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ABSTRACT BOOK

Free Papers

Complications and factors affecting quality of reduction in acetabulum fractures

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Trauma Free Papers 1, Main Congress Hall ABC, September 25, 2024, 08:00 - 10:00

Purpose:To evaluate the complications of acetabulum fractures and the factors affecting the quality of reduction in surgically operated cases **Material:**116 patients with 120 acetabular fractures were included. Demographic data, mechanisms of injury, fractures morphology, complications and radiological outcomes were recorded. The significance of factors including age, gender, mode of injury, associated injuries, individual fracture patterns and timing of surgery on quality of reduction was assessed.**Results:**81% of the study population were males, with average age of 39.95 ± 15.87 years. 70 of these patients were operated with an average time duration from injury to surgery of 8.32 days. Mortality was reported in 5 patients, 4 patients had deep vein thrombosis and sciatic nerve injuries was seen in 12 patients of which 4 were iatrogenic. 8 patients had infection of which 4 required multiple debridements. 4 cases developed heterotopic ossification while 2 cases had a loss of reduction.**Quality of reduction** was assessed as per Mata's criteria as anatomical (n=29), congruent (n=31) and incongruent (n=10). The quality of reduction was seen to be associated with timing of surgery and other associated fractures while age, gender, mode of injury or individual fracture patterns had no such effect.**Conclusion:**
The aim of fixation of acetabulum fractures is to achieve anatomical reduction by early open reduction and internal fixation with management of associated injuries for improved patient outcomes.

Functional scores in post-surgery periprosthetic and peri-implant fractures of the femur

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Trauma Free Papers 1, Main Congress Hall ABC, September 25, 2024, 08:00 - 10:00

Introduction Peri-implant (PIFs) and periprosthetic fractures (PPFs) of the femur are commonplace in parallel with rising age of the population. The literature is sparse on post-surgery functional outcomes in these two groups. In this study, we compare the Modified Barthel's Index (MBI) scores of PIFs and PPFs from pre-morbid to 12-months after surgery. Charlson Comorbidity Index (CCI), Bone Mineral Density (BMD) and mortality at 24 months were measured.

Methods A sample size of 33 patients with PIFs (n=16) and PPFs (n=17) over 3 years was obtained. MBI at pre-morbid, 6 and 12 months were collected. Return to function was assessed as return to the same level of independence as pre-morbid. Student's t-test was used for statistical significance. CCI, BMD, and mortality at 48 months were measured.

Results PIFs and PPFs patients have similar independence scores from pre-morbid to the 12-month mark. The MBI scores did not show any statistical significance. 61% of patients were noted to return to their pre-morbid function with only 3% falling by two levels of independence. Both groups were comparable in terms of frailty, BMD readings and mortality at 48 months.

Conclusion Both PIFs and PPFs have similar functional scores and recovery from the pre-morbid to 12-month post-surgery. Pre-morbid function is a stronger predictor of scores at the 12-month mark than age. The groups share common risk factors such as frailty, age, gender and low bone density. PPFs confer a similar mortality to hip fractures.

Level of evidence Grade III, retrospective, cohort study

Lumbopelvic fixation for chronic vertically unstable pelvic ring injuries

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ABSTRACT BACKGROUND: The initial severity of the condition of victims with vertically unstable pelvic injuries often does not allow for early reconstructive surgery. Thus, the number of long-standing damages is growing. Treatment of patients with chronic injuries (after 3 weeks since injury) of the pelvic ring with the vertical displacement (more than 20 mm) causes a separate difficulty. **AIM:** To analyze the immediate and long-term results of treatment of patients with chronic vertically unstable pelvic ring injuries. **MATERIALS AND METHODS:** The results of treatment of 31 patients of the Priorov National Medical Research Center with chronic vertically unstable damage to the pelvic ring in the period from 2017 to 2024 were analyzed. To assess the results of treatment, clinical and radiation diagnostic methods and the Majeed questionnaire were used. **RESULTS:** The long-term follow-up period for patients ranged from 1 to 3 years (on average 2.1 years). Excellent results on Majeed a year after surgery were achieved in 3 (9.7%) patients, good in 25 (80.6%), satisfactory in 3 (9.7%), there were no unsatisfactory results. **CONCLUSIONS:** The technique of spino-pelvic fixation makes it possible to effectively treat chronic vertically unstable injuries of the pelvic ring and perform simultaneous reposition and stable fixation of the posterior pelvic ring.

Asymmetric bilateral hip dislocations : A Case Report

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Abstract:

A 22-year old male, who was injured in traffic accident as passenger, was brought to our hospital with bilateral asymmetric traumatic hip dislocations, associated with fracture of right acetabulum. After initial clinical examination and full body scan, other injuries were excluded. Neurovascular status on lower extremities initially was good. After completion of diagnostics, closed reduction was performed under general anesthesia. Indication for operative treatment of right acetabulum fracture was based on postreduction radiographs and CT of pelvis. Operative treatment (open reduction and internal fixation) was performed 3 days after injury. 6 months after operation, we stated that fracture healed in good position and the patient was fully recovered.

Key words: bilateral, dislocation , hip, trauma

Comparison Of 3D Printing Assisted Transrectus Abdominis Lateral Incision And Traditional Ilioinguinal Approach In The Treatment Of Pelvic Fracture

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Trauma Free Papers 1, Main Congress Hall ABC, September 25, 2024, 08:00 - 10:00

Introduction:To compare the clinic effects of 3D printing assisted transrectus abdominis lateral incision and traditional ilioinguinal approach in the treatment of pelvic fracture.

Methods:46 patients with pelvic fracture who were treated in orthopaedic department in our hospital were selected as research object, they were randomly divided into the experimental group and the control group, with 23 patients each. The control group was given traditional ilioinguinal approach surgery, while the experimental group was given 3D printing assisted transrectus abdominis lateral incision surgery. The hip function, pain visual analogue score and operation time, postoperative drainage volume, hospital stay, length of incision and complications were compared between the two groups.

Results: After 6 months' follow-up, the excellent and good rate of hip function in the experimental group was significantly higher than that in the control group, with statistical significance, $P < 0.05$; the operation time and hospital stay in the experimental group were significantly shorter than those in the control group, the postoperative drainage volume was significantly less than that in the control group, and the length of incision in the experimental group was significantly shorter than that in the control group, with statistical significance all, $P < 0.05$; the total incidence of complications in the experimental group was significantly lower than that in the control group, $P < 0.05$.

Conclusion:Compared with the traditional ilioinguinal approach, the 3D printing assisted transrectus abdominis lateral incision approach in the treatment of patients with pelvic fractures can shorten the recovery time of hip function, receive more significant effect.

Complex fracture Patterns of the anterior pelvic ring- INFIX as a viable treatment option- A Prospective study

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Trauma Free Papers 1, Main Congress Hall ABC, September 25, 2024, 08:00 - 10:00

INFIX is a minimally invasive, biological way of achieving reduction and providing stability in complex fractures of pelvis .Study design- Prospective case series Aims and Objectives: Evaluate complications and functional outcome measures using both disease specific scores and quality of life scores.Methods : A total of 12 out of 112 pelvic fracture patients during one year study duration had complex fracture patterns of anterior pelvic ring and was decided for INFIX by two pelvic surgeons. Reduction criteria was evaluated radiologically using Matta's criteria, Pelvic deformity Index (PDI) and Pubic symphyseal opening. Results : Fracture reduction was excellent in 10 (83.3%) cases and good in 2 (16.6%) cases. Average PDI in post-operative period and post implant removal was 0.0130 and 0.0170 signifying maintenance of reduction even after INFIX removal. Functional outcomes were excellent in 11 patients (91.6%) and good in 1 patient with mean Majeed score of 92.67 ± 5.8 . The average IOWA pelvic score at 6 month post-operative follow up was 93.92 ± 6.201 . The average SMFA score at 6 months follow up was 51 ± 4.39 (Function Index and Bother Index within normal population norms) suggestive of excellent outcome. On analyzing SF-12 scores, the average PCS12 score indicating physical wellbeing was 48.493 ± 6.74 (Range 33.68-55.81) and average MCS12 score indicating mental wellbeing was 56.370 ± 4.04 (Range 48.633-63.790). Conclusions : INFIX is a safe, effective and viable option for addressing complex pelvic fractures involving the anterior half of pelvic ring with excellent radiological and functional outcomes and predictable fracture healing.

The role of transsacral rescue screws in the treatment of hemodynamically unstable patients with pelvic ring injuries

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Introduction:

Iliosacral rescue screws (ISRSs) may be utilized in trauma patients with unstable pelvic fractures and associated hemodynamic instability. The goal of the current study is to determine the early impact of this measure on cardiopulmonary status.

Methods:

Patients with unstable pelvic ring injuries and hemodynamic instability were extracted from the institutions pelvic trauma registry. Patients treated by ISRSs between 2015 and 2021 were included. The impact of ISRS-placement on pelvic volume (distance between the left and right anterior sup. iliac spine (SPIAS)) was calculated prior to and after rescue screw placement. Moreover, vital parameters and resuscitation requirements was determined.

Results:

A total of 40 patients with a mean age of 46 (std. 18) and an ISS 30 (std. 12) received ISRSs. Systolic blood pressure (SBP) in hemodynamically unstable patients in this cohort was 85 (std. 16) mmHg on admission. After resuscitation and ISRS-placement SBP was significantly higher (107 (std. 14) mmHg, $P=0.0003$). No statistically significant changes in pulse rate and vasoactive medication requirements were observed. ISRS-placement resulted in a statistically significant volume reduction of the pelvis as the distance between both SPIAS decreased from 232 (std. 17)cm to 222 (std. 23)cm ($P=0.015$).

Conclusions:

The current study shows that iliosacral rescue screws are an effective tool to reduce pelvic volume and to stabilize the pelvic ring in hemodynamic unstable trauma patients with pelvic ring injury. These findings warrants the implementation of TRSs as a treatment modality in guidelines for unstable pelvic ring injuries.

Outcomes of delayed soft tissue coverage in Gustilo IIIB and IIIC lower extremity fractures: A regional hospital's experience

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Trauma Free Papers 1, Main Congress Hall ABC, September 25, 2024, 08:00 - 10:00

Introduction: The management of open fractures of the distal lower extremity is challenging. These injuries are associated with increased complications and bear significant socioeconomic impact. Current literature demonstrates that delayed soft tissue coverage for Gustilo III fractures of extremities have increased complication rates. Meeting the recommended time frame for coverage is however often not possible, and this may lead to poorer patient outcomes. **Objective:** We aim to (i) determine infection rates (soft tissue infection, osteomyelitis) in patients with delayed coverage, and (ii) measure complications of prolonged recumbency (deep vein thrombosis, pulmonary embolism, pressure injuries, pneumonia). **Methods:** Retrospective analysis of consecutive patients from January 2018 to December 2021 with Gustilo IIIB and IIIC fractures of distal tibia, ankle, and foot who underwent free-flap coverage procedure was performed. Patients with ≤ 1 initial debridement, < 6 months of follow-up, and locoregional flaps were excluded. **Results:** 12 patients met the criteria, with mean time-to-free-flap procedure of 15 days. 1 patient had coverage performed < 7 days from index injury. Only 1 patient (8%) belonging to the delayed (> 7 days) group developed a soft tissue infection. No patient in either group developed osteomyelitis or complications of prolonged recumbency. **Conclusion:** Contrary to published literature, delayed soft tissue coverage for open fractures of the distal lower limb did not yield significant infection rates. These lower rates may be due to: (i) multiple debridements performed (mean of 4 in our study), (ii) consultant-led debridements (more meticulous and extensive), (iii) use of adjuncts (antibiotic cement beads, local vancomycin powder, gentamicin-collagen sponge).

The application of the modified Pelvic Frame in clinical practice.

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Background: Pelvic fractures and concomitant injuries remain problems in orthopaedics, especially when the fracture is more than 4 weeks old. Open reduction will increase the number of severe, life-threatening injuries, regardless of the approach is used. The Starr Frame made a revolution in pelvic surgery. The invention made it possible to treat also old pelvic fractures with closed reduction and low invasive surgery. But this frame is bulky and has its own disadvantages. Methods: For unstable pelvic fractures, we established a comprehensive and integrated solution. We made a modification of the Starr Frame, that can be easier used in operating room. Results: The modified Pelvic Frame (MPF) is very helpful for closed reduction and percutaneous fixation in complex pelvic fractures. In this study, a minimally invasive fixation technique in the pelvic fracture was explored. Although the patient had delayed anterior sacral nerve compression problems after trauma we developed a traction system and surgical method using the MPF to achieve a closed reposition after 5 weeks from accident. The patient was relieved of nerve pressure, pain and rehabilitate his leg movement and sensitivity. Conclusions: This treatment method could be an alternative treatment for pelvic fractures and concomitant injuries. The application of this treatment is a safe and feasible option that can be employed to manage early and late nerve repair with sacral fractures when open surgery or conservative treatment is unsuitable. The MPF is more comfortable to use in operating room through its size and possibilities in its accommodation.

"Triangular Elevation and Distraction (TED) Frame: Tubular External Fixator Design for Ankle Joint Fractures"

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Introduction: The important components of soft tissue management for ankle fractures are lower limb elevation

and fracture site distraction. With the available methods for soft tissue management, no single technique is found to be effective in providing simultaneous limb elevation and fracture distraction. Thus, we propose use of Triangular Elevation and Distraction (TED) frame, as a novel design of external fixator for soft tissue

management. **Methods:** The data of patients admitted with Pilon fracture (AO/OTA-43 B, 43C) from January 2017 to December 2019 were retrospectively collected from the hospital records. A total of 105 patients with pilon fracture (AO/OTA- 43 B, 43C) were admitted; of whom 63 patients fulfilled the inclusion criteria. All these patients were given either TED frame or Bohler Braun Splint along with Calcaneum Pin Traction (BBSCPT) for the initial management.

Results: Thirty patients were managed with TED and 33 with BBSCPT for pre-operative soft tissue resolution. The mean time for swelling subsidence after application of TED was 75.9 + 14.7hrs (Mean + SD) compared to 117.5 + 25.9hrs required in BBSCPT group. Time required for soft tissue resolution in AO/OTA 43-B fractures was significantly less in TED group 68.7 + 13.2hrs, compared to BBSCPT group 102.4 + 15.4hrs. Swelling subsidence was also noted significantly earlier in AO/OTA 43-C fractures managed with TED 84.2 + 12hrs compared to 135.7 + 24.3hrs with BBSCPT.

Conclusion: This novel TED design is an economical, effective, and easy-to-apply solution for the management of soft tissue components in fractures around the ankle.

Return To Sport After Acetabular And Pelvic Ring Fractures In Amateur Athletes: A Retrospective Study

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Introduction:

Acetabular fractures and pelvic ring fractures are caused by motor vehicle accidents, pre-falls or simple falls and rarely by sports injuries. The aim of the study was to investigate the return to sport after acetabular and pelvic ring fractures

Method: In this retrospective study, hospital records and clinical notes were reviewed in order to collect demographic data, injury mechanism, date of surgery, operating times, type of implants, and surgical approaches.

Results: A total of 35 patients met the inclusions criteria. Twenty patients had acetabular fractures (male/female ratio of 4:1, mean age of 45,3 years); 15 had pelvic ring fractures (male/female ratio of 6,5/1 ratio and mean age of 51,3 years). According to Judet-Letournel classification, the most common fracture pattern includes the posterior and anterior wall , followed by the posterior wall and column and both columns. They have been ranked by the mean of their placement in every item (PCS-12; MCS-12; MAQ total; HOS total; HSAS and TAS).

According to Young-Burges classification, the most common fracture pattern is the antero-posterior compression, followed by the lateral compression and the vertical shear . The results of the comparison between the APC, LC and VS fractures were calculated with ANOVA test

Conclusions: For acetabular fractures the ones of the anterior region have a better outcome compared to the posterior ones, whereas for the pelvic ring fractures APC have a best outcome, followed by the LC and VS ones.

The outcome of blunt pelvic trauma with concurrent urinary tract injuries: a retrospective study

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Introduction: Urinary tract injuries (UTIs) such as bladder, ureter, or urethral lesions occur frequently in patients with pelvic trauma. Especially bladder injuries negatively affect outcome. However its exact impact is unclear. This study aimed to investigate the association between urinary tract injuries on outcome of trauma patients with pelvic trauma.

Methods: All adult patients with pelvic trauma and concurrent UTIs have been included from our trauma registry. Two groups were composed and compared. Group BLAD comprised patients with bladder injuries, while Group URET included those with ureter or urethra injuries. Outcome parameters examined included length of hospital stay (HLOS), length of intensive care unit stay (ICU-LOS), complication rates including infections, and mortality.

Results: The study included 43 patients with a mean age of 43 +/- 20. The mean Injury Severity Score (ISS) was 37 +/- 10. Group BLAD (N=33) had a significantly higher incidence of infectious complications compared to Group URET (N=10), respectively 60.1% vs. 20.0%; P=0.03. Gram-negative infections were most common (N=15). Fifteen patients developed sepsis. There were no significant differences in ICU and hospital stays or overall mortality rates between the two groups.

Conclusions: Concurrent traumatic injuries of the urinary tract in patients with pelvic trauma are associated with elevated rates of infectious complications and sepsis. Notably, infection rates are higher in associated bladder injuries compared to ureter or urethra lesions, with gram-negative bacteria being the most frequently implicated pathogens. Given the increasing clinical importance of antibiotic-resistant gram-negative bacteria, co-treatment of urinary tract injuries in pelvic trauma warrants the development of novel international guidelines.

A Comparative Prospective Analysis of Muscle Trauma in Total Hip Arthroplasty Using Direct Anterior Approach: Standard Operative Table Versus Orthopaedic Fracture Table."

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Hip Free Papers 1, MR 9, September 25, 2024, 08:00 - 10:00

Introduction: The Direct Anterior Approach (DAA) for Total Hip Arthroplasty (THA) offers multiple benefits compared to other approaches. While DAA is routinely executed on both standard operative tables and specialized orthopaedic fracture tables, comparative studies on muscle damage associated with these tables for single surgeons are limited.

Methodology: This prospective cohort study involved patients aged 18-60 years with symptomatic hip arthritis, treated from February 2022 to March 2024. All procedures were performed by the same surgeon at a single institution. Muscle damage was evaluated using the modified Goutallier Classification System via MRI at 3 months post-operation. Patient outcomes were further assessed at 2, 6, and 12 weeks postoperatively using the Forgotten Joint Score for Hip (FJS-12) and the Harris Hip Score.

Results: The study divided patients into two groups: those operated on a standard operative table (group 1) and those on an orthopaedic fracture table (group 2), with 20 patients in each. The prevalent cause of hip arthritis was avascular necrosis followed by traumatic arthritis. Group 2 exhibited significantly lower muscle damage according to the Goutallier score ($p < 0.05$), with reduced insult on the Ilio-psoas and Tensor fascia lata muscles.

Conclusion: Utilizing a fracture table for THA via DAA reduces muscle damage, and supports predictable surgical manipulation facilitating earlier rehabilitation and discharge. These findings highlight the fracture table's potential as a tool for leg manipulation to reduce muscle trauma during DAA THA.

Surgical intervention within 48 hours of admission for elderly hip fractures results in improved functional outcomes at 1-year post-operation: A matched cohort study of 1776 hip fractures.

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Hip Free Papers 1, MR 9, September 25, 2024, 08:00 - 10:00

Background

Elderly patients with hip fractures can benefit from surgery, though optimal time to surgery is controversial. Some studies report reduced mortality from early surgery (<48 hours). The aim of this study was to determine if delay to surgery of more than 48 hours was associated with poorer functional outcomes and increased 1-year mortality rates for elderly hip fractures.

Methods

A retrospective review of elderly hip fracture patients in a single institution from January 2014 to December 2018 was conducted. Patients were divided into 2 groups depending on hours from admission to surgery: Group 1 (<48 hours) and Group 2 (>48 hours); these groups were matched for the initial Modified Barthel's index (MBI) and Charlson comorbidity index (CCI). Functional outcomes via the MBI, ambulatory status, return to community and 1-year mortality rates were reviewed.

Results

2562 patients were eligible for the study. After 1:1 matching, there were 888 patients in each group. There was no significant difference in gender, age and fracture type between the groups. Group 1 had significantly better MBI scores at 6-months (mean 78.7 (SD 19.9) vs. mean 75.5 (SD 20.6)) and 1-year (mean 80.4 (SD 20.1) vs. mean 76.9 (SD 22.3)) ($p < 0.001$). There were significantly more patients in Group 1 who were community-ambulant (31% vs. 23%) and independent in ambulation (29% vs. 22%) ($p < 0.001$). There was no significant difference in 1-year mortality (3.7% vs 4.4%).

Conclusion

Early intervention for elderly hip fractures within 48 hours conferred better functional outcomes at the 6- and 12-month mark. There was no significant difference in 1-year mortality.

Factors related to collapse progression in Japanese Investigation Committee classification type B osteonecrosis of the femoral head

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Purpose: This study aimed to identify factors related to collapse progression in Japanese Investigation Committee classification type B osteonecrosis of the femoral head (ONFH) and to identify patients who would benefit from surgical treatment.

Methods: This study included 41 patients with type B ONFH with a minimum follow-up of 3 years. Based on a ≥ 3 mm collapse progression in ONFH, we categorized patients into two groups: collapse progression and no collapse progression. Sagittal and coronal computed tomography images were used to measure the necrotic region relative to the intact femoral head diameter. The ratios of the necrotic regions of transverse and vertical diameter in coronal and sagittal images are defined as the mediolateral transverse and mediolateral vertical, anteroposterior transverse and anteroposterior vertical, respectively. Demographic data and these imaging findings were compared between the two groups. We established a cut-off value for predicting collapse progression through receiver operating characteristic analysis and determined survival rates with collapse progression as the endpoint.

Results: Type B ONFH had a 17.8% collapse progression rate. The mediolateral transverse, mediolateral vertical, anteroposterior transverse and anteroposterior vertical were significantly higher in the collapse progression group. Mediolateral transverse was an independent risk factor of collapse progression (hazard ratio, 1.27; 95% confidence interval, 1.03–1.57; $P = 0.03$), with an mediolateral transverse cut-off of 45.6%. The 5-year survival rates with collapse progression as the endpoints were 57.0 and 94.9% in the ML transverse of ≥ 45.6 and $< 45.6\%$, respectively.

Conclusion: A mediolateral transverse of $\geq 45.6\%$ predicts collapse progression in type B ONFH.

Is Biplane Double Supported Screw Fixation(BDSF) superior to Dynamic Hip Screw (DHS) Fixation in treatment of young neck femur fractures.

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Introduction: Preferred treatment of Neck femur fractures in young adults is osteosynthesis. There is no consensus regarding ideal implant, although DHS/ Inverted triangle configuration of CCS are most commonly used. We tried to evaluate the superiority of BDSF over DHS as it provides Biplane double support fixation. **Material and methods:** 45 patients of neck femur fracture (Age between 18-55 years) were treated with BDSF or Dynamic Hip Screw with derotation screw and were compared for union, functional outcome and intraoperative parameters: blood loss, duration of surgery and radiation exposure. **Results:** Mean age was 38.5 years (range 19 to 55 years) and mean follow up was 9.25 months in DHS and 9.75 months in BDSF group. Union was seen in 21 of 23 patients in DHS and 21 of 22 patients in BDSF group. Mean blood loss, duration of surgery and exposure in DHS and BDSF was significantly different which was 196.8 ml and 74.67 ml, 76 min and 88 min, and 17 and 27 shoots respectively. Mean harris hip score and union time in DHS and BDSF was 85.8 and 86.1(p value >0.05), and 14 and 15.2 weeks respectively. **Conclusion:** Functional outcomes of BDSF and DHS are comparable although greater blood loss is expected in surgery in DHS group, whereas BDSF has increased duration of surgery and radiation exposure as it is a newer technique and need to be expertised by a learning curve.

Single Dose Versus Extended Antibiotic Prophylaxis in Primary Hip and Knee Arthroplasty: A Systematic Review and Meta Analysis

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Introduction: There is a common question amongst many joint arthroplasty surgeons as to how many doses of prophylactic antibiotics should one administer during primary hip and knee arthroplasty procedures. Some advocate for a single dose during the perioperative period whilst others want an extended antibiotic course. **Methods:** A systematic search was conducted across PubMed, Embase, and the Cochrane Library databases to identify relevant studies. The focus was on comparing the outcomes of single dose antibiotic prophylaxis against extended antibiotic prophylaxis in primary joint arthroplasty procedures of the hip and knee. The primary endpoints of this study were periprosthetic joint infection, revision surgery and superficial surgical site infections. A total of 744 studies were screened for title and abstracts. Of the 15 eligible studies two authors AF and JYP performed a blinded full text review and came to the unanimous conclusion of including 9 studies in this meta analysis. **Results:** Across 9 studies 295654 patients were included in this review of which 125489 were total knee arthroplasties and 172055 total hip arthroplasties. **Conclusion:** There was a significant statistical difference in terms of the incident of periprosthetic joint infection, favouring single dose antibiotic prophylaxis (Odd Ratio 0.78 [0.63, 0.98] 95% CI, Heterogeneity: Tau = 0.00; Chi² = 4.45, df = 5 (P = 0.49); I² = 0%). In summary, a single dose prophylactic antibiotic regimen proves to be more effective in reducing the incidence of periprosthetic joint infections.

Modified Trochanteric Triplane Osteotomy for chronic moderate to severe Slipped Capital Femoral Epiphysis

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Introduction: Modified Dunn osteotomy addresses all the deformities of slipped capital femoral epiphysis (SCFE), but has the potential to cause avascular necrosis and chondrolysis. Trochanteric osteotomies create a distal deformity to compensate for the proximal deformity. We describe a modified trochanteric triplane osteotomy (MTTO) with a 1300 ABP, without removal of bone wedge for moderate and severe SCFE. **Methods:** The study was done in patients, who underwent MTTO (minimum 2 years follow-up) for moderate/ severe chronic stable SCFE from July 2018 to December 2021. Radiological outcomes were assessed using alpha angle, neck shaft angle, mechanical axis deviation and limb length discrepancy (LLD) on scannogram. Functional outcomes were assessed using modified Harris hip score, lower extremity functional scale (LEFS) and SF-36 questionnaire. **Results:** A total of 11 patients and 13 hips were included. The mean age was 12.9 ± 2.1 years. 12 had severe slip and 1 had moderate slip. All osteotomies united uneventfully. At 37 months follow up, the mean neck shaft angle was 129.0°, mean alpha angle was 69.70°, and mean LLD was 1.05cm. There was significant improvement in the post-operative modified Harris hip score ($p < 0.001$), from 73 to 96 postoperatively, and the median LEFS was 78. 1 case had bone scan evidence of AVN, but did well with restricted weight bearing and bisphosphonate therapy. **Conclusion:** MTTO is a safe and effective option for chronic moderate and severe SCFE. However, a residual proximal femoral Cam deformity persists after this procedure which may need to be treated with an osteochondroplasty.

Incidence and causes of Cement Intravasation in Total Hip Arthroplasty: A Data Analysis of 1,100 cases from a Single Center.

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Hip Free Papers 1, MR 9, September 25, 2024, 08:00 - 10:00

Aim: Despite favourable long-term outcomes of cemented stem fixation in hip arthroplasty, complications like bone cementation syndrome and rare cement intravasation pose risks. The incidence of bone cementation syndrome is well documented, however, data on cement intravasation is limited to case reports. **Methods:** In this single-centre retrospective study, we evaluated 1100 cemented hip arthroplasties from 2012 to 2023 to identify cement intravasation incidence and related postoperative complications. Detection involved analysis of surgical reports, radiographs, and CT scans, with outcomes including embolism and DVT. **Results:** In 1,100 hips, a 0.63 % incidence of cement intravasation was noted using AMI TM stems and high-viscosity cement. All cases employed a fourth-generation cementing technique. No postoperative complications like DVT or embolism were observed. **Conclusion:** The study documents the incidence of cement intravasation with cemented hip stems using high viscosity cement and fourth-generation cementing technique. No major postoperative complications were noted associated with cement intravasation.

Free vascularized iliac bone flap based on deep circumflex iliac vessels graft for the treatment of osteonecrosis of femoral head

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Hip Free Papers 1, MR 9, September 25, 2024, 08:00 - 10:00

Background:To investigate the feasibility and clinical efficacy of free vascularized iliac bone flap based on deep iliac circumflex vessels graft for the treatment of osteonecrosis of femoral head (ONFH).

Methods:216 patients (292 hips) undergoing ONFH were included from 2016 to 2023. After debridement of the necrotic bones, the vascularized iliac bone flap was designed and harvested, in which the deep circumflex iliac vessels and the transverse branch (or ascending branch) of the lateral circumflex femoral artery and their accompanying veins were anastomosed. X-ray was obtained at 1, 3, 6, 9, and 12 months respectively for evaluation of the bone flap healing. Hip function was evaluated with Harris hip score (HHS) at 36 months postoperatively. **Results:**The majority of hips healed well; five complications arose: 17 patient (5.8%) developed superficial wound infection, 12 patient (4.19%) experienced hematoma, 18 patients (6.2%) developed heterotopic ossifications, and 24 patients (8.2%) suffered anterolateral femoral cutaneous nerve injury. X-ray films at 12 months showed improvement in 223 hips (76.4%), 56 hips (19.2%) were unchanged, and 13 femoral head collapse with conversion to total hip arthroplasty (4.5%). 126 cases followed up for more than 3 years, with an average HHS score of 84.2 ± 3.5 which was significantly improved compared to the preoperative results ($P < 0.05$). The hip preserving ratio was 95.7% at the 1-year follow-up and 93.3% at the 3-year follow-up. **Conclusions:**Free vascularized iliac bone flap based on deep circumflex iliac vessels graft is an optimal treatment option for ONFH in stages ARCO II and III.

Fixed – angle gliding fixation device is superior to other fixation techniques in Pauwels 3 femoral neck fractures

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Hip Free Papers 1, MR 9, September 25, 2024, 08:00 - 10:00

Introduction: Hip fractures treatment is a growing challenge worldwide. Among them, trochanteric fractures are mostly fixed, while femoral neck fractures (FNF) could be treated either with arthroplasty or with fixation.

Aim: The aim of this study was to compare radiological outcome of fixed FNF with fixed – angle gliding fixation device (FNS) with other techniques (OT) in Pauwels I and II vs. Pauwels III fracture type.

Methods: In period 2018. - 2022. we identified 1659 patients with hip fractures in our institution. 47% had FNF. We found 94 patients (12% of all FNF) where femoral neck fixation fixation was done. 39% of them were fixed by FNS, 61% by OT. We analyzed fracture type using Pauwels classification, implant positioning and fracture healing. X – Rays were analyzed by two surgeons and one radiologist.

Results: There was 60% Pauwels I and II fractures and 40% Pauwels III fractures. We found overall fracture healing after FNF fixation in 72% patients. Fracture healing at fixed Pauwels I and II fractures was in 84%, in Pauwels III fractures 53%.

There was 15 (44%) Pauwels III patients treated with OT and 19 patients (56%) treated with FNS. 11 OT fixations (73%) failed, 5 FNS fixations (26%) failed. We found suboptimal reduction on 5 failed OT fixation (45%) and on 4 FNS fixations (80%).

Conclusion: We found FNS is superior in treatment of Pauwels III femoral neck fracture fixation comparing to OT. Overall 67% of implant failure goes with suboptimal femoral neck fracture reduction.

Outcomes of perioperative intravenous iron infusion in femoral fracture surgeries: a systematic review and meta-analysis of randomised controlled trials

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Hip Free Papers 1, MR 9, September 25, 2024, 08:00 - 10:00

Background:

Patient blood management recommends using intravenous (IV) iron infusion to reduce inappropriate blood transfusion perioperatively for anaemic surgical patients. However, evidence regarding its use in patients with femoral fractures is limited. This systematic review aims to collate the current evidence regarding the use of IV iron in femoral fracture patients managed surgically.

Method:

MEDLINE, Embase, Cochrane CENTRAL, Clinicaltrials.gov, and the WHO ICTRP databases were systematically searched for randomised controlled trials comparing the outcomes of perioperative IV iron infusion with placebo in adults requiring surgical management for femoral fractures. Risk ratios (RR) were calculated using the Mantel-Haenszel method for dichotomous outcomes, and mean difference (MD) was calculated for continuous outcomes.

Results:

Six RCTs with 1085 patients were included. There was no statistically significant difference in the proportion of patients receiving red cell transfusion (RR:0.89, 95%CI: 0.80; 1.00), number of red cell unit transfused (RR:0.87, 95%CI: 0.64; 1.19), length of hospital stay (MD=-0.08, 95%CI: -1.04; 0.87), mortality rates (RR=1.01, 95%CI: 0.73; 1.40), infection rates (RR=0.89, 95%CI: 0.68; 1.16), and haemoglobin levels at the time of discharge (MD=1.73, 95%CI: -0.89; 4.35). Results from individual studies showed no statistically significant differences in functional and quality of life outcomes.

Conclusion:

There is a moderate to low level of evidence showing no significant difference in the proportion of patients receiving red cell transfusion, length of hospital stay, mortality rates, infection rates, and short-term haemoglobin level in femoral fracture patients receiving IV iron perioperatively. Further studies must confirm its effect on patient-reported outcome measures.

Histological analysis of femoral head in patients with suspicious proximal femoral fractures is an useful investigation?

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Hip Free Papers 1, MR 9, September 25, 2024, 08:00 - 10:00

Introduction: Neck of femur fractures are amongst the most common types of fragility fracture, often necessitating further histological analysis to exclude malignancy as a precipitating factor. Whilst the Royal College of Pathologists (2011) recommend a low clinical threshold for investigation, there is currently no UK consensus regarding the circumstances in which the femoral head (FH) should be extracted and sent to histology. In this study, we aimed to identify whether routine histological analysis of FH in patients with proximal femoral fractures is justifiable in certain patient populations. **Methods:** We performed a retrospective search using Clinical Portal and PAX, following extraction of relevant patient cohort from handwritten histology logbooks, as per local hospital audit guidelines. Our selection criteria specified FH specimen sent to histology between dates of March 2022 – March 2024; all legible phrase and spelling variations were accepted. Our primary outcome measure was the presence of positive histology following analysis of FH, including metastatic and/or new malignancy. **Results:** We identified 66 eligible patients with an average age of 82 ± 9.9 (55 – 101). The most common reason for histology was previous/concurrent medical history of malignancy (59.2%). Ultimately, only one histology specimen (1.5%) was positive for the presence of metastatic carcinoma, with no new malignancies discovered. **Discussion:** Previous/concurrent medical history of malignancy correlates poorly with positive histological analysis. Definitive national guidelines outlining circumstances in which FH histology should be conducted are required, as reliance on surgical judgement is not cost-effective in patient management nor clinical outcome.

Regional five-year clinical outcomes of 289 consecutive cementless oxford uni-compartmental knee replacements at a non-inventor centre

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Knee Free Papers 1, MR 11, September 25, 2024, 08:00 - 10:00

Introduction: Uncemented unicompartmental knee replacement offers a minimally invasive approach, faster rehabilitation and good levels of function, supported by evidence reporting low intra-operative fracture rate and mid-term stability with no implant migration at 5-years. Our aim was to examine the clinical outcomes in 289 consecutive Oxford unicompartmental knee arthroplasties (257 patients), five years post-operatively.

Methods: A retrospective study of patients treated in a non-inventor centre by a single surgeon was performed. Patients with anteromedial bone on bone uni-compartmental arthritis were included. Oxford Knee Scores (OKSs) at last follow-up were recorded, intra-operative complications reported with commentary on revision cases.

Results: Mean age of patients was 66 years (SD 9.6, 45e88 years). The average oxford knee score was 40.1 (n 1/4 232, Range 06 to 48, SD 8.46) at an average 6 years and 3 months from surgery, including revised patients. Six patients had their prosthesis revised within five-years of the index surgery. Five-year cumulative implant survival rate was 97.8% (95% CI 97.62 to 97.98, SE 0.09). Indications for revision were: lateral side wear (n 1/4 1); dislocated spacer (n 1/4 4); instability and spacer subluxation (n 1/4 1). Thirteen patients died within five years of surgery Five-year cumulative survival rate was 94.9% (95% CI 94.87 to 94.925, SE 0.013).

Conclusion: The proportion of patients requiring revision at five-years is lower than that generally reported for UKR. These findings add support for the use of the cementless oxford UKR outside the design centre.

Effect Of PCL Resection on Flexion and Extension Gaps in Indian Varus Knees Using Stryker Mako Robotic Total Knee Arthroplasty

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Knee Free Papers 1, MR 11, September 25, 2024, 08:00 - 10:00

Introduction:Posterior cruciate ligament(PCL) is a key structure in balancing the gaps in TKA;but the effect of its resection on the gaps are controversial and inconclusive. This study aims to understand the changes in the flexion and extension gaps in both medial and lateral compartments following PCL resection in TKA with Stryker-Mako robot. **Materials and methods:**Prospective study which included 50 patients with osteoarthritis of the knee with varus deformity who underwent Stryker Mako robot assisted TKA(RA-TKA) from July2023 to Dec2023. Valgus deformity, post traumatic arthritis, previous ligament surgeries, rheumatoid arthritis are excluded. Medial and lateral compartment are distracted to the physiological limits in full extension and 90° flexion with curved osteotome before and after PCL release and gaps are documented. **Results:**PCL resection led to greater increase in medial flexion gap(mean 3.1mm(sd 2.0),p-0.009) compared to lateral flexion gap(mean 1.8mm(sd 1.2),p-0.003). PCL resection increased medial extension gap by mean of 0.9mm(p-0.004) and lateral extension gap by mean of 1mm(p-0.03). There was no significant improvement in the varus angle(mean 1.20 p-0.6)and flexion deformity angle(improved by mean of 1.20) following PCL resection. **Discussion:**Kayani et al have shown asymmetrical flexion gap opening which is more in lateral compartment. Lucian et al claim that the pattern of opening up of gaps following PCL release is inconsistent. The behaviour of PCL may differ based on the CPAKtype and in Indian scenario most common is CPAKtype 1, unlike the western population. **Conclusion:**In Indian varus knees PCL resection creates flexion extension mismatch with greater increase in medial flexion gap.

Impact of Knee Flexion Angle on Outcomes after Total Knee Arthroplasty

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Knee Free Papers 1, MR 11, September 25, 2024, 08:00 - 10:00

Background: The position of knee flexion during wound closure in total knee arthroplasty (TKA) can influence postoperative outcomes such as pain, knee function, and patellar height. This study compares the effects of 45-degree versus 90-degree knee flexion. **Methods:** A randomized sample of 58 patients undergoing TKA with posterior-stabilized prostheses was divided into two groups: 45-degree knee flexion (29 patients) and 90-degree knee flexion (29 patients). Outcomes assessed at 3 months postoperatively included pain, patellar height, knee function, and complications. **Results:** At 3 months post-TKA, there were no significant differences in pain scores, patellar height (measured by the modified Insall-Salvati ratio and Blackburne-Peel index), knee function (assessed by the Forgotten Joint Score-12 Thai version and Oxford Knee Score Thai version), or range of motion between the two groups. No postoperative complications were observed. **Conclusions:** Knee flexion at 45 degrees and 90 degrees during wound closure in TKA showed no significant differences in pain, patellar height, knee function, or complications at 3 months postoperatively

Current Status of Asian Knee and Hip Joint Replacement Registries: a systematic review

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Knee Free Papers 1, MR 11, September 25, 2024, 08:00 - 10:00

Introduction: We aimed to provide a comprehensive overview of current Asian joint arthroplasty registries, highlighting their strengths and weaknesses, and providing a case for the need to establish such registries nationwide.

Methods: A broad search on Google, PubMed and Scopus using the keywords “joint registry Asia” without limits on language or date was conducted. The search was then conducted with keywords in English using Boolean operators, ("arthroplasty registry" OR "joint registry" OR "knee registry" OR "arthroplasty database" OR "joint database" OR "joint arthroplasty registry" OR "knee arthroplasty registry" OR "hip registry" OR "hip arthroplasty registry" OR "joint arthroplasty database" OR "hip database" OR "hip arthroplasty database" OR "knee arthroplasty database"). **Results:** A total of six registries in Asia were identified. Only three, Indian Joint Registry, Japanese Orthopaedic Association National Registry and Pakistan National Joint Registry have developed official websites and published annual reports. The majority of both hip surgeries in India and Pakistan were carried out on men, osteoarthritis in contrary to in Japan. The majority of knee surgeries were conducted in women. Osteoarthritis was the primary indication for knee surgery, whereas osteonecrosis was the main indication for hip surgery in India and Pakistan compared to osteoarthritis in Japan. **Conclusions:** Although many countries in Asia have attempted to report data on joint arthroplasties, very little information on nationwide registries can be found. Only three countries in Asia, Japan, India and Pakistan have made available their joint registry data to the public.

Comparison Of Intravenous Versus Topical Tranexamic Acid in Blood Loss Reduction in Bilateral Total Knee Arthroplasty

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Knee Free Papers 1, MR 11, September 25, 2024, 08:00 - 10:00

Introduction Multiple strategies, used either in isolation or combination, are available to reduce the need for post-operative blood transfusion in joint replacements. Amongst them, the use of tranexamic acid (TXA) has been rising and this study was conducted to compare the efficacy of topical and intravenous TXA in bilateral total knee replacement patients. **Materials and methods** Randomised prospective study with 120 patients (male: female: 25:95) undergoing bilateral TKA. Patients were divided into two groups A and B after computer randomization, who received intravenous or topical (intra-articular) TXA respectively. **Results** The average haemoglobin loss in intravenous group was 90.2379 g/L as compared to 39.137 g/L in topical group ($p < 0.005$). Moreover, there was reduction in blood loss in topical (330.1602 ml) as compared to intravenous group (764.9622 ml). The blood transfusion rate was more for the intravenous group (average 1.73 units) than for the topical group (average 0.75, unit). WOMAC score at 6 weeks in the intravenous group was 12.50, and in the topical group was 7.23 (p value < 0.001). **Conclusion** Topical TXA is better than intravenous TXA for reduction of blood loss, which also reduces the need for blood transfusion in bilateral TKA patients.

Clinical Outcomes of Primary Total Knee Arthroplasty for Neuroarthropathy of the Knee

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Knee Free Papers 1, MR 11, September 25, 2024, 08:00 - 10:00

Introduction: We aim to analyse the clinical and radiological outcomes of TKA in neuropathic joints. **Methods:** A final cohort of 17 patients (21 knees) with the diagnosis of neuropathic joint undergoing primary TKA between January 2013 to January 2019 were included in the study. The preoperative ambulatory status, range of motion, prosthesis used, level of constraint and any augmentation were retrieved from medical records. Radiological evaluation includes Koshino's staging, magnitude of deformity, and any progressive loosening were evaluated. **Results:** The mean follow up was 40.2 months (range, 15 to 75 months). The mean HKA angle in valgus knees was 23.60 (range, 11.10 to 42.50) and for the varus knees was 19.30 (range, 4.90 to 39.60). The prosthesis used were posterior stabilized in 7 knees (33.3%), varus-valgus constrained in 5 knees (23.8%) and rotating hinge was required in 9 knees (42.8%). The mean arc of motion improved from 102.4±22.7 degrees to 105.7±15.5 degrees postoperatively ($p>0.05$). The knee society and knee society functional score improved from 23.3±9.3 and 28.3±12.2 preoperatively to 81.1±5.4 and 80.4±8.5 during the follow up respectively ($p<0.05$). There were no progressive radiolucent lines noted in the final follow up. One patient had medial collateral ligament injury, one patient had deep vein thrombosis and another had postoperative periprosthetic tibial shaft fracture. **Conclusion:** TKA in neuropathic joint will lead to improved functional and radiological outcomes compared to the preoperative disability. The diagnosis of non-syphilitic neuroarthropathy, modern constrained prosthesis and early rehabilitation lead to improved clinical outcomes in these high-risk patients.

Knee range of motion after total knee arthroplasty is not affected by intravenous or periarticular use of tranexamic acid

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Knee Free Papers 1, MR 11, September 25, 2024, 08:00 - 10:00

Background: Tranexamic acid has proven to reduce bleeding after total knee arthroplasty without an increase in adverse events. However, it is still controversial whether its intravenous or periarticular delivery is preferable. **Methods:** We performed a prospective cohort study comparing intravenous and periarticular tranexamic acid in total knee arthroplasty, and specifically the differences in the clinical evaluation of the knee after one year. Two groups of 37 patients received either 2 doses of intravenous tranexamic acid (25mg/kg) or a periarticular infiltration of 2g in 40cc of saline. The blood level of haemoglobin was recorded after 24 hours as well as clinical and functional data one year after the surgery. **Results:** Patients in the iv group showed a reduction in haemoglobin level after 24 hours of 2.1 mg/dL ($\pm 0,97$) and the second group of 2,14 mg/dL ($\pm 0,79$) showing no statistical difference in the t-test ($t=0.8671$). The visual analogue scale (VAS) score, flexion and extension at one year follow-up showed a value of 2.65, 106.97 and 0 in the iv group, and 2.69, 106.63 and 0 in the periarticular infiltration group. The Oxford Knee Score at follow up was 34.04 and 33.82, respectively. None of the results regarding pain and range of motion showed statistical differences between the two groups. **Conclusion:** Both intravenous and periarticular delivery of tranexamic acid in total knee arthroplasty provide equal functional results at one year follow-up.

