the reliability of this method, we retrospectively collected movement images of patients with TBPI. These images were analyzed through the program, and the results of measurements were accomplished by an HPE algorithm (BlazePose). The results were compared to the outcomes of photography-based goniometry to assess the reliability. The mean difference between the two methods was calculated. The Altman-Bland analysis evaluated the limit of agreement and the reliability was investigated by the intra-class correlation coefficients.Results: A total of 1241 images of 177 patients were collected for this analysis. The mean difference between the two methods ranged from 0.05 to 2.84. The results of the Altman-Bland analysis indicated that the limit agreement ranged from -10.29 to 7.99. The intra-class correlation coefficients also showed high agreement between the two methods, with the value from 0.930 to 0.994.Conclusion: Our results developed a WeChat mini program for the tele-assessment of TBPI patients and found that it is comparable to photography-based goniometry. The proposed method could be a valuable tool in the motor recovery monitoring of TBPI patients.

Step into Recovery: Unveiling our journey with Lisfranc Fracture Dislocation Repair Using Memory Staples at a Leading UK Trauma Center.

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Foot & Ankle Short Free Papers, MR 9, September 27, 2024, 11:30 - 12:30

Lisfranc injuries present a challenging scenario, often requiring meticulous surgical intervention to achieve optimal outcome and to prevent long-term morbidity. When surgery is indicated, internal fixation is mostly recommended but the option of primary fusion has role in some situations. The use of staples provides a low profile extra-articular fixation with less joint surface damage and soft tissue irritation.We retrospectively reviewed 43 patients who underwent memory staple fixation of Lisfranc injuries at a Level 1 major trauma centre over the last 10 years. All surgeries were performed by two surgeons. Patients were followed up at regular intervals after operation, with clinical and radiographic assessment of progress of healing and any complications. Clinical and functional outcomes were assessed at their final follow-up. Functional outcomes were assessed by the American Orthopaedic Foot and Ankle Society (AOFAS) midfoot scores.Six patients had broken staples in follow ups. One had removal of staples and planned mid foot fusion, two had removal of staples. Three patients had associated ankle fractures. One patient with concomitant open ankle fracture, skin was not viable and had a free flap as a soft tissue cover. At the end of the follow-up, the mean AOFAS midfoot score was 71.89 (S.D-17.5, 95% CI-63.5-80.3). Gender or associated injuries did not show any statistical difference in AOFAS midfoot scores but there was some relation with poorer outcomes in patients who had broken staples and free flap.The use of staple fixation in Lisfranc injury involves simple technique with satisfactory fixation and good functional outcomes.

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A pioneering local experience in minimally invasive TTC (Tibio Talo Calcaneal) fusion fluoroscopy guided aiming in improving service quality

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Foot & Ankle Short Free Papers, MR 9, September 27, 2024, 11:30 - 12:30

OBJECTIVES: To present benefits of MIS TTC in a society with growing metabolic co-morbidities for maximising the outcome and cost.
MATERIAL AND METHODS: In the past 24 months 4 cases have been successfully performed using intensifying imaging in a modified described MIS TTC fusion, two 5 mm incisions anteromedial and anterior were used to prepare the ankle joint, further single 5 mm incision was used to prepare subtalar joint laterally, all preparation done using MIS burrs & Osteotomes under intensifier imaging guidance. A Valor retrograde hindfoot nail was used, additional plantar nail insertion and stab incisions were performed. No bone grafts was used. Tourniquet used only during application of the Nail. The time for this surgery was 15 minutes less than those using scopes. RESULTS: Follow up was obtained at about 12 months with good healing results and a VAS score averaging at 7-8. Alignment correction was between 5-15°. No infection cases, no neurovascular injury, wounds healed per primam.
CONCLUSION: The implementation of MIS TTC fusion using a hindfoot nail and intensifier imaging rather than scopes has a beneficial impact on high-risk patients with less soft tissue complications, surgical time & reduces the cost of arthroscopy usage with similar results.