Proximal tibia stress fractures with grade 4 osteoarthritis of knee- experience with long stem TKR.

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Knee Free Papers 1, MR 11, September 25, 2024, 08:00 - 10:00

Introduction: Osteoarthritis of Knee with Tibial stress fracture is not so common entity. It poses additional challenges for doing Total Knee Arthroplasty. We studied the radiological and functional outcome of Single-stage total knee arthroplasty with long stem components for patients with grade4 of knee osteoarthritis and proximal tibia stress fractures. **Materials and Methods:** We analysed 15 patients with proximal tibia stress fractures associated with Grade 4 knee osteoarthritis. The mean age was 66 years (range-52–80) and included seven men and eight women. Diagnosis of stress fractures was seen on x rays and clinical examination. Standing X-Ray views were obtained for all patients preoperatively and postoperatively. All patients were treated with TKA with long stem (PCL sacrificing). Union of the fracture site studied using anteroposterior and lateral leg x-rays at intervals. **Results:** The mean follow-up period was 17.2 weeks (range of 12–24) months. All patients experienced reduction in pain and improvement in functional status. The range of motion of the knee improved significantly. Flexion of knee improved from mean of 88 degrees (60-110) to 122 degrees (100-140). The fixed flexion deformity also decreased from mean of 10 degrees (5-15) to mean of 1 degree (0-5) The Knee Society score and Knee Society functional score had excellent improvements of approximately 82% and 83% respectively. All proximal tibia stress fractures were united till with an average time of 10 weeks (8-12 weeks). **Conclusion:** Single- stage Long stem TKR is a good and reliable surgical option for proximal tibial stress fractures with grade 4OA

Alteration of coronal plane alignment of the knee when performing robot-assisted total knee arthroplasty

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Knee Free Papers 1, MR 11, September 25, 2024, 08:00 - 10:00

The coronal plane alignment of the knee (CPAK) classification classifies coronal knee alignment based on the arithmetic hip knee angle and joint line obliquity. With increasing prevalence of robot-assisted total knee arthroplasty (TKA), surgeons are equipped to assess gap balancing intra-operatively and fine tune implant placement prior to making saw cuts, to achieve the “ideal” lower limb alignment. Hence, this study aims to evaluate how pre- vs post-operative CPAK classification changes for patients undergoing robot-assisted TKA, and its impact on patient reported outcome measures (PROMs). We retrospectively analysed 250 consecutive knees in patients who underwent Stryker Mako robot-assisted TKAs. Gap balancing was performed intra-operatively with all surgeons opting for a restricted kinematic alignment strategy. The most common pre-operative CPAK phenotypes were 37% CPAK I, 27% CPAK IV and 16% CPAK II, which changed post-operatively to 28.7% CPAK IV and 70.5% CPAK V post-operatively. In terms of functional outcomes, patients with pre-operative CPAK IV or V had a better Knee Society Score at 6 months post-operatively compared to all other CPAK phenotypes ($p < 0.001$), but there was no difference at 2 years ($p = 0.74$). These findings illustrate how CPAK phenotypes change with robot-assisted TKA, but with no significant difference in long-term PROMs.

Distribution of Coronal Plane Alignment of the Knee Classification in Han-Chinese Patients with Knee Osteoarthritis

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Knee Free Papers 1, MR 11, September 25, 2024, 08:00 - 10:00

Introduction: The coronal plane alignment of knee (CPAK) classification system has been proposed as a pragmatic, comprehensive classification for coronal knee alignment, based on constitutional alignment and JLO. This study aimed to evaluate the phenotype of knees in the Han Chinese population based on the CPAK system. **Methods** Randomly chosen 300 osteoarthritic knees of Han Chinese patients underwent radiological assessment with long-leg radiographs and were classified based on the CPAK system. Measurements included the arithmetic hip–knee–ankle angles (aHKA), joint line obliquity (JLO), lateral distal femoral angle (LDFA) and medial proximal tibial angle (MPTA). Knees were grouped into 9 CPAK phenotypes based on aHKA and JLO. **Results** Most knees were distributed in Type I (37%) with constitutional varus and apex-distal joint line orientation. followed by type IV (26.7%), type II (13%), type III (10%), and type V (5.3%), types VII (3.7%), type VI(3%), type VIII (1.3 %), type IX was not distributed. **Conclusion** The majority of Han Chinese population was found to have constitutional varus alignment and apex-distal joint line orientation.

The objective measurement of hypoesthesia after total knee arthroplasty and its correlation with length of skin incision: A prospective study

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Knee Free Papers 1, MR 11, September 25, 2024, 08:00 - 10:00

Introduction: A well-known postoperative complication of the standard midline approach used in Total Knee Arthroplasty (TKA) is an injury to the infrapatellar branch of the saphenous nerve (IPBSN), which results in hypoesthesia of the anterior skin around the knee.

Method: As part of the present study, 66 knees undergoing primary TKA with a standard anterior midline incision were evaluated. The length of the incision and the area of numbness were measured in complete knee extension and 90° of flexion. The area of numbness was marked by the patient using a sketch pen. It was also determined by an independent observer using monofilament testing. The "ImageJ" software was also used for calculating the area of numbness. All measurements were done at 2 weeks, 3 months, and 6 months postoperatively.

Results: All patients developed numbness around the knee after TKA. Pearson correlation coefficient showed a statistically significant correlation between the length of skin incision and the area of numbness in both flexion and extension at 2 weeks ($p < 0.001$) and 3 months ($p < 0.001$). However, there was a weak positive correlation at 6 months ($p = 0.217$) and it was statistically not significant.

Conclusion: The skin incision length used for TKA positively correlates with the area of numbness postoperatively in the short-term period. However, there is no significant correlation 6 months after the surgery. Numbness involving the lateral skin flap is a significant notable complication after TKA and patients should be counseled regarding this complication before surgery. The occurrence of numbness should be documented postoperatively.

A Study of the Appropriate Day and Frequency of Hemoglobin Level Monitoring after Total Knee Arthroplasty

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Knee Free Papers 1, MR 11, September 25, 2024, 08:00 - 10:00

Background: TKA has estimated blood loss from 700-1,500 ml. Postoperative changes in hemoglobin (Hb) can evoke a stress response in patients and increase morbidity. While monitoring Hb levels and clinical is standard postoperative care, existing literature lacks a standardized guideline for postoperative blood concentration monitoring. This leading to the question what the appropriate timing and frequency for blood collection. this could reduce the cost of investigations and alleviate the discomfort associated with blood collections.

Methods: A total of 203 patients undergoing unilateral TKA, and 130 patients undergoing simultaneous bilateral TKA were enrolled in a prospective observational study. All patients received tranexamic acid and underwent tourniquet. Preoperative Hb levels were obtained and subsequent measurements were taken at 24 and 48 hours postoperatively. A correlation between pre- and post-operative of hemoglobin level and blood transfusion rate was analyzed. Blood was transfused when Hb level <8.0 or patient had anemic symptoms.

Results: The mean difference in Hb levels between preoperative and 24 hours postoperative was 2.1 g/dL in unilateral and 2.78 g/dL in bilateral TKA. The most significant decrease in Hb levels was observed at 24 hours postoperative compared to the previous day. The overall blood transfusion rate was 6.4% in unilateral and 37.6% in bilateral TKA. From the results, in unilateral patients with hemoglobin levels of 13.1 (\pm 1.3) g/dL and 12.99 (\pm 1.13) g/dL in bilateral TKA, no blood transfusions were administered. The first-day blood transfusion rate was 46% in unilateral and 48.9% in bilateral TKA groups.

Can we delay TKR by using Viscoelastic injections & physiotherapy

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Knee Free Papers 1, MR 11, September 25, 2024, 08:00 - 10:00

Millions adults worldwide have knee osteoarthritis (OA), a life-altering disease associated with pain. Different pharmacologic and non-pharmacologic drugs and agents are recommended for treatment of pain, and to improve their daily adult life. The use of viscosupplementation with hyaluronic acid (HA) injections can benefit to restore synovial fluid properties in the knee, can relief pain and improved the function. Arthroplasty of the knee either partial or total usually is considered as the last option. This study to show the use of HA injections in delaying knee arthroplasty in patients with knee OA.

Methods: A retrospective study of 85 patients with degenerative knee disease of at least two compartments seen in our OPD from Jan 2020 till March 2023 (55 female & 30 males). Excluding those with obvious deformities. All patients receive HA injections 4ml single and Intensive quadriceps build up and stretching exercises for two months, then follow clinically and radiologically.

Result: There was a well defined response curve with such model of treatment in 69 case very well improved and the reduction of NSADs use, 10 cases slight improvements and 6 cases with minimal satisfaction

Conclusion: The results support the effectiveness of hyaluronic acid injections associated with good physiotherapy program in delaying total knee replacement and show that patients treated with hyaluronic acid and the reduction of the direct medical costs

Does the infant hip dysplasia disease specific care certification program improve the infant hip care in Changhua Christian Children's Hospital?

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International Hip Dysplasia Congress: a Worldwide Perspective 1 - Juvenile and Adolescent Dysplasia, MR 13, September 25, 2024, 08:00 - 10:00

INTRODUCTION

The Joint Commission of Taiwan launched the infant hip dysplasia disease specific care certification program. Changhua Christian Children's Hospital is the first certified healthcare organization in this program. This program aims to encourage comprehensive infant hip care services from hip dysplasia prevention to acute and chronic hip dysplasia care to meet neonate hip healthcare demands. The efficiency of the early diagnosis and avoidance of the major surgery in DDH was improved.

MATERIALS & METHOD

We set up a cross-disciplinary team integrating in the infant hip dysplasia care. This program was launched from March 2022. The hip stability was assessed with standard hip physical examination, followed by selective hip ultrasound according to the risk factor and each hip stability. Either observation, Pavlik harness treatment, or close reduction were applied according to each hip condition. The DDH prevention baby care method was introduced to the parents. The incidence of early diagnosis, surgery were collected.

RESULTS / DISCUSSION

The total number of hip screen was 2494. 258 cases were classified as hip dysplasia. The early detection rate was 5.82%. No case failed Pavlik harness treatment. The incidence of DDH surgery was 0.00%. In our study, the incidence of early diagnosis was higher than the average incidence of DDH in Taiwanese population. The incidence of surgery is lower than the average incidence of surgery in Taiwanese population.

CONCLUSION

The infant hip dysplasia DSC certification program improved the efficiency of the early diagnosis and treatment of DDH and avoid major surgery in the infants.

Meyer's dysplasia in the differential diagnosis of hip joint pathology in children

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International Hip Dysplasia Congress: a Worldwide Perspective 1 - Juvenile and Adolescent Dysplasia,
MR 13, September 25, 2024, 08:00 - 10:00

Introduction: in practice, there is often a need for diagnosis and differential diagnosis of diseases of the femoral head in preschool children. To date, isolated dysplasia of the femoral heads - Meyer's dysplasia - has not been sufficiently studied.

Purpose: To study the semiotics of changes in the hip joint in patients with Meyer's dysplasia for differential diagnosis. **Materials and methods:** prospective cohort study. X-ray data, MSCT (multi-slice computed tomography), MRI before treatment were studied in 20 patients with Meyer's dysplasia.

Results: patient age ranged from 1 to 3 years. There were 13 boys, 7 girls. Bilateral lesions were diagnosed in 9, unilateral in 11 patients. Coverage of the femoral head was complete in all. The epiphysis index averaged 2. According to X-ray and computed tomography data, fragmentation of the ossification nucleus was visualized. According to MRI, the integrity of the articular cartilage was preserved, the height was uniform, and in 5 patients an increase in the amount of fluid in the joint cavity was detected. In comparison with Legg-Calvé-Perthes disease, there were no foci of necrosis, bone marrow edema, or deformation of the head. **Conclusion:** thus, a thorough examination of patients with suspected pathology of the hip joint allows us to avoid unjustified prescription of treatment for these patients.

Needle Arthroscopy in the Treatment of Hip Dysplasia in Adolescence

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International Hip Dysplasia Congress: a Worldwide Perspective 1 - Juvenile and Adolescent Dysplasia,

MR 13, September 25, 2024, 08:00 - 10:00

Dysplasia of the hip can alter hip biomechanics resulting in higher contact stresses in the joint, which can lead to degenerative changes in affected adolescents. Hip dysplasia can lead to intra-articular pathology including cartilage degeneration and labral tears, resulting in debilitating pain and dysfunction in these patients. Arthroscopic treatment can be used as an adjunct to open procedures for symptomatic treatment of intra-articular pathology. Needle arthroscopy describes a minimally-invasive form of arthroscopy whereby a narrow diameter arthroscope and small-bore instruments are introduced percutaneously. One such device, the Arthrex NanoScope, consists of a 1.9mm diameter needle arthroscope inserted through a 2.4mm cannula. We describe the use of the Arthrex NanoScope in the treatment of a 12-year-old female that presented with hip osteoarthritis secondary to a previously operated developmental hip dysplasia. A two-portal technique was utilised using anterolateral and anterior hip portals. Performing percutaneous needle arthroscopy facilitated a well targeted intra-articular hip injection and reduced the radiation exposure associated with conventional hip arthrography. Needle arthroscopy allowed for direct visualisation of the joint condition which helped with planning of subsequent reconstructive surgery. Post-operative hip examination demonstrated marked improvements in range of motion and the patient reported a significant improvement in pain. The patient was discharged on the same day and there were no complications. We conclude that needle arthroscopy may be used safely and effectively in the setting of hip dysplasia in adolescence.

Enhanced Recovery After Surgery (ERAS) pathways versus Conventional care of children undergoing surgery for Developmental Dysplasia of Hip- A Randomized Controlled Trial

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International Hip Dysplasia Congress: a Worldwide Perspective 1 - Juvenile and Adolescent Dysplasia,
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Introduction- Open reduction for developmental dysplasia of hip (DDH) is a commonly performed procedure which is associated with anxiety amongst parents. Enhanced recovery after surgery (ERAS) pathway consists of a set of interventions meant to improve the peri-operative experience. We applied ERAS protocols to the care of children with DDH to reduce the associated anxiety and improve outcomes.

Methods- A prospective double-blinded RCT was conducted including 44 patients undergoing unilateral open reduction; with 22 patients in each arm (ERAS and Conventional care). Parents in the ERAS pathway were counselled pre-operatively, taught spica care with a spica doll. The children were also kept fasting for shorter periods and given non-opioid analgesia. They were mobilized early post-operatively on a spica stroller. The primary outcome was postoperative FLACC score, pre-operative parental anxiety was assessed using the STAI scale and parental satisfaction was assessed at 3 months using the Swedish parental satisfaction questionnaire.

Results- Mean age was 2.76 ± 1.32 years (34 females, 10 males). Baseline characteristics of the groups were similar. Post-operative FLACC scores and episodes of vomiting were significantly lesser for the ERAS group. The length of hospital stay was significantly shorter for the ERAS group. The mean pre-operative STAI anxiety score was significantly higher in the conventional pathway than the ERAS group ($p < 0.001$). Parental satisfaction was significantly greater in the ERAS group.

Conclusion- ERAS care is effective in reducing postoperative pain in children with DDH undergoing open reduction. It also reduces parental anxiety and increases parental satisfaction.

Unlocking Insights: Transverse Pelvic Diameter and Height Ratio as Predictors of Anterior Cruciate Ligament Rupture in Females

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Sports Medicine Free Papers 1, MR 4, September 25, 2024, 08:00 - 10:00

Anterior cruciate ligament (ACL) injury is a prevalent clinical condition that significantly impacts physical activity. This retrospective study aims to explore the predictive potential of transverse pelvic diameter (TPD) and height/TPD ratio in females with ACL rupture. A cohort of 22 females aged 18-46 years who underwent arthroscopic ACL reconstruction surgery was retrospectively analyzed. Maximal transverse pelvic diameter measurements were obtained using standardized radiographic techniques. The normal average transverse pelvic diameter is considered to be 130 mm. In our patient population, the average maximal transverse pelvic diameter was 144.04 mm (range: 140.4-157.2 mm), with an average height of 164.2 cm (range: 155-173 cm). The average height/TPD ratio was 11.0043, ranging from 11.151 for the shortest individual to 11.005 for the tallest individual. Statistical analysis was conducted to evaluate the relationship between maximal transverse pelvic diameter, height, and ACL rupture risk. Results indicate that for all participants, maximal transverse pelvic diameter exceeded 140 mm, and height/TPD ratio equaled or exceeded 11, which serves as a cutoff value. These findings suggest that a larger transverse pelvic diameter is associated with an increased risk of ACL injury in females. Moreover, a height/TPD ratio above a certain threshold may serve as a predictor for ACL rupture. Further research is warranted to validate these findings and elucidate potential biomechanical mechanisms underlying this association.

Comparison of bone age assessment methods using a hand radiography in patients with active growth plate and anteromedial knee instability

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Sports Medicine Free Papers 1, MR 4, September 25, 2024, 08:00 - 10:00

Background Bone age is essential for pediatric patients with active growth zones and anteromedial instability to facilitate optimal treatment strategy and minimize postoperative complications.

However, many people are unaware of various tools for determining bone age, including classical methods and modern machine learning techniques.

The objective was to show and compare different methods for calculating bone age and determining surgical strategy for patients with anteromedial instability of the knee joint.

Material and methods All-Inside anterior cruciate ligament reconstruction was performed for 20 patients. Wrist radiographs were performed for bone age assessment using the "point scoring system" of Tanner and Whitehouse and the "atlas matching" method of Greulich and Pyle. Machine learning programs were used in addition to standard bone age assessments.

Results The findings showed an average difference of 21 months (80 %) in a group of 20 individuals with bone age ahead of the passport age and an average difference of 18 months (20 %) in patients with retarded bone age.

Discussion The findings showed the difference between chronological and bone age and could be encountered in scientific articles on endocrinology and pediatrics. No scientific studies on the use of the methods could be found in the specialty "trauma and orthopaedics".

Conclusion Bone age assessment, prediction of children's target height are essential for surgical treatment of patients with open growth plates

Selection of interferential screw for fixation of graft in tibial tunnel during anterior cruciate ligament reconstruction by novel probe test.

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Introduction: Anterior cruciate ligament (ACL) reconstruction is a common orthopaedic procedure employing grafts like the hamstring tendon, bone-patellar bone, and quadriceps tendon. Fixation methods include a suspensory loop with a button, interferential screw, and cortical fixation. The optimal screw diameter for tibial tunnel fixation remains undefined, with choices ranging from 1mm smaller to 1-2 mm larger than the tunnel diameter. Screw-related complications such as breakage and thread flattening are concerns. This study was to determine the ideal screw diameter for secure graft fixation in the tibial tunnel during ACL reconstruction. **Materials and Methods:** A novel arthroscopic probe technique was utilized to assess tibial tunnel bone integrity. Bone quality was categorized into weak, strong, and very strong. Screw size selection, either equal to or 1-2mm larger than the tunnel diameter, was based on bone quality. Screw lengths varied from 25mm to 35mm. **Results:** The novel technique significantly reduced screw-related complications, from 9.6% (24 out of 248 patients) to 0.5% (1 out of 187 patients). The need for additional cortical stabilization decreased from 14.5% (36 out of 248 patients) to 1.6% (3 out of 187 patients). **Conclusion:** The low-cost, efficient two-minute probe test is a secure and effective method in the hands of the author for selecting interferential screws in ACL reconstruction, minimizing complications and additional stabilization needs. The multicentric application of the test can substantiate the strength of the study.

Treatment Of Recurrent Anterior Shoulder Dislocation with Bristow - Latarjet Procedure - Our First Experience

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The purpose of this paper is to describe the clinical and radiographic results of patients with traumatic recurrent anterior shoulder dislocation treated with the Bristow-Latarjet procedure. Bristow-Latarjet surgery involves using the coracoid process and the conjoint tendon of m. biceps and m. coracobrachialis to stabilize the shoulder. The procedure is recommended when shoulder dislocation is associated with a bony defect of the anterior glenoid rim, but can be performed as a first procedure for selected patients

The aim of this procedure is to stabilize the shoulder by the bony effect of the coracoid process graft increasing the size of the glenoid and the conjoint tendon sling pushing back the humeral head .

This paper includes 30 patients treated with Bristow – Latarjet procedure in our institution in the period from 2021-2023.

The result was described as good in 90 % of cases , with 3 cases of graft resorption and subluxation of the shoulder

In conclusion we can say that Bristow – Latarjet procedure is very reliable method of treatment for recurrent anterior dislocations and subluxations of the shoulder.

It also can be used in people with increased physical activity. Limiting shoulder mobility does not prevent patients from returning to their usual occupations.

ACP therapy for severe osteoarthritis of the knee

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Knee osteoarthritis is a major problem in the European population. Surgical treatment implicates a long absence from work. Alternative treatments postponing major surgery to the age of retirement from work would be beneficial. Patients with severe knee osteoarthritis are treated by four intraarticular injections of ACP (double syringe system, Arthrex). Lequesne and VAS score before and four weeks after treatment are evaluated. Two years after treatment patients are contacted via telephone. Those not requiring major surgery in the meantime and not requiring pain killers in daily living are considered as success. 245 patients were treated, 139 women and 106 men aged 64.1 +/- 10.9 years. 34 (13.9%) patients showed no effect. Lequesne score was 11.2 +/- 3.8 before and 3.9 +/- 2.6 ($p < 0.001$) after treatment. Regarding the Lequesne classes 146 patients were classified to the extremely severe and very severe group before whereas after treatment 223 patients were classified as mild or moderate ($p < 0.001$). The VAS score dropped from 6.3 +/- 1.8 before to 2.3 +/- 1.4 after treatment ($p < 0.001$). Two years after treatment 198 patients were contacted (no one lost for follow up). 134 (67.7%) were classified as mid term success. 48 (24.2%) patients had major surgery in the meantime. 16 (8.1%) patients underwent other therapies, mostly an other ACP treatment. Intraarticular ACP therapy shows excellent short term results. The majority of the patients does not require major surgery for another two years, thus avoiding higher costs from incapacity to work.

Three portal technique for anatomical single bundle ACL reconstruction a prospective study

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Introduction; ACL is one of the common ligaments injured in knee which needs to address by arthroscopic reconstruction. Proper placement of femoral and tibial tunnel is crucial step for the outcome of reconstruction. Single bundle ACL reconstruction is time tasted procedure. Visualization of femoral and tibial footprint or land mark reduces the chance of improper placement of tunnels. We have used three portal technique with modification of conventional AL and AM portal along with Far medial portal. Method; We treated 123 patients from September 2021 to December 2022 at our center. Symptomatic patients with positive clinico-radiological proven ACL tear included in the study. We have used AL portal, AM Portal, slightly lower and closure to patella tendon then the conventional portals and Far medial portal for femoral and tibial tunnel placement. Graft secured with closed loop endobutton on femoral side and bio-screw / suture disk on tibial side. Result; Minimal follow-up was done till 6 months duration and post operative lysholm scoring was done at 6months. Assessment of the tunnel done on AP and lateral view in full extension. Femoral and tibial tunnel angle, percentage of tibial tunnel and femoral tunnel along with tibial plateau, blumensaat line respectively with graft impingement were in the criteria. Discussion- Most crucial aspect of proper visualization of the lateral wall, making tunnel through rigid instrument with hyperflexion of knee at 120 degrees. Our three-portal technique with inclusion of far medial portal makes a better visualization of wall and better negotiation of instrument.

Navigating Osteochondral Lesions: Contemporary Strategies in Surgical Intervention for Optimal Therapeutic Outcomes

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Osteochondral lesions pose a significant challenge within the fields of orthopedics and sports medicine. These lesions are characterized by damage to the cartilaginous and subchondral structures of the joint, leading to chronic pain, functional limitations, and degenerative changes in the affected joint over time. The objective of this presentation is to critically examine contemporary strategies and approaches in the surgical treatment of osteochondral lesions, emphasizing the pursuit of optimal therapeutic outcomes. We conducted a thorough literature review, incorporating relevant studies, clinical trials, and insights gleaned from our experience at the Institute for Orthopedics "Banjica". For minor lesions, conservative treatments such as physical therapy and pharmacological interventions are often initial approaches. However, in cases involving larger, deeper lesions and the presence of joint instability, surgical interventions become imperative. Additionally, we will underscore the potential of various scaffolds as promising therapeutic strategies to facilitate damaged cartilage repair and potentially impede the progression of osteoarthritis. In conclusion, the accurate diagnosis, ongoing monitoring, and the judicious selection of appropriate therapy are pivotal in the effective management of osteochondral lesions.

Evaluation of Anthropometric Measurements as A Reliable Indicators to Prognosticate Hamstring Graft Size in ACL Reconstruction: A Cross Sectional Study of Young Military Adults

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Sports Medicine Free Papers 1, MR 4, September 25, 2024, 08:00 - 10:00

Introduction: The hamstring tendon has been explored as the ideal graft choice for ACL (anterior cruciate ligament) reconstruction and has shown excellent functional results. The hamstring tendon graft is ideally quadrupled and to avoid failure, the minimum graft diameter for ACL restoration should be greater than 08 mm. This study set out to evaluate how well several anthropometric factors, such as age, thigh circumference, weight, height, and body mass index (BMI), predicted the hamstring graft diameter. **Method:** A cross sectional study was conducted in a group of young adults who underwent ACL reconstruction using hamstring autografts primarily. The anthropometric variables (age, gender, height, Body mass index and thigh girth) were measured preoperatively and the length and diameter of the quadrupled hamstring graft was measured intraoperatively. All the statistical analysis was done using SPSS. **Results:** A total of 60 patients were included in the study with mean age of 31.4 +/- 7.8 yrs., height of 1.69 +/- 0.6 meters, weight of 70.06 +/- 9.77, BMI of 24.18 +/- 4.23 kg/msq and thigh girth of 49.5 +/- 4.5 cms. The average length of Semitendinosus tendon graft was 28.28 +/- 2.85, gracilis was 24.74 +/- 2.28 and quadrupled hamstring graft was 8.29 +/- 0.75. There was strong correlation between height with Semitendinosus graft length and quadrupled graft diameter. **Conclusion:** The hamstring graft may not be adequate in reconstruction of the ligament injuries in short patients and hence harvesting autografts from other sites should be anticipated and planned preoperatively.

Fibrin assisted arthroscopic bone grafting and fixation of non-union of the scaphoid: Operative Technique and Clinical Outcomes

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Sports Medicine Free Papers 1, MR 4, September 25, 2024, 08:00 - 10:00

Introduction: Scaphoid non-union can result in pain, and altered wrist kinematics, leading to a Scaphoid Non-union Advance Collapse. Open techniques have their limitations, We describe the rationale, surgical technique, and outcomes of our series of arthroscopic bone grafting (ABG).
Materials and methods: A prospective consecutive study of 22 patients with clinic-radiological established scaphoid non-union between March 2015 and April 2019. In a single surgeon series, data was collected from Electronic Patient Records (EPR-Evolve), Patient Archived Computer system (PACS), and hand therapy assessments. The Disabilities of the Arm, Shoulder, and Hand Score (Quick DASH), Mayo wrist score, Patient Rated Wrist Evaluation (PRWE), and grip strength measurements were collected preoperatively and at follow-up appointments. The surgical technique and assessment algorithm are described. **Results:** There was an improvement in all outcome measures when comparing preoperative and postoperative results. The Quick DASH score improved by a mean of 24 points, Mayo wrist and PRWE scores improved by 15.1 and 29.7 points respectively. Grip strength analysis also improved by 6.1 kgf (Right) and 3.3kgf (Left). Computerized tomography (CT) follow-up scans revealed union in 18/22 patients with 2 patients lost to follow-up. 1 patient required a revision ABG procedure to achieve union. **Conclusion:** Arthroscopic bone grafting and fixation of non-union of the scaphoid allows a minimally invasive method of assessment and management of these injuries. It shows minimal morbidity, and accurate articular reduction, resulting in less postoperative stiffness and increased functional outcomes. Human fibrin glue provides an initial scaffold for the bone graft incorporation.

Isolated posterior cruciate ligament tears in monozygotic twins: A case report

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Sports Medicine Free Papers 1, MR 4, September 25, 2024, 08:00 - 10:00

Introduction: Posterior cruciate ligament (PCL) are rare as an isolated injury and more commonly occur in a multi-ligament-injured knee. We reported a case of PCL rupture in monozygotic twins.

Case Presentation: A 19-year-old female presented with giving away of her left knee since 4 months.

Physical examination demonstrated positive posterior drawer test. MRI showed ruptured PCL and lateral meniscal tear. Her identical twin, also a 19-year old-female, fell from the stairs and complained of giving away. There was positive posterior drawer test. MRI demonstrated ruptured PCL and lateral meniscal tear. Both patients underwent arthroscopic-assisted PCL reconstruction using gracilis, semitendinosus, and peroneus tendon graft. At one year of follow-up, there were no graft failures. Satisfactory outcome measured by Osteoarthritis Outcome Score (KOOS) and visual analogue scale (VAS). Both were athletes prior to their injury and they returned to sport.

Discussion: This report shows that patients may have genetic predisposition to the incidence of PCL rupture. This is likely because of heritable factors, such as biomechanical, anatomic, anthropometric, and neuromuscular traits. A family history of PCL tear may increase the risk of a PCL tear. Further studies are recommended to examine genetic variants as a risk factor for PCL tears.

Conclusions: Multiple variables may lead to the increased risk: the combination of improper neuromuscular control, genetic factors, and possibly hormonal factors contributed to their PCL injuries. Further history exploration, lab tests, and genetic analysis should be done to determine the variables. Both patients returned to sports one year postoperatively.

Does pre-operative serum Vitamin D deficiency affect arthroscopic rotator cuff repair outcomes? A systematic review and meta-analysis of correlation coefficients

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Sports Medicine Free Papers 1, MR 4, September 25, 2024, 08:00 - 10:00

Introduction: Vitamin D deficiency is prevalent amongst the older generation who are also prone to developing degenerative rotator cuff tears. Vitamin D is found to be critical in tendon-to-bone healing, yet there are few studies evaluating the effects of vitamin D levels on RCR outcomes. This study thus aims to evaluate pre-operative serum vitamin D levels and arthroscopic RCR outcomes. **Methods:** A systematic search of four databases (PubMed, EMBASE, Scopus and Cochrane Library) was performed. Inclusion criteria was studies with (a) arthroscopic rotator cuff repair and (b) pre-operative serum vitamin D levels ('Vitamin D levels') reported. Meta-analysis of correlation coefficients was performed to compare the relationship between Vitamin D levels and pre-operative factors including (a) fatty degeneration, (b) tear size and (c) retraction size, as well as post-operative outcomes including (a) patient-reported outcome measures (PROMs) and (b) retear rates. **Results:** Five articles were included in this study. Total sample size was 1436. Pooled mean serum vitamin D level (ng/ml) was 23.66. Higher Vitamin D level was found to be significantly associated with lower fatty degeneration ($p=0.05$), but not with tear or retraction size. There was no association between vitamin D levels and post operative PROMs. Only one included study evaluated retear rate and found significantly higher retear rate in the Vitamin D deficient group. **Conclusion:** Higher level of pre-operative serum vitamin D levels is associated with lower pre-operative fatty degeneration, which may reduce the risk of retear in arthroscopic RCR patients.

Arthroscopic internal brace with fibertape augmentation for neglected posterior cruciate ligament avulsion fracture malunion: a case report

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Background: Neglected posterior cruciate ligament (PCL) avulsion fracture malunion poses altered anatomy and functional symptoms in the knee joint such as pain and instability. **Case Presentation:** We reported a case of a 32-year-old female patient with a neglected PCL avulsion fracture malunion. The patient presented with chronic knee pain and instability but no limited range of motion for 3 years after the index trauma. Physical examination test demonstrated the positive posterior drawer test and posterior sagging. Image study revealed malunion with significant displacement of the avulsed fragment. Surgical intervention was performed utilizing an arthroscopic internal brace technique with fiber-tape augmentation to re-tensioning the PCL without the bony procedure to the malunion fragments correction. **Outcome:** At a year follow up, the patient demonstrated significant improvement in knee stability, range of motion, and pain scores. Radiographic evaluation revealed satisfactory alignment. Functional International Knee Documentation Committee score indicated satisfactory results. **Conclusion:** Arthroscopic internal brace with fiber-tape augmentation represents a reasonable surgical approach for neglected PCL avulsion fracture malunion. In this case, the patient had less malunion related impingement symptoms which highlights the efficacy of this technique in restoring knee stability and pain relief without avulsed fragments correction procedure

Time Unveils Subspine Impingement: A Case Report Of Recurrent Symptoms Years After AIIS Avulsion In An Adolescent Football Player

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Sports Medicine Free Papers 1, MR 4, September 25, 2024, 08:00 - 10:00

Introduction: Femoroacetabular impingement (FAI) has been recognized in recent years as a predominant cause of hip pain in the young population. Subspine impingement is an important cause of FAI-related hip pain, induced by mechanical stress around the subspine region of the anterior inferior iliac spine (AIIS). **Case Report:** We present a clinical case involving a 14-year-old male, who experienced sudden, sharp pain in his left groin during a football practice. Radiological evaluation revealed AIIS avulsion. He underwent nonoperative treatment, with protected weight bearing for 6 weeks. 9 months later he was pain-free and returned to sports activities. Radiographic imaging demonstrated complete healing of the AIIS. 2 years later, the patient presented again with left groin pain, while sprinting and kicking during football practice. Physical examination revealed tenderness over the AIIS and limited hip flexion range of motion, with pain experienced at 90° of flexion. Radiographic evaluation showed subspine impingement, Hetsroni type III. The patient underwent surgical treatment: Arthroscopic Decompression, with careful preservation of rectus femoris origin. A postoperative anti-inflammatory regimen (celecoxib 200mg twice daily) was prescribed for three weeks to prevent heterotopic bone formation. 8 weeks after surgery he was able to return to sports activity pain-free. **Conclusion:** Arthroscopic decompression of a symptomatic AIIS is a reproducible and safe procedure that has been shown to provide excellent outcomes at short-term follow-up. If an overly aggressive resection is performed, the rectus femoris could be detached from its origin, leading to a potential hip flexion deficit.

Additive technologies in surgical treatment of cervico-thoracic spinal deformities.

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Spine Free Papers 1, MR 5, September 25, 2024, 08:00 - 10:00

Objective: Comparison of additive technologies and conventional methods in the surgical treatment of cervicothoracic deformities. **Materials:** Surgical treatment was performed in 39 patients with cervicothoracic deformities of various etiologies. 19 patients (group I) underwent 2-stage treatment (halo+dorsal instrumentation). 20 patients (group II) underwent 3-stage treatment with anterior decompression and fusion with individual additive implants. Treatment results were assessed over a period of 6 to 42 months. **Results:** Decompression according to postoperative CT data in group I: insignificant – 3 patients, partial – 3, complete – 2; in group II - insignificant - 0, partial - 3, complete - 8. Results of the dynamics in neurological deficit: Group I: worsening of the deficit - 0 patients, no regression - 3 patients, partial regression - 1 patient, complete regression - 0 patients; group II - worsening in of the deficit - 0 patients, no regression - 1 patient, partial regression - 4 patients, complete regression - 3 patients. Assessment of implants stability during follow-up: Group I – revision interventions in 3 cases. In group II, there were no cases of revision interventions. **Conclusions:** The use of multi-stage surgical treatment is the most expedient in neurologically complicated patients. According to our observations, additive implants are most appropriate for anatomically complex deformities, which allows for complete decompression and ensures stability of fixation.

3D-printed vertebral body for spinal reconstruction in patients with congenital spinal deformity

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Spine Free Papers 1, MR 5, September 25, 2024, 08:00 - 10:00

Introduction: Children with spinal deformities cannot undergo anterior column fusion due to the lack of fusion devices tailored to pediatric sizes. This is a significant factor contributing to postoperative complications such as spinal cord folding, non-fusion of the anterior column and internal fixation failure. Customized 3D-printed titanium alloy fusion devices can meet the needs of these patients.

Methods: This manuscript retrospectively collected 1-year follow-up data from 20 patients who underwent 3D-printed titanium alloy fusion device placement in the vertebral body and 110 patients who did not undergo anterior column fusion during the same period. Methods such as t-tests and chi-square tests were used to compare intraoperative data and postoperative follow-up data between the two groups of patients.

Results: There were no statistically significant differences between the two groups of patients in terms of surgical time, intraoperative bleeding, and neurological complications. However, the use of 3D-printed titanium alloy fusion devices significantly improved the restoration of intervertebral height and the rate of interbody fusion at one year.

Conclusion: The use of 3D-printed titanium alloy fusion devices is associated with simplified surgical procedures, without increasing surgical risks, and improves postoperative interbody fusion. It represents one of the surgical strategies for anterior column fusion in pediatric spinal deformity patients.

Feasibility and outcomes of posterior-only hemivertebra resection, deformity correction and short segment fusion using 3D-printed patient specific spine models as surgical simulators.

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Spine Free Papers 1, MR 5, September 25, 2024, 08:00 - 10:00

Introduction:The distorted spinal anatomy and critical neurovascular neighborhood in congenital scoliosis make pedicle screw placement and surgical resection of congenital hemivertebrae challenging. We analyzed the feasibility and outcomes of utilizing 3D-printed patient-specific spine models as preoperative surgical simulators for hemivertebra resection and fusion for congenital kyphoscoliosis. **Methods:**Virtual pre-operative planning, simulation and intraoperative assistance of the patient-specific 3D-printed model was used to perform hemivertebra resection and deformity correction (3DP group) through an all-posterior approach. Operative time, intraoperative blood loss, accuracy of pedicle screw placement (Gertz-bain-Robbins classification), and postoperative complications were recorded. Results were compared to a similar historic cohort of 12 patients (control group) who underwent hemivertebra resection and deformity correction without using 3D-printed models. **Results:**There was a significant reduction in the mean operative time in the 3DP group (262.8±64.3min, range 180 – 380 min) vs the control group (336.4±33.8min, range 240 – 420min), p<0.05. The intraoperative blood loss was significantly reduced in the 3DP group (390.8±144.2 ml, range 250 – 600 ml) vs the control group (460.5±83.2 ml, range 350 – 900 ml), p<0.05. Pedicle screw placement accuracy was significantly higher in the 3DP group [92.8% (77/83 screws)] in comparison with the control group [86.6% (78/90 screws)]. Critical pedicle breaches causing neurological deficits were significantly higher in the control group (n=2) vs 3DP group (n=0). The mean scoliosis and kyphosis correction rates were comparable in both groups. The mean SRS-22r scores were comparable in both groups. **Conclusion:**3D-printed patient-specific spine models as preoperative surgical simulators reduces operative time, blood loss, improves accuracy of pedicle screw placement, and reduces the incidence of neurological deficit due to screw misplacement.

Two-stage surgical treatment of patients with caudal regression syndrome and spinal deformity

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Spine Free Papers 1, MR 5, September 25, 2024, 08:00 - 10:00

Introduction

Caudal regression syndrome is a rare developmental anomaly that occurs in up to 1:60000 live births. Mild forms are asymptomatic, but in most cases anomaly leads to severe developmental disorders, including neurological manifestations and spinal deformities with lumbosacral junction area dysplasia. The aim was to study the results of two-stage treatment of patients with caudal regression syndrome and spinal deformity.

Materials and methods

A retrospective monocenter study from 2016 to 2022 enrolled 11 patients with caudal regression syndrome accompanied by the spinal deformity and metabolic osteopathy. Patients were divided into 2 groups. The main group included 5 patients 11.7 y.o. (9-15yy.) who underwent 2-stage surgery. M:F = 1:4. The first stage was implantation of screws. Then patients received osteotropic therapy (calcium supplements and vitamin D3 in age-appropriate dosages) for 6 months. After 6 months repeat CT proceed to assess screw position and preoperative rod preparation. The control group included 6 patients 10.2 y.o. (8-14 yy.) who underwent standard one-stage surgery. M:F = 2:4.

Results

The structural instability and revision surgeries showed the effectiveness of two-stage treatment. One year PostOp, examination of 3 control patients revealed the instrumentation lower pole instability, while in 2 it was symptomatic, requiring re-operation. The patients of the main group showed no signs of structural instability.

Conclusion

Two-stage surgery improved the integration of screws in patients with caudal regression syndrome, which significantly reduced the risk of aseptic instability and revision surgeries. The small sample requires further observations, but the first results are encouraging.

Effectiveness of Six Months of Preoperative Preparation in Patients with Lumbar Scoliosis and Osteoporosis

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Spine Free Papers 1, MR 5, September 25, 2024, 08:00 - 10:00

Introduction. Titanium instrumentation in patients with osteoporosis can lead to unsatisfactory results. At the present time there is a clear increase in complication rate that has to do with implant instability.

Materials and Methods. A total of 160 patients aged 40 to 82 with low bone mineral density took part in the investigation. The level of BMD was on average 0.854-0.884 g/cm² with T-scores ranging from -2.7 to -3.8. All patients received similar surgical treatment: traditional titanium instrumentation and interbody fusion. The patients were divided into two groups: the study group underwent preoperative osteoporosis treatment and the control group only underwent osteoporosis treatment in the postsurgical period. The treatment of osteoporosis included calcium, vitamin D and antiresorptive medications.

Results. The degree of lumbar curve correction in both groups amounted on average to 22° (10° to 35°). Analysis of radiographs and CT scans at a 2.5-year follow-up in the study group showed no implant instability or major bone resorption. Adjacent level instability was not observed, while PJK was observed in 1.5% of the patients. Infectious complications were also observed in 1.5% of the cases. Revision surgery was needed in 2% of the cases. The questionnaire data showed higher results in the study group. The complication rates in the control group were as follows: PJK–8%, implant instability–10%, pseudoarthrosis–6%, infections–3%. Revision surgery was needed in 25% of the cases.

Conclusion. Preoperative preparation in adult patients with osteoporosis that undergo surgical treatment of scoliosis improves surgical outcomes and decreases the complication rate.

Congenital cranio-vertebral junction anomalies: An enigma dissected

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Introduction: Atlantoaxial-dislocation (AAD) is a diverse pathology which can have variable etiologies, with catastrophic neurological-sequelae. Congenital-AAD is often associated with highly variable bony and vascular anomalies. It poses a great challenge in restoring normal craniovertebral-junction anatomy, and preventing progressive myelopathy. The treatment options are anterior-release (transoral/extrapharyngeal), along with anterior/posterior-instrumentation. Controversy exists regarding the magnitude of correction and need for foramen-magnum decompression. This study highlights the various stages of presentation of congenital-AAD and their systematic management. As per our protocol, irreducible-dislocations were treated with single-stage extra-pharyngeal release of the tethered structures (Longus colli, Anterior Longitudinal Ligament and anterior facet-capsule) which resulted in effective downward-translation of the odontoid. It also allows effective decompression and anterior-fusion and was supplemented with posterior-instrumentation and fusion. Occiput level was spared by doing atlanto-axial-fusion, with occipitocervical-plating being done in cases having occipito-atlantal assimilation. Various reduction maneuvers to reduce retro-odontoid tilt and vertical-translation were used. **Methods:** Single-centre data of 6-years was analysed and a retrospective, observational-study was done. Out of 103 AAD patients, 25 patients of congenital-AAD were identified and analysed. **Results:** Majority of the patients had some form of anomaly, either vascular (36%) or bony (92%), the most common being occipito-atlantal assimilation (58%). 80% patients had cord changes. 7/25 (28%) had irreducible dislocations for which anterior release was done. Average C1-C2 angle correction was 20.6°. Complications occurred in 32% patients. **Conclusion:** Congenital-AAD poses additional challenges over other forms of AAD in having anatomical variation. Thorough planning and restoration of anatomy is essential for satisfactory clinical-outcomes.

Active Apex Correction through non fusion and modulation in Early Onset Scoliosis, is it a myth?