To assess the clinical and radiological outcomes of a computer-assisted six-axis fixator in the correction of complex foot and ankle deformities - a pilot study

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Background: With the advent of technology, it is now possible to correct complex orthopaedic deformities with greater accuracy, using the computer-assisted six-axis system, which offers the unique possibility of simultaneous three-dimensional correction of complicated deformities, following a single visit to the operation theatre.
Methodology: Ours was a prospective cohort pilot study in 15 patients, aged between 18-60 years, who presented with complex deformities of the foot and ankle. The objectives were to assess: (a) the results of six-axis-assisted correction, clinically, using the American Orthopaedic Foot and Ankle Society (AOFAS) scores; (b) the accuracy of correction of radiological parameters using a planning software; and (c) the rate of complications associated with the procedure. AOFAS scores were recorded pre-operatively, at six-, and twelve-months following frame removal.
Results: For bony corrections, the mean time to union was 4(+/-1.2) months. For pure soft-tissue distraction, it ranged from 1.5-2.5 months. All patients achieved a stable, plantigrade foot and exhibited normal, un-assisted gait, using modified footwear. At final follow-up, the mean LDTA was 90(+/-2)°; mean ADTA was 80(+/- 1.5)°; mean tibio-talar angle was 66°(+/- 2); mean Meary's angle was 6(+/-2.5)°; mean AP Kite's angle was 22(+/-1.5)°; and mean AOFAS score was 84(+/-8). The improvement in AOFAS scoring was statistically significant ($p<0.05$). Complications included superficial pintract infections (n=2) and joint stiffness (n=1).
Conclusion: Our study concurs the fact that perplexing foot and ankle deformities can also be corrected safely and accurately, upon adoption of this technological development, which holds great promise in the future.

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Foot Reconstruction Assisted with Biologics (Platelet Rich Plasma) in Crush Injuries

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Introduction: Crush Injuries are associated with physical losses & devitalization of soft tissues. It needs intense management including debridement, stabilization of fractured bones and reconstructive plastic surgeries for soft tissue losses including skin grafting. However, the sole cannot be reconstructed with natural plantar skins. Biologics including Platelet-rich Plasma are emerging as part of the management of complex wounds, particularly for assisting the reconstructions. Materials and methods: A prospective interventional study was conducted at our centre and included 28 cases of crush injuries of the foot All these had severe soft tissue loss and 11 had associated impending gangrene of toes. All underwent primary debridement with minimum removal of further soft tissues including the tendons and stabilisation of bones. Further, they were treated with a protocol based on serial infiltration of autologous Platelet-Rich Plasma (PRP). Results: In all the cases the feet were reconstructed by inducing regeneration with the aid of PRP including the control of infection and salvage of nearly dead tendons. The skin regenerated on the planter aspect was nearly normal and thick as a sole. It demonstrates the potential biologics as timely minimal interventions leading to salvage of feet after severe crush injury. Conclusion: PRP infiltration, can be an essential inclusion towards salvage strategy in crush injuries of feet, preventing morbidities.

Title: Functional Outcomes of Calcaneal malunion managed by Reconstruction Osteotomy and Osteosynthesis

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Foot & Ankle Short Free Papers, MR 9, September 27, 2024, 11:30 - 12:30

Introduction:
Managing calcaneal malunion presents formidable challenges. Clinical examination discerned pain generators, guiding operative strategies to attain near-normal anatomy.

Methods:
This retrospective case series evaluates the functional outcome of reconstruction osteotomy and osteosynthesis in patients with calcaneal malunion. Ten male patients, aged 23 to 52 years, who underwent surgery for calcaneal malunion were included in the study. patients presenting within six weeks post-injury, those with comminuted fractures and subtalar arthritis, or those treated by subtalar arthrodesis. Surgical intervention involved reconstruction osteotomy to elevate depressed posterior facet , correction of calcaneal varus, and internal fixation with plate and screw while preserving the subtalar joint. Clinical and radiological evaluations were conducted postoperatively, assessing parameters such as pain scores, walking distance, stability, and support. Radiological union of the calcaneal fractures was also assessed.