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Introduction

Active Apex Correction (APC), a hybrid strategy featuring replacing a traditional SHILLA with apex growth modulation through unilateral compression on the convex side associated with translation and rotation and distraction on the concave side, has been shown to be safe and effective for Early Onset Scoliosis. Aims/Objectives To determine the rate of Apex facet fusion in children with Early Onset Scoliosis treated surgically with Active Apex Correction APC technique. Methods Multicenter retrospective study was done for patient who were treated with APC technique as the index surgery for Early Onset Scoliosis children with more than one year follow up. All patients enrolled had a minimum one year follow up with a 3D CT scan determining the rate of facet fusion in the Apex of the deformity treated with posterior tethering Results 16 patients received APC as the index surgery for Early Onset Scoliosis with at least 1-year follow up. The average age of surgery was 8 years, and 9 of cases were congenital, 2 juvenile, 3 syndromic, 1 neuromuscular. Mean patient follow up was 26 months. In total 96 facets in the tethered apex were evaluated, with 80% facets demonstrating clear radiological evidence of no fusion, while the remaining were fused or semifused. Conclusions APC for Early Onset Scoliosis offers patients apical correction associated with modulation and non-fusion technique, clearly demonstrated with low incidence of facet fusion levels at the Apex, limiting the crankshaft phenomena seen in cases resulting in arthrodesis at apical levels.

Comparison clinical and radiological results of surgical treatment Lenke 5 scoliotic deformities using anterior dynamic correction (ASC) and posterior fusion in patients with completed or near-completed growth

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Introduction Despite the active implementation of dynamic correction in case of idiopathic scoliosis, there are no comparative studies of results of posterior and anterior dynamic correction in patients with completed and near-completed growth.

Methods Eighty-six patients with Lenke 5 scoliotic deformities were enrolled in the study. The first GP (54 patients) underwent deformity correction via posterior approach with fusion; the second group (32 patients) — using ASC. Mean age was 22.6 ± 12.8 and 27.3 ± 10.9 years, respectively. We studied radiological data before surgery, immediately after surgery, and 2 or more years after surgery. Blood loss volume, duration of hospital stay, and duration of narcotic analgesics intake in the early postoperative period were analyzed. Functional results were assessed using SRS-22.

Results Preoperative Cobb angle in the first group was 65.5° , and 27.5° at the long-term FU. Mean number of fixed levels was 6.4 ± 1.0 in the first GP and 5.6 ± 1.5 in the second GP. Mobility of the thoracolumbar/lumbar curve was higher in the second group, $28.2 \pm 9.1^\circ$, compared with $36.0 \pm 7.2^\circ$ in the first group. Preoperatively, lumbar lordosis in the second group was 42.5° , in the long-term period — 43.5° , and in the first group — 43.4° and 44.3° .

Conclusion Both posterior fusion and ASC in case of Lenke 5 idiopathic scoliosis can provide satisfactory radiological results with initially similar thoracolumbar deformities in patients with completed or near-completed growth. However, dynamic approach can reduce blood loss, duration of hospital stay, duration of narcotic analgesics intake after surgery, and improve quality of life in the long-term period.

The prevention of infectious complications in AIS surgery with sodium aminodihydrophthalazinedione use

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Introduction

A surgical site infection (SSI) is defined as an infection that occurs after surgery in the part of the body where the operation was performed. Modern immunomodulation is becoming important in spinal surgery.

Materials and methods

A prospective, comparative, non-randomized, single-center study. The study included 60 patients, 30 in the experimental group, 30 in the control group. Each patient signed informed consent. When the patient was included in the study, a laboratory examination was performed: T-lymphocytes (CD3+); T-helpers (CD3+CD4+); T-cytotoxic lymphocytes (CD3+CD8+); immunoregulatory index (IRI); B-lymphocytes (CD19+); Natural killers (NK cells, CD3-CD16+/CD56+); T-natural killers (CD3+CD16+CD56+); indicators of phagocytosis of granulocytes and monocytes; circulating immune complexes (CIC), immunoglobulins A (IgA), M (IgM), G (IgG), E (IgE); leukocyte formula with the determination of the proportion (in%) and concentration (thousand cells / μ l) of neutrophils, lymphocytes, monocytes, eosinophils, basophils. The described laboratory examination was repeated in patients on the 10th day PostOp after the course of the 200 mg sodium aminodihydrophthalazinedione 1 time per day.

Results

It was found that the percentage of patients with positive dynamics of immunological indicators was significantly higher after the course of sodium aminodihydrophthalazinedione (T-, B-cell immunity, IgG level, the level of lymphocytes, neutrophils), thus this chemical compound potentiates, enhances the positive effect on the main links of immunity in a much larger number of patients .

Conclusion

Sodium aminodihydrophthalazinedione significantly effected on cellular immunity, thereby reduced the possible risks of infectious complications in the surgical area in patients with degenerative diseases of the lumbar spine.

Changes in Pelvic Parameters After Pelvic Fusions in Adult Spinal Deformity

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Introduction: Pelvic parameters, including pelvic incidence (PI), pelvic tilt (PT), and sacral slope (SS), play pivotal roles in assessing sagittal balance pre- and postoperatively. While PI remains constant after skeletal maturity, PT and SS adapt as compensatory mechanisms to maintain head-pelvis alignment. Surgical interventions for adult spinal deformity (ASD), aimed at restoring sagittal balance, can influence PI, often targeted to align within 10° of lumbar lordosis (LL). This study investigates pelvic parameter changes in 80 ASD patients post-surgery. **Methods:** Eighty patients who underwent pelvic fusions with insertion of 160 S2AI screws were analyzed. Preoperative and one-year follow-up radiographs were analyzed using semi-automated tools in Surgimap to measure PI, SS, PT, and LL. Patients were categorized based on preoperative PI into low (<40°), normal (40°-60°), and high (>60°) groups. Changes in pelvic parameters were assessed using paired t-tests, with significance set at $p < 0.01$. A change in PI exceeding 6° was deemed significant. The chi-squared test compared the frequency of significant PI changes across the three PI groups. **Results:** Significant reductions were observed in PI, PT, and PI-LL post-surgery, with no significant change in SS. Preliminary findings indicated no statistically significant difference in the frequency of PI changes across the three preoperative PI groups, though definitive conclusions await further data. **Conclusion:** Surgery for ASD results in decreased PI, PT, and PI-LL, with early trends suggesting patients with high preoperative PI may retain elevated PI post-surgery.

A prospective multicenter ≥ 2 years clinical study of the Active Apex Correction (APC) technique in Early Onset Scoliosis (EOS) patients

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Introduction: Active apex correction (APC) is posterior tethering technique for correction of early onset scoliosis (EOS) via reverse modulation at the apex. APC has been increasingly used worldwide. This study aimed to assess short-term outcomes of multicenter study with ≥ 2 years of APC on spine length, curve correction, complications, unplanned surgeries, and proposed low crankshaft phenomena incidence. **Methods:** Prospective multicenter study including 24 EOS patients treated by APC; involves inserting and compressing pedicle screws on convex side of apex proximal and distal to most wedged vertebra allowing apex modulation according to Hueter-Volkman law. Excluded patients with < 2 years follow-up whom APC was not primary surgery. **Results:** Mean age 85.97 ± 32.43 months, 71% congenital scoliosis, mean follow-up 35.54 ± 12.36 months. At final follow-up, statistically significant improvement in Cobbs angle ($\Delta=23.96\%$, $p<0.0001$), spinal length T1-T12 ($\Delta=12.83\%$, $p<0.0001$), T1-L5 ($\Delta=13.41\%$, $p<0.0001$) but not in apical vertebral translation (AVT) albeit clinical improvement ($\Delta=7.9\%$, $p=0.36$) compared to preoperative measurements. Comparing immediate postoperative measurements to > 2 years follow-up, statistically significant improvement in spinal length T1-T12 ($\Delta=6.03\%$, $p=0.0002$) and T1-L5 ($\Delta=6.26\%$, $p<0.0001$) but not in Cobbs angle ($\Delta=4.93\%$, $p=0.3$) or AVT ($\Delta=14.77\%$, $p=0.25$). 9 complications requiring 3 unplanned surgeries recorded in all patients including 2 broken rods, 2 adding-on and 4 screw dislodgement. **Conclusion:** APC is a novel technique that has been incorporated in several countries as treatment modality for EOS. Short-term outcomes are promising in terms of clinical improvement, complication rates and decreased need for multiple operations or unplanned surgeries.

Instrumented fusion of strategic vertebrae provides optimum outcome with minimum instrumentation in Adolescent Idiopathic Scoliosis.

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Spine Free Papers 1, MR 5, September 25, 2024, 08:00 - 10:00

Abstract

Background

The surgical management of adolescent idiopathic scoliosis (AIS) has seen many developments in the last two decades. Little high-level evidence is available to support these changes and guide treatment. This study aimed to identify optimal operative care for adolescents with AIS curves between 40° and 90° Cobb angle. The all-pedicle screw instrumentation method of posterior-only approach arthrodesis, which fuses strategically located vertebrae, avoids the metal and implant-related problems and has a correction rate comparable to other methods. It is also reasonably priced and cost-effective for patients in our setup.

Materials and Methods:

With minimal instrumentation, we selectively fused certain vertebrae to treat 175 patients with severe adolescent idiopathic scoliosis, whose mean age was 17.5 years. The average scoliosis curve measured 86° Cobb. The same senior surgeon handled every case, using both free hand and C-arm guided techniques along with intraoperative neurophysiologic monitoring.

Results:

Mean Cobb angle was 86.8° which was improved to 16.3 degree post operatively. 3 patients developed transient neuro deficit which improved with time of average 3 months. 1 patient had superficial wound infection. VAS and ODI improved significantly

Conclusions:

Posterior instrumented fusion by minimum level pedicle screw insertion addressing the strategic vertebrae is a good and effective method for stable correction of Adolescent Idiopathic Scoliosis.

Evaluation of functional and radiological outcome of low grade degenerative lumbar spondylolisthesis treated by transforaminal lumbar interbody fusion – a prospective study

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Introduction: Different surgical techniques and approaches have been described for treatment of low grade spondylolisthesis (Grade 1 and 2). Aim of our study was to assess the functional and radiological outcomes in patients with transforaminal lumbar interbody fusion .

Method: A prospective study consisting of 32 patients of Low-grade spondylolisthesis operated with TLIF at a tertiary care centre was undertaken for over 3years.The functional and radiological outcomes were evaluated. The radiological outcome was assessed on sagittal alignment at a specific level, radiologic bony fusion/non-union, intervertebral disc heights and percentage of a slip in relation to the endplate. The functional outcomes were assessed using the Visual Analogue Score (VAS) and the Oswestry Disability Index (ODI).

Results: The mean VAS score improved from 5.96 pre-operatively to 4.72 at POD5,2.78 at 12 weeks, 1.31 at 26 weeks follow-up. The mean ODI score improved from 73.44 preoperatively to 44 at POD5, 31.33 at 12weeks, 11.444 at 26 weeks follow-up. Pelvic incidence (PI), pelvic tilt (PT), sacral slope (SS) and lumbar lordosis (LL) were significantly greater in spondylolisthesis. PI, PT, and SS did not change statistically from the baseline postoperatively but increased LL and Segmental LL ($P < 0.001$), 86% of the patients with implants in situ had good fusion.

Conclusion: TLIF is effective in treating Low grades of spondylolisthesis with overall good to excellent functional outcome. It emphasizes the effectiveness of the procedure in providing stability , relieving pain, and improving quality of life.

Selective thoracic fusion (STF) – short instrumentations- our experiences on 149 patients

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Introduction: Although scoliosis mostly affects thoracic spine, many time surgeons fuse some lumbar vertebrae. Reduced number of free lumbar segments leads to accelerated degeneration of free ones. Aim of this work was to present how we can achieve satisfactory scoliosis correction without instrumentation of L spine in vast majority of patients. **Patients and methods:** We have analyzed 149 patients whom we have done STF during last 12 years, with minimal follow up of 2 years (8,4. Including criteria were: primary Th curve with compensatory L curve, flexible L curve with Cobb <50°, Th>L curve (type King II). **Surgical technique** was posterior corrective spondylodesis Th4-Th12 with surgeon-directed MEP IONM. **Results:** Postoperative balance and deformity corrections was established in all patients, L curve was disappeared, brace was needed an 31 patients (20%) 3-6 months, average SRS22r score was $3,7\pm 0,6/83\pm 19$. There were no infections, emboli, neither implant loosening and neurological deficit complications. **Discussion:** Reduction of surgical exposure and free L spine are logical imperative in prevention of late disturbances (pain, loss of balance, revisions). Most of AIS patients that fulfil requirements for STF have fused 9,3 Th segments and skin scar of 26,5cm, no pain, and not reported restriction in any activities.

System for dynamic anterior scoliosis correction (ASC). Results of trials and use in clinical practice

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Introduction: a system for anterior dynamic scoliotic correction of spinal deformities in adult patients and children has been developed.

Methods: static and dynamic loading tests were carried out to determine the strength characteristics of the dynamic spine correction implant system. The tests were carried out on a universal dynamic testing machine servo-hydraulic type. Five cord samples were examined "at break" and five assemblies (cords fixed in the screw heads). The software recorded the received data. Additionally, cyclic tests were carried out to determine the properties of the samples during long-term operation. Fatigue tests were performed on assemblies identical to static loading samples, under load in one direction.

Results: the value of the load at rupture of the cord in kn was 2, 57. In addition, the average elongation value is 21%. Test results of five assemblies. The beginning of plastic deformation of the vertebral screw (cord is not damaged). After passing 10 million loading cycles, the samples underwent a visual inspection, which revealed minor lapping of the cord in the area of contact with the edge of the groove of the vertebral screw. **Conclusion:** The created system of anterior dynamic scoliosis correction has high strength characteristics of static and dynamic load and can be recommended for use in the clinic.

Beyond Growth Hormone: Association of Short Stature Types and Growth Hormones With Scoliosis

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Introduction: In short stature, rhGH is widely used and the concentration of growth hormone varies among types. The epidemiologic characteristics of scoliosis and the role of rhGH in scoliosis remain unclear.

methods: A cross-sectional study was conducted among 3896 patients with short stature, and a 1:1 age and sex-matched control group. The cohort study included 2605 subjects who underwent radiography more than twice.

Results: Compared with controls, patients with short stature had a higher incidence of scoliosis (34.47% in partial GHD, 31.85% in GHD, 32.94% in ISS vs . 8.83% in control, $P < 0.001$), a higher risk of scoliosis development [hazard ratio (HR) = 1.964 in partial GHD; HR = 1.881 in GHD; HR = 1.706 in ISS), but not a higher risk of progression, brace, or surgery. Among the 3 types of short stature, there were no differences in the incidence, development, and progression of scoliosis or the need for bracing or surgery. RhGH treatment increased the risk of scoliosis development in each short-stature group (HR = 2.673 in partial GHD; HR = 1.924 in GHD; HR = 1.564 in ISS). Vitamin D supplementation was protective against scoliosis development (HR = 0.456 in partial GHD; HR = 0.42 in GHD; HR = 0.838 in ISS).

Conclusions: More attention should be paid to the spinal curve in patients with partial GHD, GHD, or ISS. For short stature treated with rhGH, the risk of scoliosis development was increased. Vitamin D supplementation may be beneficial for prevention.

Complications after anterior dynamic scoliosis correction (ASC) and their resolution

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Introduction

VBT/ASC is becoming an increasingly popular technique as an alternative to spinal fusion surgery for some patients with idiopathic scoliosis. However, complications after VBT still occur and many of them are mechanical, which may be related to patient selection. Another perioperative complications although not uncommon, but currently discussed with less interest.

Materials and Methods

Our experience: a total of 511 patients were operated on between 2019 and 2023 using VBT/ASC technic. One side VB–84 pt., doble side VBT-77 pt., one side ASC -135 pt., doble side ASC–133 pt., hybrid instrumentation 82 pt. All operations were performed through thoracotomy/thoracophrenotomy. Complications were identified, recorded and analyzed among all patients.

Results

Complications: Hemothorax, requiring revision (5 pt.-0.97%) and re-drainage (14 pt.-2.74%). Pneumothorax requiring repeated drainage 32 pt. – 6.2%. Chylothorax 3 pt.–0.59%, treated with octreotide and diet without revision. Cord breakage 4 pt.–0.78% without significant loss of correction. Hypercorrection 3 pt. – 0.58%, treatment tactics are determined. Malposition 2 pt. – 0.39%, re-intervention. Neuropathic pain syndrome revision cause 2 pt.-0.39%. Breakage of drainage in the pleural cavity 1 pt.–0.001%, thoracoscopy. Spondylitis 1 pt.–0.001%, conservative treatment. The overall complication rate was 12.9%.

Conclusion

VBT/ASC remains a promising novel procedure that is effective in treating scoliotic deformities non-fusion. The overall complication rate is relatively low and may be related to patient selection criteria, learning curve, hardware, etc. Research is needed to find out the reasons underlying the development of complications, and, in particular, to determine the optimal timing of surgery for a growing spine.

Swan neck deformity – different treatment modalities

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SOTA Upper Extremity Free Papers 1 (Hand and Wrist & Pathology in General and Private Practice),

MR 7, September 25, 2024, 08:00 - 09:00

Swan neck deformity is characterized by the hyperextension posture in the proximal interphalangeal joint and the flexion in the distal interphalangeal joint. It can be due to many causes that lead to imbalance of the extensor mechanism such as the rupture or unthreatened lesion of the extensor digiti communis, it is seen also in inflammatory diseases such as rheumatoid arthritis, in patient with cerebral palsy and Ehlers-Danlos Syndrome or patients with volar plate laxity. The treatment of swan neck deformity is challenging and what method to use depends on many factors. In this abstract, we will be discussing about different modalities of treatment of swan neck deformity.

Challenges in the surgical treatment of phalangeal fractures of the hand

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SOTA Upper Extremity Free Papers 1 (Hand and Wrist & Pathology in General and Private Practice),
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The range of hand injuries treated in our emergency department in the last year was between 1.5 and 28 % of all injuries. The treatment of phalangeal fractures can be surgical or non-operative depending on the stability of the fracture and the success of the reposition. The purpose of minimally invasive procedures for the operative treatment of phalangeal fractures is mainly to effectively and in a timely manner fix the fracture. On the other hand, these procedures minimize the possibility of developing complications that could occur with open reduction and internal fixation. The resulting stability enables early activation of the patient's injured hand. If it is not possible to treat patients with minimally invasive procedures, we use methods of open reduction and fixation with K-wires or plates. In the period from January 2020 to December 2023, we treated a total of 178 patients. All patients were treated with closed reduction and percutaneous fixation with K-wires or by open reduction and fixation with K-wires, free screws, or plates. Fracture reduction and fixation is routinely checked intraoperatively with a C-arm x-ray machine. The wires were removed 5 weeks after surgery, and the screws and plates were generally not removed. Results were evaluated after 3 and 6 months by measuring the range of motion, grip strength and by using DASH score. Fracture healing occurred in all patients. Complications were mostly related to finger contractures, the inability to form a fist and limited full range of motion, which disturb the patient's quality of life.

Reconstruction with a Pedicled Trapezius Musculocutaneous Flap after Resection of Malignant Tumors in the Shoulder Region

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SOTA Oncology Free Papers, MR 7, September 25, 2024, 09:00 - 10:00

Introduction: The treatment of malignant tumors in the shoulder region is exceptionally complex due to its anatomical specificity. Modern approaches involve extensive tumor resection and the application of adjuvant oncological therapy. After the resection of these tumors, large soft tissue defects often remain, requiring extensive reconstructive procedures. Adequate reconstruction of these defects is of invaluable clinical importance as it allows for the safe achievement of planned resection margins and provides the opportunity to quickly apply adjuvant oncological therapy.

Materials and Methods: This study included 6 patients (2 women and 4 men) treated at the Institute for Orthopedics "Banjica", from January 2021 to February 2024. Patients were pathohistologically diagnosed with primary tumors and metastases in the shoulder region. For the reconstruction of the defect, a pedicled trapezius musculocutaneous flap was used. **Results:** The immediate postoperative results were satisfactory. In two cases healing at the donor site was delayed. There were no local recurrences of tumor during the follow-up period. All musculocutaneous flaps were vital. Satisfactory functional and aesthetic results were achieved. **Discussion and Conclusion:** The use of pedicle musculocutaneous flaps allows the achievement of safe, wide resection margins without complications arising from insufficient coverage of the resultant soft tissue defects. The trapezius muscle is almost ideal for covering defects on the shoulder, as the muscle itself is relatively small but carries a significant skin envelope that is sufficient to close medium, and even some larger, defects. Moreover, this spares the latissimus dorsi muscle, which could be utilized in case of recurrence.

The treatment of periprosthetic pathological (metastatic) fractures: A case series

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Periprosthetic pathological fractures, especially those caused by metastases to bone tissue, are a complex challenge in orthopedic practice. This retrospective case series showcases three patients with metastatic pathological fractures who previously had endoprostheses implanted. The increasing incidence of these fractures corresponds with the rising number of alloarthroplastic surgeries, the younger population undergoing these procedures, and the growing prevalence of cancer.

The cases of three patients with different types of fractures are described, following a detailed analysis of clinical presentation, characteristics of primary tumors, and choice of surgical techniques. In the first case, a 62-year-old patient with a "Vancouver C" type femur fracture, from renal carcinoma metastasis, underwent a successful treatment using hybrid stabilization, a retrograde nail and plate along with cement augmentation. The second case involved an 80-year-old patient with a "Lewis and Rorabeck" type A tibial fracture due to renal carcinoma metastasis, stabilized with an intramedullary nail and cement augmentation. The third case describes a 73-year-old patient with a "Vancouver" B2 femur fracture from breast cancer metastasis, treated by resecting the proximal femur and implanting a resection prosthesis.

This case series underscores the need for personalized treatment strategies for periprosthetic pathological fractures, taking into account the specifics of the primary tumor, fracture location, and the patient's overall health. Given the absence of definitive guidelines, a team-based approach is essential, blending conservative and surgical techniques to ensure the best possible outcomes. This approach involves careful consideration of the patient's health status, expected lifespan, and specific needs.

Tracing the Path of Musculoskeletal Tumors: From First Encounter to Definitive Diagnosis

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The diagnosis of musculoskeletal tumors is a complex process that requires a systematic approach for accurate diagnosis and appropriate treatment planning. The initial steps include a properly taken medical history and a detailed clinical examination to determine the symptoms and localization of the tumor. Radiography of the affected bone is usually the first diagnostic procedure, providing basic information about the bone tissue. Computerized tomography (CT) allows for a more detailed evaluation of bone lesions and the assessment of systemic tumor spread. Magnetic resonance imaging (MRI) provides superior soft tissue resolution, facilitating precise tumor localization and assessment of nerve and vascular tissue involvement. Whole-body scans, such as scintigraphy and PET scanning, are crucial for detecting metastases and assessing the disease stage. Biopsy, as the final procedure in the series, is considered the gold standard in definitive diagnosis, providing histological information about the type and malignancy of the tumor.

This diagnostic approach precisely determines the characteristics and stage of musculoskeletal system tumors, enabling appropriate treatment planning and better outcomes for patients.

β -Caryophyllene exerts anticancer effect on osteosarcoma by regulating PPAR- γ and Hippo-YAP pathway

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The most frequent malignant bone tumor, osteosarcoma (OS), has a strong propensity for local invasion and early metastasis. Unfortunately, the prognosis has not improved in cases of metastasis or recurrence, despite the fact that individuals with localized OS currently live longer. Because there are currently few specialist treatments for OS metastatic biology, more biologically intelligent anti-cancer strategies must be used. β -Caryophyllene (BCP) is a naturally compound in plants. Various studies have shown that BCP has significant anti-cancer effects on different cancer. However, there is currently no research exploring the therapeutic effect of BCP on OS. Therefore, this study explores the anti-tumor effect of BCP on OS and its mechanism of action. The expression of the PPAR- γ and Hippo-YAP signaling pathway, as well as the levels of ROS and apoptosis and invasion ability, of osteosarcoma were found after cultured osteosarcoma MG-63, U2OS, and HOS cell lines using BCP media containing varying quantities for a duration of 24 hours. Moreover, inoculate HOS cells subcutaneously in mice and inject different doses of BCP for 21 days. Observe tumor size, apoptosis level, and PPAR- γ and Hippo-YAP signaling pathway expression. In vitro, BCP increased the level of ROS, induced apoptosis, inhibited their migration and invasion ability, and upregulated PPAR- γ expression level and inhibition of Hippo-YAP pathway expression in OS cells. In vivo, BCP restricted the size of OS and promoted tumor cell apoptosis. Research has confirmed that BCP inhibits the proliferation and invasion of OS by regulating the PPAR- γ and Hippo-YAP signaling pathways.

Preoperative planning using three-dimensional multimodality imaging for soft tissue sarcoma of the axilla: a pilot study

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Axillary soft tissue sarcoma (STS) is challenging due to its proximity to vital neurovascular bundles. We conducted a prospective, observational, pilot study to explore whether 3D multimodality imaging (3DMMI) can improve preoperative planning for and surgical outcomes of patients with axillary STS. Twenty-one patients with STS (diameter >5 cm) of the axilla were allocated, at their discretion, to either a control group undergoing traditional preoperative planning with separate computed tomography angiography, magnetic resonance imaging, and magnetic resonance neurography, or an intervention group where 3DMMI, digitally created based on these images, revealed the tumour, adjacent skeletomuscular and neurovascular structures in three dimensions. Primary outcome measures were surgical margins and surgical complications. Secondary outcomes included operative time, blood loss, serum C-reactive protein and interleukin-6, length of hospital stay, and limb function. The 3DMMI group had a lower, although not significantly different, inadvertent positive margin rate (1/12 vs. 3/9, $P=0.272$), significantly shorter operative time ($P=0.048$), reduced blood loss ($P=0.038$), and reduced length of hospital stay ($P=0.046$). This endorses larger trials, aiming to improve complex surgical procedures and how preoperative planning could be performed in the future.

Treatment of early stage osteonecrosis of the femoral head with bone marrow aspirate concentrate.

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SOTA New Technologies & Regenerative Medicine Free Papers, MR 7, September 25, 2024, 10:15 - 12:00

Purpose: to evaluate the short-term clinical follow-up results of treatment patients with early stages osteonecrosis of the femoral head (ONFH) core decompression combined with bone marrow aspirate concentrate. **Methods:** Single-center prospective comparative cohort study. Ninety-five (161 hips) patients with early ONFH from 2019 to 2023 were divided into 2 groups. Patients in I group were treated by autologous bone marrow aspirate concentrate instillation into the core tract after core decompression; II group were treated by core decompression alone. Parameters assessed before surgery and after 3 months: gender, age, BMI, Harris Hip Score (HHS), VAS, WOMAC, SF-36. **Results:** At 3 months, 60 patients (63.2%) (103 hips (64%)) were available for analysis. After 3 months, I group in comparison with II group was statistically significant difference in functional ability HHS (73.5 [65.75;81.5] vs 57[43.25;72. 25], $p=0.003$), WOMAC (53 [31;79] vs 94 [43;136.5], $p=0.01$), improvement of pain VAS (3 [2;4] vs 5[3 ;7], $p=0.005$), and quality of life SF-36 (89.4 [75.7;97.6] vs 73.9 [67.5;86.2], $p=0.008$). **Conclusion:** The short-term clinical follow-up results showed that core decompression combined with bone marrow aspirate concentrate was more effective than the use of core decompression alone.

M1 macrophage-targeted hydrogel microspheres for osteoarthritis treatment via biologically- and physically-coupled

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Inflammatory infiltration and inappropriate friction remain the two main challenges in treating osteoarthritis (OA). Hydrogel microspheres function as ball bearings, minimize friction during interfacial contact and effectively deliver drugs to the injury sites. However, the weak tissue adhesion associated with commonly used microsphere materials often diminishes drug effectiveness. Macrophages are among the plentiful non-specific immune cells in the synovium, and they are integral to the initiation and exacerbation of OA through the initial inflammatory response. Thus, an effective delivery system is necessary to ameliorate intra-articular inflammation, adhere to and lubricate the cartilage, and improve cartilage dysfunction. Herein, biologically- and physically-coupled matrix metalloproteinase (MMP)-responsive hydrogel delivery microspheres with cartilage adhesion, intelligent targeting of M1-type (M1) macrophages, and cartilage lubrication were developed. The microspheres (78c@Lipo-FA-DPG@Chs/SerMA [LFDCS]) had sericin methacryloyl (SerMA) as their core blended with chondroitin sulfate (Chs), and 78c@liposomes- folic acid (78c@Lipo-FA) was attached to Chs/SerMA via the MMP-responsive degraded peptide, DSPE-PEG2k-GPLGLAGQC (DPG). In vivo and in vitro studies, when LFDCS exerted lubrication and adhesion functions, Chs was released to ameliorate chondrocyte dysfunction. DPG enzymatically released 78c@Lipo-FA to inhibit M1 macrophage-mediated inflammation in a high MMP9 environment. That indicated that LFDCS alleviated OA via biologically- and physically-coupled. In addition, an RNA sequencing analysis revealed that the LFDCS ameliorated chondrocyte dysfunction by down-regulating inflammation (i.e., the PI3K/AKT signaling pathway). In conclusion, this novel M1-type macrophage-targeted drug delivery system addresses the unfavorable factors of both the biological and physical microenvironments in macrophage-mediated diseases, effectively “killing two birds with one stone”.

Application of Bone Marrow Aspirate Concentrate, Cancellous Bone Autograft, Platelet Rich Plasma, and Autologous Fibrin for Femur Non-unions: A Case Series

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Aim: This study aimed to assess the efficacy of a novel bioregenerative scaffold comprising bone marrow aspirate, cancellous bone autograft, platelet-rich plasma, and autologous fibrin in the treatment of supracondylar femur non-unions.

Methods & Materials: Four patients with non-unions following multiple unsuccessful surgical interventions underwent bone stabilization surgery along with the application of the innovative bioregenerative scaffold. Evaluation of outcomes was conducted through preoperative and postoperative assessments at 6, 12, and 24 months, utilizing X-rays for radiological confirmation and subjective assessment scales to gauge functional improvements.

Results: Radiographic analysis demonstrated successful healing of all non-unions with adequate callus formation evident within the specified timeframe. Notably, within 6 months post-surgery, all patients achieved the milestone of full weight-bearing walking without experiencing pain or discomfort. Statistical analysis revealed highly significant improvements across all subjective assessment scales compared to baseline values, indicating robust functional recovery and symptom relief.

Conclusions: This study underscores the potential of the novel bioregenerative scaffold as a promising therapeutic option for managing supracondylar femur non-unions refractory to conventional treatments. The observed successful outcomes, including prompt healing and restoration of functional abilities, highlight the clinical efficacy and potential utility of this approach in addressing challenging cases of non-union following multiple surgical failures. Further investigation and validation in larger cohorts are warranted to establish its broader applicability and long-term efficacy.

Keywords: femur non-union, bone marrow aspirate, platelet rich plasma, autologous bone graft, autologous fibrin, regenerative orthopedics

The Remodelling Potential of IHDI GRADE II DDH Hips Following “Successful” Pavlik Harness Treatment. A Retrospective Study

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International Hip Dysplasia Congress: a Worldwide Perspective 2 - Infantile Dysplasia, MR 13,
September 25, 2024, 10:30 - 12:00

Introduction: The management of IHDI 2 hips following “successful” Pavlik harness treatment is controversial with no consensus. Treatment includes Active Monitoring, Abduction Bracing, Abduction Casting or Closed Reduction.

Aim: To assess the remodelling potential of IHDI grade 2 hips (Identified at 6 months old) following “successful” Pavlik harness treatment, and outcomes of subsequent treatment modalities.

Methods: Retrospective cohort study included children diagnosed with DDH treated with a Pavlik harness between 2015- 2018 at the RNOH. We included hips graded IHDI 2 on their 6 months follow up X-ray and excluded neuromuscular, syndromic or genetic conditions with abnormal tone and those lost to follow up. Demographics, treatments and radiographs (Acetabular Index, IHDI grade and Shenton's line) were reviewed at different age groups: 6 months, 12-24 months, and 3-5 years.

Radiographs were analysed by two fellowship trained paediatric orthopaedic surgeons.

Results: 58 IHDI 2 hips were included from a database of 424. Treatment modalities included : active monitoring (N=37, 63.8%) abduction brace N=(12, 20.6%), abduction casting (N=3, 5.2%) and closed reduction (N=6, 10.4%). 57/58 (98.3%) hips improved to IHDI 1 at the final follow up regardless of treatment modality (1 diagnosed late with ipsilateral tibial hemimelia). 26/58 (44.8%) normalised to IHDI 1 after 12-24 months. 15.5% (9/58) had an Acetabular Index >25° at final follow up. Shenton's line was broken in 77.6% of X-rays at 6 months, improving to 12% at final follow up.

Conclusion: We feel Active Monitoring for residual IHDI 2 hips following “successful” Pavlik Harness treatment is justifiable.

How to manage a child in a spica cast: a lesson learnt from parents

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International Hip Dysplasia Congress: a Worldwide Perspective 2 - Infantile Dysplasia, MR 13,
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Introduction: This study aimed to evaluate the management of patients with a Spica cast as a therapeutic treatment for developmental dysplasia of the hip DDH. **Methods:** A questionnaire about general information, nutrition, hygiene, clothing and child management was administered to all patients' families who underwent closed reduction and Spica cast between May 2008 and January 2019. The scores were compared between two groups differing in age (children <6 months vs. >6 months). **Results:** Fifty-two patients were sent the questionnaires and 43 (56%, 24 <6 months and 19 >6 months) of them responded. Closed reduction and Spica cast were performed at a medium age of 6.11±4.69 months, 53 hips with 10 bilateral, 23 left and 10 right sides DDH. **Conclusion:** Our study demonstrates the importance of investigating the best solutions in the management of the child with Spica cast. It also explores and analyzes the perspective of families in the management of the Spica cast in critical areas.

Utilization of Artificial Intelligence (AI)-assisted cine sweep ultrasound for screening of Developmental Dysplasia of the Hip in infants

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International Hip Dysplasia Congress: a Worldwide Perspective 2 - Infantile Dysplasia, MR 13,
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Aims: Ultrasound (US) is the gold standard for screening developmental dysplasia of the hip (DDH) in infants. We tested whether it is feasible to use a novel application using AI analysis of cine sweep hip ultrasound images to improve the early detection of DDH in infants. **Methods:** We performed US on infants presenting for immunization between age 6-10 weeks. Each infant received a traditional scan (TS) and a cine sweep (CS) on which AI assessment was performed. MEDO hip app was utilized for evaluation of the scans. Feasibility of application was measured by user feedback assessment, rates of adequate/inadequate scans and cost of scanning. Secondary outcomes included estimates of positive and negative predictive values of screening hip US for DDH, rates of DDH that are being missed without screening, and caregiver satisfaction with an US-guided infant DDH screening program. **Results:** 307 children (614 hips) were analyzed. 88 hips with dysplasia were identified in these scans: 80 Graf IIa, 5 Graf IIB and 1 Graf III & IV each. The average scanning time was 198 seconds for TS and 89 seconds for cine sweep. Suboptimal scans were seen in only 27 hips (4.4%). Assessor satisfaction was >80/100 using System Usability Scale and parents rated an average 4.73/5 on overall satisfaction with the screening process. **Conclusion:** AI-assisted cine sweep US for screening of DDH can successfully be implemented for fast and effective screening of DDH especially in peripheral region where skilled MSK sonologists are not available.

Developmental hip dysplasia and mothers' mental health

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International Hip Dysplasia Congress: a Worldwide Perspective 2 - Infantile Dysplasia, MR 13,
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Among the many newborns' medical conditions which might interfere with mothers' mental health, developmental dysplasia of the hip (DDH) appears thus far uninvestigated. The present study aimed at contributing to fill this gap by exploring mothers' mental health at the time of diagnosis and by the end of treatment; possible moderators were mothers' hip worries, compliance to treatment and severity of babies' DDH. Method: The sample included 60 mother-infant dyads, all diagnosed with either moderate or severe/very severe DDH, 33 of which were followed longitudinally. Were administered: The Parenting Stress Index–Short Form (PSI-SF), The Clinical Outcomes in Routine Evaluation–Outcome Measure (CORE-OM), The Infant Hip Worries Inventory (IHWI), The Infant Hip Worries Inventory (IHWI), Clinicians' Perception of Parental Compliance With Treatment for DDH, Degree of severity of dysplasia. Among the main results, multilevel models showed that the mothers' psychological condition remained stable over time. The mothers' hip worries, compliance to treatment and severity of babies' DDH did not moderate the mothers' mental health over time but were significant independent predictors of it. Findings have important implications for interventions to support parents in the presence of DDH.

Treatment of developmental hip dysplasia after one year of age . This study compares treatment alternatives and their results.

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International Hip Dysplasia Congress: a Worldwide Perspective 2 - Infantile Dysplasia, MR 13,
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When treating developmental dysplasia of the hip (DDH), achieving good outcomes is higher when therapy is initiated before the age of three months. Despite screening programs, some infants are not identified and start therapy only after the age of one year. For these infants there is no consensus on treatment alternatives. Study purpose: To assess what procedures are in use and have withstood the test of time. Patients and methods: The study is a retrospective cohort study. Inclusion criteria: DDH patients ≥ 1 year of age treated between 2012-2021 and with available follow-up. Treatment outcomes were assessed for: a) severity of dislocation: Tönnis classification b) for accuracy of reduction: Severin's Classification c) For avascular necrosis of the femoral head (AVN): Kalamchi and MacEwen classification d) functional results: Children Hospital of Oakland Hip Evaluation Score (CHOEHES). Results: The cohort included 41 children (48 treated hips). Mean age at surgery was 20.375 +/-6.75 months. Mean follow up was for 55.14/- 36.44 months. Open reduction was done in 21 hips while 27 hips underwent closed reduction. Femur and / or periacetabular osteotomies were sometimes performed in the same session. The protocol that includes open reduction, subtrochanteric femoral shortening plus derotation and a peri-acetabular osteotomy done in the same session achieved optimal outcomes - in 19/20 treated hips . Open reduction did not increase the rate of AVN. Conclusion: Optimal results can be achieved, even in the age group 1 -3 years with potential to delay osteoarthritis indefinitely.

Bony reconstructive surgery for the instable hip in cerebral palsy : clinical and radiological outcome

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Introduction: Hip instability is the second musculoskeletal trouble in children with cerebral palsy. Its occurrence represents a dramatic shift in the disease course because of its implications in both clinical and functional ability and quality of life. The purpose of our study was to report the mid-term results of bony reconstructive surgery and its impact on quality of life. **Methods:** the retrospective study examined 42 subluxated/dislocated hips in 31 patients with cerebral palsy over a period of 8 years. All underwent a combined surgery including varus derotational femoral osteotomy and a modified Dega acetabuloplasty. Sitting ability, quality of life, hip range of motion were reviewed with at least 12 months follow-up. **Results :** The primary complaints were pain (45%) and lack of abduction resulting in perineal care problems (32%). There were 31 subluxated and 11 dislocated hips before surgery.

At last follow up of 50 months, 51.6% of patients were pain free according to San Salvador scale. Among children expressing pain preoperatively, 47.5% became pain free. Pain decreased significantly in 32.5%.

The Care and comfort caregivers questionnaire (Care Q) was significantly improved. Only patients GMFCS III have improved their gait ability. Sitting symmetry has improved in 45% of children. Recurrence of the dislocation was observed in 28.6%. The risk of recurrence was greater when surgery was performed before 7 years old. Plaster sore and implant discomfort were the main complications (respectively 31% and 45.2%).

Conclusion: One stage bony reconstruction gives good clinical and functional results in children GMFCS III. It improves the quality of life namely pain, perineal care and transfers.

Repair of skin and soft tissue defects in children's limbs using perforator flap transplantation

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SOTA Paediatrics Free Papers, MR 7, September 25, 2024, 13:30 - 15:30

Introduction: To explore the feasibility and clinical efficacy of perforator flap transplantation for repairing skin and soft tissue defects in children's limbs. **Method:** From July 2007 to January 2024, 288 children with skin and soft tissue defects in the limbs and exposed tendons or joints caused by traffic accidents and machine injuries were treated. 91 cases were treated with inferior abdominal artery perforator flap, 81 cases were treated with circumflex scapular artery perforator flap, 60 cases were treated with thoracodorsal artery perforator flap, 5 cases were treated with radial collateral artery perforator flap, 7 cases were treated with circumflex iliac artery perforator flap, and 44 cases were treated with circumflex lateral femoral artery descending perforator flap. Among them, 45 cases were transplanted with split branch perforator flaps and 38 cases were transplanted with combined perforator flaps. The minimum area of the transplanted skin flap is 6cm x 3cm, and the maximum is 24cm x 8cm; The skin flap is directly sutured in the donor area. There were 2 cases of complete necrosis and 1 case of partial necrosis after surgery. The remaining skin flaps survived smoothly after surgery, and the wounds in the recipient and donor areas healed well. Follow up for 2-36 months postoperatively showed good color and texture of the skin flap. Five cases of the inferior abdominal artery perforator flap developed secondary swelling and underwent thinning surgery. The rest of the skin flaps recovered well in appearance, with a linear scar remaining in the flap donor area.

Optimizing intraoperative irradiation levels for paediatric orthopaedics surgeries: Radiation doses does matter

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SOTA Paediatrics Free Papers, MR 7, September 25, 2024, 13:30 - 15:30

Introduction: Perioperative exposure radiation in paediatric orthopaedic surgery carries risks, both for children who have increased radiosensitivity and for surgeons who accumulate significant radiation exposure during their practice.

The aim of this study is to quantify the radiation dose used in paediatric orthopaedic and traumatology surgeries to demonstrate the benefits of measures taken to limit preoperative irradiation.

Methods: We retrospectively analyzed radiation doses recorded during surgery for patients under the age of 18 who underwent orthopaedic procedures over a 28-month period. For each surgical procedure, the radiation dose was quantified in terms of cumulative dose surface (CDS) expressed in $\text{mGy}\cdot\text{cm}^2$.

Results: Perioperative radiation exposure was analyzed for 1789 surgeries. Treatments for slipped femoral epiphysis (SFE), scoliosis, and lower limb lengthening procedures were the most irradiating procedures. The mean \pm standard deviation doses were $380 \pm 513 \text{ mGy}\cdot\text{cm}^2$ for SFE, $459 \pm 432 \text{ mGy}\cdot\text{cm}^2$ for scoliosis, and $327 \pm 334 \text{ mGy}\cdot\text{cm}^2$ for lower limb lengthening. Radiation doses for trauma procedures were relatively low, with means \pm standard deviations of $85 \pm 144 \text{ mGy}\cdot\text{cm}^2$ for lower limb trauma procedures and $42 \pm 77 \text{ mGy}\cdot\text{cm}^2$ for upper limb trauma procedures.

Discussion: Optimizing radiation doses is essential to obtain sufficient image quality with low radiation risk. These measures have enabled the implementation of the ALARA (As Low As Reasonably Achievable) principle and have resulted in low radiation exposure compared to recent published studies.

Surgical management of complex lower limb deformities in children using 3D modelization and patient specific guides

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SOTA Paediatrics Free Papers, MR 7, September 25, 2024, 13:30 - 15:30

Introduction: Surgical management of complex lower limb deformities in children remains challenging. 3D modelization and conception of patient-specific guides and instrumentation enable for accurate surgical corrections.

The aim of this study was to evaluate clinical and radiological outcomes in patients treated for lower limb deformities using 3D modelization and patient-specific osteotomy guides.

Methods: Twenty-five patients (34 limbs) with lower limb deformities underwent surgery with 3D planning and GPS. Technical details regarding the type of osteotomy, perioperative and postoperative complications, preoperative analysis, and planning time were recorded. Clinical and radiologica postoperative results were analyzed. The operating surgeon was retrospectively queried about the utility of 3D planning for each case.

Results: A total of 46 osteotomies were performed. Major etiologies for treated were MOC (n=8), idiopathic deformities (n=6), vitamino-resistant rickets (n=6) and traumatic sequala (n=4). Preoperative planning time ranged from 15 minutes to 2 hours. Goniometry was normalized in 92% of cases. Patients were satisfied or very satisfied with the outcome in 91% of cases. Corrections were evaluated by the surgical team as satisfying in 88% of cases.

Discussion and conclusion:

3D planning and patient-specific instrumentation appears to be an essential tool for understanding and treating complex limb deformities. Failures can be attributed to initial planning errors, underestimation of joint laxity, and epiphyseal anomalies in patients with constitutional bone diseases. Technical difficulties, such as guide placement and plate adaptation to bone, may explain the discrepancy between the target plan and radiographic result in 8% of patients.

Central obesity may affect bone development in adolescents:association between abdominal obesity index ABSI and adolescent bone mineral density

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Purpose: Previous studies have suggested that obesity defined by body mass index(BMI) is a protective factor for bone mineral density(BMD), but have overlooked the potential influence of different types of obesity. This study aims to evaluate the correlation between abdominal obesity index A Body Shape Index(ABSI) and adolescent bone density, and analyze the relationship between abdominal obesity and bone metabolism.**Methods:** A total of 1557 adolescent participants were included in NHANES from 2007 to 2018. Calculate the ABSI using a specific formula that takes into account waist circumference and BMI. A weighted multiple linear regression model is used to evaluate the linear correlation between ABSI and BMD. Forest plots are used to analyze the correlations between subgroups, and cubic splines are limited to evaluate the nonlinear correlations and saturation effects between ABSI and BMD.**Results:** After adjusting for confounding factors, there was a significant linear correlation ($P<0.01$) between ABSI and femoral BMD, both as a continuous variable and an ordered categorical variable. The restrictive cubic spline curve indicates a significant nonlinear correlation and saturation effect between adolescent ABSI and BMD. **Conclusion:** Research has shown a significant negative correlation between ABSI and BMD at the four detection sites of the femur, and this correlation may vary slightly due to age, race, family income, and different detection sites. The research results indicate that compared to overall body weight, fat distribution and content may be more closely related to bone metabolism.

Clinical application of perforator flap based on the descending branch of circumflex scapular artery for repairing the skin and soft tissue defects of foot and ankle in children

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SOTA Paediatrics Free Papers, MR 7, September 25, 2024, 13:30 - 15:30

Introduction: To explore the clinical outcome of free graft of the perforator flap based on the descending branch of circumflex scapular artery for repairing the wound located in foot or ankle in children. **Methods:** From February 2009

to April 2011, the perforator flap based on the descending branch of circumflex scapular artery was used to repair 11 cases of pediatric patients who suffered from skin and soft defects of foot and ankle with exposure of bone, joint or tendon. The flap size ranged from 9 cm×4cm to 15cm × 7cm. **Results** 10 flaps survived smoothly with primary healing, venous crisis was observed in one of double skin paddle perforator flap at 8 hours after operation, and surgical exploration proved that was due to vascular torsion, finally most of the flap lost, and skin graft had to be done for wound healing. The follow-up ranges from 3-36months(12months on average). The flaps were of good appearance, there was only one linear scar on the donor site, the cosmesis and function of the donor sites were satisfying.

Difference between necrotizing soft tissue infection and severe cellulitis with LRINEC score of 6 or higher

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Infections Free Papers, MR 10, September 25, 2024, 14:30 - 16:00

Early diagnosis, early surgical intervention, and intensive treatment is important for necrotizing soft tissue infections. The other hand, severe cellulitis does not require surgical intervention. If surgical intervention were performed in all cases of severe cellulitis, this would lead to progression of skin necrosis and a decrease in the effectiveness of antibiotics, delaying healing. Therefore, we will discuss the differences between necrotizing soft tissue infection and severe cellulitis in cases with a score of 6 or higher.

This time, we targeted 18 cases of soft tissue infections treated at our department from 2014 to 2023 with an LRINEC score of 6 or higher. There were 13 male cases and 5 female cases, with an average age of 61.6 years (42 to 91 years). There were 12 cases of necrotizing soft tissue infection and 6 cases of severe cellulitis. Items to be considered include mean blood pressure, pulse rate, respiratory rate, WBC, CRP, PCT, Cr, BUN, SOFA score, acute phase DIC score, pH, Lac, use of vasopressors, rapid streptococcal test, computer tomography (CT), Echo findings and finger tests were reviewed.

As a result of the study, significant differences were observed in Cr ($P=0.017$), LRINEC score ($P=0.00$), gas image on CT, fluid accumulation on the fascia, and finger test.

In patients with an LRINEC score of 6 or higher, a high LRINEC score and worsening renal function are findings that suggest necrotizing soft tissue infection, and findings such as CT and echocardiography and finger tests are considered useful for differential diagnosis.

Efficacy of IV and Topical Tranexamic Acid in Preventing Periprosthetic Joint Infections in Hip and Knee Arthroplasty

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Introduction: Anemia and blood transfusions are known risk factors for periprosthetic joint infection (PJI) in total joint arthroplasty (TJA) patients. Tranexamic acid (TXA) has been shown to reduce blood loss and transfusion needs. This study aims to explore whether perioperative TXA administration, both intravenously (IV) and topically intra-articularly, is associated with a decreased incidence of PJI in TJA patients. **Methods:** Data from 8042 patients undergoing primary total hip arthroplasty (THA) and total knee arthroplasty (TKA) from January 2009 to December 2020 were collected. The primary outcome was the occurrence of PJI within one year post-surgery. Secondary outcomes included blood transfusion rates, length of hospital stay (LOS), venous thromboembolism (VTE), and 90-day readmission. Subgroup analysis examined the odds ratio of PJI in patients receiving IV and topical TXA in both THA and TKA. **Results:** Patients receiving TXA had a lower PJI rate (1.1% vs. 2.1%, $p < 0.001$), fewer blood transfusions (14.4% vs. 22.7%, $p < 0.001$), and shorter LOS (5.6 ± 1.6 vs. 6.5 ± 2.5 , $p < 0.001$). There were no significant differences in VTE or 90-day readmission rates between the groups. Perioperative TXA administration was associated with a lower risk of PJI in multivariate analysis (OR 0.54, 95% CI 0.36-0.80, $p = 0.002$) and propensity score weighting. Subgroup analysis showed that both IV and topical TXA administration resulted in decreased PJI rates, particularly in primary TKA. **Conclusion:** Administration of TXA during primary THA and TKA is associated with a reduced risk of periprosthetic joint infection.

in vitro study of the dynamics of elution of antibacterial drugs impregnated into matrices based on polymer hydrogel

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Introduction. Treatment of orthopedic infection requires a multimodal approach, including surgical debridement, adequate wound drainage, local and systemic antibiotic therapy. Local therapy is provided by depot matrices, mostly based on polymethyl methacrylate (PMMA). PMMA, due to the release of up to 10% of the impregnated antibiotic from its total loaded amount, cannot be considered an optimal depot system. **Methods.** Samples of polymer hydrogel and PMMA with a volume of 4 cm³, impregnated with vancomycin, rifampicin and cefazolin in various concentrations, were placed in phosphate-buffered saline and incubated at 37 °C. On days 1, 3, 7, 14, 21 and 28, the medium was completely replaced. The concentration of drugs and their release profiles were evaluated using spectrophotometry. 5 parallel studies were performed. Data were processed using Me and 95% CI.

Results. For hydrogel samples, the drug release was more than 70% of its total amount, in contrast to PMMA (less than 10%). Burst release was observed in the hydrogels, with up to 80% of the amount released in the first 5 days and exceeding the minimum inhibitory concentrations during the entire observation period. The concentrations released by the hydrogel were on average 7 times higher on day 1, 15 times higher on day 3, 6.6 times higher on day 7, and 3 times or more on subsequent days of observation. **Conclusion:** The release of antibiotics due to the diffusion of particles is an important advantage of hydrogels compared to PMMA, which potential is limited by surface depletion.

Percutaneous negative suction drainage of large tubercular psoas abscess

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Introduction: One third of World population is thought to be infected with Tuberculosis and one fourth of them live in India. Most of the spinal infection presents with para vertebral abscess and some of them become too large due to prevailing poor socio-economic and health conditions in India. **Materials:** This is a study of 22 cases of percutaneous negative suction drainage of large psoas abscesses. There were 10 males and 12 females with age ranging from 28 years to 70 years. The study was performed from July 2005 to June 2022. **Method:** A 16 gauge negative close wound suction drain is introduced in the abscess as an OPD procedure under sedation and aseptic conditions. The drain is kept until the whole abscess is drained out. The amount of aspirate varies from 800 ml to 1400 ml. Aspirate was investigated for TB PCR and TB culture and sensitivity. None of the patient required surgical drainage. One patient developed sinus at drain site which healed in due course of time. All patients were given anti-tubercular treatment. **Discussion:** This procedure does not have inherent risks of CT radiation, anesthesia and surgery. The anti-tubercular treatment becomes more effective after drainage of abscess. This procedure ultimately reduces the morbidity and mortality of the patients. **Conclusion:** Percutaneous negative suction drainage is an efficient, easy, safe, effective and cheap procedure for drainage of large psoas abscess and can be done as a day care procedure under sedation and local anesthesia.

in vitro study of the antimicrobial activity of a polymer hydrogel impregnated with antibiotics against leading microorganisms causing orthopedic infection

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Introduction: the incidence of infectious complications after orthopedic surgery is increasing every year. Microbial pathogens form three-dimensional biofilms, only possible to be eradicated by lesion sanitation and antibiotic therapy, local and/or systemic. Existing depot systems based on polymethyl methacrylate (PMMA) have several disadvantages. **Methods:** a comparative analysis of the antimicrobial activity of 13x8 mm cylinder samples based on biodegradable polymer hydrogel and PMMA was carried out against MSSA, MRSA, MSSE, MRSE and *A. baumannii*, sensitive to the tested antibiotics with different physicochemical properties. The bactericidal activity of microbe-antibiotic pairs: MSSA-gentamicin, MSSE-cefazolin, MRSA and MRSE-vancomycin, *A. baumannii*-tobramycin - was studied in 3 parallel studies. The study procedure was based at the disk diffusion microbiological method. The duration of the study was 7 days. Data was processed using Me and 95% CI, Mann-Whitney and Wilcoxon tests. **Results:** the antimicrobial effect of the polymer hydrogel against the leading pathogens of orthopedic infections from the first day of incubation was significantly ($p = 0.002$) higher than the activity of PMMA. The PMMA bactericidal effect was short-term (up to 3 days) with a significant ($p = 0.042$) decrease in activity on the 2nd day of cultivation. The inhibition zone around the hydrogel throughout the study (as a result of controlled diffusion of antibiotics) was reduced by an average of 1-2 mm. **Conclusion:** Polymer biodegradable hydrogels impregnated with antibiotics have greater antimicrobial potential compared to PMMA.

Role Of Wound Alpha Defensin for Diagnosing Early Post Operative Fracture Related Infection In Open Fractures - A Prospective Case Control Study

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Introduction: Diagnosing fracture related infection (FRI) requires either purulent discharge from wound or positive culture reports which take time. This necessitates the need for accurate and rapid diagnosis. Taking forward a pilot study on biomarkers for diagnosing FRI, this study was conducted to determine the accuracy of Alpha Defensin (AD) for the diagnosis of FRI in open fractures. **Methods:** Wound fluid levels of alpha-defensin (AD) were evaluated on post-operative day 2 of patients with open fractures via sandwich ELISA, and patients were followed up for three weeks. Patients were categorized as cases (FRI) or controls (no FRI), based on the consensus definition of FRI. Univariate and multivariable logistic regression analysis, along with receiver operating characteristic (ROC) analysis was performed. **Results:** 153 patients with average age of 36.3 (SD ± 14.6) years were included. AD levels showed a significant (P=0.001), 2.1-fold elevation in cases (n = 63, Mean = 28.8 µg/ml) as compared to controls (n = 83, mean = 13.5 µg/ml). The area under the curve for this estimate was 0.71. As per Youden's index, an AD value cut-off value of a value of 7.85 µg/ml had a sensitivity of 71.4% and specificity of 68.7%. Multivariate logistic regression revealed AD and Gustilo Anderson grade as independent predictors of FRI. **Conclusion:** Wound AD levels are significantly elevated in patients with open fracture who develop FRI. This can be used as a diagnostic tool for early diagnosis when overt clinical symptoms haven't developed.

Antibiotics in periprosthetic joint infection: what do orthopedic surgeons know ?

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Introduction : Antibiotics are a key point in the management of periprosthetic joint infection. Orthopedics surgeons tend to have excessive prescription of antibiotics to ensure a rapid result.

Methods : We conducted a web-based survey to evaluate the orthopedic surgeons' knowledge and attitudes regarding the prescription of antibiotics in managing periprosthetic joint infection using a serie of 26 questions.

Results : A total of 60 surgeons participated in this survey. Most doctors (90%) work at a teaching hospital. 45% prescribe antibiotics to old patients over 65 years old who underwent hip arthroplasty over 43.3% for knee arthroplasty. Surgeons working in the private sector stated that they prescribed postoperative antibiotics for hip and knee arthroplasties. Surgeons stated they prescribed as a first line antibiotics the following molecules : amoxicillinclavulanicacid-fluoroquinolone (30%), Vancomycin-Piperacillintazobactam (23.4%), amoxicillinclavulanicacid-gentamycin (21.7%), Ofloxacin-rifampicin (10%). All surgeons performed bacteriological samples. Only 83.3% adapted the treatment according to the results. 63.3% often asked an expert in infectious diseases. Surgeons stated that the main difficulty was the delay in bacteriological sampling in 68.3%, lack of national recommendations regarding antibiotics in 63.3%, availability of oral treatment in 55%, treatment shortage in hospitals in 51.7%, allergies in 28.3%. Only 36.7% used vancomycin powder mostly in arthroplasty and revision.

Conclusion : Emerging antimicrobial resistance and the lack of new molecules represents a real threat to clinicians added high cost due to intravenous treatment. Prevention remains the key. Optimal management includes a collaboration between an infectologist and surgeon.

Stimulan : Use in Chronic Osteomyelitis, A Single Centre Experience Study

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Introduction:- Chronic osteomyelitis (chronic OM) is one of the oldest known diseases in the field of Orthopedics. Despite the advent of recent technologies and advances in microbiology and surgery, there is no general consensus on a single perfect treatment strategy in the present time. The major concern is the reliable safe eradication method of the residual germs . The desired minimal inhibitory concentrations (MIC) reached with any intravenous antibiotic is used may reach to toxic levels putting the patient's health at risk. **Methods:-** A prospective study of 20 cases of bone chronic osteomyelitis was performed in our institute with follow up of 1 year. All patients were screened with pertaining hematological, microbiological and radiological investigations. All cases were operated upon with thorough debridement first and then we used dissolvable antibiotic-loaded calcium sulphate hemihydrate (CaSO₄.H₂O)beads that is known commercially as Stimulan. The patients were given culture sensitive antibiotics for a period of 1 week intravenously and then orally for a period of 2 weeks. Patients were followed up at 1 month, 6 months and 12 months post-operatively. **Results:** The criterias for chronic OM eradication were clinical, radiological and laboratory. Out of the 20 cases, there was complete eradication in 17 and remaining 3 required other modalities of treatment.**Conclusion :** The use of Stimulan allows the fast, continuous and prolonged delivery of antibiotics into bone voids after debriding chronic OM properly. Further large scale study is required to propose Stimulan as a single perfect treatment for Chronic Osteomyelitis .

Use of custom-made modular total femur cement spacer for staged total femur replacement: case report

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Introduction: Chronic periprosthetic hip and knee infection occurring simultaneously poses a rare and challenging complication following lower limb surgery. The gold standard treatment for septic revision surgery typically involves the implantation of a bone cement spacer loaded with antibiotics. However, cases necessitating a two-stage revision with a total femur (TF) replacement present ongoing challenges for orthopedic surgeons. We present a case study detailing the use of a custom constructed modular TF antibiotic spacer for the treatment of simultaneous periprosthetic hip and knee joint infections. **Case presentation:** A 62-year-old female patient was admitted to our hospital with left hip pain and a fistula near the postoperative scar. She had a history of multiple revision surgeries for periprosthetic hip infection, long-term antibiotic treatment, and distal femur periprosthetic fracture stabilization. Clinical examinations and microbiological analysis confirmed *Staphylococcus aureus* infection. The treatment involved a two-stage revision surgery, with the first stage involving placement of a modular TF cement spacer and the second stage TF megaprosthesis implantation. The spacer, constructed using revision cement implant with calcar and a Kuntscher nail, was coated with Vancomycin and Gentamicin-loaded cement. Postoperatively, intravenous antibiotics were administered for eight weeks, leading to the normalization of clinical and laboratory parameters. In second stage TF megaprosthesis was successfully implanted, with intraoperatively sampled tissue cultures proving sterile. **Conclusion:** The use of a custom-made modular TF antibiotic-loaded cement spacer in our case provided satisfactory results as part of a two-stage revision surgery, allowing for early weight-bearing and hip mobility prior to total femur replacement.

Disc Penetration Sign: A Distinctive MRI sign Indicating the Severity of Pyogenic Spondylitis

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Introduction: This study aims to define a novel MRI sign that could indicate the severity of pyogenic spondylitis, aiding in its early diagnosis and treatment. **Method:** This retrospective study included 137 patients from 2013 to 2023. Through the analysis of imaging characteristics among all patients, we identified a distinct MRI sign known as the 'Disc Penetration Sign' (DP). This sign is defined as an image finding on sagittal MRI depicting the anterior and posterior penetration of an abscess through the intervertebral disc space, affecting both the anterior margin of the vertebrae and the structures within the spinal canal. Observational parameters included WBC, ESR, CRP, hemoglobin, and albumin levels. Documentation of the study included the location and segment of the lesion, presence or absence of spinal cord compression, and paravertebral abscesses. **Results:** Fifty-six patients presented with the Disc Penetration Sign (DP), and eighty-one did not. The DP group had significantly higher ESR and CRP levels. Additionally, the DP group had significantly lower hemoglobin and serum albumin levels. Imaging results showed no significant differences in affected spinal segments or parts. Patients in the DP group exhibited a higher likelihood of developing paravertebral abscesses compared to those in the non-DP group and also exhibited a higher incidence of spinal cord compression. **Conclusions:** The study suggests that the Disc Penetration Sign in pyogenic spondylitis patients correlates with more severe inflammation, higher incidence of paraspinal abscesses, and potentially poorer prognosis.

Role of Spino-Pelvic Harmony with Lumbar and Lumbosacral Spinal Tuberculosis: Comparative Analysis of Conservative versus Surgical Management

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Purpose- There is scarcity of evidence on correlation of tuberculosis of lumbar spine with respect to spinopelvic harmony. The current study aims to find the association between functional outcomes & spinopelvic parameters in lumbar spine tuberculosis treatment.

Methods- 47 patients with active tuberculosis confined to Lumbar spine were prospectively analysed and divided in to two groups according to mode of intervention. Group A included 26 operatively managed patients and group B had 21 conservatively managed cases. Functional parameters comprising ODI and VAS along with spinopelvic radiological parameters (PI, PT, SS, LL, PI-LL, SVA) in both groups were analysed at 0 and 1 year of follow-up.

Result- Both the groups showed significant improvement from initial presentation to final follow-up in ODI (Gr-A: 85.4 ± 12.1 to 12.3 ± 3.2 , $p=0.02$; Gr-B: 82.5 ± 10.06 to 36.8 ± 11.9 , $p=0.04$) and VAS (Gr-A: 8.1 ± 1.2 to 1.4 ± 0.9 , $p=0.02$; Gr-B: 8.5 ± 0.09 to 3.5 ± 1.1 , $p=0.02$). Statistically significant ($p < 0.05$) difference was observed in both functional outcome parameters between the two groups in successive follow-ups, compared to nonsignificant difference ($p > 0.05$) at presentation. Better improvements of spinopelvic parameters of PT, SS, LL, PI-LL were observed in surgical group and in both groups difference of these parameters correlated with differences of functional outcome parameters, though PI showed no correlation.

Conclusion- The spinopelvic parameters played significant role in functional outcome. There is better functional outcome when LL is adequately restored. Surgical correction offered betterment of spinopelvic parameters like PT, SS & SVA, which in turn leads to improvement in functional outcome.

Shoulder arthroplasty - from hemi to RSA

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SOTA Upper Extremity Free Papers 2 (Shoulder and Elbow), MR 7, September 25, 2024, 16:00 - 17:00

Despite the recent trend of operative treatment for comminuted proximal humeral fractures in the form of total reverse shoulder arthroplasty (RSA), hemiarthroplasty remains an option that should be considered for certain, especially younger patients. Historically, when open reposition and osteosynthesis were not possible due to comminution of the humeral head, general osteoporosis or massive injury of the rotator cuff, hemiarthroplasty was used as first choice. However, the results of this surgery were largely unpredictable since they depend on the anatomical restoration of the lesser and above all the great tubercle. Total reverse arthroplasty has recently taken its place as a good option for surgical treatment in such cases, since postoperative results do not depend to a large extent on the healing of tubercles and their anatomical restitution. The stability and range of motion can be improved with proper repositioning and healing of the tubercle, which contributes to the constant evolution of adequate surgical technique and implant design to optimize healing. Complications of reverse shoulder arthroplasty in the field of trauma include general surgical complications, consists some special ones in the form of scapular notching and neurological injuries. In this review, we summarize the indications, choice of surgical technique, outcomes, and complications of treatment for non-reconstructive proximal humeral fractures with treatment modalities ranging from hemiarthroplasty to total reverse shoulder arthroplasty.

Possible association between rotator cuff repair and suicide: A nationwide cohort study using propensity score matching

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SOTA Upper Extremity Free Papers 2 (Shoulder and Elbow), MR 7, September 25, 2024, 16:00 - 17:00

Purpose: We aimed to investigate the incidence rate of suicide-related death over time, and analyze the association between RCR and suicide using a representative nationwide large cohort database.

Methods: We used the National Health Insurance Service Senior cohort version 2.2 (NHIS-Sample) of South Korea, which includes all records of healthcare and long-term care services. RCR patients were identified from the National Health Information Database and matched with control subjects using propensity score matching (1:1). Time-dependent Cox proportional hazard models were used to estimate the hazard ratios (HR) of suicide for RCR patients compared to matched controls.

Results: We included 3,992 incident RCR patients and 3,992 matched controls. The incidence rate of suicide among RCR patients was 62.61 per 100,000 person-years for a period of more than 1 year and 56.15 per 100,000 person-years (95% confidence interval [CI]: 32.61–96.68) during the entire follow-up period. During the entire follow-up and a period of more than 1 year after RCR, RCR patients were 3.19 and 5.86 time more likely to die by suicide than their matched controls (95% CI: 1.04–9.76, $p = 0.043$ and 95% CI: 1.31–26.15, $p = 0.021$, respectively).

Conclusions: Patients who underwent RCR demonstrated no association with suicide within the first postoperative year, but a noticeable trend of increased suicide incidence emerged after this period. This finding suggests the potential impact of challenges, such as intense pain, rehabilitation difficulties, persistent functional limitations, and RC retear, on the psychological well-being of patients following RCR.

Lečenje Preloma Humerusa-Timska Igra Koja Garantuje Uspeh

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SOTA Upper Extremity Free Papers 2 (Shoulder and Elbow), MR 7, September 25, 2024, 16:00 - 17:00

Prelomi nadlaktatne kosti, odnosno humerusa, variraju po svojoj lokaciji (proksimalni deo, dijafiza, distalni deo), tipu preloma i uzrastu pacijenta. Najčešće su u pitanju povrede nastale traumom većeg intenziteta (sobraćajni udes, pad sa visine) kod mladih ljudi, odnosno povrede dominantno proksimalnog dela, nastale minimalnom traumom, padom na istom nivou kod starijih ljudi. U poslednje tri godine na odeljenju koje se ranije bavilo dominantno hirurgijom šake i ručnog zgloba, lečili smo 50 pacijenata od različitih tipova preloma humerusa, metodom otvorene repozicije i unutrašnje fiksacije LCP pločama. Pacijenti su operisani od tročlanih hirurških ekipa. kombinovanih od članova istog odeljenja.

Kod svih operisanih pacijenata su postignuti dobri rezultati, sa minimalnim komplikacijama.

Uspeh u lečenju je posledica kontinuiranog napretka hirurške tehnike, kao i uigranog timskog rada i multidisciplinarnog pristupa

kako u operacionoj sali, ali i kasnije u toku hospitalizacije na odeljenju i daljeg ambulantnog praćenja i reabilitacije pacijenta.

Key words: humerus, rame, lakat, osteosinteza, tim, multidisciplinarni

Treatment of proximal humeral fractures with PHILOS plate

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SOTA Upper Extremity Free Papers 2 (Shoulder and Elbow), MR 7, September 25, 2024, 16:00 - 17:00

Fracture of the proximal humerus most commonly occurs in the elderly population, often due to a fall on an outstretched arm and 10-20% of these fractures require surgical treatment. However, in young, healthy individuals, this fracture is often the result of high-energy trauma, with such fractures being frequently multifragmentary and accompanied by more extensive soft tissue damage. When an appropriate indication for surgical treatment of these fractures is established, the most common method of fixation is the use of a PHILOS plate. The surgical approach can be either deltoid-pectoral or transdeltoid. Fracture of the proximal humerus often presents a challenge for the surgeon, considering the complex anatomy, often osteoporotic bone, or when a multifragmentary fracture is present. The PHILOS plate provides technical solutions for such problems. On the other hand, complications related to the method of open reduction and internal fixation itself or related to the limitations of plate fixation are not uncommon. The aim of this study is to review the general epidemiology, indications for surgery, surgical approaches, technical specifics of the PHILOS plate, as well as the most common complications.

Comparing Intra-Articular and Intravenous Tranexamic Acid in Arthroscopic Rotator Cuff Repair: Enhanced Visual Clarity and Reduced Postoperative Pain in a Retrospective Cohort Study

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SOTA Upper Extremity Free Papers 2 (Shoulder and Elbow), MR 7, September 25, 2024, 16:00 - 17:00

Purpose: We aimed to find the distinctions between intra-venous (IV) and intra-articular (IA) tranexamic acid (TXA) concerning intraoperative visual clarity, postoperative pain management, and the incidence of complications during arthroscopic rotator cuff repair (ARCR).

Methods: In our retrospective cohort study, we included patients who had a history of rotator cuff tears. The primary outcome, visual clarity during surgery, was evaluated using a five-grade arthroscopic visual scale (AVS) by the operating surgeon. This scale ranged from grade 1, indicating optimal clarity, to grade 5, the least clarity necessitating a switch to open surgery. These assessments were made at 10-minute intervals during the review of the operation's video footage. We also measured the duration of the surgery and postoperative pain levels as secondary outcomes.

Results: IA group included 30 patients and the IV group had 31 patients. IA group had lower grade of AVS grade 1-2 compared to IV group (90.0% vs 64.5%, $p=0.011$). PVAS suggested a trend towards less pain in the IA group at various postoperative times, and less pain at postoperative 48 hours (IA 2.7 vs IV 4.2, $p=0.008$). Notably, 4 patients in the IA group required anticoagulants, a contraindication for intravenous TXA administration.

Conclusions: Both IA and IV routes are effective and safe for the administration of TXA in ARCR. However, given the increased distribution of low grade of AVS in IA group, the slight trend towards reduced postoperative pain, and context of patients with cardiac conditions requiring anticoagulants, IA administration presents a more viable alternative.

Treatment of proximal humerus fractures in the elderly population

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Fractures of the proximal humerus in individuals older than 70 years are common and are caused by low-intensity force, most commonly a fall on the same level.

Treatment is mostly non-operative and does not yield good functional results. In individuals with higher physical demands, surgical intervention is necessary. Material from 45 operatively treated patients was analyzed. Fractures were classified radiologically according to the NEER classification, after which operative treatment was undertaken with an anatomically contoured plate.

Rehabilitation followed thereafter. Results were followed up at 6 and 12 months, clinically and radiographically, as well as with functional tests. Shoulder mobility and muscle strength were analyzed, as well as patient satisfaction with achieved results in daily activities.

Results depend on several factors such as age, bone tissue condition, comorbidities, fracture type, surgical technique, and the length and quality of rehabilitation treatment.

Shoulder joint injuries - From non-operative treatment, through synthesis, to prostheses

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SOTA Upper Extremity Free Papers 2 (Shoulder and Elbow), MR 7, September 25, 2024, 16:00 - 17:00

Fractures of the proximal humerus have long been neglected in operative treatment. This review aims to present, through a historical overview of treatment methods in our region, from the earliest non-operative methods, through operative treatment by synthesis with various materials, from wire loops, screws, nails, Kirschner wires, various plates, to anatomically contoured plates with locking screws, to partial, total, and reverse shoulder prostheses. Immediate results, complications, as well as long-term functional outcomes after several years of follow-up are presented. Today, with increasing demands for functional recovery after such injuries, a multidisciplinary approach is necessary, which involves proper indication for operative treatment, choice of treatment method, postoperative course, as well as continuation of rehabilitation with prompt and properly directed physical therapy, along with analysis of postoperative status and prevention of possible complications. Despite everything, functional outcomes are not always satisfactory, leading to dissatisfaction both for patients and surgeons and the entire team. Patient expectations are almost always higher than the achieved results, which supports further development of treatment methods.

Outcome of Total Hip Arthroplasty in young patients less than 35 years- A Clinico-radiological study in 110 patients with minimum 5 years follow-up

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Concerns of THA in younger patients less than 35 years is high failure rate due to higher activity level and increased life expectancy. Present study is based on clinico-radiological outcome with minimum 5 years follow up.

A prospective analytical study of 110 patients (160 hips) operated between July 2004 and June 2012. Functional outcome analysis and satisfaction level assessed by HHS, SF-36 score and WOMAC scores. Radiological parameters were assessed. Student's t-test was used for analysis.

Sixty (54.5%) were unilateral while fifty (44.5%) were bilateral. Mean follow-up 8.16 years (5-12 years). Mean age 28.96 years. 61.8% were male, 38.2% females. Common causes were AVN (50%) followed by ankylosing spondylitis (22%). 92.8% (n=148) cementless implants with 70.7% (n=113) ceramic on ceramic, 24.6% Ceramic on Poly and 3% metal on poly. The average acetabular inclination was 40.43deg±6.0, anatomical anteversion was in 82% (n=131). Mean vertical offset was 5.72+0.26cm and horizontal offset was 3.77+0.29cm. The radiological limb length discrepancy was 0.6±0.15cm shortening (n=64) and lengthening was 0.59±0.15 (n=32). The femoral stem position was in neutral in 55.6% (n=89) patients. Harris hip score, SF-36 and WOMAC score showed significant improvement (p<0.0001). Neither infection nor loosening was observed. Incidentally, ninety patients were able to sit cross legged and squat during latest followup.

Based on the acceptable radiological parameters studied and the functional outcome scores assessed the outcome was excellent among the young requiring no revision till date. First of its kind studied in Indian scenario with radiological parameters results with minimum 5 years follow-up.

The Comparison Of Clinical And Radiological Outcomes Of Total Hip Arthroplasty With Direct Anterior Approach Versus Posterior Approach – A Randomised Control Trial

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Hip Free Papers 2, MR 9, September 25, 2024, 16:30 - 18:00

Our study aimed to compare clinical and radiological outcomes of Total Hip Arthroplasty (THA) via Direct Anterior Approach (DAA) versus Posterior Approach (PA) in a South-east Asian population, particularly in India. We included 40 patients with unilateral symptomatic hip arthritis, evenly split between the two approaches. Follow-ups were conducted at intervals up to one year postoperatively. Muscle fatty atrophy and soft tissue damage were assessed using muscle damage and inflammatory markers (ESR, CRP, LDH, Creatine Kinase, Myoglobin, Creatinine) and MRI scans preoperatively, at 3 months, and 1 year postoperatively. Functional outcomes were evaluated using gait analysis, Harris Hip Scores, and Forgotten Joint Score-12. Radiographs and EOS™ scan evaluated implant positioning and leg length. Return to activities of daily living was tracked using a milestone diary. Results showed higher postoperative muscle damage and inflammatory markers in the PA group, notably elevated CRP levels at POD 1-2 ($p=0.035$) and 2 weeks ($p=0.020$). MRI scans revealed significant differences in fatty atrophy: Gluteus medius, Gluteus minimus, Piriformis, Obturator Internus, Obturator Externus, and Quadratus femoris had higher incidences in the PA group, while the Tensor Fasciae Latae exhibited a higher incidence in the DAA group. DAA patients demonstrated superior gait parameters postoperatively, with significant improvements in mean velocity ($p=0.023$) and stride length ($p=0.013$). Acetabular cup positioning fell within the safe zone for both groups, with no complications or dislocations. In summary, our findings suggest that DAA may offer advantages over PA in terms of reduced muscle damage, inflammation, and improved early gait parameters in patients undergoing THA.

Comparison of accuracy between CT-based navigation system and portable navigation system in patients with developmental hip dysplasia

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Objective: To evaluate the accuracy of the cup placement angle of the Hip navigation system (Stryker), a CT-based navigation system, and the Naviswiss (Kyocera), a portable navigation system. **Subjects and Methods:** Patients underwent total hip arthroplasty for developmental dysplasia of the hip (Crowe type I/II) between April 2020 and December 2022 in our hospital. All patients were treated with a posterior approach in the lateral decubitus position, with group C using a CT-based navigation system and group N using a portable navigation system (Naviswiss). The target angles of radiographic inclination (RI) and radiographic anteversion (RA) were 40° and 20°, respectively. 38 patients in group C and 63 patients in group N were matched 1:1 for propensity score by logistic regression analysis with age, sex, and BMI as explanatory variables. The study items were operative time, navigation error (absolute value of the error between the displayed navigation value and the actual insertion angle), and complications.

Results: After matching, there were 32 cases in group C and 32 cases in group N. The navigation errors were RI 2.8±2.1° and RA 3.4±2.1° for group C and RI 2.5±1.7° and RA 3.8±3.6° for group N. The RA error was significantly larger in group P. The operative time was 104.34±32.5 minutes for group C and 94.9±25.5 minutes for group N. The operative time for group C was longer.

Conclusion: The accuracy of navigation was better with CT-based navigation due to differences in registration methods and other factors. However, CT-based navigation tended to increase operative time.

Customized Acetabular Components in Revision Hip Arthroplasty

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ABSTRACT BACKGROUND: 3D-printed implants are one of the options for acetabulum reconstruction. The popularity of this technique is increasing every year. **AIM:** To evaluate the early clinical, radiological and functional results of revision arthroplasty using individual acetabular components in patients with acetabulum bone defects. **MATERIALS AND METHODS:** Revision endoprosthetics was performed in 64 patients. There were 50 female and 14 male patients. The patients' mean age was 60.4 ± 13.4 (23–89) years. According to the Paprosky classification, the defects in 1 case corresponded to type IIC, in 15 cases to type IIIA, in 48 cases to type IIIB, including 8 cases with violation of the acetabulum discontinuity. Hip joint function was assessed using the Harris Hip Score (HHS), pain severity using the Visual Analogue Scale (VAS), and social adjustment using the Western Ontario and McMaster Universities Arthritis Index (WOMAC). **RESULTS:** Significant improvement was obtained on all assessment scales. The HHS score improved on average from 33.6 to 87.1 points, the VAS scale from 78.1 to 4.7 points, and the WOMAC from 75.8 to 11.6 points. There were 8 cases (12,5%) with complications in total. In one case with a violation of the acetabulum integrity we observed migration of the sciatic bone from the lower flange of the construct. **CONCLUSION:** Thus, the results of the acetabulum reconstruction using individually fabricated acetabular components are promising

Orthobiologics for sickle cell anemia AVN

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Sickle cell anemia is a hereditary condition when a mutation occurs where negatively charged glutamine is replaced by a neutral Valine at the sixth position of the beta-globin chain. The mutation is transmitted via Mendelian genetics and is inherited in an autosomal dominant fashion. Sickle cell anemia brings about a change in the shape of RBC from circular to sickle shape on exposure to hypoxia which clog end arteries and in femur bring about AVN.

Material and Methods:

12 hips with sickle cell AVN of the femoral head with grade 1 to 3 AVN and with good hip motion were selected for live autologous cultured osteoblast Concentrate implantation following core decompression. The concentrate was certified to be having 48 million osteoblasts in a volume of 4 ml of DMEM transport media and without any antigens of infection. In making this concentrate from bone marrow cold chain and asepsis was maintained throughout the 4-week procedure.

Results:

The short term results of the procedure has given comparable results to that of patient with idiopathic AVN of the femoral Heads. All these patients were permitted weight bearing at 3 weeks.

Conclusion:

Autologous Live cultured osteoblasts concentrate remains a viable option in treating early Grade 1 and 2 AVN in Femoral head affected by Sickle cell AVN.

Outcomes of revision total hip arthroplasty using prefabricated porous coated flanged acetabular cup having caudal hook for obturator foramen and lugs for ilium fixation.

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INTRODUCTION:

Management of severe acetabular bone defect in the setting of revision Total hip replacement (rTHA) poses a challenge in achieving good bone stock with stable and durable fixation of component, and restoration of center of rotation of hip joint. We report the clinical, radiological results and complications using prefabricated porous coated flanged acetabular cup for type II/III Paprosky acetabular bone loss.

MATERIAL AND METHODOLOGY:

This retrospective study included 20 patients with paprosky type II/III acetabular bone loss who underwent rTHA using morselized femoral head graft and prefabricated porous coated flanged acetabular cup. Clinical assessment included Harris hip score (HHS) and radiological assessment comprised of graft incorporation, centre of rotation of hip. Complications like infection, dislocation, migration of cup, loosening were also recorded.

RESULT:

This study comprised of 20 cases which includes 10 cases of type II and 15 cases of type III paprosky acetabular bone loss. The mean age is 45.6 years (range:28-74 years). The HHS improved significantly at the last follow-up. Superficial infection was found in 2 cases which was amenable to debridement and antibiotics. None of our patients had any evidence of cup loosening and migration. All patients had graft incorporation by last follow-up.

CONCLUSION:

Prefabricated porous coated flanged acetabular cup having caudal hook for obturator foramen and lugs for ilium fixation provides a durable and stable method of fixation with good to excellent functional outcome with minimal complication rate in the setting of revision total hip arthroplasty.

Outcomes of conversion THA for posttraumatic arthritis following acetabular fractures

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Introduction: The clinical outcomes of total hip arthroplasty (THA) in neglected or failed acetabular fractures are not often studied. THA is a reliable procedure following failed treatment of acetabular fractures. The aim of our study was to evaluate the influence of the acetabular fracture leading to posttraumatic arthritis between the arthritis and instability groups on the clinical and radiological outcomes of conversion THA. **Methods:** Between January 2011 and January 2020, 128 patients underwent conversion THA after failed acetabular fractures. After exclusions, 121 patients were included in the final cohort, with 85 patients in the arthritis group and 36 patients in the instability group. Intraoperative measures and preoperative and follow-up clinical, radiological, and functional outcomes were compared between the arthritis and instability groups. Any complications and revision surgery noted in the follow-up. **Results:** There was a significant improvement in Harris Hip Scores (HHS) post-surgery in both groups. However, a significant difference in the mean HHS was not observed between the two groups ($p = 0.16$). The time interval between the index surgery to THA was significantly shorter in the instability group. The vertical offset was significantly higher in the instability group ($p = 0.03$), and vertical offset and inclination were not statistically significant ($p = 0.69$). **Conclusion:** Conversion THA after posttraumatic arthritis due to acetabular fractures yields good to excellent outcomes. THA for the instability group gives equally good outcomes compared to the arthritis group. However, the instability group, associated with acetabular bone defects, requires more reconstructive options.

Accuracy Validation of Robotic-Arm Assisted Surgery for Hip Total Arthroplasty after Pelvic Osteotomy Using 3D Image Analysis Software: A Propensity Matched Controlled Study

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Introduction: Robotic-arm-assisted surgery (MAKO, Stryker) is helpful in THA by improving the accuracy of implant placement. However, there are few reports on their accuracy in cases with complex pelvic morphology, such as after pelvic osteotomy, using 3D image analysis software. We examined the accuracy of the cup position of patients who underwent THA after pelvic osteotomy using MAKO, compared with that of a control group. **Methods:** Post-pelvic osteotomy cases of patients who underwent THA using MAKO between 2021 and 2023 at our hospital were included in the study (PO). The control group was selected using propensity score matching from cases of osteoarthritis without previous pelvic surgery, who had undergone THA using MAKO with a similar technique (Control). Age, gender, and BMI were selected as covariates. Preoperative planning and postoperative CT images were imported into 3D image analysis software (ZedHip, LEXI), and the pelvic coordinate system was matched. Finally, the accuracy of cup placement was calculated, evaluating the absolute values of displacements in radiographic inclination, radiographic anteversion, Anterior-Posterior, Medial-Lateral, and Superior-Inferior directions (Δ RI, Δ RA, Δ AP, Δ MML, Δ SI). **Results:** Control and PO included 24 patients each. The accuracy was significantly inferior in PO than in Control for Δ RI (1.4° vs. 0.6°; P value=0.038). However, no significant difference was observed for Δ RA, Δ AP, Δ MML, and Δ SI (1.6° vs. 1.4°; P value=0.944, 1.1mm vs. 1.2mm; P value=0.734, 1.8mm vs. 1.3mm; P value=0.226, 1.6mm vs. 1.2mm; P value=0.103). **Conclusion:** THA with MAKO can be performed with high accuracy, even in patients with previous pelvic osteotomies.

Femoral dysplasia - THR in high, unstable hip dislocation

– comparisons between two surgical techniques

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Introduction: We present only the difficult cases of THR in high dislocated hip. Femoral canal is frequently distorted in severe cases of DDH. Starting from this idea we have developed an original classification of femoral defect. **Materials and Methods:** We have operated 122 patients with DDH. First 61 cases were operated using a cemented femoral stem with trochanterotomy, femoral shortening osteotomy and trochanteroplasty Kerboull-Postel. The others 61 cases were operated with uncemented femoral stem with femoral subtrochanteric triple osteotomy - shortening, correction of valgus and rotation. **Results:** The non-union of greater trochanter in 5 cases has led us to adopt the technique of triple femoral osteotomy, using a non-cemented femoral component functioning as a centromedullary nail. The lengthening obtained varied from 4,5 to 6 cm and we did not record any case of palsy, neither total nor partial, of the sciatic nerve. No septic complications or nonunion of femoral osteotomy did not occur. **Conclusion:** The femoral dysplastic vice is present in DDH. The femoral torsion with severe helitortion angle – is a good indication for femoral triple osteotomy. The prosthetic replacement in cases of hips with congenital dysplasia is difficult in the high, unstable dislocations, but surgery offers the satisfaction of achieving a stable and mobile hip as well as an equal length of the limbs in patients of an average age of 42 years. The triple femoral osteotomy and uncemented femoral prostheses, seems to be attractive, femoral complications have not been yet noticed.

Reporting compliance and the rate of adverse effects using Losartan and NSAIDs following hip arthroscopy – a multicentre study

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Arthroscopic hip surgery effectively addresses femoroacetabular impingement and related conditions but may lead to postoperative complications like capsulo-labral adhesions and heterotopic ossification (HO). Losartan, inhibiting TGF β -1, aims to reduce fibrosis risk, while NSAIDs like naproxen or celecoxib assist in decreasing HO incidence. This study aims to identify unsuitable candidates, quantify adherence, and report treatment adverse effects of postoperative Losartan and NSAID protocols in hip arthroscopy patients.

A prospective multicenter study enrolled 48 eligible patients (M=22, F=26) aged 16-60 (Mean=36.41, SD=13.93). Following surgery, patients followed the Losartan protocol (12.5mg orally on the second post-operative evening, then 12.5mg orally twice a day for two weeks) and NSAID protocol (Naproxen 500mg orally twice a day or Celecoxib 100mg orally twice a day for two weeks). At the routine six-week follow-up, patients completed a questionnaire regarding treatment compliance and reported side effects.

One patient did not initiate Losartan due to low blood pressure, while two patients avoided NSAIDs due to allergies. No major adverse events were recorded. Among those on Losartan (n=47), one missed a dose, whereas among Celecoxib/Naproxen users (n=43), three discontinued early due to perceived ineffectiveness, stomach issues, or unspecified reasons. Side effects were reported by 5 patients taking Losartan (tiredness, nausea & vomiting) and 5 taking NSAID (dizziness). Postoperative employment of Losartan and NSAIDs in hip arthroscopy patients showed robust adherence, and safety. Consideration must be made for patients with preexisting dyspepsia. These protocols have been embedded into NAHR (Non-Arthroplasty Hip Registry) minimal dataset to report prescribing practice in the UK.

Treatment of acetabular defects with porous metal augments in revision hip arthroplasty: a ten-year single-center experience

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Introduction: The incidence of total hip revision surgery is increasing, with acetabular failure being the most common cause. Management of acetabular defects is complex and challenging. The development of Porous Metal Augments (PMA) is shown to be an effective option, with less morbidity and improved function. **Methods:** Single-center retrospective study of patients treated between 2014-2023. **Inclusion criteria:** Acetabular revision, use of PMA and follow-up >6 months. Demographic, clinical and radiological parameters were analyzed. **Results:** 44 patients were included. 22 were females. Median age was 73 years (38-92). 24 right and 20 left hips. The reason for the revision was aseptic loosening in 40 hips, infection in 3 hips, and instability in 1 hip. Femoral revision was performed in 21 hips. Based on Paprosky classification, 7 defects were classified as IIB, 2 as IIC, 18 as IIIA, and 17 as IIIB. The median surgery time was 159 minutes (72-309) and estimated blood loss was 800mL (250-2400). Two patients developed complications requiring new surgery (1 periprosthetic infection and 1 fixation failure with intra-pelvic cup migration). 42 hips showed good osteointegration as identified by absence of radiolucent lines. In 38 hips, the final hip center was lower than preoperatively. All patients demonstrated improvement in pain, satisfaction and HOOS scores. **Discussion:** PMA demonstrated good osteointegration, providing reliable fixation and recovery of the hip center, improving overall patient satisfaction, with a low complication rate. **Conclusion:** PMA constitute a proven solution for acetabular defects in revision hip arthroplasty.