Result:
At a minimum 12-month follow-up, assessment utilizing the Maryland Foot Score (MFS) revealed satisfactory outcome.The study revealed significant improvements in pain, walking distance, stability, support, limp, and shoe wear scores postoperatively, as evidenced by the Maryland Foot Score. The radiological evaluation demonstrated successful union of calcaneal fractures in all cases within the fifth month. Pearson's correlation analysis showed a significant negative correlation between delay to surgery and total MFS score ($r = -0.68$, $p < 0.05$), indicating better functional recovery with shorter delays.

Conclusion:
Intraarticular osteotomy coupled with posterior facet elevation in the management of calcaneal intraarticular malunited fractures offers promising functional outcomes with the preservation of the subtalar joint.
Key Words : Intra-articular osteotomy, Subalar joint, Malunion.

Hallux valgus surgery with subcapitale osteotomy by Kramer and Osteosynthesis first metatarsal bone with ITS® Hallux Osteotomy Locking Plate

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Foot & Ankle Short Free Papers, MR 9, September 27, 2024, 11:30 - 12:30

Presentation Aims: Our aim is to showcase our experience with hallux valgus surgery, specifically combining subcapital osteotomy by Kramer with osteosynthesis of the first metatarsal bone using an ITS® hallux osteotomy locking plate. Study Design: We conducted a retrospective, descriptive evaluation to assess the correction potential in changes to the hallux valgus and intermetatarsal angles. Preoperative and 6-month postoperative hallux valgus and intermetatarsal angles were verified using X-rays in 52 patients (45 women, 7 men, average age 57.2 years) at Tauernklinikum Mittersill, Department of Orthopaedics. The surgeries, performed between 2016 and 2023, allowed patients full-load mobilization with a forefoot relief shoe. Results: The preoperative hallux valgus angle was 31.2° (SD = 7.4) and postoperatively it was 11.0° (SD = 5.4). The preoperative intermetatarsal I/II angle was 15.0° (SD = 2.7) and postoperatively it was 3.7° (SD = 2.0). Conclusion: Hallux valgus surgery utilizing SCOT 1.MT osteotomy by Kramer, combined with HOL Plate Osteosynthesis, demonstrates a very good and stable postoperative clinical and radiological correction potential. This surgical combination, compared with other distal surgical techniques, exhibits higher correction potential and is recommended for the correction of mild to moderate hallux valgus cases with an intermetatarsal angle of 10° to 20° and a hallux valgus angle of 20° to 40°. Severe hallux valgus cases with an intermetatarsal angle greater than 20° were treated with basal Crescentic Osteotomy.

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Relapsed club foot management using mini Ex. Fix. And muscle transfer

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Foot & Ankle Short Free Papers, MR 9, September 27, 2024, 11:30 - 12:30

Introduction: children over 3 years of age with rigid clubfoot or unsuccessful treatment, over pull of muscle tibialis anterior, make it difficult to correct, for these reasons mini external hinge distraction system \ Salamehfix 2 / was modified. Method: In clubfoot over 3 years until 11 years of age, we applied the external hinge distraction system Salamehfix 2, which consists of 3 small, hinged arcs, gradual distraction and reduction of foot components, after 6 weeks fixator removal. split tibialis anterior m. transfer to peroneus brevis tendon before insertion extensor tenon, cast bellow knee applied 6 weeks. we had control group of children which treated only with external fixation. Results: from 1998 to 2023, 36 cases, first group 25 cases with combined external fixation and split muscle transfer second group 9 cases with only external, in first group 1 case relapsed, in second 7 cases relapse needed further m. transfer. Conclusion: treatment of relapsed clubfoot is not easy and over pull of muscle tibialis anterior have an essential roll, we have to consider and combined external fixation and muscle transfer have a great roll and lot of surgeon experience is needed. Conclusion: relapsed clubfoot is a major problem in pediatric orthopedic surgery and need special experience and surgeon skill to treat and combined mini external fixation with muscle transfer can give excellent results.