What are the Most Difficult Steps in Total Hip Arthroplasty for Early-Career Surgeons and How Can Future Technology Help Most? A Survey of the The American Association of Hip and Knee Surgeons Young Arthroplasty Group

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Hip Free Papers 2, MR 9, September 25, 2024, 16:30 - 18:00

Introduction: While technology in total hip arthroplasty (THA) is generally developed by experienced surgeons, particular difficulties in surgical steps and technical demands experienced by early-career surgeons remain important. This study queried the challenges early-career surgeons currently face in THA, to obtain insights into how they perceive future innovative technologies might reduce the difficulties and complications associated with THA. **Methods:** The American Association of Hip and Knee Surgeons Young Arthroplasty Group was surveyed. The perceived degree of difficulty with key THA surgical steps (scale 1-10, from No difficulty to Very difficult), and utility of adjunctive technology (scale 1-10, from Not important to Very important) were recorded. **Results:** Membership response rate was 16.1%. The most common THA approach was direct anterior (67.4%), followed by posterior (25.5%). Four out of the top five most difficult surgical steps were associated with cup preparation/placement. Fluoroscopy was the current most used technology (56.7%), followed by no technology use (21.2%) and robot-arm assistance (12.1%). With respect to the importance of technology, accurate cup placement ranked first (mean score 7.5 points). Dislocation and stem subsidence were the top two complications for which technologic advances were thought to be most beneficial. **Conclusion:** This is the first survey to reveal data about perceived difficulties in THA surgical steps, from the perspective of early-career arthroplasty surgeons in the United States, and the role of technology in mitigating these complications. Future technological developments may take these needs of early-career surgeons into account.

Ceramic-on-Ceramic Bearings: Can we avoid the complications? Long-term outcomes of big head ceramic on ceramic (CoC) bearings in primary total hip arthroplasty

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Introduction: Ceramic-on-ceramic (CoC) bearings offer superior wear characteristics and a low coefficient of friction, yet their use is limited due to reported risks of ceramic fractures in the literature. We assessed our series of patients undergoing total hip arthroplasty (THA) with 36mm CoC bearings. **Methods:** Prospective evaluation of 385 patients (442 hips) undergoing primary THA between 2008 and 2018 was conducted. Twenty-three patients deceased and 36 patients (38 hips) were lost to follow-up. Data were prospectively collected for 326 patients (381 hips) who had uncemented THA with 36-CoC bearings. Kaplan-Meier analysis was used to assess survival with ceramic fracture or revision as endpoints. Clinical evaluation was done using EQ-5D and Oxford Hip Score (OHS). Incidence of squeaking and ceramic-related complications, dislocation, and infection were recorded. **Results:** Survival of CoC bearings was 100% (95% CI 96.7-100%) at 14 years with ceramic fracture, failure, or revision due to squeaking as the endpoint. Mean OHS was 44.5 (30-48). Occasional squeaking was reported by 28 patients (7.3%), without pain or revision surgery due to squeaking. Squeaking correlated significantly with younger age (<60 years; P=0.002). Dislocations occurred in 2 cases (0.5%) and prosthetic joint infection in 1 (0.3%). **Conclusion:** THA with CoC bearings using 4th generation BIOLOX delta ceramic heads yielded excellent 14-year results, with no ceramic fractures or squeaking-related revisions. The optimal position of the bearing surface is crucial to mitigate fracture risk, while larger heads reduce dislocation risk. The observed low infection rate may be attributed to reduced biofilm formation on ceramic surfaces.

Outcomes of Cemented Taper Slip versus Composite Beam Femoral Stems in Total Hip Arthroplasty: A Systematic Review and Meta-analysis

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Purpose: This systematic review and meta-analysis aimed to compare the outcomes of cemented collared composite beam (CB) and collarless taper slip (TS) femoral stems in Total hip arthroplasty (THA).

Methods: Four databases were searched from inception until August 2023 for original studies that compared the outcomes of cemented CB and TS femoral stems following THA. The primary outcome was the aseptic loosening; the secondary outcomes were periprosthetic fractures, instability, dislocation, revision, survivorship, and periprosthetic infection (PJI). This review was conducted in line with PRISMA guidelines.

Results: A total of 11 studies with 730,769 hips were included, with a mean follow-up period of 8.48 ± 6.07 years and average MINORS score of 17.36 ± 1.86 . There was a statistically significant difference in aseptic loosening (OR, 0.28; 95% CI, 0.19–0.43; $p < 0.001$), and PJI rate (OR, 0.61; 95% CI, 0.53–0.71; $p < 0.001$) between the CB and TS groups in favor of the latter. However, periprosthetic fracture, revision rate, survivorship, instability, and dislocation were all similar across both groups (P=NS).

Conclusion: This study demonstrated a significantly higher aseptic loosening and PJI in the CB group compared to the TS stem type. However, other outcomes were comparable. These results must be interpreted in context due to confounding effects.

Level of Evidence: III

Keywords: Total hip arthroplasty; Charnley; Exeter; Composite beam; Taper slip

Femoral component rotation in TKR how much is too much?

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Knee Free Papers 2, MR 11, September 25, 2024, 16:30 - 18:00

Femoral component rotation in total knee replacement (TKR) can significantly impact patient outcomes and benefits. Proper femoral component rotation is crucial for achieving optimal alignment and stability of the knee joint after TKR. When the femoral component is accurately rotated, it can lead to improved function, reduced risk of complications, and enhanced patient satisfaction. While a certain degree of rotation is necessary for optimal function and stability, excessive rotation can lead to complications such as dislocation, impingement, and increased wear of the implant. Current literature suggests that a range of 5-15 degrees of anteversion and 0-20 degrees of internal rotation is considered acceptable. Beyond these ranges, the risk of complications significantly increases. It is essential for surgeons to carefully assess and optimize femoral component rotation during surgery to achieve the best possible outcomes for patients undergoing total hip arthroplasty.

why do my oxford replacements fail?

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objective: to study the reasons for failure of my oxford unicompartmental knee replacements (OUKAs.) Materials and methods: retrospective study. total 542 OUkAs, 352 patients. 432 knees, 280 patients followed. 16 failures ,16 knees (2.95%). 81 knees had 15% varus. Followed 1 to 9 years. . Level of evidence EBM 4.Results: entire cohort, the average age 67, BMI 28. Male to female 39:61. Preop HKA 11.5. Post-op HKA 5. Average age of the sub-cohort 64 years, BMI 31, preop HKA 12.85 post-op HKA was 6.7. 15 females, one male. 16 failures, (11 bearing dislocations,3 fractures and 2 aseptic loosening). average time to revision 2 years and 5 months after index surgery. 4 underwent exchange of bearing, 1 MCL augmented. 3 fractures fixed. 7 underwent TKR .one refused surgery. One lost to follow up. Superficial MCL found lax in all patients with bearing dislocation. Discussion: out of 16, 4 patients (25%) had severe varus (as compared to 3.9% in entire cohort). Sub-cohort preop HKA 12.85,(entire cohort 11.5) and post-op HKA 6.7, (entire cohort 5). superficial MCL appears to get lax over a period in some patients although tight at time of surgery . Conclusion: wear a hinged brace in obese, short ladies with residual varus> 6 degrees post-op for six weeks. Avoid OUkA in varus over 14 degrees. tibial cut with 3G instead of 4G clamp and plus-2 guide. Smallest possible bearing to have more options if it dislocates. There was no conflict of interest.

Influence of Patella Height on Functional Outcomes Following Total Knee Arthroplasty: A Retrospective Study

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Knee Free Papers 2, MR 11, September 25, 2024, 16:30 - 18:00

Total knee arthroplasty(TKA) stands as a cornerstone in osteoarthritis management,yet the impact of patellar height on postoperative success remains pivotal.This retrospective study aims to scrutinize the correlation between patella height and functional outcomes post-TKA.A cohort of 210 patients who underwent primary TKA between January 2018 and February 2023 were analyzed.Patella height was assessed preoperatively via the Insall-Salvati ratio(ISR).Functional outcomes were evaluated using pre and postoperative Knee Society Scores(KSS) and Western Ontario and McMaster Universities Osteoarthritis Index(WOMAC) scores.Patients were stratified into two groups based on ISR:Group 1 (ISR \leq 1.20) and Group 2 (ISR $>$ 1.20).Comparative analysis encompassed preoperative characteristics and postoperative functional scores.Exclusion criteria comprised patients undergoing reoperation due to aseptic loosening (n=5) or periprosthetic joint infection (n=3),resulting in final cohort of 202 patients.Mean preoperative ISR was 1.068 in Group 1 and 1.306 in Group 2.Postoperatively, Group 1 with preoperative ISR values that are within normal and acceptable upper limit exhibited significantly superior improvements in both KSS and WOMAC scores compared to Group 2 with ISR values higher than 1.2, which can also be defined as patella alta (p < 0.05).Moreover, Group 1 demonstrated a lower incidence of complications, notably patellar subluxation and anterior knee pain,compared to Group 2.Our findings underscore significant impact of patella height, as gauged by ISR, on functional outcomes post-TKA.Patients with lower but within normal preoperative ISR values are predisposed to achieve superior functional scores and experience fewer postoperative complications.Hence, preoperative assessment of patella height holds promise in prognosticating functional outcomes and refining surgical strategies in TKA procedures.

Safe zone of joint line elevation for the treatment of knee flexion contracture preventing mid-flexion instability in total knee replacement

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This study aimed to evaluate the safe zone of joint line elevation for the treatment of flexion knee contracture preventing mid-flexion instability in total knee replacement.

Methods 51 knees with varus osteoarthritis undergoing TKA were evaluated. 39 knees with flexion contracture $< 15^\circ$ and 12 knees with flexion contracture $> 15^\circ$. 2-mm joint line elevation was performed in just 4 knees with $> 15^\circ$ flexion contracture. The extension and flexion gaps were measured with traditional spacer block. Stability in coronal plane (varus & valgus stress) was assessed at 0, 30, 60 & 90 degrees. Sampling Technique was nonprobability consecutive. SPSS 23 was used for statistical analysis.

Results: The study comprises 51 patients undergoing total knee replacement (TKA) for osteoarthritis, with a notable gender distribution (84.3% women, 15.7% men) and a mean age of 60.24 ± 8.54 years. Of these, 41.2% had both knees affected, and joint elevation was performed in 23.5% with flexion contracture $> 15^\circ$. No instability was found in cases with joint line elevation. Flexion contracture analysis revealed asymmetry across sides, yet no statistically significant differences. Detailed comparisons show variability in flexion contracture and range of motion, emphasizing the complexity of side-specific outcomes. The study underscores the importance of tailored evaluation and intervention for flexion contracture $> 15^\circ$ to optimize postoperative results.

Conclusions: This study has shown that in patients with varus osteoarthritis of the knee and flexion contracture $> 15^\circ$, a 2-mm joint line elevation is safe to treat knee flexion contracture and is not associated with mid-flexion laxity.

Weight Loss Interventions Before Total Hip and Knee Arthroplasty Operations: A Systematic Review of Randomized Controlled Trials

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Knee Free Papers 2, MR 11, September 25, 2024, 16:30 - 18:00

Background: The high coprevalence of obesity and end-stage osteoarthritis requiring arthroplasty, with the former being a risk factor for complications during arthroplasty, has led to increasing interest in employing preoperative weight loss interventions such as bariatric surgery, diet modification, etc. However, the current evidence on it is conflicting, and this study aimed to investigate the effect of weight loss intervention before arthroplasty in prospective randomized controlled trials. **Methods:** Four electronic databases (MEDLINE, EMBASE, Web of Science, and Cochrane Central Register of Controlled Trials) were searched for prospective randomized controlled trials that compared weight loss interventions with usual care from inception to October, 2023 following the PRISMA guideline. The Cochrane Risk of Bias tool and GRADE framework were used to assess the quality of the studies. Meta-analyses were performed when sufficient data existed from 2 or more studies. **Results:** Three randomized controlled trials involving 198 patients were identified. Two studies employed diet modification, and one study employed bariatric surgery. All three studies reported significant reductions in body weight and body mass index, and intervention groups had fewer postoperative complications reported. There was no difference in the length of stay between the intervention group and the control group. Variable patient-reported outcome measures were used by different research groups. **Conclusion:** Weight loss intervention can achieve significant reductions in body weight and body mass index before arthroplasty, with fewer postoperative complications reported. Further studies with different populations would allow confirming its effect among population with different obesity characteristics.

The Outcome Of Combined Nail-Plate Construct (NPC) In Complex Distal Femur Fractures And Periprosthetic Fractures Around Total Knee Replacement (TKR)

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Background:

Surgical treatment of distal femur fractures and periprosthetic fractures around Total Knee Replacement (TKR) is challenging. The nail-plate hybrid construct offers improved biomechanical stability and the advantage of a locked plate and intramedullary nail to allow immediate weight-bearing in the setting of complex fracture patterns and osteoporosis.

Objectives

To evaluate the functional outcomes of the patients treated with the combined NPC on the basis of fracture union in a satisfactory position, knee range of motion (ROM), pain, deformity, walking ability, and return to the pre-fracture status of mobility.

Study Design & Methods

We evaluated a retrospective cohort of 21 patients with a mean age of 79.4 years (66- 92 years) who had complex distal femur fractures of all types treated by NPC. We fixed the retrograde intramedullary nail first followed by a lateral anatomical locking plate although there is no consensus on the sequence of the procedure.

Results

We evaluated our results based on the Injury characteristics, fracture pattern, operative variables, radiographic information (X-rays and CT Scans), and postoperative outcome. All patients treated with the combined nail-plate construct proceeded to fracture union (100%). Functional outcomes improved significantly in all patients.

Conclusions

Treatment of complex distal femur native or periprosthetic fractures is challenging but can be safely addressed with a combined Nail Plate Construct (NPC), which allows enhanced biomechanical stability, promotes immediate weight bearing, and reduces complication risk. This technique requires meticulous planning and is reliable, efficient, and reproducible.

Better Accuracy in Implant Position After Medial Unicompartmental Knee Arthroplasty Using Image-Based Robotic-Assisted System Compared to Imageless Robotic-Assisted One: A Two Hundred Ninety-Two Consecutive Knees Analysis.

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Knee Free Papers 2, MR 11, September 25, 2024, 16:30 - 18:00

Objectives: It was observed that robotic assistance improves the implant placement accuracy in relation with conventional technique. Despite this, different robotic systems were developed in the last years. The aims of this study were to compare the accuracy of implant positioning in image-based robotic-assisted UKA versus imageless robotic-assisted UKA in a large cohort. **Methods:** This is a radiographic retrospective study which included all the medial consecutive UKAs that were done using two different robot assistance systems between 2011 and 2023. The radiological measurements were done preoperatively and in the last postoperative control. The evaluation included the residual hip-knee-ankle (HKA), JL restoration, posterior tibial slope (PTS) and coronal positioning of tibial implant according to Cartier angle (Δ Cartier). Outliers were defined as follows: post-operative HKA $< 175^\circ$ or $> 180^\circ$, JL change ≥ 2 mm, PTS $< 2^\circ$ or $> 8^\circ$ and Δ Cartier $> 3^\circ$ or $< -3^\circ$. **Results:** Out of the 292 knees included, 95 underwent image-based robotic-assisted UKA (32.5%) and 197 (67.5%) imageless robotic-assisted UKA. Image-based robotic UKA was associated with better accuracy compared to imageless robotic-assisted UKA in relation to HKA (77,1% vs 67,5%, $p = 0.03$), JL restoration (80,2% vs 69,5%, $p < 0.02$), PTS (93,7% vs 82,7%, $p < 0.02$), and tibial varus restoration (87,6% vs 65%, $p = 0.01$). **Conclusions:** Image-based robotic assistance in patients undergoing medial UKA was associated with better accuracy compared to imageless robotic-assisted medial UKA with respect to tibial implant positioning, post-operative limb alignment, and JL restoration.

Short-term Intervals in Treatment of the Knee Periprosthetic Infection.

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Introduction: double-stage revision arthroplasty remains the gold standard for the treatment of the knee periprosthetic infection. There still needs to be a consensus on the interval between stages. Methods: we compared the results of treatment in 67 patients who were treated with short intervals (mean 16.3±2.5 days) with the results of treatment in 77 patients in whom intervals were longer (mean 161±70,4 days). We assessed treatment results using the following criteria: range of motion in the knee joint, VAS, WOMAC, OKS and FJS-12 scores and infection recurrence rate. Results: the mean time to evaluate patient results after the second stage was 31.7±9.1 months (minimum 14 months). A statistically significant difference was obtained in the knee joint's flexion after the second stage: 98.4±16 degrees in the short-interval group and 89.7±18.7 degrees in the long-interval group (p=0,01). The mean results on the VAS scale after the second stage of revision arthroplasty were 1.1±1.5 in the short-interval group and 1.6±2.1 in the long-interval group (p=0.04); 18,6±12,4 and 23,7±17,2 respectively on the WOMAC scale (p<0.03), 21±7,1 and 25,3±8,7 on the OKS scale (p<0.01); 13,4±8,7 and 16,8±11,6 on the FJS-12 scale (p=0.03). Recurrences of periprosthetic infection were noted in 7 patients (10.4%) in the short-interval group and 9 patient (11.6 %) in the long-interval group. Conclusion: patients in the short-interval group had better results in terms of the amount of flexion in the knee joint, according to the VAS, WOMAC, OKS and FJS-12 scales, and the same infection recurrence rate.

Efficacy of Different Doses of Pregabalin as a Multimodal Analgesic Agent in Postoperative Pain Control after Total Knee Arthroplasty : [1]A Randomized Controlled Trial

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Knee Free Papers 2, MR 11, September 25, 2024, 16:30 - 18:00

Introduction: Pregabalin stands as a vital component in multimodal analgesic strategies for postoperative pain management following total knee arthroplasty (TKA). The current standard recommends a daily dose of 150-300 mg for 14 days post-surgery. Demonstrated side effects include sedation, dizziness and visual disturbances. Our study aimed to pinpoint the most effective postoperative Pregabalin dosage with minimal side effects. **Methods:** We conducted a double-blind, randomized controlled trial of patients undergoing unilateral primary TKA, comparing 75 mg of postoperative Pregabalin to 150 mg of postoperative Pregabalin prescribed for 14 days post-surgery. Visual Analog Scale (VAS) for pain at rest and on motion was the primary outcome measure. Secondary outcomes were morphine and antiemetic consumption, adverse events, and functional outcomes. **Results:** Our results revealed no statistically significant difference in VAS scores between the 75 mg and 150 mg groups at various time points up to 12 weeks post-surgery. However, the 75 mg group exhibited significantly lower incidences of dizziness (17% vs. 61% in the 150 mg group, p-value<0.001) and faster time to ambulation (27±4 hours vs. 30±4 hours in the 150 mg group, p-value<0.001). Other outcome measures showed no notable variances between the two groups. **Conclusion:** A dosage of 75 mg of Pregabalin for 14 days post-TKA yielded comparable pain control outcomes to 150 mg with the added benefits of quicker ambulation and reduced dizziness. Therefore, we advocate for the use of 75 mg of Pregabalin as part of a multimodal analgesic regimen for postoperative pain management following TKA.

Comparison of double cementing method and modular metal augments for the replacement of AORI type 2 and 3 femoral and tibial defects during revision knee arthroplasty

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Introduction: Most cases of revision knee arthroplasty involve bone defects. In this study, we compared the use of double cementing method and modular metal augments to replace bone defects. **Methods:** A prospective randomized trial was conducted. In the main group, the double cementing method was used to replace bone defects during revision knee joint replacement, and in the control group, modular metal augments were used (40 patients in each group). Bone defects were assessed using the AORI scale and joint function was assessed the Knee Society Score (KSS) and Oxford Knee Score (OKS). Knee radiography was used to assess the stability of the endoprosthesis. **Results:** The follow-up period was up 12 to 36 months (average 28.3 months, $\sigma=8.5$). There were no statistically significant differences between two groups in days in the hospital ($p=0,18$), operation time ($p=0,5$), knee ($p=0,5$) and functional ($p=0,24$) KSS scores, OKS scores ($p=0,16$). Blood loss in the main group was on average 300 ml less than in the control group ($p=0,00014$). There were 2 cases of periprosthetic infection development in the first group and 4 cases in the second group. In the first group, there were four cases of radiolucent lines at the bone/cement interface, while the second group had seven. **Conclusions:** The research found no significant difference in outcomes between the groups except for less blood loss in the main group. The double cementation technique has the potential to reduce the risk of recurrent periprosthetic infection, reduce the incidence of radiolucent lines, and be more cost-effective.

Fix or Replace, the conundrum of managing periprosthetic distal femoral fractures. A systematic review and Meta-Analyses

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Distal femoral replacement has been shown to be effective but little comparative data exists between replacement and fixation. The aim of the study was to perform a systematic review comparing the clinical outcomes of fixation and DFR.

Methods:

EMBASE, CINAHL AND Medline databases were searched for all appropriate literature. Studies were screened according PRISMA protocols. Relevant data was extracted from included studies. In total 18 studies from the original 247 retrieved were included with patients pooled. Clinical outcomes relating to mortality, length of stay, revision surgery and PROMs were compared between interventions. Meta-analyses were performed for those studies directly comparing both cohorts.

Results:

317 fractures were treated with DFR and 726 with LCP/RIMN. Fixation was associated with 6.0% incidence of non-union. No significant difference was noted between length of hospital stay ($p=0.81$). Mortality rates at 12 months were lower in the DFR group in comparison to those undergoing fixation 10.8% vs 13.8% respectively (OR 0.65 CI 0.41-1.01 $p=0.029$). Revision surgery was significantly higher in the LCP/RIMN cohort (OR 0.21(0.092-0.50 $p=0.002$). Infection rates were marginally higher in LCP/RIMN cohort. PROMs were improved for the DFR cohort although this did not reach statistical significance. Meta-analyses of the two interventions suggest there is lower mortality and revision rates with DFR with no difference in infection rates. Conclusion DFR permits early weight bearing and has a similar profile for patient length of stay and infection when compared to fixation. DFR is a valid treatment modality in periprosthetic distal femoral fractures.

Retention of the posterior cruciate ligament in the medial congruent total knee arthroplasty does not result in better clinical outcomes.

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Knee Free Papers 2, MR 11, September 25, 2024, 16:30 - 18:00

Medial stabilised total knee arthroplasty (TKA) aims to recreate the medial pivot kinematics of the native knee. These have shown improved stability and patient satisfaction. The Medial Congruent (MC) system allows for retention or sacrifice of the posterior cruciate ligament (PCL) without changing polyethylene design. Current literature is limited on whether retaining the PCL will improve outcomes post operatively. We assess the differences in clinical outcomes depending on whether the PCL is retained or sacrificed.

This is a retrospective study comparing 26 MC with PCL retained and 50 MC with PCL sacrificed TKAs. We evaluated parameters preoperatively as well as 3 and 12 months post operatively.

Both groups were similar in terms of age, gender, BMI, and ASA score ($p \geq 0.05$). There were no significant differences between both groups preoperatively. At 1 year, the ROM and all outcome scores were similar between both groups (ROM: $p=0.8$; OKS: $p=0.66$; KS-FS: $p=0.30$; KS-KS: $p=0.70$). At the 3 month mark, OKS and KS-KS improved statistically for both groups but KS-FS only improved statistically for the retained PCL group.

The MC implant is designed to substitute the function of the PCL with increased constraint in the medial compartment.

It has good post operative outcomes regardless the status of the PCL. As preserving the PCL does not improve post operative outcomes, surgeons may routinely sacrifice the PCL. This can make ligamentous balancing easier and can shorten surgical time.

Swelling assessment after total knee arthroplasty

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Knee swelling after a total knee replacement (TKR) typically peaks around 2-3 days after surgery and gradually decreases over the following weeks to months. Most patients experience significant improvement in swelling within the first 6-12 weeks after surgery, but some residual swelling may persist for up to 6 months or longer. Factors such as preoperative knee swelling, BMI, age, and comorbidities considered as patient characteristics that influence the level of knee swelling. The post-operative instructions for managing swelling, such as elevating the leg, using ice packs, and performing prescribed exercises should be followed. warning signs & symptoms

1. Sudden and severe pain in the knee
2. Excessive redness, warmth, or tenderness around the knee
3. Increased swelling that does not improve with rest and elevation
4. Difficulty in performing simple knee exercises
5. Fever or chills

Our study examines the course of knee swelling after total knee arthroplasty (TKA) and its associations with knee function. Twenty-five patients had TKA. post-operative weeks (POWs) 1, 4, 8, and 12, knee swelling was measured using bioimpedance spectrometry, the study observed that knee swelling increased by approximately 27% from the day of admission levels after total knee arthroplasty, and although it reduced over time, it remained high at around 11% by post-operative week 24. Furthermore, knee swelling was found to be associated with quadriceps weakness in longitudinal, multivariable analyses, highlighting the potential importance of interventions to reduce post-TKA knee swelling to enhance quadriceps strength and knee functions

Residual Pain Examination After Primary Total Knee Arthroplasty

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Knee Free Papers 2, MR 11, September 25, 2024, 16:30 - 18:00

Introduction. According to literature above 20% patients are unsatisfied. The most common patient's complaint is pain. Materials and methods. In our prospective study 196 patients were examined from 2016 to 2023 with chronic pain after primary TKA. The mean time after TKA was 32 months, mean age was 67 y.o. All patients were examined with the accurate algorithm, which include medical history, CT scans, special X-rays and PJI examination tests. Results. The reason of pain was identified in all patients. PJI was identified in the most part of our cohort – 76 (34%) patients. Among PJI patients the components malposition was founded in 12 (15.8%) patients. The second group was with components malalignment – 61 (27%). Aseptic loosening was identified in 38 (17%) and 9 (23.7%) patients in this group has the components malalignment according to early X-rays after TKA. The ligament instability was in 24(11%) patients. Extraarticular reason was identified in 19(9%) patients and among them 5 (2%) patients were with periprosthetic fractures. It's very important, that in 27 (13.7%) patients several reasons of knee pain were identified. Conclusion. It's very difficult to identify the real problem. The most common definition as “arthrofibrosis” is usually only a symptom. According to our research, the most frequent reasons of unsatisfied knee were PJI and component malalignment. Only 19 (9%) patients had an extraarticular reasons. The comprehensive examination can help to identify the real problem. But in different National registries very often reason for revision is pain without its course verification.

Hip Arthroscopy for Femoroacetabular Syndrome Treatment - How Do I Prepare - DIY 3d Templating and Dynamic Simulation

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Sports Medicine Free Papers 2, MR 4, September 25, 2024, 16:30 - 18:00

Femoroacetabular impingement syndrome (FAIS) is defined as non-physiological contact between subcapital region of the femur and the acetabular rim, which is happening in normal range of motion in hip joint.

Hip arthroscopy is well established method for treating femoroacetabular impingement syndrome (FAIS) nowadays.

Preoperative templating is crucial step in FAIS surgery due to its predominantly biomechanical nature. The main goal here is to determine which regions of hip joint are affected in particular position of the joint elements. Based on this evaluation surgeon is aware in which areas and how much of bone removal is necessary .

As a source, a standard CT imaging of hip and pelvis is used. 3D reconstruction and 3D model segmentation and refinement is then performed. Once the center of rotation of femoral head is determined, dynamic simulation is performed in physiologic range of motion (ROM) cycle.

The areas of contact in normal ROM are then marked for further use in surgical procedure - arthroscopic bony trimming.

Although automated software for such purposes exist present, they're not used widely in daily clinical practice. Furthermore, our approach is much more flexible and allows usage in many other applications, such as personalized surgical instrumentation (PSI) design, which will be shown in our presentation.

Minimal Clinically Important Difference (MCID) of the Oxford Shoulder Score for Arthroscopic Rotator Cuff Repair at 5 Years Post-Operatively

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Introduction: The effectiveness of rotator cuff repairs can be determined not only by evaluation of symptoms and clinical examination, but patient-reported outcome measures (PROMs) as well. While the MCID for various validated shoulder scores such as the Oxford Shoulder Score (OSS) have been reported at 1 and 2 years post-operatively, there are no studies proposing the MCID of the OSS at 5 years post-operatively. Hence, the purpose of this study is to determine the MCID of the OSS at 5 years post-operatively in a cohort of patients who have undergone arthroscopic rotator cuff repair.

Methods: Prospectively collected data of 123 patients who underwent arthroscopic rotator cuff repair performed by a fellowship-trained shoulder surgeon in a single high-volume institution between 2015-2017 was retrospectively reviewed. Functional outcome was assessed by the Oxford Shoulder Score (OSS) at 6 months, 2 years, and 5 years post-operatively. The MCID for OSS was determined through 2 methods: an anchor-based linear regression approach as well as a distribution-based approach.

Results: A total of 123 patients who underwent arthroscopic rotator cuff repair were included in this study. At 5 years post-operatively, the MCID of OSS identified by the anchor-based linear regression approach for satisfaction was 2.8 (95% CI 2.0 - 3.6), and that for expectation fulfilment was 2.6 (95% CI 1.9 – 3.3). The MCID of OSS identified by the distribution-based approach was 2.5.

Conclusion: Taking the higher value to be the minimum change in score required, the proposed MCID for OSS at 5 years post-operatively is 2.8.

Anterior Cruciate Ligament Injury in Female Football Players

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The fastest growing sport in the world today is women's football. The European Football Federation has documented a 7.1% year-on-year increase in the number of active female athletes between 2016 and 2017. Therefore, in the last decade, a significant increase in orthopedic injuries among female soccer players has been observed around the world. Epidemiologically, it has been proven that the incidence of bone and joint injuries is 3.42 per 1000 hours of play. Studies show that the three most common injuries are knee, ankle and tendon injuries and their incidences are significantly different from injuries in men. The most common injury of all is an anterior cruciate ligament injury, which is at least twice as common in women as in men regardless of injury exposure and level of participation in sports. Due to the specificity of sport activity, they engage in, dilemmas related to both operative treatment and post-operative rehabilitation have arisen over time. The aim of this paperwork is to present the modern aspects of operative treatment from preoperative preparation, surgical treatment that to the greatest extent implies an adequate choice of graft, operative technique, and the application of bioregenerative medicine, to the specificity of postoperative rehabilitation protocols. The paper will present experience from the available literature, as well as personal experience in the treatment of female football players in the last two years.

Extraforaminal approach of arthroscopic-assisted uni-portal spinal surgery: a new endoscopic technique for the treatment of far lateral disc herniation

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Introduction: Arthroscopic-assisted uni-portal spinal surgery (AUSS) as a new endoscopic technique has both working and observation channels, but both are located in the same incision, and each channel can move freely. The purpose of this study was to describe the technique of extraforaminal approach of AUSS for the treatment of far lateral disc herniation (FLDH) and to analyze early clinical results after endoscopic discectomy. **Methods:** A total of 31 patients of a single center surgically treated for FLDH between 2022 and 2023 were retrospectively included in this study. All patients underwent uni-portal arthroscopic discectomy via extraforaminal approach. The VAS score for lower back and lower limb radiation pain, ODI score, modified MacNab score, estimated blood loss and recurrence and complication rates were examined as indicators for clinical outcomes and adverse events. **Results:** The mean operative time was 35.8 minutes. The mean quantity of bleeding was 40 mL. The mean VAS score for radicular leg pain dropped from a preoperative score of 8.1 ± 0.6 to a final follow-up score of 1.9 ± 1.1 ($p < 0.001$). The final outcome according to the modified Macnab criteria was excellent in 10 patients (32.2%), good in 16 (51.6%), fair in 5 (16.1%), and poor in 0. Complications were limited to one dural tear (4.8%). There was no postoperative complication and disc reherniation. **Conclusions:** The extraforaminal approach of arthroscopic-assisted uni-portal spinal surgery was a feasible and advantageous endoscopic technique for the treatment of FLDH. AUSS may be considered as an alternative surgical treatment for FLDH.

Arthroscopic Transosseous Equivalent Fixation in Treatment of ACL Avulsion Fractures

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INTRODUCTION: ACL avulsion fractures are not a common pathology. Many arthroscopic techniques and devices have been used. The purpose of this study was that we use arthroscopic transosseous equivalent fixation without damage of physis. We thought that this technology can even be used on adults and adolescents without damage of physis. **METHODS:** From June 2016 and November 2019, nine patients who underwent arthroscopic transosseous equivalent fixation for ACL avulsion fracture and were

followed more than one year. There were 4 males and 5 females with an average age of 20 years. All patient treated in acute stage. We also obtained kneeling stress radiographs of the affected and unaffected knee to evaluate the laxity after operation. We also evaluate clinical testing. International Knee Documentation Committee scores, and the Lysholm Knee score were also recorded. **RESULTS:** Pre-operative Lachman and anterior drawer tests were positive under anesthesia. Post-operative X-ray films showed that all fractures healed between 6 weeks to 3 months. Lachman and anterior drawer tests were negative after operation. At 1-year after surgery, the kneeling stress view showed no significant difference

between affected and unaffected knee. Lysholm knee score and IKDC also showed excellent in most people. **CONCLUSION:** Our study showed that arthroscopic transosseous equivalent fixation is an effective technique with several advantages, such as fracture healing, minimal invasive, and good fixation. Besides, there is no need to remove implant again. The most important is that this technology can even be used on adults and adolescents without damage of physis.

Safety and efficacy of Autologous Adipose-Derived Stem Cells for Knee Osteoarthritis in elderly population: a Systematic Review

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Introduction

Osteoarthritis (OA) affects over 240 million people worldwide, predominantly in the knee, with the elderly population over 65 being most affected. Various risk factors contribute to biological changes in joint microenvironments, leading to cartilage overload and chondrocyte aging. Adipose-derived MSCs (ADSCs) have emerged as a promising therapy for knee OA, improving joint conditions effectively. This systematic review focuses on evaluating the efficacy of ADSC therapies in treating knee OA in patients over 65 years of age.

Materials and Methods

A literature search was conducted in PubMed, Scopus, and Cochrane databases for English-language human clinical trials until Feb 7, 2024. Study characteristics including authors, publication year, study type, patient demographics, ADSC culture method, cell count, follow-up duration, adverse events, complications, and clinical outcomes were extracted and analyzed.

Results

Seven clinical trials meeting inclusion criteria were identified, involving autologous adipose-derived stem cells. Four studies utilized stem cells as a stromal vascular fraction (SVF), two as cultured ADSCs, and one investigated the microfragmented adipose tissue (MAT) procedure. All studies reported improved clinical outcomes in 339 knees, with increased scores in KOOS, WOMAC, IKS, VAS, and Lysholm knee scales post-treatment. Complications were minimal, with only 62 knees experiencing adverse events, none of which were significant.

Conclusions

This systematic review underscores the effectiveness and safety of autologous adipose-derived stem cell therapy in improving clinical outcomes for knee OA in elderly patients. It suggests a viable alternative to surgery for refractory cases, offering hope for those not yet in end-stage OA.

Role of intra-articular sodium hyaluronate injection on early recovery following arthroscopic ACL reconstruction surgery: A double-blind, randomized controlled study

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This randomized-controlled trial evaluated the safety and efficacy of intra-articular hyaluronic acid (IAHA) injection at different times after ACL reconstruction (ACLR) surgery. Ninety patients with ACL tears who underwent arthroscopic ACLR were divided into three groups: the early HA group received HA on day two and saline at eight weeks, the late HA group received saline on day two and HA at eight weeks, and the placebo group received saline at both times. Clinical and biochemical parameters were evaluated at baseline, monthly up to 6 months, and at 12 months. The early HA group demonstrated significantly better ROM than placebo ($P=0.041$) and late HA group ($P=0.029$) after one and two months. The pain (VAS) at one month was also significantly less in early HA group compared to placebo group ($P=0.033$). The early HA group had a considerably faster median recovery time to the desired Lysholm score of 83 ($p=0.01$) than the placebo group and had better Lysholm scores than the other two groups at the end of 2 months. The EQ5D5L and IKDC scores were also significantly better at 1st and 2nd months in early HA group. In both HA groups, synovial inflammatory marker TNF -alpha significantly decreased from the baseline ($P<0.05$), but there were no significant differences between the three groups. None of the patients develop any adverse events. To conclude, early intra-articular hyaluronate injection following ACLR is both safe and beneficial, leading to reduced pain, improved range of motion, enhanced knee function, and better health-related quality of life

Joint osteonecrosis in adolescents: treatment challenge

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Joint osteonecrosis, a painful condition characterized by the death of bone tissue, is a sequelae of antileukemic treatment in adolescents with acute lymphoblastic leukemia (ALL). It can result in pain, limited mobility, and decreased life quality. There is limited research on the treatment options specifically for adolescents with joint osteonecrosis, making it a significant treatment challenge. We have analyzed two adolescents with several joints affected. The first is a girl (17) who has been affected by joint issues in both hips, shoulders, knees, and elbows. The treatment options for her condition range from nonoperative treatments to joint arthroplasty, depending on the stage and severity of her symptoms. The second case a boy (16) with capitellar osteonecrosis in both elbows and talar osteonecrosis with loose bodies. These conditions were treated arthroscopically in all four joints affected. The results showed that conservative management was less effective in relieving symptoms for these two adolescent. Both of them needed surgical interventions such as core decompression or joint replacement to improve pain and restore function. Overall, the patient experienced significant improvement in their shoulder, hip, and elbow function and mobility after surgery. Their scores in all assessment tools increased, indicating a successful outcome of the surgical intervention. Joint osteonecrosis in adolescents presents a significant treatment challenge, but with a multidisciplinary approach that includes conservative management, surgical interventions, and medication therapy, successful outcomes can be achieved. Further research is needed to better understand the underlying causes of joint osteonecrosis and to develop more targeted treatment options.

Anterior cruciate ligament reconstruction with peroneus longus tendon graft

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There is controversy regarding the ideal graft choice for anterior cruciate ligament (ACL) reconstruction. Bone-patellar tendon-bone and hamstring autografts have been considered the standard choice of graft for decades. Despite the good clinical outcomes, donor-site morbidity is concern for both of these grafts. Peroneus longus tendon(PLT) autograft has also been considered as a potential graft for many orthopaedic reconstructive procedures. The biomechanical properties and thickness of PLT permit its use for ACL reconstruction. The tensile strength of a peroneus longus tendon autograft is the same as that of a hamstring autograft and greater than that of a bone-patellar tendon-bone graft and a quadriceps tendon graft. My aim to use the peroneus longus tendon autograft during single-bundle ACL reconstruction. 12 patients (10 men and 2 women) with complete ACL tear treated with arthroscopic reconstruction with peroneus longus graft. Average FU period was 17.2 months. Assessment of post-surgical pain, knee stability, and ankle function were performed using Lysholm knee score and AOFAS (American orthopaedic foot and ankle score) respectively. Excellent results were obtained on 10 cases while one case had fair results. Conclusive evidence shows that PLT can be an appropriate autograft source for ACL reconstruction, avoiding potential complications of autografts obtained from the knee region.

Cervical sagittal balance after consecutive three-level hybrid surgery versus anterior cervical discectomy and fusion: radiological results from a single-center experience

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Background: According to the different numbers and relative locations of cervical disc replacement (CDR) and anterior cervical discectomy and fusion (ACDF), three-level hybrid surgery (HS) has many constructs. **Objective:** The purpose of this retrospective study was to compare the sagittal alignment parameters of HS and ACDF for cervical degenerative disc disease (CDDD) and the association of the respective parameters. **Methods:** This study involved patients with three-level CDDD who underwent ACDF or HS. This follow-up included one-level CDR and two-level ACDF (type I group), two-level CDR and one-level ACDF (type II group) and three-level ACDF. Cervical sagittal alignment parameters included cervical lordosis (CL), segment alignment (SA), T1 slope (T1S), C2-C7 sagittal vertical axis (SVA), T1S-CL, C2 slope (C2S), occipital to C2 angle (O-C2A) and segment range of motion (ROM). **Results:** The three groups with a total of 106 patients were better matched in terms of demographics. Patients who underwent HS had significantly higher CL than those who underwent ACDF at 1 week, 6 months, 12 months and the final follow-up after surgery, as well as significantly better SA at 12 months and the final follow-up. **Conclusion:** Most improvements in cervical sagittal alignment were observed in all three groups postoperatively. HS was more advantageous than ACDF in the maintenance of postoperative CL and SA. Thus, three-level HS may be better for maintaining cervical curvature.

Does Fusion Affect the Anterior Bone Loss of Adjacent Cervical Disc Arthroplasty in Contiguous 2-Level Hybrid Surgery?

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Introduction: Hybrid surgery (HS) is a promising approach for treating multilevel cervical degenerative disc disease. However, it is associated with several adverse outcomes, such as anterior bone loss (ABL). ABL is non-progressive early peri-prosthetic vertebral bone loss occurring within 6 months after surgery at the arthroplasty level. However, no study have discussed the occurrence of ABL in HS. This study examined whether the ABL in contiguous 2-level HS was affected by adjacent fusion compared with CDA alone. **Methods:** 180 patients undergoing either a 1-level CDA or contiguous 2-level HS were retrospectively reviewed. The clinical and radiographical outcomes were collected preoperatively and at a intervals of 1 week, 3, 6, and 12 months post-operation and at the last follow-up. ABL incidence and severity were compared using initial and postoperative radiographs. **Results:** ABL appeared in 68.7% of CDA cases (37.9% mild, 34.8% moderate, 27.3% severe) and 44.0% of HS cases (54.1% mild, 27.0% moderate, 18.9% severe). Factors like age, postoperative alignment, and range of movement at the arthroplasty segment showed no correlation with ABL incidence. Logistic regression highlighted surgery type and body mass index as significant ABL correlates. There was no significant difference in the ABL incidence and severity with or without an adjacent fusion level. Postoperative clinical outcomes improved significantly in both HS and CDA groups. **Conclusion:** ABL is common in CDA and HS. Despite that HS had a lower incidence rate and degree than CDA, the fusion location in HS did not affect the ABL of adjacent CDA.

Comparison of Titanium Mesh Cage, Nano-Hydroxyapatite/Polyamide Cage, and 3D-Printed Vertebral Body for Anterior Cervical Corpectomy and Fusion

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Objective: This study aims to compare the clinical and radiological outcomes of Titanium Mesh Cage (TMC), Nano-Hydroxyapatite/Polyamide (n-HA/PA66 cage), and 3D-printed vertebral bodies in anterior cervical corpectomy and fusion (ACCF) patients. **Methods:** This was a prospective non-randomized controlled study. We enrolled 60 patients undergoing ACCF using TMCs, n-HA/PA66 cages, or 3D-printed vertebral bodies from January 2020 to November 2021. For each group, there were 20 patients. Follow-up was conducted for minimum two years. Clinical outcomes, including JOA, NDI and VAS scores were collected pre-operatively and at each follow-up. Radiographic outcomes were collected at each visit, including FSU height, fusion rate, and cervical alignment. A loss of FSU height equal or greater than 3 mm was deemed implant subsidence. **Results:** Postoperative FSU height loss at 2 years differed significantly among the TMC, n-HA/PA66, and 3D-printed vertebral body groups, measuring 3.07 ± 1.25 mm, 2.11 ± 0.73 mm, and 1.46 ± 0.71 mm, respectively ($P < 0.001$). The rates of implant subsidence were 45%, 20%, and 10%, respectively. Regarding the clinical data, only the JOA score at 3 months postoperatively showed a statistically significant difference ($P = 0.004$). All patients obtained solid fusion at 2-year follow-up. **Conclusion:** At two-year follow-up after ACCF, the n-HA/PA66 cage group and the 3D-printed vertebral body group exhibited less FSU height loss and lower rates of implant subsidence compared to the TMC group. There appeared to be no significant differences in clinical outcomes among the three groups.

Anterior bone loss: A common phenomenon which should be considered as bone remodeling process existed not only in patients underwent cervical disc replacement but also those with anterior cervical discectomy and fusion.

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Objective: Anterior bone loss (ABL) was considered as a non-progressive process secondary only to motion-preserving implant and has been noticed recently in cervical disc replacement (CDR) let alone patients with anterior cervical discectomy and fusion (ACDF). Our purpose is to reveal this unnoticed phenomenon in ACDF and further explore its clinical and radiological outcomes.

Methods: 77 patients underwent ACDF with a minimum follow-up of at least one-year were retrospectively reviewed. The average follow-up time was 22.51 ± 16.31 months. There were 50 patients in group A with ABL while there were 27 patients in group B without ABL. ABL was measured and classified into 4 grades according to Kieser's methods. Clinical evaluation, radiological parameters and fusion rate were recorded.

Results: The incidence of bone ABL was 64.9% of Zero-P and 55.2% of endplates. The incidence of upper and lower endplates was 61% and 49% respectively and such difference was not significant. Mild ABL occurred in 22%, moderate ABL in 38% and severe ABL of 40% patients underwent ACDF with ABL. ABL won't affect both clinical outcomes and fusion rate. However, ABL would result in a higher incidence of subsidence.

Conclusion: ABL should be considered as a common phenomenon that both CDR and ACDF owned and was a none progressive process which confined in one year. ABL would result in a higher incidence of subsidence. Luckily, this phenomenon does not have an effect on postoperative clinical and fusion rate.