Complex distal lower leg fracture treated by a dynamic unilateral external fixator frame – case report

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Background: Complex distal intraarticular lower leg fractures involving tibial plafond are a challenge to treat, and the case treated for a such fracture is presented in this paper. Case presentation: Female patient, 45 years old, sustained an AO/OTA 43-C3 fracture. Due the risk following ORIF at large ankle swelling presented, initial closed fracture reduction and Mitkovic type unilateral external fixation were initially performed. Two proximal pins were set in the proximal tibial fragment and two other pins were set in the foot – in calcaneus and in the first metatrsal bone. Three weeks after the first surgery, new minimally invasive surgical intervention was performed to provide an additional internal fixation, to secure the fracture position. Five weeks after the first surgery, the pin in the first metatrsal bone was removed at outpatient. At the same act, the bar of the fixator frame was set to a changed direction to provide one clamp carrier of the frame to be set in the axis of the ankle joint. This was necessary to enable further external fixation to be dynamic, thus to prevent the ankle joint contracture before the fixator removal. External fixator was removed 16 weeks after the first surgery and the patient was fully satisfied with the final functional results at the end of physical therapy. Conclusion: Mitkovic type external fixator was approved as a high addaptable device, providing a safety and good final ankle function in a complex intraarticular distal lower leg fracture treatment.

Keywords:dynamic external fixation, tibial plafond, ankle

Functional result of Lisfranc fracture-dislocations? (About 20 cases)

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Foot & Ankle Short Free Papers, MR 9, September 27, 2024, 11:30 - 12:30

Introduction : The lisfranc dislocation fracture first described by Monteggia and Dupuytren then detailed by Malgaigne in 1855, these are rare and serious lesions. They can go unnoticed, most often in the context of polytrauma whose treatment remains controversial. Methods : This is a retrospective study of 20 cases within the service over a period of 6 years (from January 2014 to December 2019 Results : The average age was 39 years with a sex ratio of 4, a predominance of AVP with 75%, 65% had a cutaneous opening and vasculo-nerve lesions in more than half of the cases. A predominance of homolateral columno-spatulary luxation fractures was noted in 50% of cases.We used the AOFAS score after a collection of 24 months whose average was 76 with predominance of a good result in 45% of cases, excellent result in 30%, acceptable result in 10% and poor result in 15% of cases. In the long term, 25% had neuro-algodystrophy and 15% had osteoarthritis. Discussion : Lisfranc dislocation fractures are relatively rare, the diagnosis of which often goes unnoticed, often affect the young active subject, whose mechanism is most often at high velocity as evidenced by the Lievers meta-analysis in 2012. These are lesions of poor prognosis, including the indirect and most frequent mechanism. The diagnosis is based on standard radiography and supplemented by computed tomography to better detail the diagnostic.Conclusion: Lisfranc dislocation fractures are lesions of poor prognosis. Early management and proper anatomical reduction are prerequisites for a satisfactory functional result.

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Severe clubfeet treatment in adults using mini external fixation.

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Introduction: delayed untreated club feet or unsuccessful treated club feet in childhood varies from slight to severe deformities and cause disability in everyday life also emotional stress, and traditional surgical methods of treatment like just tipple arthrodesis can cause foot shortness and patient discomfort, for this reason to have normal foot size, shape and stable foot, I modified a small simple external hinge fixation system. Method ; SLDF./ Salamehfix 2 / consists of just three small arcs which can fit the size of every patient and can fix main foot elements , with performing tipple arthrodesis after two weeks we can perform gradual lengthening and correction of main foot components in different direction using various fixator hinges and rods until the foot achieve normal shape and size then the fixator fixed until consolidation usually 4 months , stable fixation and comfortable system can allow patient for walking with partial wight bearing later on external fixation removed and a plaster applied on the foot and ankle joint for one month , results ; we have 15 cases of clubfeet treated using this system , 9 had excellent results 4 good , 2 fair as there was some collapse after correction due to patient who interrupted treatment. complications mainly superficial pin infection which treated locally, conclusion; mini external fixation system can help to achieve excellent results in treatment severe to moderate clubfeet deformities.

ChatGPT 4 Can Now Pass Part 1 Of The Fellowship Of The Royal College Of Surgeons (Trauma & Orthopaedics) Examination

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Background: Advancements in artificial intelligence (AI) and natural language processing models have facilitated the development of conversational agents capable of diverse tasks. This study aimed to evaluate and compare the performance of two iterations of ChatGPT, namely ChatGPT 3.5 and ChatGPT 4, to pass the Fellowship of the Royal College of Surgeons (FRCS) Trauma & Orthopaedic Part 1 examination. Methods: A dataset of 140 single best-answer questions from an established surrogate examination for the FRCS Part 1 examination were directly inputted into ChatGPT 3.5 and ChatGPT 4. Each model received identical inputs with no prompt engineering. Results: ChatGPT 4 attained a score of 78.9%, passing the examination and performing significantly better than iteration 3.5, which scored 35.8%, 30% lower than the FRCS pass mark of 65.8%. Analysis of individual question responses demonstrated iteration 4 provided explanatory answers to all questions, with 77.1% of incorrect responses resulting from factual inaccuracy. Iteration 3.5 performed most consistently on questions requiring direct factual recall (59.3% of correct answers) and worst on questions requiring higher-order thinking. Neither version recognised limitations in its knowledge, with iteration 3.5 reporting that it was unable to provide an answer once, while iteration 4 provided explanatory reasoning for all incorrect responses. Conclusion: This study highlights the enhanced capabilities exhibited by ChatGPT compared to its predecessor in passing the FRCS (Trauma & Orthopaedic) Part 1 examination. However, neither iteration of ChatGPT recognises its limitations, and thus, we must accept their fallibilities as much as we applaud their accolades.

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First experience of using a new generation of active robot for total knee arthroplasty

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Background: Robotics is developing by leaps and bounds; Just five years after we began using an active robot for total knee replacement, manufacturers are introducing a new robotic device into clinical practice, the first impressions of which we would like to share in this study. Methods: After a training course, we performed a random series of 85 operations on a new generation of active robot, after which we compared the main time parameters of planning, preparation, and operation. In addition, we surveyed the surgical team using the Spielberger State Anxiety Inventory (STAI) Short Form scale. Results: The planning stage in the new generation of robot is automated and takes on average 14±3 minutes, which is significantly shorter than the previous version with manual image segmentation. The average registration time for the new generation was 13±5 minutes, versus the old generation 22±2 minutes, the average resection time was 31±6 minutes versus 38±9 minutes, which affected the total operating time for the new generation. robot, which is 20.4% higher. Personal anxiety on the STAI scale for the operating staff did not exceed 30 points (average value 25±3); when mastering the technology of old-generation robots, this score ranged from 30 to 45 points (average value 36±8). Conclusions: Thus, the new generation of active robot for total knee replacement saves time in the operating room, and mastering the technology does not affect the psychological state of the staff.

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Arthroscopicaly Assisted Core Decompression in Osteonecrosis of The Femoral Head Using Custom Made (PSI) Aimers

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Avascular necrosis (AVN, osteonecrorsis) of the femoral head is pathologic condition caused by vascular derangement, which very often leads to secondary degenerative changes in hip joint.
Core decompression of the femoral head is well known and widely accepted technique in treating this condition caught in early stages. Traditionally, it is performed under X ray control helping to reach the areas of necrotic tissue located in femoral head. Such approach is based on two dimensional imaging provided by AP and lateral projections which results in lack of precision and possibility of damaging the articular cartilage when performing curettage of the necrotic tissue from underneath.
To accomplish better precision we developed specific aimers. One hand of this aimer was to be positioned intraarticularly over the top of the defect on the femoral head under direct arthroscopic visualization. The other hand was extraarticularly positioned on the standard entering spot under the greater trochanter ridge which is commonly used for placing the guide wire. The rest of procedure was similar to standard core decompression technique.
Construction of the aimer is based on CT scan of the affected hip. Through the sequence of software manipulations 3D model of the patient's hip is made. It's being exported in 3D CAD (computer assisted drawing) software. Respecting morphology (shape and dimensions) of particular patient's hip joint, then the 3D model of the aimer is made . Once finished, the 3D model of the aimer was 3D printed and sterilized for surgical use.