Cervical sagittal balance in normal and Down syndrome children

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Introduction: In the concept of sagittal balance, the cervical spine has long received insufficient attention from researchers, but this trend is now changing. The study of cervical sagittal balance in children with Down syndrome may help to approach the prerequisites for the development of atlantoaxial instability. **Materials and methods:** We retrospectively analyzed radiographs of the cervical spine in the neutral position in lateral projection, as well as postural radiographs of 110 pediatric patients. The patients were divided into 2 groups. Group 1 (normal)— 60 children aged 4 to 17 years without spinal pathology. Group 2 (Down syndrome) — 50 children aged 4 to 17 years with Down syndrome. The parameters of cervical sagittal balance were calculated (Oc-C2, Oc-C7, C1-C2, C2-C7, C2-C7H, C7S, Th1S, TIA, NT) and criteria for atlantoaxial instability (Nakamura angle, ADI, SAC-C1, SAC-C1/SAC-C4) and statistical analysis of the data was performed. **Results:** Statistically significant differences in C7S, Th1S, and TIA parameters were found in the direction of their increase in children with Down syndrome. These parameters are responsible for the formation of cervical lordosis, but there were no statistically significant differences in the angular parameters of cervical lordosis; therefore, the cervical spine is subcompensated during flexion in children with Down syndrome. Statistically significant differences in atlantoaxial instability criteria ADI, SAC-C1, SAC-C1/SAC-C4 were also found in the direction of their decreasing in children with Down syndrome. The obtained abnormalities can be considered as congenital determinants of predisposition to atlantoaxial instability in children with Down syndrome.

Anterior cervical V-shaped osteotomy and fusion surgery for the treatment of nucleus pulposus prolapse posterior to vertebral body with myelopathy: A technical note

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Objective: In degenerative cervical disc, nucleus pulposus prolapse generally causes severe compression of the spinal cord, making decompression procedures a favored option. However, for cases in which the prolapse lies directly posterior to the vertebral body, even considering trumpet-shaped decompression, the anterior cervical discectomy and fusion (ACDF) procedure still poses the risk of inadequate coverage. Procedures such as anterior cervical corpectomy and fusion (ACCF) allow for adequate exposure of the compression, but with increased risk of cage subsidence and vertebral body collapse. Therefore, a surgical approach with adequate decompression coverage while preserving anterior vertebral body integrity is needed. Our aim was to describe a new anterior cervical procedure, anterior cervical V-shaped osteotomy and fusion (ACVF), for the treatment of cervical myelopathy with nucleus pulposus prolapse behind vertebral body. **Methods:** ACVF was performed in two patients with cervical myelopathy with post-vertebra nucleus pulposus prolapse and spinal cord compression. Main surgical procedures included responsible level discectomy, V-shaped osteotomy of posterior margins of involved vertebra, and interbody fusion device placement. Postoperative follow-up was performed for one year and three months, respectively. **Results:** Postoperative CT and MRI demonstrated adequate decompression of the spinal cord. Follow-up confirmed improvement in neurological function. The heights of the involved vertebrae were maintained without significant collapse. No complications related to this technique were recognized. **Conclusion:** ACVF may be safe and effective for spinal cord decompression in the case of nucleus pulposus prolapse posterior to vertebral body, by the potential to serve as a substitute for procedures such as ACCF.

Anterior Vertebroplasty as Treatment for Symptomatic Cervical Hemangioma

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Background: There is very few literature on the treatment of symptomatic cervical hemangioma (SCH). **Objective:** The study aims to evaluate the safety and effectiveness of anterior vertebroplasty for patients with SCH. **Methods:** Clinical data of patients with SCH who underwent anterior vertebroplasty from January 2018 to January 2022 were retrospectively analyzed. A total of 20 patients were included in this study, including 12 males and 8 females, with an average age of 48.2 ± 5.3 years. In all patients, an open anterior cervical biopsy and vertebroplasty at the diseased vertebrae was performed under general anesthesia. The VAS scores and NDI index of patients were compared before and 24 hours after surgery, 3 months, 6 months, 12 months after surgery and at the last follow-up. The injection amount of bone cement, diffusion and leakage of bone cement were also recorded. **Results:** All of the 20 patients underwent surgery successfully, including 4 cases of C3, 6 cases of C4, 7 cases of C5 and 3 cases of C6. The pathology of the tissues taken during the operation were hemangioma. The average injection volume of bone cement was 2.8 ± 0.6 ml, and the average follow-up was 42.5 ± 5.6 months. The VAS score and NDI index were significantly improved after surgery and follow-up period compared with that before surgery ($P<0.05$). Bone cement spread to both sides of the diseased vertebra and no bone cement leakage occurred during surgery. No case recurred at the last follow-up. **Conclusion:** Anterior vertebroplasty is a safe and effective surgical method for patients with SCH.

A case of impending cranial perforation from occipital erosion of spinal fusion rod following atlantoaxial fusion with modified Harm's technique

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Introduction: Harm's technique of atlantoaxial fusion via C1 lateral mass and C2 pedicle screws is popular due to good initial stability and fusion rates. However, loss of fixation may occur, leading to implant impingement. **Case report:** A 79-year-old male with known atlantoaxial subluxation and retro-odontoid pseudotumor presented with worsening lower limb numbness and weakness. A magnetic resonance imaging (MRI) scan demonstrated cord compression and myelomalacia at C1-C2. Computer tomography (CT) revealed widened atlanto-dens interval (ADI) (7mm). Reduction of atlantoaxial subluxation and fusion of C1-3 with modified Harm's technique was performed. Immediate postoperative radiographs demonstrated a reduced ADI (2mm) and satisfactory implant positioning. The patient experienced an initial reduction in numbness followed by an acute decrease in lower limb power on post operative day (POD) 14 with an associated persistent neckache. Repeat MRI and CT scans demonstrated a loss of reduction of C1-C2 with cord compression and occipital erosion from both spinal rods. The patient underwent revision occipital-C3 fusion, decompression laminectomy C1 and C2. Intraoperatively, the left rod was noted to be eroding into the occiput with a paper-thin layer separating it from perforating into the cranial vault. Post-revision surgery, the patient recovered motor function and had resolution of neck pain. Four months postoperatively, radiographs demonstrated implant stability with satisfactory alignment. **Conclusion:** Loss of C1-C2 reduction results in relative occipital extension, reducing the distance between the occiput and cranial end of rod beyond the C1 tulip head. This may result in occipital erosion and impending cranial perforation.

Diffusion Tensor Imaging picture in compressive cervical myelopathies - A comparative study

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Introduction: Diffusion tensor imaging (DTI), a magnetic resonance technique that is sensitive to the diffusion of water molecules, can diagnose derangement of spinal cord function which cannot be demonstrated on conventional MRI examinations. Useful DTI parameters include the apparent diffusion coefficient (ADC) and fractional anisotropy (FA). Decreased FA values reflect a loss of anisotropic diffusion of water molecules, indicating damage to tract fibers at the site of compression, whereas ADC values increase in compressed lesions of the spinal cord. DTI has been known to be more sensitive for detecting subtle white matter change than T2-weighted imaging. Abnormal FA values in the spinal cord may also predict severity and prognosis. DTI is a relatively novel investigation and more studies are required to assess the utility of the investigation in compressive myelopathies. In our study we will be evaluating the ability of the test to diagnose compressive cervical myelopathy in its earlier stages, aiding in timely diagnosis and intervention. **Methods:** A prospective observational study of patients with symptoms suggestive of myelopathy was done and DTI picture due to compressive causes was compared with the DTI picture in unaffected controls. **Results:** DTI showed a sensitivity of 85.7% and an NPV of 95% as compared to the sensitivity of MRI to detect changes which is <50% of the time. **Conclusion:** DTI is a highly sensitive tool to detect compressive myelopathic changes which may otherwise be missed on conventional T2-WI of MRI, and thus can guide timely intervention before irreversible changes of myelopathy set in.

Biomechanical risk factors for heterotopic ossification following cervical disc replacement: analysis of the role of endplate coverage and intervertebral height change

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Background: Biomechanical factors including endplate coverage and intervertebral disc height change may be related to heterotopic ossification (HO) formation after cervical disc replacement (CDR). However, there is a dearth of quantitative analysis for endplate coverage, intervertebral height change and their combined effects on HO. **Methods:** Patients who underwent single-level or two-level CDR were retrospectively reviewed. Radiological data, including the prosthesis-endplate depth ratio, intervertebral height change, posterior heterotopic ossification (PHO) and angular parameters, were collected. Logistic regression analysis was used to identify the potential risk factors. Receiver operating characteristic curves were plotted and the cutoff values of each potential factors were calculated. **Results:** A total of 138 patients with 174 surgical segments were evaluated. Both the prosthesis-endplate depth ratio ($P < 0.001$) and postoperative disc height change ($P < 0.001$) were predictive factors for PHO formation. The area under the curve (AUC) of the prosthesis-endplate depth ratio, disc height change and their combined effects represented by the combined parameter (CP) were 0.728, 0.712 and 0.793, respectively. The risk of PHO significantly increased when the prosthesis-endplate depth ratio $< 93.77\%$ ($P < 0.001$, OR=6.909, 95% CI 3.521-13.557), the intervertebral height change ≥ 1.8 mm ($P < 0.001$, OR=5.303, 95% CI 2.592-10.849), or the CP representing the combined effect < 84.88 ($P < 0.001$, OR=10.879, 95% CI 5.142-23.019). **Conclusions:** Inadequate endplate coverage and excessive change of intervertebral height are both potential risk factors for the PHO after CDR. The combination of these two factors may exacerbate the non-uniform distribution of stress in the bone-implant interface and promote HO development.

Biomechanical effects of a Novel anatomic titanium mesh cage for Single-level Anterior Cervical Corpectomy and Fusion: A Finite Element Analysis

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Background: Traditional titanium mesh cages (TTMCs) are widely used in Anterior Cervical Corpectomy and Fusion (ACCF), but they often lead to complications like cage subsidence and adjacent segment degeneration (ASD). This study aimed to evaluate if a novel anatomic titanium mesh cage (NTMC) could enhance postoperative biomechanics.

Methods: NTMC, tailored to match patients' cervical anatomy, was compared to TTMC using preoperative CT data. Range of motion (ROM) and stress peaks in C6 endplates, titanium mesh cage (TMC), screw-bone interface, anterior titanium plate, and adjacent intervertebral discs were analyzed.

Results: NTMC significantly reduced segmental ROMs by 89.4% post-surgery. The C6 superior endplate stress peaks were higher in the TTMC (4.473-23.890 MPa), followed by the NTMC (1.923-5.035 MPa). The stress peaks on the TMC were higher in the TTMC (47.896-349.525 MPa), and the stress peaks on the TMC were lower in the NTMC (17.907-92.799 MPa). TTMC induced higher stress peaks in the screw-bone interface (40.0-153.2 MPa), followed by the NTMC (14.8-67.8 MPa). About the stress peaks on the anterior titanium plate, the stress of TTMC is from 16.499 to 58.432 MPa, and the NTMC is from 12.456 to 34.607 MPa. Besides, TTMC induced higher stress peaks in the C3/4 and C6/7 intervertebral disc (0.201-6.691 MPa and 0.248-4.735 MPa, respectively), followed by the NTMC (0.227-3.690 MPa and 0.174-3.521 MPa, respectively).

Conclusions: NTMC application effectively reduces TMC subsidence risk and lowers stresses at critical interfaces, decreasing instrument-related complications. Moreover, NTMC lowers the risk of ASD by minimizing stress on adjacent intervertebral discs.

Anterior bone loss after Prestige-LP cervical disc arthroplasty

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Introduction: Anterior bone loss (ABL) after cervical disc arthroplasty (CDA) is not well recognized. Especially, data on ABL after CDA with different prosthesis designs is limited. This study aims to investigate ABL occurrence after Prestige-LP CDA and its effects on clinical and radiological outcomes. **Methods:** We retrospectively reviewed patients who underwent Prestige-LP CDA at our institution. Clinical outcomes were assessed using JOA, VAS, and NDI scores. Radiographic parameters, including cervical lordosis, disc angle, ROM, HO, and ABL, were collected. **Results:** This study involving 396 patients, and ABL occurred in 56.6% of patients. Most ABL cases (88.2%) occurred within the first 3 months, but no progressive ABL was observed after 12 months. Patients with ABL were three years younger. ABL occurrence was associated with the surgical techniques, with 2-level CDA having the highest incidence (76.7%). JOA, VAS, NDI scores significantly improved postoperatively. The ROM of the arthroplasty level in ABL group was relatively well maintained compared to non-ABL group. HO occurred in 57.9% of CDA segments in non-ABL group versus 38.8% in ABL group, and 19.9% of CDA segments in non-ABL group developed high-grade HO. **Conclusion:** This study found ABL to be common but self-limited after early postoperative CDA. It occurred 3 to 6 months postoperatively, more in younger patients, especially those with 2-level CDA. Despite its occurrence, ABL did not affect clinical outcomes. Interestingly, patients with BL had a larger ROM at the arthroplasty level, likely due to a lower incidence and lower grade of HO.

Clinical impact of increased signal intensity of the spinal cord at the vertebral body level in patients with cervical myelopathy

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Objective: Increased signal intensity (ISI) is usually recognized at the disc level of the responsible lesion in the patients with cervical myelopathy. However, it is occasionally seen at the vertebral body level, below the level of compression. We aimed to investigate the clinical significance and the radiographic characteristics of ISI at the vertebral body level.

Methods: This retrospective study included 135 patients with cervical spondylotic myelopathy who underwent surgery and with local ISI. We measured the local and C2-7 angle at flexion, neutral, and extension. We also evaluated the local range of motion (ROM) and C2-7 ROM. The patients were classified into group D (ISI at disc level) and group B (ISI at vertebral body level).

Results: The prevalence was 80.7% (109/135) and 19.3% (26/135) for groups D and B, respectively. Local angle at flexion and neutral were more kyphotic in group B than in group D. The local ROM was larger in group B than in group D. Moreover, C2-7 angle at flexion, neutral and extension were more kyphotic in group B than in group D. There was no significant difference of clinical outcomes 2 years postoperatively between both groups.

Conclusions: Group B was associated with the kyphotic alignment and local greater ROM, compared to group D. As the spinal cord is withdrawn in flexion, the ISI lesion at vertebral body might be displaced towards the disc level, which impacted by the anterior components of the vertebrae. This should be different from the conventionally held pincer-mechanism concept.

Correlation Between Physical Component Summary and Length of Stay in Patients with Hip Fractures

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Introduction: Physical component summary(PCS) is a component of Short Form 36(SF-36), which quantifies health-related quality of life. In order to evaluate surgical outcomes in hip fracture patients, preoperative and post-operative PCS is frequently measured. Their preoperative PCS may impact their length of stay(LOS). This study aims to investigate the correlation between pre-operative PCS and LOS in hip fracture patients. We hypothesize a correlation between pre-operative PCS and LOS in hip fracture patients. **Methods:** A retrospective study was conducted on all hip fracture patients who underwent surgery in a single tertiary hospital between 2020-2021. Variables collected from the cohort include LOS, type of fracture, type of surgery, age, gender, and ethnicity. The effect of these variables on LOS was examined through binary logistic regression. **Results:** There were 588 patients. The mean age was 80.03±7.89 years(range 60–103) with a median LOS of 13.60±4.24 days(range 3–104) and 1-year postoperative survival rate of 92.5%. Long stayers were defined as an LOS >10 days. Worse preoperative PCS was found to be a strong predictor of long stayers, and remained significant after adjusting for age, gender, ethnicity, type of surgery, and type of fracture in multivariable analysis (OR=1.03, 95% CI 1.01-1.05, p=0.001). Furthermore, PCS was also found to be a strong predictor of 1 year mortality (OR=1.03; 95% CI 1.00-1.06 ;p=0.04). 100% follow up rates were achieved. **Conclusion:** We concluded that poorer PCS was associated with higher LOS in hip fracture patients. Thus, preoperative PCS is a useful predictor of LOS following hip fracture surgery.

100 Cases of TFNA With Cement Augmentation for Intertrochanteric Femur Fracture Aiding Immediate Weight Bearing

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INTRODUCTION: Hip fractures constitute the most debilitating complication of osteoporosis with steadily increasing incidences in the aging population. In these cases intramedullary nailing can be challenging because of poor anchorage in the osteoporotic femoral head. Although numerous advances in implant designing and postoperative treatment methods have been achieved, complication rates around 16.5% have been reported, being mostly related to cut-out, varus deformation and rotation of femoral head fragment. Recently with the use of Trochanteric Femoral Nail Advanced System (TFNA) with cement augmentation, these complications have been reduced.

METHODS : A total of 100 cases have been done and more than 70 cases have completed one year follow up. The fracture was reduced in fracture table and TFNA nailing was done. The specifically designed blade tip has holes which permits the cement injection. We inject usually 5ml of cement. The Harris hip score was used for assessment of the functional outcome. The HHS was found to be statistically significant in first two weeks with cement augmentation. Patients were allowed full weight bearing mobilisation from Day 1. None of the patient had cut-out, back out of the blade or cement leakage.

DISCUSSION : Cement augmentation into the femoral head really makes a stronger construct and effective enough to load immediately negating the fear of movement of the blade tip in the otherwise osteoporotic head. It is vitally important to mobilise the elderly to prevent systematic complications. Cement augmentation is really a valid option in such cases and aids in fast track mobilisation.

Correlation Between Parker Mobility Score And 1-Year Mortality in Patients with Hip Fractures

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Introduction: Preoperative and post-operative mobility is frequently measured in patients with hip fractures in order to evaluate their surgical outcomes. Their preoperative mobility may impact their 1-year mortality rates. The Parker Mobility Score (PMS) is a validated and reliable method of quantifying a patient's mobility. The aim of this study is to investigate the correlation between preoperative PMS and 1-year mortality in patients presenting with hip fractures. We hypothesize that there is a correlation between preoperative PMS and 1-year mortality in a cohort of patients with hip fractures. **Methods:** A retrospective study was conducted on all hip fracture patients who underwent surgery in a single tertiary hospital between 2020-2021. Variables collected from the cohort include 1-year mortality, type of fracture, type of surgery, age, gender, and ethnicity. The effect of these variables on 1-year mortality was examined through binary logistic regression. **Results:** There were 588 patients. The mean age was 80.03 ± 7.89 years (range 60–103) with a 1-year postoperative survival rate of 92.5% (544 patients). Preoperative PMS was found to be a strong predictor of 1-year mortality, and remained significant after adjusting for age, gender, ethnicity, type of surgery, and type of fracture in multivariable analysis (OR=1.22, 95% CI 1.08-1.38, $p=0.001$). 100% follow-up rates were achieved. **Conclusion:** We concluded that poorer preoperative PMS was associated with higher 1-year mortality rates in hip fracture patients. Thus, preoperative PMS is a useful predictor of 1-year mortality following hip fracture surgery.

Arthroscopic intra-articular osteotomy for malunion of distal radius

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Background: As a result of improper immobilization or operation in following distal radius fractures, rotation, and angulation malunion deformities can occur. That decreases the wrist function. This study is to evaluate the improvement of wrist function post arthroscopic intraarticular corrective osteotomy for malunion of distal radius.

Methods: From 2018 to 2021, there were 19 patients (15 male, 4 female) with intraarticular fractures of the distal radius and malalignment of the healing found. They all underwent arthroscopic intraarticular corrective osteotomy and reduction with internal fixation. Data were obtained through medical records and radiographic review. Intraoperative and immediate postoperative X-rays were compared with the final X-rays. healing, confirmed radiographically, was used to determine whether the device and internal fixation were adequate for fixation.

Results: All malunion of fractures were corrective and healed by an average of 7.5 weeks (range, 5–14 weeks) without loss of fixation or malunion again. All patients have regular follow-ups around 20–30 months (mean 25.2 m). Eighteen of nineteen patients improved wrist function to good or excellent by the scores of Modified Wrist Scores.

Conclusion: Prevention of these malunions by proper positioning at the time of primary treatment is emphasized. This is an effective method to correct the intraarticular malunion of the distal radius.

Two different approaches to Segmental Bone Defects of the Distal Femur: A Case Report Analysis

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Introduction: Segmental bone defects (SBDs) of the distal femur present complex challenges in orthopedic surgery, with various reconstruction methods available, such as fibular flaps. We present two clinical cases of SBDs of the distal femur, each treated with a distinct reconstruction approach.

Case Reports: Case 1: A 25-year-old man suffered a Gustillo-Anderson IIIA supra-intercondylar fracture with SBD of the distal femur from a motorcycle accident. Initial treatment included closed reduction and internal fixation with screws. Subsequently, he underwent minimally invasive osteosynthesis with a distal femur LCP plate. Reconstruction at 17 days post-injury involved a contralateral vascularized osteoseptocutaneous fibular free flap with allograft using the Capanna technique. However, early postoperative graft complications arose. Nevertheless at 7 months, he achieved 120° active-range-of-motion and full weight-bearing. Case 2: A 50-year-old man sustained a Gustillo-Anderson IIIB supra-intercondylar articular fracture of the distal femur from a motorcycle accident. He underwent surgery using a modified Olerud approach with allograft and anatomical plate osteosynthesis. At 6 months, he ambulated with one crutch and had active-range-of-motion of 15°.

Discussion: Both cases underscore the complexity of managing SBDs of the distal femur. While fibular free flap reconstruction offers structural support and bone integration potential, it entails donor site morbidity and vascular complications. Conversely, allograft reconstruction presents a less invasive approach with favorable outcomes, avoiding additional vascularized tissue transfer.

Conclusion: Managing SBDs of the distal femur requires a tailored approach. While allograft reconstruction remains valid, a stepwise fibular free flap reconstruction with allograft may offer comparable outcomes with specific advantages.

Indications for MusculoSkeletal Temporary Surgery (MUST) in physiologically compensated patients

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Introduction: Temporary external fixation is an established procedure in damage control. Yet, external fixation is also performed in patients that could also be cleared for early definitive fixation. MUST (MusculoSkeletal Temporary Surgery) describes injury patterns that should be considered for temporary fixation also in isolated musculoskeletal injuries. The impetus of our study was to identify characteristics that are predictive for external fixation in stable patients.

Methods: A retrospective database of patients admitted via trauma bay followed by surgical treatment from 2015 -2022 was analyzed. Only physiological compensated patients were included for further analysis. Standard statistics were performed to detect group differences and logistic regression was performed to identify predictive factors for external fixation. Subgroup analysis for patients with and without cerebral injuries was performed. **Results:** From 355 initial patients, 204 patients were considered as stable. 78 patients received temporary external fixation, 126 did not. Patients in the external fixation group presented significantly more open fractures, a higher ISS and AIS of the lower extremities. Adjusted logistic regression yielded the presence open fractures, elevated AIS of the lower extremities, extraarticular fractures and the presence of cerebral injuries as independent predictors for external fixation. **Conclusion:** The presence of intracranial injuries seems to influence the surgical decision making towards external fixation regardless of the injury severity and morphology. In addition, an open fracture constellation as well as the severity of lower extremity injuries seem to be able to predict external fixation. Further research regarding fracture fixation within concomitant intracranial lesions should be undertaken.

Comparative evaluation of Post-operative outcome of proximal femoral locking compression plate vs proximal femoral nail in unstable proximal femoral fractures

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Comparative evaluation of Post-operative outcome of proximal femoral locking compression plate vs proximal femoral nail in unstable proximal femoral fractures

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Abstract:

Introduction:

Intertrochanteric fractures are of the commonest fractures of the hip. They occur mainly in elderly people with osteoporotic bone usually due to low energy trauma like simple fall. Their incidence is increasing day by day because of population aging.

Methodology:

The retrospective study was carried out in a tertiary care centre in India. 30 patients treated by proximal femoral locking compression plate(PF-LCP) and 30 patients treated by proximal femoral nailing(PFN) was selected for study.

Results:

Average operating time in PFN was 67(range 73.42-61.58 mins) and in PF-LCP is 81.5(range 90.71-72.29 mins). Out of 60 cases, radiological union was seen in 56(93.33%) cases and no radiological union was seen in 4 (6.67%) cases.

Conclusion:

The study found that PFN was a better implant as compared to PF-LCP in management of unstable proximal femur fractures.

Keywords: Femoral Fractures, Femoral locking compression plate and Proximal Femoral Nail

Comparison Of Early And Late Weight Bearing In Patients With Isolated Lateral Malleolus Fractures

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Introduction: Isolated lateral malleolar fractures (ILMF) are common around the ankle joint, with varying post-operative rehabilitation practices, particularly regarding weight-bearing timing. This study examines the impact of early weight bearing (EWB) and late weight bearing (LWB) on clinical and radiological outcomes in ILMFs. **Methods:** Thirty-two patients operated on for ILMFs between 2022 and 2023 were assessed, divided into EWB and LWB groups based on weight-bearing times. All patients underwent open reduction and internal fixation using an anatomical locking compression plate with a lag screw. EWB patients initiated tolerable weight bearing on the first postoperative day, while LWB patients had complete restriction for 6 weeks post-surgery. Ankle exercises were allowed in both groups from the first postoperative day. Radiological, clinical (Foot and Ankle Outcome Score - FAOS), and complication assessments were conducted. **Results:** No significant differences were found between groups in outcomes or complications. Although LWB group had slightly higher complications, it was not statistically significant. EWB group showed significantly shorter hospital stays and return-to-work times compared to LWB group (2.4 vs. 4.1 days, $p < 0.05$ and 6.2 vs. 8.5 weeks, $p < 0.05$, respectively). **Conclusion:** Similar postoperative results between groups and shorter recovery times in EWB group support early weight bearing post-ILMF surgery. Consequently, early weight bearing should be considered in rehabilitation plans for ILMF patients with anatomical reduction and stable fixation using a plate.

The usefulness of bedside ultrasonographic blood flow monitoring of venous flap for the digit reconstruction.

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Introduction: The venous flap is one of the useful options for soft tissue reconstruction of the digits that is relatively thin and can be raised in any size and shape. However, the venous flap's hemodynamic characteristics are not physiological, which can sometimes lead to congestion. It is also difficult to determine whether the flaps will successfully survive in the early postoperative period. This study aims to investigate the outcome of the venous flap for digit reconstruction with blood flow monitoring using ultrasonography. **Patients and methods:** Seven patients who underwent soft tissue reconstruction with a venous flap were included in the study. The treatment course was investigated retrospectively. **Results:** The patients' mean age was 37.9 years, and venous flaps were harvested from the forearm in all patients. The mean size of the flaps was 24.6 cm². The flaps were designed using a vein-fluorescent illumination device to confirm the vascular distribution. All patients had an A-V-V anastomosis. Six flaps were successfully survived, and one flap was totally necrotic due to infection at two weeks postoperatively. The mean postoperative follow-up was 15.1 months, and two patients underwent additional touch-up surgery. **Discussion:** Ultrasonographic monitoring facilitates the determination of stable intra flap blood flow and the evaluation of changes in blood flow over time, even when the flap is congested, and visual evaluation is difficult. **Conclusion:** The use of bedside ultrasonography to evaluate intra flap blood flow after venous flap surgery was a useful method for the postoperative evaluation of flaps.

Long bone shaft, pelvis, and acetabular fracture fixation in polytrauma patients: priorities in the context of traumatic injuries of the head, chest, abdomen, spine, spinal cord, and extremity vasculature

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Introduction: Determining the appropriate treatment strategy and timing of definitive fracture fixation is crucial and has a relevant impact on systemic outcomes. In this regard, this study aimed to provide recommendations for the timing and sequence of fracture fixation in multiple injured patients, with an emphasis on concurrent injuries to the head, chest, abdomen, spine (including spinal cord), vasculature, and multiple extremity fractures. **Methods:** We formed an international multidisciplinary expert panel and developed consensus statements using the Delphi method. Preliminary statements were drafted to define conditions for each type of associated injury under which fracture fixation can be recommended. These statements underwent repeated modifications by the consensus group members in preparation for an in-person meeting. During this meeting, the statements were discussed and finally voted. The process was supported by a systematic literature review. **Results:** A total of 20 consensus statements were prepared. Of these, five focused on traumatic brain injury, four on abdominal trauma, three each on thoracic trauma, multiple extremity fractures and on spinal injuries, and two focused on vascular injuries. The panel discussed the conditions and exceptions for definitive fracture fixation. Overall, 78 publications and every statement were reviewed, and overwhelming consensus was achieved for all 20 statements, with 15 of them reaching 100%. **Conclusion:** A total of 20 statements were developed on the timing of fracture fixation in patients with associated injuries. All statements agree that fracture fixation for major extremity injuries should be initiated within 24 hours of admission unless severe issues speak against it.

Examining the Fracture Fixation Frontier: An Audit of Distal Femur Fracture Repairs In A DGH

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Introduction: Distal femur fractures are challenging injuries, often occurring in osteoporotic patients yet requiring stable fixation for optimal recovery. Despite advancements like the nail-plate dual construct, no single fixation method has proven definitively superior. This audit evaluated fixation techniques utilized for distal femur fractures at our institution and their associated outcomes.

Methods: A retrospective review of 217 patients who underwent operative fixation for distal femur fractures from 2013-2023 was conducted. Patient demographics, fracture patterns, fixation methods, operating room logistics, complications, and postoperative mortality were analysed. **Results:** The mean patient age was 74 years. Lateral plate fixation was most common (66%), followed by retrograde intramedullary nailing (20%), nail-plate constructs (4%), and two column plating (3%).

Complications occurred in 20 patients (9%), including infections (2%), implant failures (2%), and non-union (1%), all stemming from lateral plate fixation. The average life expectancy post-operatively was approximately 2 years. **Conclusion:** Lateral plating remained the predominant fixation method at our institution, with a relatively low complication profile despite intramedullary nailing demonstrating lower non-union rates. Continued surgical expertise, judicious implant selection, and optimized rehabilitation are crucial for improving outcomes. A future audit incorporating patient-reported outcome measures at initial follow-up is planned.

Infected Big Gap Nonunion of Femur.

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Introduction: Infected big gap non-union of femur is difficult to treatment because of infection, bone loss, shortening, poor soft tissue covers and deformity. **Materials & Methods:** 545 Infected big gap non-union of femur were treated from 1990 to 2023; 55 presented without active discharge and was treated with Ilizarov ring fixator, 200 presented with draining infection and were treated with debridement and Ilizarov bone transport, 200 had a bone transport to fill gap of 2.5 to 27 cm. Bifocal bone transport were done in 90 cases. None had bone grafting to achieve union. **Results:** All healed with the application of Ilizarov fixator, 5 needed reapplications of Ilizarov to achieve 100% union. **Conclusion:** A well plan step by step Ilizarov technique to cover infected gap nonunion of femur is an excellent method in challenging cases. Excellent results cannot be achieved with conventional methods but can be easily achieved with Ilizarov technique within 1-2 years. This combined multiplanar type of deformity requires

Septic Nonunions of Tibial Metaphysis, clinical and functional outcomes (SePseT Ilizarov, ISRCTN30905788)

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Septic metaphyseal nonunion of long bones is a rare entity. Seventeen adult patients were prospectively included in this study (SePseT Ilizarov, ISRCTN30905788) and followed-up for minimum 30 months after frame removal. The average number of failed previous operative procedures was 4.5. According to Paley classification there were 8 nonunions type A and 9 nonunions type B. The mean length of the bony defect was 4.3cm while fourteen patients had severely restricted movement of the knee. Radical surgical debridement, mono- or bifocal technique of osteosynthesis with Ilizarov method for a mean time of 200 days resulted to infection eradication and bone union for all the participants. According to the Paley's grading system, thirteen patients had an excellent bone result, four good and one fair. The functional result was excellent in eleven patients, good in two and fair in four. All patients with nonunion type A according to Paley classification had excellent bone results. The external fixation time was increased when the initial fracture type was high-energy, the definitive treatment started ten months or more after the initial trauma, the patient had been subjected to more than four surgeries prior index treatment and in nonunions type B. Patient reported outcomes measurement scores were also at least good. The most common residual complications were knee and ankle stiffness (3 patients each) after bifocal osteosynthesis technique. The Ilizarov method seems to be a reliable treatment for this rare condition particularly in complicated cases with extensive bone defect, angular deformity or knee contracture.

Early Diagnosis of Infectious Complications in Patients with Inflammatory Fractures of The Lower Extremities

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Trauma Free Papers 3, Main Congress Hall ABC, September 26, 2024, 08:00 - 10:00

The choice of tactics and the final result of treatment depend not least on the adequate, effective and timely diagnostic measures, their completeness and comprehensive interpretation. The aim was to determine the possibilities of procalcitonin for early diagnosis of infectious complications in victims with gunshot fractures of the lower extremities. The entire array of research consisted of 86 victims with gunshot fractures of the lower extremities. The main group included 38 victims with gunshot fractures, the control group included 48 victims with household fractures. Among a large group of inflammatory markers, we used procalcitonin. Depending on the content of this hormone in the victim's blood, it is possible to talk about an existing infectious process developing in the victim's body. In patients with a threat of infectious complications, the level of procalcitonin was 0.9 ± 0.03 ng/ml, and in control patients it was only 0.4 ± 0.01 ng/ml. Determining the blood procalcitonin level is a fairly informative method of early diagnosis of infectious complications in victims with gunshot wounds of the lower extremities. Among the victims with gunshot fractures of the lower extremities, a higher blood procalcitonin level was determined compared to the victims with fractures caused by other factors

Response of Coagulopathy Markers in Patients with Long Bone Fractures on A Background of Covid-19

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Trauma Free Papers 3, Main Congress Hall ABC, September 26, 2024, 08:00 - 10:00

Determination of the level and dynamics of the D-dimer diagnostic marker, which will allow characterizing the course of COVID-19 in patients with limb fractures and their impact on the early diagnosis of thromboembolic complications in this category of patients. The main group included 157 cases of skeletal fractures against the background of COVID-19, the control group included 132 cases of skeletal fractures in which there was no COVID-19 infection. On the first day of treatment, 45.9% of patients in the main group had a high level of D-dimer, while among patients in the control group, this result was registered more than four times less often. On the third day of treatment, 53.5% of patients in the main group had a high level of D-dimer, which is 5.5 times more often than in the control group. On the tenth day of treatment, normal and subnormal D-dimer levels were observed in 44.0% of the main group, but this was more than twice as common as in the control group. A high level of D-dimer was determined in 49.8% of patients of the main group, while in the control array it was found in only 3.3% of patients. Peak values of D-dimer on the third day of treatment tend to decrease on the tenth day of treatment

Optimising patient flow in Trauma and Orthopaedic practice setting. Evaluation of the effectiveness, safety and efficiency of the newly established Trauma and Spine Hub (TSHUB) in University Hospital of Wales.

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Trauma Free Papers 3, Main Congress Hall ABC, September 26, 2024, 08:00 - 10:00

Introduction

Efficient patient flow management in trauma centres is crucial for enhancing healthcare outcomes. The Trauma and Spine Hub (TSHUB) at the University Hospital of Wales was established to improve treatment efficiency, reduce wait times, and ensure timely, specialised care for GP-referred patients, aiming to elevate patient care standards.

Methods

In an eleven-week retrospective study, the TSHUB's effectiveness, safety, and efficiency were evaluated. Data was collected from the Welsh Clinical Portal and admission records, analysing key metrics such as hospital length of stay, time to radiography, and blood test timing to assess patient flow. A staff survey involving doctors, nurse practitioners, and ward nurses identified operational challenges, offering a comprehensive view of the TSHUB's functionality.

Results

During the study, 49 patients were admitted to the TSHUB, primarily with query infections (79.6%). A significant portion, 67.3%, were discharged on the day of admission, while 12.2% were discharged on Day 1, and 8.16% on Day 2. The longest stay was 75 days. Challenges included non-compliance with unit criteria, capacity limitations, radiograph delays, and staff venipuncture training gaps.

Conclusion

The TSHUB significantly improved patient flow in the tertiary care environment, optimising referrals and access to specialised care. Despite its success, operational issues highlight the need for ongoing refinement to sustain the TSHUB's effectiveness. Further research is encouraged to explore the TSHUB model's long-term viability and potential to enhance orthopaedic and spine care delivery in various settings.

Metabolomics after severe trauma – results of a systematic review of the literature

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Trauma Free Papers 3, Main Congress Hall ABC, September 26, 2024, 08:00 - 10:00

Introduction: It is widely accepted that major trauma leads to systematic dysregulation with concomitant metabolic derangement. While metabolomics measurements are already used in other medical fields such as oncology, we still know little about the specific effects of trauma on human metabolism. The impetus for our study was to identify relevant components of the metabolic pathway in the existing literature. **Methods:** A systematic literature search of MEDLINE and Embase from 2000 to 2022 was performed. Original publications reporting metabolomics measurements after severe trauma in human studies were included. All significant parameters were extracted and evaluated. The metabolites were stratified according to their time point of measurement to either group: acute (baseline/0h after trauma), intermediate (6-24h after trauma) or late (>24h-7days). **Results:** A total of 3878 publications were identified in the databases. Nine publications met our criteria. In the acute phase, metabolites that are involved in the energy providing pathways, detoxification and excretion as well as biosynthesis are significantly elevated. These pathways present a dynamic over the following time course. Overall, ornithine, succinate and lactate were the most frequently reported metabolites. **Conclusion:** There is great heterogeneity in the existing literature between study designs, groups and time-points. As far as these discrepancies allow, a specific metabolic dysregulation can be observed, with a particular impact on energy-providing and detoxification/excretion pathways with a time-dependent dynamic. Especially in the acute phase after trauma, a highly catabolic metabolism with increased oxidative stress is visible. Identified metabolites and pathways may be of particular interest for future research.

Enhancing Patient Safety through Educational Interventions: A Study on Staff Knowledge of the Massive Haemorrhage Protocol at a Major Trauma Centre in Wales

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Trauma Free Papers 3, Main Congress Hall ABC, September 26, 2024, 08:00 - 10:00

Background: The University Hospital of Wales initiated a Quality Improvement Project aimed at boosting the efficacy of the Massive Haemorrhage Protocol (MHP) among its Trauma and Orthopaedic staff. This study investigated the effects of targeted educational interventions on improving staff familiarity and operational efficiency with the MHP, a critical factor for patient safety and survival.

Methods: A comprehensive evaluation involved structured educational sessions and the distribution of laminated reference cards to bridge knowledge gaps. The project assessed improvements in staff's MHP activation knowledge, focusing on the activation process and essential contact numbers, through pre- and post-intervention surveys.

Results: Significant improvements were noted following the interventions: understanding of the MHP activation number rose from 14.8% to 70%, knowledge of the out-of-hours bleep number increased from 30% to 95%, and familiarity with the blood bank bleep number improved from 18.52% to 85%. Usage of PORTERTRAC for MHP activation surged, with feedback suggesting the need for a unified activation number.

Conclusion: This Quality Improvement Project demonstrated that integrating educational sessions and practical tools significantly enhances MHP activation within trauma settings. It highlighted the synergistic effects of theoretical learning and practical aids in improving patient outcomes, emphasising the importance of clear communication and continuous education in trauma care. The study advocates for continued educational initiatives and simplification of the MHP activation process to maintain high standards of patient care and safety.

Exploring Military-Civilian Trauma System Integration as a Tool for International Trauma System Development

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Objectives: The Integrated Military Partnerships and Civilian Trauma Systems (IMPACT) Study was initiated to examine and address the challenges faced in establishing integrated systems of trauma care. **Methods:** Through a survey, this study comprehensively gathered data on trauma system capabilities and the current degree of military-civilian integration of 77 individual countries. Our research collaborative developed a scoring method based on participant responses; countries were classified into three distinct integration types, ranging from minimal (Type I) to robust (Type III). **Results:** The survey collected a total of 246 responses. Improvements in resource availability with increased integration status were assessed in different aspects of trauma care delivery. Ambulance personnel availability was found to be improved with increased integration status (Type I: 48%, Type II: 69.2%, Type III: 84.6%), demonstrating a statistically significant correlation (Tau-b=0.299, $p<0.05$). A positive correlation with rehabilitation provider and therapist availability was also noted with increased integration status (Tau-b=0.230, $p<0.05$); Type I: 40%, Type II: 80.8%, Type III: 96.2%. **Conclusion:** Our comprehensive dataset allows us to understand not only factors surrounding resource availability, but also patient-care, communication, finances, and other components of trauma care. This analysis helps us understand the global landscape of military-civilian trauma system integration. From this foundation, our group aims to build an adaptable framework for implementation of trauma system integration that can significantly reduce the burden of traumatic disease globally.

Does the earthquake during the COVID-19 lockdown change the pediatric injury pattern?

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A retrospective single-center study was performed to determine the impact of earthquakes during the COVID-19 lockdown on pediatric injury pattern referrals at a tertiary care facility. The investigated group included a period during the COVID-19 lockdown right after the earthquakes until the end of the confinement period, and the control group included the corresponding period one year before the pandemic. All consecutive pediatric patients who presented to the Emergency Department due to urgent care requirements for trauma were identified. Demographical data, type, region, and treatment of leading injury were investigated. Overall, data on 1166 patients were collected and analyzed. The investigated group's median age was lower than the control group but without sex differences. During the post-earthquake COVID-19 lockdown period, we observed a reduction in Emergency Department presentations and a decreased proportion of trauma presentations.

Furthermore, in the investigated group, we observed an increase in the proportion of head and shoulder/elbow injuries and a decrease in the proportion of foot/ankle injuries compared to the control group. The proportion of hospital admissions and the need for surgical treatment in the observed groups remained similar in both periods. Therefore, in the initial response to similar future scenarios, centers with pediatric emergency departments need to be prepared for an increased number of head and upper limb trauma cases.

Improving orthopaedic drilling accuracy with SawBone model practice

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Introduction: Technological advances in orthopedic and trauma surgery persist, but drilling proficiency still relies heavily on surgeon technique. Despite its critical role, access to specific drilling skills training is lacking. Spatial awareness and psychomotor skills are crucial in drilling accuracy, but evidence of practice improving proficiency is scant. **Methods:** This prospective study, representing level II therapeutic evidence, aimed to assess if repeated drill practice improves accuracy. Participants used standardized SawBone models to drill varying trajectories toward predefined targets. The control group conducted initial drilling, followed by a second round after 8 weeks with no regular practice. Meanwhile, the intervention group engaged in weekly self-directed drilling practice over 8 weeks, followed by a final round of standardized drilling. **Results:** A total of 17 orthopaedic staff at 2 hospital locations completed the study. Results showed no significant change in drilling accuracy of the control group from the initial round (Mean 3.8, SD 0.65, 95% CI 2.93-4.49) compared to the second round (Mean 4.0, SD 0.82, 95% CI 3.19-4.83) with a t-test p-value of 0.61. In the intervention group there was a significant improvement in accuracy from the initial round (Mean 4.4 SD 0.88 95% CI 3.52-5.03) compared to the final round after regular practice (Mean 2.9 SD 0.49 CI 2.39-3.38, p-value <0.01). **Conclusion:** There is a significant improvement in drilling accuracy with regular practice and no significant difference in a cohort that undertake only standard clinical work. This provides evidence for implementation of supplementary drilling practice as a standard orthopaedic training tool.

Axillary nerve injury in direct deltoid splitting approach for proximal humerus fracture - myth or a reality?

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Deltopectoral (DP) approach is the most used approach for proximal humerus fractures. But it provides inadequate access to the posteriorly displaced fragments. These disadvantages can be addressed by a direct lateral deltoid splitting (DS) approach. However, there is always a concern about the possibility of axillary nerve injury in DS group. Purpose of this study is to assess whether there is increased possibility of post operative axillary nerve palsy in DS group or not. Between 2015 to 2023, 38 patients having Neer 2- and 3-part fractures were operated for proximal humerus fracture with proximal humerus locking plate. Among them 17 were operated through deltoid splitting (DS) approach while 21 patients were operated through classic deltopectoral (DP) approach M:F ratio was 9:10 with average age of 56.6 years. The mean follow-up period was 52 weeks (range 18-82 weeks). There were no case of nonunion while 3 cases had malunion in DS group and 2 cases in DP group. There were no cases of axillary nerve palsy or deltoid weakness in any group. Mean Constant- Murley score of shoulder function was 80.3 (range 57-92). DS group had a significantly short operation time (62.5 min vs 79.8 min). So, it can be concluded that deltoid splitting approach allows a feasible way to treat proximal humerus fractures with excellent results in most of the patients without increased chance of peri-operative axillary nerve palsy.

Occult hypoperfusion in polytrauma: age-related impact on outcome

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Introduction: Occult hypoperfusion (OH) is a condition marked by normal vital signs coupled with inadequate tissue oxygenation. OH is often linked with adverse outcomes, especially in older individuals. This study aims to evaluate how OH affects the outcomes of polytrauma patients across different age groups.