A Novel Device: Providing Additional Stability in Osteoporotic Bones by Screw Thread Interlocking Plating System (STIPS)

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The successful fracture healing in long bones by Internal fixation through Plating is based on developing a stable construct. This stable construct relies upon Bone to Bone contact, Screw to Bone contact, Screw-to-Plate contact and Plate-to-Bone contact. The implant can fail due to the loosening of any such contacts leading to the pulling out of screws with or without the plates. The most vulnerable contact point is screw to bone (purchase in cortices) , particularly in osteoporotic bones, leading to loosening of screws. The design improvements have been a progressive process by improving bone-to-plate contacts with Low contact plates, Screw plate contact by interlocking, through threaded holes. Despite these improvements in designs, stable fixation of osteoporotic bone remains vulnerable. We hereby introduce an addition to the above concepts for stable construction and have developed screw to screw thread interlocking system. This enables the screw to lock with each other inside the bone, thus minimizing the pull-out of screws due to loss of bone density. In this paper, we discuss the Principle of screw-to-screw interlocking and the Device which is patented (Indian) as a “Screw Thread Interlocking Plate System (STIPS)”.

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Innovating the surgical care pathway: A prospective study

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Emerging technologies are reshaping healthcare to align with carbon reduction goals, such as those outlined in the European Green Deal aiming for climate neutrality by 2050. Digital surgical pathways, with their emphasis on patient engagement, not only streamline clinical workflows but also hold promise for reducing carbon emissions and saving time for clinicians and administrators.

During the period from March to August 2023, all lower limb arthroplasty patients at University Hospitals Sussex, a high volume low complication centre were enrolled in a digital surgical care pathway (DCP). This pathway incorporated a web-based health questionnaire for pre-operative assessment, along with digital patient education materials, all validated by pre-assessment nurses.

1060 patients participated in the DCP, leading to significant reductions in carbon emissions. The DCP resulted in a total reduction of 6.84 metric tons of CO2, with 5487.5 kilograms saved from reduced travel and 1358.7 kilograms saved from reduced paper usage. It also led to 282 hours saved for pre operative nurses as 63.9% by identifying appropriateness for telephone consultation.

This is one of the largest prospective studies of the environment benefits of a digital surgical care pathway. It highlights a fundamental transformation in orthopaedic care delivery, driven by a dedication to innovation. Beyond enhancing patient engagement and streamlining clinical workflows, this approach aligns with environmental objectives. As orthopaedic centres continue to pioneer advancements, the integration of digital technologies and environmental consciousness promises to shape a more sustainable and patient-centred healthcare landscape, epitomising the evolution of orthopaedic care in the modern era.

Image free navigation system for acetabular cup implantation in total hip arthroplasty for third world countries.

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Implantation of the acetabular cup is the cornerstone of total hip arthroplasty (THA). The outcome of THA is related to acetabular inclination and anteversion, as well as other parameters like stability, limb length alignment, capsule closure, etc. Various navigation and robotic equipment are available to assist the surgeon in placing the hip implant in the right version. High cost, steep learning curve, and equipment safety have restricted its use to less than one percent. We have designed an image-free navigation device to assist the surgeon in implanting the acetabular cup in the right inclination and anteversion. The experiment has been performed on an artificial hip bone structure. Historically, 50 iterations of the angle measurements were performed to assess the device's accuracy. The images from each of the measurements were imported in Image J software to find out the actual angle. The principle of OpenCV is used for image processing in our navigation device. We found the angle of inclination mean error of 0.15° with a standard deviation of 0.44°with a p-value <0.05, which is very significant. Similarly, the angle of anteversion mean error was -1.06° with a standard deviation of 0.34° and p-value < 0.05, which is very significant. The tool provides accuracy with an error of less than 1.5-2 degrees. Our image processing device delivered promising results with regard to acetabular inclination and acetabular anteversion in invitro studies. It can be an option in third world countries who do not have access to navigation systems.