Materials: A prospective trauma registry was examined up to 2019, comprising adult patients with an Injury Severity Score (ISS) exceeding 16. Two groups were compared: ADULTs (30-59 years) and ELDERly (60 years and above). OH was defined as Lactate >2 mmol/l with SBP >90 mmHg and PR <120 bpm, while shock was defined as SBP <90 or PR >120. The study compared outcomes between normal, OH and shock patients within each age group.

Results: 1,067 patients were classified as ADULTs, and 715 selected for Gr.ELD. Among Gr. ADULT, ICU stay and hospital stay did not significantly differ between shock and OH. Mortality was notably higher in shock patients (39%) and upon OH (20%) compared to normal patients (8%). Conversely, among ELD-patients, hospital stay was longer after shock compared to OH (16 vs. 10 days, P=0.004). Mortality was higher after shock compared to OH, with no significant difference observed between normal and OH patients in this group.

Conclusions: This study is the first to demonstrate that OH is linked with increased mortality, especially in polytrauma patients aged between 30 and 59 years. Conversely, in older patients, there was no significant difference in morbidity or mortality between OH and normal patients. These findings diverge from literature on less severely injured patients and this requires further research.

Bone defect management using modified hinged external fixation .

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Introduction: bone defect because of trauma, infection or war injury requires bone reconstruction the most effective method is external fixation system comfortable, stable, less painful, hinged; correct any angular deformity in addition to lengthening. Methods: the external arc fixation system Salamehfix1 assembled from three small arcs for one segment lengthening and 4 arcs for two segments of lengthening depending on patient size, for every patient a special size arranged. The arcs are deferring in diameter and perimeter depending on the extremity shape so that the fixator will take the shape of the extremity on which it applies and the mostly used half pins for bone fixation which transfix the bone in different angels and levels and lead to stable fixation also existing simple hinges between arcs can correct any angular deformity. Results ; from 2000 to 2023, 239 patients was treated mean age 43 years (range: 21 -68 years) with mean bone loose of 7.8 cm (range : 2- 17 cm)with various reasons and locations in upper and lower extremities, mean duration follow up 37 months, mean external fixation time 294 days , 102 excellent, 59 good , 38 fair, 5 poor , there where 6 problems , 7 obstacles according to Paley,s classification of complication , there was one persisting nonunion which required additional grafting .Conclusion ;the external arc fixation system Salamehfix 1 is effective in bone defect treatment and more comfortable to the patient in size, stability and correction of combined angular deformities.

The double floating extremity and open fracture – a bad thing never comes alone

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Both floating knee, floating hip and open pelvic ring fractures are rare. These conditions are caused by high-energy trauma and relate with high complication rate and mortality. A recent study reviewed 8 cases in literature of double floating extremity and shows the difficulties in managing these situations. A 22 year-old man suffered a motorcycle accident and was approached according to the ATLS algorithm. Active inguinal hemorrhage was managed with inguinal packing to allow CT-scan study. His injuries included open-type IIIB-GA fracture of pelvic ring(Young-Burguess APC-II), comminuted fracture of the right femoral shaft, open-type II-GA fracture of right tibial+fibular shaft and multiple lacerations of the limbs, perineum and abdomen. He underwent surgical reduction of pubic symphysis with C-Clamp and external fixation of the femur and tibia fractures. There was no peritoneal penetration, but due to testicular hematoma, orchidopexy was preformed. The patient was then admitted to the ICU. He underwent placement of external fixator to stabilize the pelvic ring and definitive right sacroiliac joint osteosynthesis, with an ilio-sacral screw(percutaneous). After 10days, intramedullary nailing of the femur and tibia was performed. Due to dehiscence of the inguinal wound, debridement was performed. After discharge, the evolution was favorable and after finish the rehabilitation treatment, the patient regained total independence and was able to walk without walking aids, only with a deficit in hallux extension(G4/5–MRC). The approach to the polytraumatized patient with simultaneous ipsilateral floating hip and knee is complex, particularly with open fractures. The multidisciplinary approach was essential to guarantee the good results.

The three stages of polytrauma rehabilitation –a systematic literature review on behalf of SICOT

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Introduction: Polytrauma presents a devastating event with great impact on the patient's life. While we are taking great care of improving our treatment algorithms, the rehabilitation often takes place outside of our direct field of vision. Yet, adequate rehabilitation is crucial for the patients to regain their former lives. The aim of this study on behalf of the SICOT Trauma research group was to identify rehabilitation strategies and standards in existing scientific literature. Methods: A systematic literature search of MEDLINE and Embase from 2000-2023 was conducted. Inclusion criteria was the description of polytrauma rehabilitation strategies in the acute, post-acute or long-term stage. Reported treatment aims, conducted therapies and challenges were extracted and stratified to either of the stages. Results: A total of 5212 studies were identified and 7 reviews were included in our study but no original study met our inclusion criteria. In the acute rehabilitation, the focus seems to be on the physical recovery, prevention of complications and preparation for the following rehabilitation stages whereas in the later stages, the main aim is to integrate the patient back into his former life. In every stage, a multidisciplinary approach is mandatory. Multiple challenges, such as the "rehabilitation gap" or psychological obstacles are described. Conclusion: This study highlights the need for standardized polytrauma rehabilitation algorithms. Whereas we could identify important information about each rehabilitation stage, we did not encounter specific evidence for prioritization of different therapies or algorithms of treatment. Polytrauma rehabilitation needs to shift from eminence to evidence.

Detecting suspected scaphoid fractures? the role of different imaging modalities within a district general hospital during the pandemic

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Background: This study evaluates the effectiveness of magnetic resonance imaging (MRI) versus computerised tomography (CT) scans for persistent wrist pain at the thumb base following injury in adults and children during covid. This was part of a pathway introduced as access to MRI scan was limited. **Methods:** Patients were identified as having possible scaphoid fractures within the emergency department but had no fracture identified on initial imaging over a 3-month period. These were triaged to a scaphoid pathway during the covid pandemic from a virtual clinic. Patients were reviewed clinically and radiographically within the hand clinic using further imaging with CT or MRI scan. **Results:** During the study time 45 patients with scaphoid fractures were detected on initial radiography in ED and 187 with suspected scaphoid fractures were selected for further review. Ninety (48%) were referred to the hand clinic where 2 (1%) scaphoid fractures were diagnosed on a second radiograph and ninety-seven (52%) were to be seen in an upper limb clinic where 2 (1%) further fractures were detected. 92% of scaphoid fractures were identified on radiography either in ED or orthopaedic clinic. Of the remaining 178 with two negative radiographs further imaging was requested in 45 cases (25%). Pathology was found in 17 (58%) MRI scans and in 7 (39%) CT scans. **Conclusions:** Imaging needs to be timely to enable effective treatment. Obtaining MRI scans while diagnostically superior is not always achievable especially in times of resource depletion. Back up pathways using alternative imaging can be effective.

The treatment of middle phalangeal Pilon fracture with cement and Kirschner wire self-made external fixator

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Hand & Wrist Free Papers 1, MR 6, September 26, 2024, 08:00 - 10:00

Introduction : The Pilon fracture of the middle phalanx is a complex fracture of the hand. Although there are many treatment methods, the treatment of this kind of fracture is still challenging. The purpose of this study was to evaluate the effect of cement combined with Kirschner wire in the treatment of middle phalangeal Pilon. **Methods:** A total of 14 patients with Pilon fracture of the middle phalanx from January, 2021 to January, 2023 were treated in our department. All patients were treated with cement and Kirschner wire with self-made external fixator. First, we inserted a 1.2 mm Kirschner wire laterally from the proximal phalanx and then a 1.2 mm Kirschner wire from the middle phalanx. After bending the two ends of the Kirschner wire in opposite directions, the two ends of the Kirschner wire are fixed with bone cement to form a fixator. After the surgery, X-ray films were taken at 2, 4, 6 and 12 weeks, and motions of metacarpophalangeal joint (MCP), proximal interphalangeal joint (PIP) and distal interphalangeal joint (DIP) were measured. VAS scores were recorded. **Results:** All patients were followed up and all fractures healed 6 weeks after operation. At 12 weeks after operation, the mean range of motion of MCP, PIP and DIP was 84°, 80° and 74° respectively. The average VAS score was 2.3. **Conclusion:** The technique is simple. This technique can provide traction, provide strong fixation. This technique allows the patient to perform early rehabilitation exercises

Open distal radius fractures management in a major trauma unit: An audit

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Introduction

Literature is scarce regarding the management of soft-tissue coverage for open tibia fractures, while the current BOAST standards stipulate fixation within 24 hours of injury

Background

This audit aimed to assess compliance with BOAST standards for managing open fractures, focusing on time to theatre. Post-operative complications and return to surgery rates were also evaluated.

Patient and Methods

A retrospective audit was conducted over 3 years, identifying 29 patients (aged 23-93) with 20 in the geriatric population, 24 males and 5 females, and 26 with co-morbidities. All injuries were classified using the Gustilo classification (ranges I to IIIa). All patients received intravenous antibiotics and clear documentation of neurovascular status. The average time to surgery was 47 hours, with all patients having a single definite surgical procedure involving debridement, fracture fixation (K-wires, locking plates, and/or screws), and soft tissue coverage. 27 patients had primary wound closure and 2 required split-thickness skin grafts. Post-operatively, no superficial or deep infections were reported, and 2 patients required further surgery. One patient had a loss of fracture reduction requiring the removal of metalwork and an application of a dorsal spanning plate, while the other had a displacement of the ulna styloid requiring further open reduction internal fixation.

Conclusion

This audit shows despite not adhering to BOAST standards a delay in patient presentation to theatres, did not result in adverse clinical outcomes for patients. This suggests that delayed management of open distal wrist fractures might be safe under the care of a skilled hand/trauma surgeon.

Late Distal Radius Fracture Fixation does it impact Tourniquet Time?

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Abstract: Distal radius fractures, stemming from both high and low-energy trauma, are commonplace. Rather than fixating solely on radiological parameters, the primary treatment objective is functional recovery. Adherence to the British Orthopaedic Association Standards for Practice (BOAST) guidelines is pivotal in this context. Key recommendations encompass documenting the injury mechanism, assessing skin integrity, circulation, and sensation, and obtaining posteroanterior and lateral radiographic views of the wrist. For stable fractures, early mobilization with a removable support is advisable once pain permits. Surgical intervention should be contemplated for unstable fractures, adhering to specific timing criteria. This abstract underscores the critical role of BOAST guidelines in managing distal radial fractures.

Methods: A retrospective audit identified 125 cases of distal radius fractures to assess adherence to the National guidelines set by the BOA for trauma management. Criteria included the date of injury in relation to surgery, fracture type, and tourniquet time. We included all closed distal radius fractures treated with open reduction and internal fixation (ORIF) and excluded patients without recorded time or unused tourniquet. Cases involving distal radius fixation using percutaneous wires were also excluded.

Results: Our findings revealed suboptimal adherence to the BOAST guidelines. However, no statistically significant difference in tourniquet time was observed between intra-articular cases fixed exceeding three days and extra-articular cases fixed exceeding seven days. Interestingly, approximately half of the cases exceeded the average time (70 minutes).

Conclusion: We recommend adhering to BOAST guidelines when managing distal radius fractures, as it can reduce tourniquet time and enhance theatre efficiency.

Functional outcomes of patients with spaghetti wrist injuries

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Introduction: Spaghetti wrist injuries pose a significant challenge in surgical treatment and rehabilitation, and are mostly caused by household and industrial machines, knives, sharp tools and glass shards. Definitions of the term differ from injuries affecting one nerve and two other structures to injuries of ten structures in total. The aim of this study is to evaluate the functional outcomes following surgery in patients with spaghetti wrist injuries. **Methodology:** At a single center, 72 patients with spaghetti wrist injuries were surgically treated between 2020 and 2022. They were followed up for approximately 22 months. Functional outcomes were measured by DASH score, Handgrip strength (HGS), range of motion using the Total Active Motion (TAM) scale and sensory recovery using Medical Research Council (MRC) scale. **Results:** The mean age was 26+/- 4 years. Commonly affected structures were the superficial flexors of the fingers, flexor pollicis longus and the median nerve. The average value of HGS was 69.1% compared to the uninjured hand, the average TAM values were 74.75%, while the mean value of the DASH score was 24.1. On MCR scale, most patients (15, 35%) were in the S2 group. The average time for return to daily activities was 9 months. **Conclusion:** With a timely diagnosis, adequate treatment, and intensive physical therapy, it's possible to achieve good functional results even in the most severe hand injuries. It is notable that older patients and those with a higher number of damaged structures, particularly involving nerves, tended to experience poorer outcomes.

Mini External Fixator - The Dark Horse in Phalangeal Fracture Treatment

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Introduction: A conservative approach is preferred for closed or minimally displaced phalangeal fractures, while surgical fixation is necessary for open, comminuted, unstable, and irreducible fractures. Mini external fixators can achieve the desired results with reduced complications. This study aims to evaluate the functional outcome of using mini external fixators for phalangeal fractures of the upper limb. **Method:** We included 30 patients with phalangeal fractures from October 2021 to October 2023 at the Department of Orthopaedics, Chettinad Hospital and Research Institute. The total active flexion (TAF) was measured pre-operatively. The patients underwent mini external fixation for the phalangeal fractures following which, functional outcome was measured during the immediate post-operative period, at 4 weeks, 6 weeks, 8 weeks, 12 weeks and 6 months post-operatively. The ASSH TAF Score was used for evaluating the functional outcome. **Results:** Comparison of the pre and post-operative functional outcomes was done using the ASSH TAF score. All the patients had a fair outcome during the immediate post-operative period, whereas 76.9% had an excellent outcome at 6 months post-operatively. One incidence each of pin tract infection and pin loosening were observed. **Conclusion:** Mini external fixation is a highly effective treatment option for phalangeal fractures, delivering functional outcomes ranging from good to excellent. In spite of their unattractive appearance, these constructs allow the patient to return to their daily routines sooner, compared to other fixation methods. It is therefore recommended that external fixation be considered as a viable and valuable treatment modality for patients with phalangeal fractures.

The importance of tendon remodeling in treatment of tendinous mallet finger: insights from a random control clinical trial

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Background: Tendinous mallet finger lacks high-level evidence of optimal treatment. In this study, we compared the results of thermoplastic splints with those of surgical treatment using Kirschner wire fixation in the management of tendinous mallet fingers, with the aim of providing evidence-based guidance for clinical treatment. **Method:** Forty-eight patients were enrolled and randomly assigned to the thermoplastic splint group (n=23) and Kirschner wire group (n=25). An evaluation was performed at 16- weeks after treatment, mainly focusing on DIPJ extension and flexion angles, and extension lag. The results were graded using the Abouna-Brown and Crawford scores, and factors affecting the outcomes were analyzed. **Results:** There was no significant difference in the outcomes between the groups in terms of final extension and extension lag after 16 weeks. The final extension of the DIPJ in both groups correlated with the extension degree under fixation and the maximal extension of the contralateral fingers. Slight extension loss was observed in the early stage after the removal of the fixators, which was partially improved by routine active exercise. **Conclusions:** Both treatments using kirschner wire and thermoplastic splint for the tendinous mallet fingers are equally effective. Active exercise after the removal of fixators plays a key role in the final outcomes, indicating the significance of tendon remodeling.

Dynamic external fixation in the treatment of complex intraarticular fractures of the proximal interphalangeal joints using a Suzuki frame

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Severe intraarticular fractures at the base of the middle phalanges in the proximal interphalangeal joints are one of the most challenging fractures when it comes to treatment, and the results are usually not satisfying leading mainly to a loss of productivity due to subsequent stiffness of the joint, loss of the overall strength of the hand, inability to form the fist and residual pain. They are mostly the results of injury in younger population during sport activity.

Different ways of treatment have been proposed beginning from non-operative, open or closed reduction and fixation with K wires with less probability of proper reduction which will most probably lead to stiffness or arthrosis of the joint to arthrodesis or arthroplasty of the joint. Other options include the dynamic immobilization with transfixation to the neighbouring finger or dynamic external fixation with ligamentotaxor like the Suzuki frame. The role of Suzuki frame resides in the early mobilization of the injured joint while intervening in the reduction during healing of the fracture, preventing the stiffness of the periarticular structures and has the advantage of being less invasive. The aim of this study is to show the results using the Suzuki frame, indications, protocols and eventual complications that are related to the use of the frame. Overall, excellent results were obtained with satisfactory range of motion of the fingers. Key words: Suzuki frame, intraarticular fracture, interphalangeal joint, hand.

Treatment of scaphoid fracture by closed reduction and internal fixation assisted by navigation robot

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Introduction: The scaphoid fracture is the most common type of wrist fracture. Delayed treatment after fracture often leads to nonunion. Because of its irregular shape, closed reduction and internal fixation is often difficult to achieve a good needle position and direction. With the rapid development of robotic navigation technology in recent years, it provides a better therapeutic effect for the treatment of scaphoid fracture with closed reduction and internal fixation. **Methods:** There were 14 patients with scaphoid fracture (Herbert B 2) . From March 2020 to March 2023, all patients were closed reduction and internal fixation assisted by navigation robot. The time of operation was recorded, and the X-ray films were reexamined at 1,2,3 and 6 months after operation. The patients were evaluated with Cooney wrist score at 6 months after operation. **Results:** All patients were followed up. At 2 months after operation, 13 patients were healed, 1 patient was unhealed. At 3 months after operation, all patients were healed. The mean Cooney wrist score was 92.4 at 6 months postoperatively. **Conclusion:** The navigation robot can locate and plan the direction of the needle and the point of insertion more accurately, and the operation time is shortened, and the fixation effect is reliable.

Arthroscopic osteosynthesis with DBM and BMAC for scaphoid nonunion

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Background: This study was to analyze the clinical follow-up results (minimum, 2 years) in patients with nonunions of the scaphoid with minimal sclerosis treated with arthroscopically assisted percutaneous internal fixation augmented by injection of demineralized bone matrix (DBM) and bone marrow aspirated concentration (BMAC). **Method:** From January 2021 through November 2022, a consecutive series of 17 patients with fibrous union or early stage of nonunion of a scaphoid fracture with sclerosis or resorption at the nonunion site were treated with arthroscopic osteosynthesis with DBM and BMAC combine percutaneous internal fixator. Preoperative and postoperative evaluations included measurement of clinical (grip strength and range of motion), radiographic, and functional (Mayo Modified Wrist Score) parameters, as well as satisfaction.

Result: The sample included 15 men and 2 women with a mean age of 30.5 years (range, 20 to 45 years). We recorded union and return to activity and analyzed data with regular clinical follow-up at a mean of 26 months (range, 24 to 30 months). We confirmed union in 15 of 17 patients (88%) at a mean of 15.4 weeks according to clinical examinations and standard radiography. For the Mayo Modified Wrist Score, there were 11 excellent and 4 good results. A total of 15 of 17 patients (88%) returned to work or sports activities at their preinjury level.

Conclusions: Arthroscopic osteosynthesis with DBM and BMAC with percutaneous internal fixation is a reliable and minimally invasive method to achieve union and scaphoid healing in early stage of nonunion.

Wrist injuries in polytrauma patients

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Introduction: It's hard to estimate the incidence of wrist injuries in polytrauma patients, as they carry a high risk of being overlooked. Although these injuries are not life-threatening, their delayed management can lead to a significant functional deficit. Therefore, it is extremely important to be aware of the possibility of associated wrist injuries in polytrauma patients and to assess them accordingly. The aim of this study was to determine the type of wrist injuries in polytrauma patients, mechanisms of injury and the most common concomitant injuries. **Material and methods:** In two years, 31 polytrauma patients with wrist injuries were surgically treated at a single center. Patient information was recorded and analyzed. Patients with isolated wrist injuries were not included. **Results:** Patients were predominantly male (95%). The age range was between 17 and 59 years. Wrist injuries recorded were divided into non-dissociative and complex carpal injuries (CCI). Concomitant injuries were mostly orthopedic (spine, pelvis, and extremities: 22 cases), ribs and chest injuries (20 cases), head (facial and cranial bones: 16 cases), brain (14 cases) and abdominal injuries (9 cases). Dominant mechanism of injury were traffic accidents (motorcycle 39%, car 26% and pedestrian 16%), followed by fall from heights (19%). All patients required surgery. All patients survived. **Conclusion:** Wrist injuries of variable severity are often seen in polytrauma patients, especially in those with major bone fractures. Detailed clinical examination is required, as overlooking wrist injuries can lead to delays in diagnosis and treatment and subsequently to a poor functional outcome.

Minimal Invasive Management of Volar Barton Fracture. Case Report

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Volar barton fractures are very rare,accounting for 1,3 % of all distal radius fractures.This fracture is unstable because the distal fracture is accompanied by subluxation of the volar carpus,requiring fixation that is stable enough,anatomical reduction and immediate mobilization.Internal fixation is an option,with open repositioning,selecting a fairly extensive soft tissue area followed by internal fixation with plate screws,k-wire, multiple pinning.Minimal incision and closed reduction as well as fixation with screws are expected to obtain stable anatomical reduction without extensive soft tissue dissection,thereby preventing instability and greater tissue damage.The case of a 41 y.o man with complaints of pain and swelling in the right wrist after falling from a height of 5 meters,radiography of the right wrist showed a Volar Barton fracture.Surgery was performed with a minimal dorsal incision of the right distal radius ,closed reduction of the fracture,evaluation with c-arm radiography showing repositioned fracture fragments followed internal fixation with a 4,0 partial threaded cancellous screw and washer.Post operative evaluation, minimal incision to maintain aesthetics,physiotherapy moving the right wrist gradually.Evaluation of 4 weeks,right wrist range of motion approached normal and reduction was achieved

Treatment of Scaphoid Non-Unions with Custom-Made 3D-Printed Titanium Partial and Total Scaphoid Prostheses and Scaphoid Interosseous Ligament Reconstruction

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Introduction: Treatment of scaphoid fracture sequelae is still an unsolved problem in hand surgery. Custom-made 3D-printed titanium partial and total scaphoid prosthesis and scaphoid interosseous ligament reconstruction (SLIL) are performed in cases of non-union and isolated aseptic necrosis of the proximal scaphoid pole and when it is impossible to save the scaphoid bone, respectively. This study aims to evaluate the clinical, functional and radiographic results after these two prosthesis implantations.

Method: Between January 2019 and July 2020, nine partial and ten total scaphoid prostheses were implanted using custom-made 3D-printed titanium implants. Evaluation criteria included carpal height ratio (CHR), radioscapoid angle, wrist extension and flexion, radial deviation and ulnar deviation of the wrist, grip strength and pinch strength, Visual Analogue Scale (VAS), the Disabilities of Arm, Shoulder, and Hand (DASH) score, and the Patient-Rated Wrist Evaluation (PRWE).

Result: Clinical, functional, and radiographic improvements were found in all outcomes analyzed for both patient groups. The VAS pain scale obtained the most remarkable improvement at the one-year follow-up. The results of the DASH scores and the PRWE were good, with a great rate of patient satisfaction at the end of the follow-up. SLIL reconstruction also provided excellent stability and prevented a mid-carpal bone collapse in the short- and medium-term follow-up.

Conclusion: A custom-made 3D-printed titanium partial or total scaphoid prosthesis is a viable solution for patients with scaphoid non-union and necrosis or complete scaphoid destruction in whom previous conservative or surgical treatment has failed.

A Comparison of Clinical and Radiographic Outcomes between Open and Arthroscopic Tibiototalcalcaneal Arthrodesis

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Foot & Ankle Free Papers 1, MR 10, September 26, 2024, 08:00 - 10:00

This study aimed to evaluate the outcomes of TTCA with a retrograde intramedullary nail regarding open and arthroscopic joint preparation. A retrospective and comparative analysis of 62 patients (68 ankles) who underwent TTCA with a retrograde intramedullary nail was performed. They were divided into two groups: Open and Arthroscopy. Patient demographics, hospital stay, fusion, and complications were recorded. For radiographic evaluation, the coronal tibiotalar (CTT) angle was measured. Data analysis revealed that 34 ankles of 32 patients underwent Arthroscopic and 34 ankles of 30 underwent Open TTCA. There was no difference in age, sex, smoking, peripheral neuropathy, and diabetes mellitus between the two groups ($p=0.1667/0.652/0.456/1.000/0.485$). The Arthroscopy group had a shorter hospital stay (mean 1.35 ± 0.88 nights) compared to the Open ($p<0.001$). The follow-up period was comparable (mean 63.49 ± 26.08 months, $p=0.458$). Union rates were 85.29% for Arthroscopy and 94.12% for Open TTCA ($p=0.231$). Postoperative CTT angle improved similarly in both groups ($p=0.700$). Rates of early (13.24%) and late (7.35%) complications did not significantly differ between the groups ($p=0.341$ and $p=0.642$, respectively). The use of retrograde intramedullary nails in TTCA with open and arthroscopic joint preparation has yielded similar rates of bone healing with acceptable complication rates and satisfactory radiological recovery in both groups. Despite the conventional preference for the open approach, the arthroscopic method emerges as a valid, efficient, and reliable alternative for appropriate cases.

Comparative Analysis of the Cost-Effectiveness of TightRope System versus Syndesmotic Screws in the Management of Acute Ankle Syndesmotic Injury: A Retrospective Analysis

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Foot & Ankle Free Papers 1, MR 10, September 26, 2024, 08:00 - 10:00

Background: Ankle fracture is a debilitating injury and imposes a substantial burden to the healthcare system encompassing direct medical costs, rehabilitation expenses and the potential long-term care. The surgical fixation methods for treating ankle fractures with syndesmotic injury remains a subject of ongoing debate. **Objectives:** To analyse and compare the cost-effectiveness between TightRope and syndesmotic screws in syndesmotic fixation to elucidate the economic implications and facilitate informed resource allocation. **Study Design:** Case series. **Level of evidence:** 4. **Methods:** Data for a consecutive series of patients who underwent syndesmotic fixation between June 2020-2023 in our institution was collected retrospectively. Post-operative images and operative indications was reviewed and collected using electronic records and PACS systems. **Results:** Over the 3-year period, 213/504 patients who underwent ankle surgeries also had syndesmosis fixation. Clinical and radiological follow-up was obtained for all 213 patients. 27/213 (12.7%) patients had TightRope fixation whereas the remaining patients all had syndesmotic screws fixation. Among the patients who had TightRope fixation, 3/27 (11%) required removal at a further date. In comparison, 50/186 (27%) patients had their syndesmotic screws removed with the commonest indications being patients' preferences and broken screws. Eventhough a TightRope System (stainless steel; £177.9 each) is relatively more expensive than syndesmotic screws (stainless steel; £4.47/screw), TightRope is proven to be more cost-effective as fewer cases require removal (theatre cost; approximately £1,200/hour) and lower risks to patients due to fewer needs for further surgery. **Conclusions:** Our study found that TightRope system is more cost-effective than syndesmotic screws in the management of syndesmotic injury.

Changes In Level Of Essential Collagen-Forming Vitamins And Trace Minerals In Type II Diabetic Complicated Surgical Patients Of Mediterranean Origin.

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Diabetes Mellitus is a metabolic disease characterized by hyperglycaemia due to defective insulin secretion or action. Abnormalities in insulin regulation leads to imbalances in essential vitamins and minerals like Vitamin C (Vit C) and Vitamin D (Vit D) may play a role in the progression of this disease and defect in collagen formation.

Study Design & Methods

A cross-sectional study was conducted. The study included 60 cases of type 2 diabetes mellitus (T2DM) patients who were divided into 2 groups (controlled uncomplicated / Uncontrolled surgical) and 30 healthy controls of mediterranean origin. Serum levels of copper and zinc as well as serum levels of Vitamin C and Vitamin D were measured.

Results

Serum zinc levels were observed to be lower in T2DM cases with complications (83.65 ± 4.21) compared to healthy controls (95.40 ± 3.90). In contrast, serum copper levels were highest among cases with complications (178.05 ± 8.62) compared healthy controls (128.85 ± 8.76). Furthermore, the study found that Vitamin C and Vitamin D levels were significantly lower in T2DM cases and healthy controls.

Conclusions

The altered levels of trace elements zinc and copper, along with deficiencies in Vitamin C and Vitamin D, appear to be important predisposing factors for diabetic patients in developing complications. These findings suggest that monitoring and correcting these nutritional imbalances may have a significant impact on the management and prevention of surgical complications in individuals with type 2 diabetes mellitus.

Long-Term Outcome of Silastic Joint Replacement of the Hallux in Low Physical Demand Population.

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This study investigates the outcomes of silastic joint replacement arthroplasty in a low-physical-demand population with hallux rigidus. The aim is to assess the efficacy and suitability of this surgical procedure in addressing the deformity and improving joint function in individuals who have not responded to conservative treatments. The study includes a detailed examination of radiological alignment, functional outcomes, and patient satisfaction with a minimum of 10 years follow-up period

The results demonstrate high patient satisfaction, and reduced reliance on additional interventions in more than 78% of cases with less reported radiological findings the previously mentioned in literature. The study contributes insights into the outcomes and benefits of silastic joint replacement arthroplasty in low physical demand patients, aiding in appropriate patient selection and treatment decision-making.

Fibula protibia fixation allows immediate weight bearing and regain of independent ambulation in elderly with unstable ankle fracture

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Unstable ankle fractures are common in the elderly after low energy injury. Post-fixation rehabilitation and return to function are often limited by associated fragility. Fibular pro-tibia fixation allows immediate weight bearing on the injured limbs and early return of mobility. Fibular protibia fixation is performed by passing long screws which also engage the tibia cortices through a lateral fibular plate. Fixing the fibula to the tibia provides much-enhanced rigidity to allow immediate weight bearing. It required no new approach but using long anatomical locking plates and anteverted pro-tibia screws compared with the traditional open reduction and internal fixation. Methods: This is a retrospective study on 18 elderly patients with ages ranging from 63 to 95 (average age 75) who suffer from bimalleolar or trimalleolar ankle fracture after low energy injury. The primary outcome is the time to independent ambulation. Secondary outcomes are major complications and length of stay. Result: 16 out of 18 patients were able to regain independent ambulation within a month, while two patients with severe cardiovascular diseases suffered from a deep infection requiring implant removal. There is no mechanical failure. The average length of stay is 12.7 days. Conclusion: Fibular pro-tibia fixation provides rigid fixation for unstable ankle fractures in the elderly, allows a faster return to independent ambulation, and reduces prolonged immobilization.

Fibula Rod System In Ankle Fractures : Our Experience

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Objectives : To compare our results of the use of fibula rod system versus the literature available. Designs & Methods : Retrospective study. We looked at Ankle fractures treated by the fibula rod system from the period of 2017 to 2020. Data collected from the Theatre Operating Management System (TOMS) , Clinical Notes and Synapse(r) (FujiFilm) viewer . Patient Related Outcome Measures were obtained using FAOS (Foot and Ankle Outcome Scores) via telephone ,email and letters. Results : 26 female and 17 male, average age 60.7 years (range 20-97). Pattern: Bimalleolar 5 / BM +Subluxed 7 / Trimalleolar 15 / TM + Subluxed 12 / Pilon 4 Indications : Swelling 19 / Swelling + Blisters 15 / poor skin 7 / Other 4 .Co morbidities- Diabetes 3 / Vascular Insufficiency 2 / Osteopenia 9 / Other 4 (Psoriasis, B12 deficiency) .18 needed stabilisation with external fixator for swelling/blisters, dislocations . Average time : frame to fixation was 9.2 days (Range 5-18 days) .Average time to discharge- 12.6 weeks .Clinical Outcomes: Excellent - 24 .Fair - 17 Poor - 2 .Radiological Outcomes :Excellent - 18 Fair - 25 Poor - 2 PROMS with FAOS : 40 responses at an average of 2 years since injury (Range 13 -38 months) Average score 73.18% Complications- syndesmotom screw snapped, non union persistent pain and stiffness. Conclusion :Our Experience vs Literature, Complication rate <1% vs 7-13%, Excellent to fair results 99% vs 73-100%. Union rate 99 % vs 99%

Why hindfoot valgus correction by calcaneal lengthening osteotomy a bad idea?

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Introduction: calcaneal lengthening osteotomy of is one of the most popular procedures in the flatfoot correction. It is believed that calcaneal lengthening osteotomy corrects all components of the deformity.

Methods: we evaluated the treatment outcomes of 35 children (44 feet) with calcaneal lengthening osteotomy (follow-up period 3-5 years). In all patients angles and indices of the degree of deformity were measured in clinical evaluation and on radiographs. To assess the impact of the studied parameters, a correlation analysis was carried out.

Results: In determining the effect of the "Evaluation Time" parameter on the main angles and indices, there was an improvement after surgery. The exceptions to these parameters were: AP and lateral Kite angle and hindfoot valgus. An increase in the AP Kite angle and hindfoot valgus after surgery had no statistical significance, and a worsening of the lateral Kite angle had statistical significance ($p=0.021$).

Conclusion: calcaneal lengthening osteotomy biomechanically increases the eversion of the subtalar joint. To lengthen the lateral column during calcaneus osteotomy distraction, the subtalar joint must be fixed in a rigid position. This position is obtained by subtalar joint eversion. Based on this, the correction of hindfoot valgus after calcaneal lengthening osteotomy is ineffective.

Lateral Calcaneal lengthening osteotomy for treatment symptomatic flexible flatfoot in adolescents: problem of choosing the form of diastasis and the level of osteotomy.

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One of the recognized surgical methods for the treatment of planovalgus deformity of the feet in children over 12 years of age is the Evans calcaneal osteotomy. This operation, described in 1975, was modified: various levels of osteotomy, as well as forms of diastasis (wedge-form osteotomy, lengthening osteotomy) were suggested. Problem of choosing the parameters of the formed diastasis in the preoperative stage in order to reduce the number of cases of hypo- and hypercorrection of deformity remains a pressing issue to this day.

A retrospective study was performed in which 64 children aged 12-17 years with symptomatic flatfoot (53 patients with flat-valgus deformity of the feet and 11 patients with flat feet without a valgus position of the calcaneus) were included. All patients in this group underwent an elongating wedge-form osteotomy of the calcaneus. A dynamic assessment of radiometric parameters and the results of the AOFAS questionnaire was performed before and after surgery (after 6 months and 1 year).

In 9 patients (81.8%) with flat feet without a hallux valgus position of the calcaneus at 6 months, X-ray hypercorrection was confirmed (varus position of the calcaneus 6-14°). In the group with flat-valgus deformity, hypercorrection was confirmed radiologically in 7 patients (13.2%).

The results of the study showed the importance of choosing the form of diastasis at the preoperative stage in the treatment of flexible flatfoot in adolescents.

Correction of Hallux Valgus Does Not Decrease Lesser Metatarsal Pressures: A Pedographic Study.

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Introduction: The objective of this study was to evaluate the effects of minimally invasive chevron and Akin (MICA) procedures on the plantar pressure distribution of the lesser metatarsals (MTs) in patients with hallux valgus (HV), focusing on whether correction of HV influences lesser metatarsal pressure and, consequently, transfer metatarsalgia. **Methods:** This prospective study was conducted from January 29, 2019, to July 18, 2023. Thirty feet from twenty-six patients with moderate hallux valgus, symptomatic enough to warrant surgery, were included. The fourth generation MICA was the sole procedure performed, without any additional interventions on soft tissues or lesser toes. Radiographic parameters (HVA, IMA, DMAA, 1st metatarsal length, and Meary's angle) and pedographic outcomes (using RSscan International, Olen, Belgium) were measured preoperatively and three months postoperatively. **Results:** Postoperative radiographic analysis showed significant improvements in HVA, IMA, DMAA, and an average 2.3mm shortening of 1st metatarsal length (all $p < 0.01$). However, the pedographic analysis revealed no significant change in the maximum force, maximum pressure, or cumulative load on lesser MTs three months postoperatively. The maximum force and pressure on the big toe and first MT significantly decreased. **Conclusion:** The MICA procedure for hallux valgus results in significant radiographic corrections but does not decrease maximum force, maximum pressure, or cumulative load on lesser metatarsals at three months post-operation. This result may be relative to the inevitable shortening of 1st metatarsal after surgery. This suggests that MICA alone may not adequately address lesser metatarsal pressures in patients with HV and transfer metatarsalgia.

Clinical Outcomes of Minimally Invasive Distal Metatarsal Osteotomy for Simultaneous Hallux Valgus and 5th Toe Varus

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Introduction

The occurrence of both hallux valgus (bunion) and bunionette (tailor's bunion) in the same foot is relatively uncommon. When both conditions are present, it is sometimes referred to as a "combination bunion." However, the prevalence of this condition is not well-documented in the medical literature.

Materials & Methods

We retrospectively collected 74 cases who were diagnosed with combination bunion in our hospital during 2016-2022. All cases received minimal invasive osteotomy. Clinical assessment included American Orthopaedic Foot and Ankle Society (AOFAS) score, visual analog scale, shoe selectivity, patient satisfaction. Radiographic assessment including 5th MP angle, 4th-5th IM angle, Hallux valgus angle, 1st-2nd Intermetatarsal angle (IMA)

Results

We achieved good and excellent results in 74 cases with a very high satisfaction. Sufficient correction of 5th MP angle, 4th-5th IM angle, Hallux valgus angle, 1st-2nd Intermetatarsal angle (IMA) without radiological recurrence. A substantially shorter operating time and a reduced risk of complications related to surgical exposure.

Conclusion

Combination bunion actually is not so rare and the prevalence might be underestimated. Minimal invasive osteotomy has some advantages: less skin and soft tissue damage, Simple technique with K-wire fixation. Percutaneous distal metatarsal osteotomy is an alternatively safe and reliable technique for combination bunion.

Medium term outcomes of patients undergoing synthetic cartilage arthroplasty for first metatarsal phalangeal osteoarthritis

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CARTIVA is a synthetic silicon based implant utilised in the treatment of first MTP osteoarthritis. This study assessed the clinical outcomes of this novel intervention in the management of first MTPJ arthritis. Methods: 64 patients who underwent a total of 67 CARTIVA procedures between May 2016 and June 2020 were included in the study. Minimum follow up was 12 months. Validated outcome measures, EQ-5D-3L and MOX-FQ were prospectively collected pre and post operatively at 12 months as the primary end point. AAOS-FAM was recorded post op. Secondary outcomes included complication and revision surgery. All cases were performed by the senior author. Results: The Average age was 54 (19 to 77) with 42 females 22 males. Radiological Grade 2 OA was present in 46 cases with Grade 3 in 21 (KL scale). There was statistical improvement in EQ-5D-3 (0.69 to 0.85 $p<0.05$) and MOXFQ scores (42.5 to 15.4($p<0.05$)) when pre- and post-operative scores were compared. AAOS-FAM mean core score was 89.01. Multivariate analysis by grade of OA indicated that patients with Grade 2 OA did better than those with grade 3 OA although this did not reach statistical significance. 3 of the 67 CARTIVA implants required revision procedures one patient developed an implant related infection. Conclusions: All validated outcome measures demonstrated statistically significant improvement at 12 months post op. CARTIVA is a safe and efficacious surgical intervention in the management of moderate 1st MTPJ OA.

New operative technique for patellar fracture - tension band suture - "X box" technique

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Introduction: Patella fracture is a relatively rare injury, accounting for 1-2% of total skeletal trauma. The operative treatment technique with Kirschner needles and tension wire cerclage is the gold standard. Although this technique provides good healing and a good functional result, there are numerous complications that are mainly related to the implant material. An additional operation is often necessary to remove the implant. According to data from the literature, the percentage of complications ranges between 22%-30%, while the percentage of revision surgery is 65%.

Methodology: Non-absorbable thread and tapes in osteosynthesis of bone fractures and joint instability have been applied for the last few years. The patients included in this study have a simple two-part patellar fracture. The technique used for osteosynthesis uses two Fiberwire 5 non-resorbable threads, which are used to suture the tendon of m. quadriceps. Then, through the longitudinal transosseous tunnels, threads are passed from proximal to distal pole of patella, connecting the fracture fragments. The sutures are then brought back from the front of the patella and again passed through the transosseous tunnels, but one suture is transferred from the lateral side to the medial side and vice versa. In this way, an "X box" configuration is achieved.

Result: Osteosynthesis of a two-part patella fracture performed in this way ensures dynamic compressive effect at the fracture site. There is no migration of implant material and no need for additional surgical treatment.

Conclusion: The most important advantage of the technique is significantly lower frequency of postoperative complications.

The use of hamstring tendon autografts in the reconstruction of neglected or chronic patellar ligament injuries

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SOTA Knee Free Papers, MR 7, September 26, 2024, 08:00 - 09:00

Introduction: This study investigates the effectiveness of reconstructing neglected or chronic patellar tendon injuries using hamstring tendon autografts, based on the analysis of three cases. The presented cases are thoroughly documented, outlining the surgical procedure steps, the evolution of the patients' recovery, and the achieved functional outcomes. **Methods:** Three patients (two females, one male), of mean age 38.6 (26-58years) presented with chronic patellar tendon injury, with the time since injury ranging between three months and two years. Active extension was not possible in all three patients. All patients had severe functional limitation with an average IKDC score of 32.7 (range 24–48). Patellar tendon reconstruction was performed on all of them, employing autografts sourced from the hamstring tendon. **Results:** Following orthopedic surgery, patients were longitudinally monitored postoperatively, with a mean follow-up duration of 12.3 months (range 6-18). All patients exhibited a stable knee joint with complete flexion. Among them, two patients attained full extension, while one patient manifested an extension lag of 10 degrees. The IKDC score averaged at 64 (range 54-78). All three patients demonstrated favorable outcomes post-surgery.

Conclusion:

While previous research has supported the use of hamstring tendon autografts in similar situations, these cases further confirm the success of this technique in addressing specific issues with neglected patellar ligament injuries. These results provide a valuable contribution to existing medical knowledge in this field and support the continued research and application of hamstring tendon autografts as an effective therapeutic option in this context.

Revision in two stage after infection of primary knee arthroplasty. Presentation of three cases

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Introduction A serious complication after TKA is periprosthetic joint infection, with an incidence of 2%. Infection is the second most common cause of revision after TKA in the UK. Chronic infection of primary knee arthroplasty can be treated with one or two stage revision. In one-stage, the infected prosthesis is removed followed by radical debridement of infected tissue and direct reimplantation of prosthesis. In a revision in two stage, the infected prosthesis is removed, tissue debridement is performed and, more often, an antibiotic joint spacer is inserted. The role of the antibiotic spacer includes reduction of dead space, reduction of intra-articular hematoma, preservation of soft tissue balance and local release of antibiotics. After a certain time interval, when we have no signs of infection, a new knee endoprosthesis is implanted, usually revision type.

Case reports We presents the complete treatment of 3 patients with chronic infection of primary knee arthroplasty. The patients were female, 68, 71, 72 years old. All patients underwent revision in two stage with the application of a two-component joint antibiotic spacer. Reimplantation of the revision knee prosthesis was performed 7, 13 and 15 months after the first operation. All patients were followed up for 12 months postoperatively. There was no reinfection and a good functional result was achieved.

Conclusion. Revision in two stage using an antibiotic joint spacer is an excellent method of treating chronic infection of primary knee arthroplasty. The method is accompanied by a low percentage of reinfection and a good functional result.

When posterior stabilised total knee arthroplasty is not posteriorly stable anymore – Case report and literature review

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Posteriorly stabilized total knee arthroplasty represents one of the most frequently used total knee prosthesis types in modern orthopaedics. Among all total knee arthroplasty complications one regarding the tibial post fracture is rare with a reported incidence of <1% and with very limited literature support, predominantly in the form of case reports and systemic reviews with only one retrospective observational study.

On our patient catastrophic implant failure occurred 10 years after the initial operation with the patient's main complaint being knee instability and without known trauma. Revision surgery was performed with intraoperatively confirmed tibial post fracture with a broken polyethylene part in the form of a loose intraarticular body. The revision was performed by inserting a larger polyethylene which resulted in a stable joint.

The literature states that the majority of these complications occur less than 5 years after surgery. Predominantly revisions surgery was done by increasing polyethylene size, but in some cases, a more constrained implant was needed to achieve joint stability. There is still no undisputed cause of this complication, while the most common explanation was the initial undersized polyethylene insert. This case is shedding new light on the time needed for this catastrophic failure to occur and is valuable for increasing knowledge on this topic.

Sonication importance in the diagnosis of periprosthetic infections: A Single-center experience

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Introduction: Periprosthetic infections represent one of the most severe complications, not only in the therapeutic but also in the diagnostic sense. Clinical signs, laboratory, and standard microbiological tests cannot always differentiate aseptic loosening from infection. Determining the causative agent by conventional cultures is difficult in the cases of formed biofilm, intracellular bacteria, or small colony variants. An additional problem is antibiotic therapy, which leads to false negative findings. An undiscovered causative agent, i.e., a wrong diagnosis, is the main reason for unsuccessful treatment. **Methods:** Implant sonication is the application of low-frequency, low-energy ultrasound waves that disintegrate the biofilm, and bacteria become available for further diagnostics. After extraction, the implant is placed in a sterile sealed container with Hartmann's solution. Before the sonication, the vessel is mechanically vibrated for 30 seconds and then placed in an ultrasonic bath for 7 minutes. The mechanical vibration of the container is applied again, after which the sediment is sampled with a sterile pipette, centrifuged, and cultivated on a blood culture medium. **Results:** In this paper, we present the results and experiences after three years of applying this method in a single medical center. **Conclusion:** This technique is relatively simple and cheap, so it can be applied in most microbiological laboratories. Its advantages include the possibility of detecting microorganisms in "low-grade" infections, previously applied antibiotic therapy, and also polymicrobial flora. Sonication should become a routine diagnostic procedure.