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Autologous Cartilage Micrografts as a Novel Non-Invasive and Non-Arthroscopic Procedure for Knee Chondropathy: Three-Year Follow-Up Study

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Background: Focal chondral defects of the knee can significantly impair patient quality of life. Although different options are available, they are still not conclusive and have several limitations. This study aimed to evaluate the role of autologous cartilage micrografts in the treatment of knee chondropathy. Methods: Eight patients affected by knee chondropathy were evaluated before and after 6 months and 3 years following autologous cartilage micrografts by magnetic resonance imaging (MRI) for cartilage measurement and clinical assessment. Results: All patients recovered daily activities, reporting pain reduction without the need for analgesic therapy; Oxford Knee Score (OKS) was 28.4 ± 6 and 40.8 ± 6.2 and the visual analogue scale (VAS) was 5.5 ± 1.6 and 1.8 ± 0.7 before and after 6 months following treatment, respectively. Both scores remained stable after 3 years. Lastly, a significant improvement of the cartilage thickness was observed using MRI after 3 years. Conclusions: Autologous cartilage micrografts can promote cartilage volume changes, improve symptomatology, and could be a valid approach for the treatment of knee chondropathy.

Cobbs Angle Measurement of Spine from X-Ray Images Using Convolutional Neural Network

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Introduction: The efficiency and accuracy of curvature estimation of Cobbs angle provides a powerful index to evaluate the type and severity of scoliosis which would be important for clinical judgement in treatment.
Materials and Methods: An automatic system for measuring spine curvature using the anterior-posterior (AP) view spinal X-ray images was innovated through deep learning by convolutional neural network (CNN) approaches which include the U-Net, the Dense U-Net, and Residual U-Net, to segment the vertebrae. The segmentation results of the vertebrae are reconstructed into a complete segmented spine image, and the spine curvature is calculated based on the Cobbs angle criterion.
Results: For Cobbs angle measurement, we analyze the original U-Net, Residual U-Net, and Dense U-Net which were superior to the other two methods with average Dice similarity coefficient reaching 0.951. The one-way ANOVA analysis between our results and that of two clinicians does not show significant differences.
Discussion: For scoliosis, the classification of spine curve type is complex. With the spine curvature from this automatic system, measurement and analysis of scoliosis will become efficient and accurate. In addition, the segmented results of spinal columns and the spine curvature we acquired from the proposed system in this study may be useful information to apply for another spine-related research.
Conclusions: The proposed system can not only reduce the costs and times of manual measurement but avoid observational error. It can assist doctors in reliable measurement of the spine curvature that is beneficial for better understanding and clinical treatments.

Using deep learning for ultrasonographic images for evaluation of the thenar muscle atrophy

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(Introduction) Deep learning (DL) algorithms have been utilized for the diagnosis of medical images. We previously evaluated the thenar muscle atrophy level by measuring the depth of the thenar muscles by ultrasonography (US). The purpose of this study was to detect image features using DL in US images of carpal tunnel syndrome (CTS) and calculate the diagnostic accuracy from the confusion matrix obtained.

(Materials and Methods) US images of 138 hands without CTS and 27 hands diagnosed with CTS were used in this study. Ultrasonographic examination was performed to evaluate the abductor pollicis brevis and opponens pollicis muscles. The transducer was applied onto the palmer surface of the hand perpendicularly to the longitudinal axis of the first metacarpal bone. The short-axis image of the thenar muscle was visualized. Transfer learning was performed using three pre-trained models. The confusion matrix and receiver operating characteristic curves were used to evaluate diagnostic accuracy. Furthermore, regions where DL was determined to be important were visualized.

(Results) The highest score had an accuracy of 0.78, precision of 0.91 and recall of 0.77. AUC obtained ROC curve was 0.90. Visualization of the important features revealed that the DL models focused on the hypoechoic lesion lateral to the bony prominence of the thumb metacarpal bone.

(Conclusion) We analyzed the usefulness of the diagnostic method by DL for US images of the thenar muscle atrophy of CTS. DL could be a useful tool for evaluation of the thenar muscle atrophy.

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