Komplikacije Operativne Rane Posle Implantacije Totalne Proteze Kolena

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Ugradnja totalne proteze zgloba kolena predstavlja jednu od najčešćih ortopedskih operacija danas u svetu. Statistička analiza predviđa da će se od 2030. godine ugrađivati 3,5 miliona proteza kolena godišnje. Samim tim i broj operativnih komplikacija će neminovno rasti. Ukupan broj komplikacija u dosadašnjoj literaturi iznosi od 3-6%. Komplikacije operativne rane nisu česte i prema navodima iz literature se javljaju u nešto manje od 1% slučajeva. Značaj ovih komplikacija se sastoji u visokom riziku za septično razlabavljenje proteze, gubitku ekstremiteta, a u najtežim slučajevima, moguć je i fatalan ishod. Komplikacije se ispoljavaju u vidu nesrastanja operativne rane u regiji ligamenta patele, nekroze kože lateralno od ivice reza, raslojavanja dubljih struktura, nekroze ligamenta patele i ekspozicije proteze. Preoperativna procena faktora rizika može značajno smanjiti mogućnost nastanka komplikacija. Najznačajniji faktori rizika su komorbiditet i operativna tehnika. Način lečenja zavisi od veličine i dubine defekta, prisustva infekcije, ekspozicije tetiva, kosti ili implanta. Rani debridman i pokrivanje rane kvalitetnim mekotkivnim pokrivačem su bazični principi koji obezbeđuju visok procenat uspešnog lečenja (90%) komplikacija operativne rane posle implantacije totalne proteze kolena.

Ključne reči : totalna proteza kolena, operativna rana, komplikacije

Diagnostic Dilemma: Late-stage Ankle Gouty Arthritis Simulating Infection and Malignancy

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SOTA Foot and Ankle, Conservative Treatment & Resident's Sessions Free Papers, MR 7, September 26, 2024, 09:00 - 10:00

Diagnostic Dilemma: Late-stage Ankle Gouty Arthritis Simulating Infection and Malignancy

INTRODUCTION :

Gouty arthritis poses a frequent challenge in orthopedic-endocrinology realms. Nonetheless, occurrences of erosive gouty tophi leading to ankle joint deterioration are seldom encountered. Herein, we present a case involving the late manifestation of tibio-talar joint gouty arthritis.

REPORT:

A 53-year-old man with a history of gout presented with worsening pain and swelling in his right ankle over five months, hindering weight-bearing. No night pain, constitutional symptoms, or tuberculosis contact reported. Examination revealed diffuse swelling around the right ankle joint. Blood tests showed leukocytosis ($24.5 \times 10^9/L$), elevated ESR (77mm/hr), CRP (4.42 mg/dL), and hyperuricemia (503umol/L). Ultrasound and bone scan indicated active infection, confirmed by contrast MRI. Treatment involved arthrotomy washout, external fixation, and antibiotic cement spacer insertion. Intraoperatively, chalky material, flattening of the talar dome, and complete loss of articular cartilage were observed, with inflamed synovial tissue. Cultures for fungi, TB, and tissue were negative. Histopathological examination confirmed gouty tophi.

DISCUSSION :

Due to elevated inflammatory markers and MRI evidence of tibio-talar joint erosion with talar dome flattening, investigating for osteomyelitis or tuberculosis is crucial. Ankle joint involvement and signs of joint erosion typically manifest in the late stages of gouty arthritis (19% versus 5% in early stages).

CONCLUSION :

Diagnosing ankle gouty arthritis can be complex, but management focuses on thorough debridement, restoring limb functionality, pain relief, and joint stabilization. Definitive procedures like ankle joint arthrodesis or replacement surgery may be considered in later stages of treatment.

Hirurško lečenje povrede Lisfrankovog zgloba stopala

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Uprkos tome što je Lisfrankova povreda tarzo-metatarzalnog zgloba stopala poznata unazad dva veka, lečenje ove povrede i dalje predstavlja veliki problem u ortopediji i traumatologiji. Od postavljanja dijagnoze i operativne indikacije, preko odabira adekvatne operativne tehnike i na kraju pravilne rehabilitacije postoji dosta prostora za grešku, a u literaturi se ne izdvaja ni jedan algoritam lečenja koji bi se mogao okarakterisati kao superioran.

Autori žele da predstavljaju studiju slučajeva od 14 pacijenata sa povredom Lisfrankovog zgloba, koji su lečeni operativno na Institutu za ortopediju Banjica, u periodu od četiti godine (od 2020. do 2024 godine), od strane istog hirurga. Operativna tehnika koja je bila korišćena je otvorena anatomska repozicija tarzometatarzalnog zgloba sa različitim tehnikama unutrašnje fiksacijom. Period praćenja pacijenata je bio u intervalu od 6 do 30 meseci nakon operacije.

Cilj ove studije slučajeva je prikazivanje rezultata nakon operativnog lečenja Lisfrankove povrede tarzo-metatarzalnog zgloba. Takođe razmatra se najadevatniji način fiksacije, kao i funkcionalni rezultati nakon operativnog lečenja. Na kraju iznećemo preporuke i smernice za lečenje povrede Lisfrankovog zgloba koja, ako se previdi ili zanemari može dovesti do ozbiljnih komplikacija u smislu pojave deformiteta stopala i rane pojave osteoartitičnih promena, kao i posledice po svakodnevni život pacijenata.

Subjective Global Assessment and Serum Biomarkers as a Screening Tool for The Evaluation of Nutrition Status and Its Impact on Bone Healing in Patients with Limb Injuries

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Background: Hospitalized patients' malnutrition is a serious issue. In patients with limb injuries, this study sought to determine the usefulness of the Subjective Global Assessment (SGA) in forecasting the relationship between serum biomarkers and malnutrition, as well as the effect of malnutrition on clinical and radiographic bone repair. **Methodology:** There were ninety-three individuals with limb injuries in this prospective trial. Along with the secondary outcomes, basic demographic information, serum biomarker levels, nutritional status as determined by the SGA, and the relationship between nutrition status and the Radiological Union Shaft Tibia (RUST) score were evaluated. **Results:** Patients were categorized into three groups based on the SGA: well-nourished Group A, moderately malnourished Group B, and severely malnourished Group C. Albumin, hemoglobin, platelets, and total leucocyte count were the serum indicators that were substantially increased in Group A compared to Group B + C ($p < 0.0001$). When compared to Group B + C, the nutritional status of patients in Group A was significantly greater ($p < 0.0001$) from the time of admission up to six months later. At six months, the RUST score for radiological healing showed a negative connection with C-reactive protein and a positive correlation with a number of other indicators. **Conclusions:** There was a positive link observed between the nutritional status of the patients and the serum biomarker levels as well as the clinical and radiographic bone repair as determined by the RUST grading system.

Treatment of open extruded fracture neck of the talus using the combined method of external fixation modified for dynamic ankle joint fixation and Kirschner wires - case report

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Abstract

Introduction: Open extruded fracture of the talus is present in 2% of talar fractures. Because of numerous complications (infection, nonunions, arthritis), it represents a great challenge for the surgeon. The most commonly used method of treatment is reimplantation of the talus and osteosynthesis.

Case presentation: A 19-year-old patient suffered an open extruded fracture of the talus type Hawkins II after falling from a height. The emergency operative technique that we performed was debridement of the wound, reimplantation of the talus bone, osteosynthesis with external fixation modified for dynamic external fixation of the ankle joint (Mitkovic-type), and two Kirschner wires. Reposition of fragments we controlled with C-Arm fluoroscopy. The patient was prescribed 14 days antibiotic therapy (cephalosporin, aminoglycoside, mebendazole) and thromboembolic prophylaxis for 35 days. After 6 weeks we allowed movements in the ankle joint with physical therapy. Gradual weight-bearing in the injured leg was allowed after 8 weeks. The osteosynthetic material was removed after 18 weeks, and the treatment continued with physical therapy with a full weight bearing on the leg after 6 months. X-ray follow-up of the talus was done for 2 months until the 24th month postoperatively. An excellent result was obtained with a healed talus and minimal restriction of dorsiflexion of the foot.

Conclusion: Treatment of this injury represents a huge challenge for the surgeon. External fixation can be chosen as a treatment method for an open luxation fracture of the talus.

Keywords: case report, open extruded talar fracture, external fixation, Kirschner wires.

Complications of Surgical Treatment of Achilles Tendon Rupture

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The Achilles tendon, significant for stabilizing the ankle joint and crucial for walking, is often prone to injury, especially in physically active individuals. Surgical intervention is often necessary for a certain portion of the population, but it carries certain risks that affect the final outcome. This study aims to analyze complications after surgical treatment of the Achilles tendon.

Complications of Surgical Treatment:

- Wound Complications:** Issues such as wound dehiscence and infection are possible and have a certain percentage influenced by factors such as diabetes and surgical technique. Reported rates vary from 3% to 25%.
- Nerve Injuries:** Rare but serious intraoperative nerve injuries can cause sensory problems. Reported rates vary from 0.5% to 6%.
- Achilles Tendon Healing Complications:** Poor healing can lead to re-rupture or adhesions. Reported rates of re-rupture vary from 1% to 5%.
- Functional Results and Limitations:** Complications often result in reduced strength and mobility of the ankle joint, along with decreased dorsiflexion, deformity, swelling, with reported percentages ranging from 10% to 30%.
- Deep Vein Thrombosis and Pulmonary Embolism:** Prolonged immobilization increases the risk of blood clots, with reported rates ranging from 0.5% to 3%.

Conclusion: Although surgical intervention restores function, the complications are significant. A multidisciplinary approach is crucial for effective management.

The Diagnostic Puzzle: Midfoot Fracture, Malunion, or Charcot Neuroarthropathy

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The Diagnostic Puzzle: Midfoot Fracture, Malunion, or Charcot Neuroarthropathy

INTRODUCTION:

Injuries to the midfoot are uncommon and their diagnosis can be challenging. Consequently, overlooked midfoot fractures can result in significant repercussions for both the patient and the surgeon.

REPORT:

Here, we present a case of a 39-year-old woman recently diagnosed with diabetes, hypertension, and dyslipidemia. She experienced left foot pain and deformity for five months after spraining her ankle. Initially diagnosed with a soft tissue injury, her condition worsened despite bearing weight on her foot. Four months later, she sought medical attention, showing signs of foot deformity. Laboratory results revealed elevated HbA1c at 12.3%. Diagnosis: neglected midfoot fracture with malunion secondary to charcot neuroarthropathy. Treatment: left midfoot fusion surgery corrected deformity and relieved pain.

DISCUSSION:

The case presented a diagnostic challenge due to severe midfoot deformity following a minor ankle sprain. Differential diagnoses included midfoot charcot neuroarthropathy, osteomyelitis, and malunited midfoot fracture. With the patient newly diagnosed with diabetes mellitus (HbA1c: 12.3%), charcot neuroarthropathy was identified as a causative factor. Rapid progression of the condition further suggested charcot neuroarthropathy. Managing neglected midfoot malunion secondary to charcot neuroarthropathy poses challenges, with literature recommending corrective surgery focusing on salvaging the tarsometatarsal joint and reconstructing the foot arch through osteotomy, fusion, and stabilization.

CONCLUSION:

Surgical intervention is imperative for neglected malunion of midfoot charcot neuroarthropathy. Effective treatment, which focuses on stabilizing the affected joints, correcting alignment, and restoring the foot arch, can lead to outstanding outcomes.

Lečenje aseptične pseudoartroze dijafize tibije intramedularnim klinom - prikaz slučaja

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Uvod: Brojne tehnike se koriste za lečenje pseudoartroza preloma dijafize tibije, od kojih fiksacija intramedularnim klinom može biti najpovoljnija po pacijenta, obzirom da omogućava oslonac od prvog postoperativnog dana, uz minimalan rizik od postoperativnih komplikacija.

Slučaj: Pacijentkinja starosti 66 godina, hipertoničar, loše regulisana glikemija, povređena padom na ravnom, zadobila prelom tibije AO42A2, otvoren Gustillo-Anderson tip II. Lečena spoljašnjim fiksatorom u regionalnoj ustanovi. Zbog inicijalno prihvatljive pozicije fragmenata, odlučeno da se lečenje započeto metodom. Nakon 6 meseci, uklonjen fiksator, bez jasnih znakova zarastanja preloma, postavljena gipsana imobilizacija, koja je uklonjena nakon 6 nedelja, kada je pacijentkinji dozvoljen oslonac, i započet rehabilitacioni tretman. Na narednim kontrolama radiografski se uočava progresivno povećanje varus deformiteta na mestu pseudoartroze. Nakon 15 meseci od povrede, pacijentkinja operativno lečena na našoj Klinici, učinjen debridman mesta preloma, intramedularna fiksacija uz osteoplastiku koštanom pastom. Dobijena anatomska konfiguracija potkolenice. Brisevi mesta preloma pristigli sterilni. Pacijentkinji dozvoljen oslonac prvog postoperativnog dana. Radiografski verifikovano zarastanje posle 3 meseca.

Diskusija: Pseudoartroze tibije predstavljaju čest problem u ortopedskoj hirurgiji, najčešće kao posledica loše procene u metodi lečenja ili korišćenjem neadekvatne tehnike. Potrebno je odabrati implantat s kojim se ostvaruje zadovoljavajuća stabilnost, uz što manje narušavanje mekotkivnog pokrivača potkolenice, i smanjen rizik od nastanka postoperativnih komplikacija.

Zaključak: Intramedularna fiksacija se može uspešno koristiti kao metoda lečenja aseptičnih pseudoartroza dijafize tibije.

Does craniocervical sagittal alignment affect the outcomes of cervical disc replacement?

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Introduction: craniocervical sagittal alignment plays a crucial role in maintaining the physiological function of the cervical spine and could affect patient surgical outcomes. This study aimed to explore the relationship between craniocervical sagittal balance and clinical and radiological outcomes of cervical disc replacement (CDR). **Methods.** Patients who underwent 1-level and 2-level CDR were retrospectively analyzed. Clinical outcomes were evaluated using scores on the Japanese Orthopaedic Association (JOA), Visual Analogue Scale (VAS), and Neck Disability Index (NDI). The craniocervical sagittal alignment parameters, including the C2-C7 Cobb angle, C2 slope, T1 slope, C2-C7 sagittal vertical axis (SVA), C1-C7 SVA, the center of gravity of the head (CGH)-C7 SVA were measured. **Results.** A total of 169 patients were involved. Both the pre- and postoperative C2 slope were significantly higher in the less mobile group than in the more mobile group. Analogously, the CGH- C7 SVA before and after surgery was significantly larger in the less mobile group. Patients with a higher preoperative C2 slope and CGH-C7 SVA had lower cervical lordosis and ROM after surgery. There were no significant differences in the clinical outcomes between patients with different sagittal balance statuses. Patients with radiographic adjacent segment pathology (rASP) had significantly higher preoperative CGH-C7 SVA and C2- C7 SVA. **Conclusion.** Craniocervical sagittal balance is associated with cervical lordosis and ROM at the index level after CDR. A higher preoperative SVA is related to the presence and progression of rASP. A relationship between sagittal alignment and clinical outcomes was not observed.

Long-Term Outcomes of Lumbar Spinal Stenosis: Impact on Daily Living Autonomy, Dementia, and Mortality – An Eight-Year LOHAS Cohort Study

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Spine Free Papers 3, MR 5, September 26, 2024, 14:00 - 15:30

Objective: To investigate the prolonged impact of lumbar spinal stenosis (LSS) on the loss of independence in basic activities of daily living, the progression to dementia, and overall lifespan.

Methods: Subjects aged over sixty-five from the Locomotive Syndrome and Health Outcome in Aizu Cohort Study (LOHAS), classified by LSS status via 2008 self-administered questionnaire, were observed until March 2016. Key outcomes were the loss of independence in basic activities of daily living, dementia onset, and mortality. Independence loss was defined as scoring "A" or higher on Japanese long-term care insurance physician's opinion form, with dementia identified at level "II" or above. Analysis utilized Cox regression, adjusting for age, gender, chronic conditions, depression (via the Mental Health Inventory), and grip strength.

Results: The cohort included 1220 participants (451 men, 769 women, mean age 72). Eight years event rates in the LSS (-) group/LSS (+) group were 3.0%/6.1% for independence loss, 6.3%/15.8% for dementia, and 8.8%/11.9% for mortality. After adjustment using Cox regression, LSS was a significant risk factor for dementia onset (HR 1.80; 95% CI: 1.22-2.64) but not for decreased independence (HR 1.40; 95% CI: 0.78-2.52) or mortality HR 1.08; 95% CI: 0.73-1.58).

Conclusion: LSS significantly escalates the risk of dementia, while having a limited effect on the loss of independence in basic activities of daily living and mortality. These results suggest that orthopedic interventions targeting LSS could act as a preventative measure against dementia, emphasizing the need for specific healthcare strategies.

Sagittal slope angle of lateral atlantoaxial articulation is associated with the severity of basilar invagination with atlantoaxial dislocation and predicts reduction degree after surgery

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Introduction: Morphology of the lateral atlantoaxial articulation (LAA) seems to contribute to pathological changes in basilar invagination (BI) with atlantoaxial dislocation (AAD). No study has investigated its impact on the outcome of surgical reduction. This study aims to investigate (1) LAA morphology BI with AAD and healthy individuals (2) its relationship with the severity of dislocation and (3) the effect of the LAA morphology on reduction degree (RD) after surgery.

Methods: In this retrospective propensity score matching case-control study, imaging and baseline data of 62 patients with BI and AAD from 2011 to 2022 were collected. 613 participants without occipitocervical junctional deformity served as controls. Logistic regression analysis and receiver operating characteristic curve was used for analysis.

Results: There were no significant differences in sex, age, and BMI between the two groups after propensity score matching. Sagittal slope angle (SSA) and coronal slope angle (CSA) was lower and greater, respectively, in the patient group than in the control group. Regression analysis revealed a significant negative correlation between SSA and severity of dislocation. However, no relationship was found between CSA and the severity of dislocation. Multivariate logistic regression found minimum-SSA was an independent predictor of satisfactory reduction (RD $\geq 90\%$). The area under the curve was 0.844, and the cut-off value was -40.2 .

Conclusion: SSA in patients group was significantly smaller and more asymmetric than that in the control group. Dislocation severity was related to SSA but not to CSA. SSA can be used as a predictor of horizontal RD after surgery.

IONM analysis in the surgical treatment of patients with severe spinal deformities

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Spine Free Papers 3, MR 5, September 26, 2024, 14:00 - 15:30

Introduction: there are very few research papers devoted to the study of the effect of halo traction on IONM indicators. There are no reports of the effect of preoperative halo traction on IONM.

Methods: a retrospective analysis of the results of surgical treatment of 88 patients with severe spinal deformities using different types of HT and IONM was carried out. The patients were divided into 2 groups. Group I (52 people) received standing or sitting HGT as a preoperative preparation. Group II (36 people) was operated under conditions of intraoperative HT. The modalities of motor evoked potentials (MEP) and somatosensory evoked potentials (SSEP), spontaneous electromyography (EMG), and transpedicular screw test were used. A comparative analysis of signaling criteria with the threat of developing neurological deficit of the lower extremities during surgery (more than 80% when using facilitation) was performed. **Results:** signaling criteria with the threat of neurological deficit development were registered in 12 patients: 8 in group I, 4 in group II. Of these, a significant decrease in MEP was noted in 5 patients of group I and 1 patient II, while complete loss of MEP was diagnosed in 3 patients in each group. In two patients of group II, the recovery of the MEP indicators of the lower extremities did not occur and permanent neurological deficit could not be avoided. **Conclusions:** preoperative HGT demonstrates greater safety in the postoperative period. The combined use of IONM with preoperative preparation can significantly reduce the incidence of neurological complications in severe deformities.

Efficiency of the mathematical model for estimating chances for recurrence of lumbar disc herniation

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Purpose: To evaluate the effectiveness of the mathematical model for estimating chances for recurrence of lumbar disc herniation (rLDH). **Materials:** One-Center Retrospective Study. The study included 514 patients (I group), operated on lumbar disc herniation L4-L5, L5-S1, with a 3-year follow-up period. Before surgery, patients evaluated the radiological parameters of the lumbar spine and determined the risk of rLDH using the mathematical model for estimation of chances. If the risk was less than 50% (Ia group), then the patient underwent microdiscectomy. If the value was more than 50% (Ib group), fusion was performed. Comparison group (II group) - data from 350 patients (300 – without recurrence, 50 - recurrence requiring surgery). Based on the data from these patients, the mathematical model was created. To obtain homogeneous values of the preoperative parameters of both groups, the Propensity Score Matching was used. **Results:** The preoperative data of groups I and II were aligned for significantly different indicators. After that, the sample size was 37 patients in each group. The number of reoperations in the groups was statistically significantly different: group I - 5% [1%; 18%], group II - 35% [22%; 51%] ($p = 0.003$). The risk of reoperation in group I at 0.13 [0.03; 0.58] times lower than in group II ($p = 0.002$). **Conclusions:** The proposed mathematical model for estimating chances for recurrence of lumbar disc herniation can be used as an option to determine the surgical tactics of treating patients aimed at reducing the frequency of reoperations after microdiscectomy.

Overloaded vertebral body: A unique radiographic phenomenon following multilevel anterior cervical discectomy and fusion

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Spine Free Papers 3, MR 5, September 26, 2024, 14:00 - 15:30

Background: Because previous studies have not focused on postoperative cervical collapse.

Objective: The purpose of the present study was to introduce the overload vertebra body (OVB) phenomenon following multilevel anterior cervical discectomy and fusion (ACDF) as well as to investigate its effects on clinical and radiographic outcomes. **Methods:** We conducted a retrospective study involving patients who underwent ACDF. A total of 55 patients were included in the analysis, including 110 OVB and 110 non-OVB. The evaluated vertebral parameters included the vertebral cross-sectional area (CSA), wedge angle (WA), vertebral height (anterior [AH] and posterior [PH]) and anterior-posterior vertebral diameter (upper [UD] and lower [LD]). **Results:** The CSA and WA were significantly lower in the OVB group than in the non-OVB group at 3, 6, and 12 months after surgery as well as at the final follow-up ($p < 0.01$). The AH of the OVB group was significantly lower at 3, 6, and 12 months after surgery as well as at the final follow-up compared to 1 week after surgery ($p < 0.01$). **Conclusion:** OVB, a new phenomenon following multilevel ACDF, is defined as the cervical vertebral body located in the middle of the surgical segments in multilevel anterior cervical spine surgery. Statistical analysis of vertebral parameters, including CSA, WA, AH, PH, UD, and LD, showed that OVB occurs mainly at the anterior edge of the vertebra and that its largest radiographic manifestation is the loss of height at the anterior edge of the vertebra in the early postoperative period.

Multilevel lumbar spine stenosis in patients with Parkinson's disease. Is surgery always failed?

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Spine Free Papers 3, MR 5, September 26, 2024, 14:00 - 15:30

Introduction

Scoliosis, thoracic kyphosis, and other deformities are more common in patients with PD. Severe and involuntary forward flexion of the thoracolumbar spine is a disabling process in the course of PD.

Materials and methods

Comparative prospective study. 36 patients with PD and lumbar spine stenosis were enrolled and divided in two groups according to type of surgery. Spinal fusion and decompression surgery using transpedicular constructions was performed in 21 patients (group I), only decompression at the most significant level of stenosis was performed in 15 patients (group II)

Results

Clinical results were satisfactory in 2 patients in group I, the remaining patients noted dissatisfaction with surgical treatment. The mean postoperative VAS was 6.4, while the mean preoperative VAS was 5.9. ($P = 0.19$). During the first 12 months after the operation, 17 out of 21 patients underwent revision surgery due to instability of the structure ($n=7$) or fractures of the hardware elements ($n=10$). In 24 months after the surgery complete removal of the instrumentation was performed in 8 patients.

Group II patients in the early postoperative period showed greater satisfaction with the surgical intervention. Thus, 12 patients were fully satisfied: VAS 6.1 preop and 5.8 postop. Revision interventions were not performed in this group.

Conclusion

The outcomes of surgical treatment of lumbar spine stenosis in patients with Parkinson's disease (PD) are controversial and might be improved by minimization of surgical activity. Given the progressive natural course of Parkinson's disease, a poor prognosis for surgical treatment is inevitable.

Dynamic Stabilization of the Lumbar Spine in Patients with Degenerative Spondylolisthesis and Lumbar Spine Instability. 10 Years Follow-Up.

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Spine Free Papers 3, MR 5, September 26, 2024, 14:00 - 15:30

Introduction

Surgical treatment of lumbar degenerative disc disease (DDD) and spondylolisthesis with or without segment instability with the implementation of fusion is the "gold standard" of treatment, but is associated with a large number of complications. The use of TiNi as a material for the rods can significantly decrease the rate of complications.

Methods

103 patients underwent surgical treatment using TiNi rods between 2010 and 2012. All patients were divided into three groups depending on the level of intervention and the clinical picture. Consequently, each group was divided into two subgroups - with TiNi and titanium rods. Radiographs, CT, MRI and clinical outcomes were examined preoperatively, at 6, 12, 24 and 42 months.

Results

The mean patient age was 53 years. Minimum follow - up period was 3.5 years. Statistical analysis was performed using SPSS 21.2. Statistically better results ($p < 0.05$) were shown 3.5 years after surgery in all groups with nitinol rods.

One of the main evaluation criteria in our study was the extent of preserved mobility of the spine segments fixed with nitinol rods.

In all patient groups where nitinol rods were used for stabilization, mobility was present at all times throughout the observation (up to 42 months).

Conclusions

The use of nitinol rods in lumbar stabilization surgery showed good results in comparison with titanium rods. Further investigation, including multicenter studies, will allow to more clearly define the indications and contraindications for this type of implants.

Is there a relationship between preoperative cervical degeneration and heterotopic ossification following cervical disc replacement?

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Spine Free Papers 3, MR 5, September 26, 2024, 14:00 - 15:30

Introduction: Heterotopic ossification (HO) is an intractable issue after cervical disc replacement (CDR) that may decrease the segmental mobility and even develop to arthrodesis. This study aimed to identify factors in preoperative cervical degeneration that affect the HO formation after surgery and explore the impacts of preoperative degeneration on the occurrence of HO in different locations. **Methods:** This was a retrospective study of patients who underwent CDR in our center. The degree of preoperative cervical spondylosis was evaluated radiologically, including the intervertebral disc, uncovertebral joints, facet joints and ligaments. The effects of cervical degeneration on the HO formation after CDR were analyzed according to HO location. Multivariate logistic regression was performed to identify independent factors. **Results:** 149 patients with a total of 196 arthroplasty segments were involved in this study. HO, anterior HO (AHO), and posterior HO (PHO) developed in 59.69%, 22.96%, and 41.84% levels, respectively. The significant factors in univariate analysis for PHO included disc height loss, anterior osteophytes, preoperative uncovertebral joint osteophytes, and facet joint degeneration. The disc height loss in the high-grade HO was significantly more than that in the low-grade group ($P=0.039$). Multivariate analysis identified disc height loss as the only independent factor for PHO ($P=0.009$). No significant degenerative factors related to the formation of AHO were found. **Conclusion:** Preoperative cervical spondylosis predominantly affected the HO formation in the posterior disc space after CDR. In the multiple elements of preoperative cervical degeneration, the disc height loss was an independent risk factor for posterior HO formation.

Incidence and risk factors for bone loss after single-level anterior cervical surgery: a comparison between cervical disc replacement and anterior cervical discectomy and fusion

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Spine Free Papers 3, MR 5, September 26, 2024, 14:00 - 15:30

Introduction: Bone loss (BL) is a common phenomenon after cervical disc replacement (CDR). BL was also observed in patients who underwent anterior cervical discectomy and fusion (ACDF). This study aimed to compare the incidence, clinical outcomes, and risk factors for BL between single-level CDR and ACDF. **Methods:** This is a single-center retrospective cohort study of 212 patients. 113 patients treated with CDR and 99 patients treated with ACDF were retrospectively reviewed. Cervical sagittal alignment parameters, including cervical lordosis (CL), C2-C7 sagittal vertical axis (cSVA), T1 slope, disc angle, and surgical level slope, were evaluated. **Results:** BL was identified in 75 (66.4%) patients in the CDR group and 57 (57.6%) patients in the ACDF group. There were no significant differences in the incidence, severity, and location of BL between the ACDF and CDR groups. For patients who underwent ACDF, the proportion of females was significantly higher in BL group ($P=0.002$), while the BMI was significantly lower in the BL group compared to non-BL group (22.72 ± 3.09 vs. 24.60 ± 3.04 , $P=0.002$). The effect of BL on the clinical outcomes of ACDF and CDR was not observed. In the ACDF group, patients with BL had significantly smaller postoperative CL, T1 slope, cSVA, and surgical level slope. BL after CDR was less correlated to the cervical sagittal alignment. **Conclusion:** BL is common after both CDR and ACDF with comparable incidence and severity. Cervical sagittal alignment was closely related to BL after ACDF yet had less influence on BL after CDR.

Diagnostic and therapeutic delays in necrotizing fasciitis of the limbs

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SOTA Miscellaneous Free Papers, MR 7, September 26, 2024, 14:00 - 15:30

Introduction:

Necrotizing fasciitis is a rare and severe bacterial infection causing tissue necrosis in dermal and subcutaneous layers. Early recognition is crucial for prognosis, often determined by prompt surgical intervention. This study aims to evaluate diagnostic and treatment timelines among hospitalized necrotizing fasciitis patients.

Materials and methods:

A retrospective single-center study covering five years (2019-2023) was conducted. Clinical, bacteriological data, diagnostic and treatment delays, and complications were analyzed.

Results:

Twenty-two patients were included, predominantly male with an average age of 60 years. Most cases involved the upper limb (60%). The mean diagnostic delay was 7 days. All patients underwent surgical excision and dual antibiotic therapy. Surgical revision was required in 75% of cases, with one-third experiencing unfavorable outcomes, including three early deaths and four limb amputations.

Discussion:

Necrotizing fasciitis necessitates rapid, effective, and multidisciplinary management due to its severity and rapid progression. Advanced age and comorbidities, especially diabetes, correlate with poorer outcomes. Timely surgery, within 12 hours of diagnosis, is crucial for optimal prognosis.

Conclusion:

Necrotizing fasciitis demands swift intervention and multidisciplinary care. Delay in diagnosis or treatment significantly impacts prognosis, highlighting the importance of early recognition and prompt surgical intervention.

Uloga ortopedskog hirurga u lečenju urođene anomalije - distalne fokomelije

Prikaz slučaja

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SOTA Miscellaneous Free Papers, MR 7, September 26, 2024, 14:00 - 15:30

Fokomelije predstavljaju interkalarni gubitak tkiva gornjeg ekstremiteta uz postojanje tri tipa. Predstavljaju 0,8 % svih kongenitalnih anomalija gornjeg ekstremiteta. U svim tipovima ove anomalije postoji skelet prstiju. Naziv koji se još koristi je interkalarna aplazija. Prvi tip je takav da je šaka vezana direktno za trup. Drugi tip predstavlja formu gde donekle postoji razvijena podlaktica i šaka, bez razvijenog humerusa. Treći tip- distalna fokomelija, gde postoji šaka koja je vezana za humerus. U našoj ustanovi je operativno lečenja ženska osoba, devetnaest godina starosti sa obostranom fokomelijom, rođena je kao treće dete, bez prethodnog postojanja anomalija u porodici. Operacija je izvršena u totalnoj intravenskoj anesteziji, u smislu amputacije zaostalih prstiju šake sa leve strane. Cilj lečenja je obezbeđivanje adekvatnog patrljka i dalji nastavak lečenja u centru za rehabilitaciju u smislu protetisanja, kako bi se pacijetkinji obezbedili uslovi za poboljšanje kvaliteta života u smislu upisivanja na viši stepen obrazovanja kao i polaganje vozačkog ispita.

Pseudoaneurysm Of the Medial Femoral Circumflex Artery as A Complication of Lesser Trochanter Displacement Upon Intramedullary Osteosynthesis of a Femur Fracture – Case Report

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SOTA Miscellaneous Free Papers, MR 7, September 26, 2024, 14:00 - 15:30

Transtrochanteric fractures of the femur are amongst the most common lower extremity injuries in the elderly. The gold standard for the stabilization of these fractures is intramedullary osteosynthesis with different types of nails. This type of osteosynthesis falls under the category of minimally invasive techniques, which enables safe and stable osteosynthesis with a small number of complications. With the development of osteosynthesis techniques, the number of complications has greatly decreased, and vascular complications are particularly rare. They most commonly occur during the application of the distal screw and its penetration into the superficial femoral artery. Complications resulting from the damage to blood vessels located in the proximal part of the thigh are described much less frequently. This case report aims to present a rare complication after osteosynthesis of a fracture of the proximal end of the femur, which was caused by the displacement of the lesser trochanter.

The Effect of the COVID-19 Pandemic on Mental Health in Electively Scheduled Hip and Knee Arthroplasty Patients in Serbia

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SOTA Miscellaneous Free Papers, MR 7, September 26, 2024, 14:00 - 15:30

Introduction: In response to the COVID-19 pandemic, hospitals in Serbia were recommended to stop performing elective procedures. This suspension led to the abandonment of a large number of hip and knee arthroplasties. The impact of this on the physical and mental health of patients has yet to be investigated.

Method: A survey was developed to assess patients' pain, anxiety, physical function, and economic ability to undergo hip or knee arthroplasty. The study included 319 patients who had to have elective hip and knee arthroplasty canceled between March 2020 and March 2021.

Results: Patients were not worried about the uncertainty of when their surgery might be rescheduled. Patients waiting for total hip replacement were significantly more anxious than patients with total knee arthroplasty. Only 68% of patients understood and agreed with public health measures to control infections, while 33% of patients planned to delay as soon as possible. Younger patients were more concerned about financial concerns and concerns about job security. Older patients were less concerned about contracting COVID-19 during a future hospitalization.

Conclusion: Patients with hip and knee arthritis continue to suffer from pain in the final stages of the disease. They were worried about the COVID-19 pandemic. Only 33 percent of patients wanted to be operated on as soon as possible. Age and the type of degenerative disease affect their causes of anxiety about future surgery. Older adults show high levels of resilience to stressors such as COVID-19 and delayed health care, which manifests in lower levels of anxiety.

Impact of bone-implant gap size on the interfacial osseointegration: an in vivo study

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Best Papers Session, Main Congress Hall ABC, September 26, 2024, 16:00 - 17:30

Objective To evaluate the impact of bone-implant gap size on the interfacial osseointegration of cervical disc arthroplasty (CDA) in a rabbit animal model.

Methods A cylindrical (8 mm in diameter with different depth) calvarial bone-implant gap model was established to assess the impact of bone-implant gap size on interfacial osseointegration. A series of round-plate implants with different teeth depth (0.5 mm, 1.0 mm, 1.5 mm and 2.0 mm) was specifically designed. A total of 48 New Zealand white rabbits were randomly categorized into four groups by the implants they received (0.5 mm: group A, 1.0 mm: group B, 1.5 mm: group C, 2.0 mm: group D). At 4th and 12th week after surgery, animals were sacrificed. Micro-CT, acid fuchsin and methylene blue staining and hematoxylin and eosin (HE) staining were conducted.

Results At 4th week and 12th week after surgery, both micro-CT and HE staining showed more new bone formation and larger bone coverage in group A and group B than that in group C and group D. At 12th week, the bone biometric parameters were significantly superior in group C when compared with group D ($p < 0.05$). At 12th week, hard tissue slicing demonstrated larger portion of direct contact of new bone to the HA coating in group A and group B.

Conclusions Bone-implant gap size larger than 1.0 mm negatively affected bone-implant osseointegration between compact bone and HA coated implant surface.

An aragonite-based scaffold provides superior clinical outcome compared to debridement/microfractures at 24-month follow-up: a multi-center, randomized controlled trial

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Best Papers Session, Main Congress Hall ABC, September 26, 2024, 16:00 - 17:30

Objective: This multicenter, randomized, and controlled trial aimed to compare the outcomes of patients with joint surface lesions (JSLs), with or without concurrent OA, who were treated with an aragonite-based osteochondral implant (Agili-C™, CartiHeal Ltd, Israel) to those treated with arthroscopic debridement/microfractures.

Methods and Materials: A total of 251 subjects meeting specific criteria were enrolled across 26 medical centers. Subjects were randomized in a 2:1 ratio to receive either the implant or debridement/microfracture. Evaluations were conducted at 6, 12, 18, and 24 months using various questionnaires and MRI assessments to measure outcomes.

Results: Both groups had similar demographic characteristics and baseline values. The implant group consistently showed statistically superior outcomes compared to the control group at all follow-up visits. The improvement in the implant group, especially in terms of mean KOOS improvement, was significantly larger than in the control group. Additionally, a higher responder rate and greater defect fill on MRI were observed in the implant group. The failure rate was also lower in the implant group compared to the control group.

Conclusion: The aragonite-based implant demonstrated superior clinical and radiographic outcomes compared to debridement/microfractures at the 24-month evaluation.

Keywords: Agili-C™; aragonite; scaffold; joint surface lesions; microfractures; debridement; RCT

Impaired Glycine Neurotransmission Causes Adolescent Idiopathic Scoliosis: Finally an understanding of the etiology of AIS

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Best Papers Session, Main Congress Hall ABC, September 26, 2024, 16:00 - 17:30

Adolescent idiopathic scoliosis (AIS) is the most common form of spinal deformity affecting millions of adolescents worldwide, but it lacks a defined theory of etiopathogenesis. Five multi-generation AIS families and 843 sporadic cases were identified, and along with 3219 controls, underwent genetic analyses including linkage analysis, genome sequencing, and targeted sequencing to identify pathogenic variants. Paraspinal muscle sEMG tests were performed on familial cases. Additionally, 858 patients from two additional AIS cohorts in China and US were used for validation. After identifying disease-associated variants, cellular mechanisms were studied and zebrafish models were generated to understand the underlying etiology of the spinal curvature and to test candidate treatments. Disease-causing and predisposing variants of SLC6A9 in multiple families and many sporadic cases were identified via genetic analyses. SLC6A9 variants affected subcellular localization and stability of GLYT1, leading to reduced glycine uptake activity in cells. Slc6a9 mutant zebrafish exhibited discoordination of spinal neural activities and pronounced spinal curvatures which resembles the human patients carrying the SLC6A9 pathogenic variant. Administration of a glycine receptor antagonist or a clinically used glycine neutralizer sodium benzoate partially rescued the phenotype (scoliosis phenotype dropped from 70.2% to 30.3%). Aberrant EMG bursts were found in SLC6A9 pathogenic variants suggesting an impairment of paraspinal muscle balance control. Genetic variants affecting glycine transportation are strong causal risk factors of AIS. Results from patients and animal models suggest a neuropathic origin for “idiopathic” scoliosis, involving the dysfunction of CPGs, potentially a common cause of AIS.

Mechanical versus Kinematic Alignment in Obese Patients Undergoing Total Knee Arthroplasty: Do Tibial Stems Effect Aseptic Tibial Loosening Rates?

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Best Papers Session, Main Congress Hall ABC, September 26, 2024, 16:00 - 17:30

Introduction

Tibial stems in total knee arthroplasty (TKA) have been postulated to enhance fixation and decrease rates of aseptic tibial loosening (ATL) in obese patients. Tibial stems are commonly implanted in TKA placed using mechanical alignment (MA) rather than kinematic alignment (KA). The purpose of this study was to determine the influence of a tibial stem on ATL rates as a function of alignment strategy. We hypothesized that obese patients undergoing TKA with MA with stem would have lower ATL rates than patients undergoing KA without stem.

Methods

We reviewed patient records with body mass index (BMI) greater than 35.0 kg/m² who underwent primary, cemented TKA for osteoarthritis from 2013 to 2018 with minimum 12 months follow-up. Statistics included logistic regression with alpha=0.05. The post-hoc power analysis indicated our power is 80% using a difference of 11% in ATL rates.

Results

A total of 176 patients were included: 111 in the MA group and 65 in the KA group. 64 (58%) and 12 (18%) of the MA and KA groups had tibial stems, respectively. Mean BMI was 40.4 kg/m² (range, 35.0 to 55.9) and average follow-up was 3.9 years (range, 1 – 10 years). No patients with stems whereas four MA and four KA without stems experienced ATL. Neither alignment type ($p = 0.98$) nor stem presence ($p=0.99$) was associated with ATL.

Conclusion

In class 2 and 3 obesity, the risk of developing ATL is not significantly associated with alignment strategy used nor the presence of a tibial stem.

Patient-reported outcomes for operative surgical repair using speed bridge Achilles tendon vs Conventional repair

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Best Papers Session, Main Congress Hall ABC, September 26, 2024, 16:00 - 17:30

Introduction:

Achilles tendon ruptures are among the most common and debilitating tendon injuries, particularly affecting athletes and active individuals. The decision to pursue operative repair is guided by the goal of optimizing functional outcomes, reducing the risk of re-rupture, and facilitating a quicker return to pre-injury levels of activity.

Material and Methods:

This retrospective cohort study compares the results between the modified SpeedBridge technique and traditional direct repair for Achilles tendon rupture. We reviewed the outcomes of 100 patients treated for Achilles tendon rupture, with 64 cases managed with the SpeedBridge technique and 36 cases treated with direct repair. Patient selection was in alignment with the SMART programme's operative intervention criteria and both groups had the same rehabilitation program. Primary outcomes measured included functional recovery, as determined by the Manchester Foot and Ankle Score, and the timeline for return to physical activity, monitored over a 12-month post-treatment period.

Results

Analysis revealed that patients treated with the SpeedBridge technique, following the SMART programme's guidelines, demonstrated significantly faster recovery and earlier return to physical activities than those undergoing direct repair. Additionally, the SpeedBridge cohort reported higher Manchester Foot and Ankle Scores, indicating a better functional outcome.

Patterns and Predictors of Nerve Injuries in Pediatric Monteggia Fracture-Dislocations

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Best Papers Session, Main Congress Hall ABC, September 26, 2024, 16:00 - 17:30

Introduction: This study examines incidence and predictors of nerve injury in pediatric acute Monteggia fracture-dislocations. **Methods:** We retrospectively reviewed pediatric patients (≤ 18 years) with acute Monteggia fractures treated operatively from 2011-2021. Included fractures met Bado's criteria or were Monteggia-equivalent, including olecranon fractures, isolated radial dislocations with ulnar plastic deformation, and radial neck fractures with dislocation and ulnar fracture. Exclusions were chronic fractures (≥ 30 days), malunions, or cases without imaging. Logistic regression adjusted for fracture heterogeneity and age. **Results:** Of 170 pediatric patients (average age: 6.5 years), 19.4% had fracture-related nerve injuries: 17 posterior interosseous nerve (PIN), 9 anterior interosseous nerve (AIN), and 8 other nerve injuries. Significant predictors for overall nerve injury include age over 8 (odds ratio [OR] 4.8, 95% confidence interval [CI] 2.0-11.4, $P=0.001$), ulnar comminution (OR 2.9, 95% CI 1.2-7.0, $P=0.019$), lateral dislocation (OR 2.8, 95% CI 1.1-7.5, $P=0.035$), and open fracture (OR 3.0, 95% CI 1.0-8.7, $P=0.043$). Subgroup analysis found lateral dislocation (OR 5.3, 95% CI 1.48-18.6, $P=0.010$) and ulnar comminution (OR 4.6, 95% CI 1.4-14.5, $P=0.010$) predicted PIN injury in multivariable analysis. Univariable analysis was feasible for AIN injury and found that open fracture (OR 7.5, 95% CI 1.9-29.8, $P=0.005$) and ulnar diaphyseal fracture (OR 10.9, 95% CI 1.3-89.5, $P=0.026$) increased risk. **Conclusion:** Key predictors of nerve injury in pediatric Monteggia fractures are age over 8, ulnar comminution, lateral dislocation, and open fracture. Clinicians should consider PIN injury with lateral dislocation or ulnar comminution and AIN injury after open fracture or ulnar shaft fracture.

Optimizing Total Knee Arthroplasty: Unveiling Gait Dynamics in Kinematic vs. Mechanical Alignment

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Best Papers Session, Main Congress Hall ABC, September 26, 2024, 16:00 - 17:30

Background

Mechanical Alignment (MA) in total knee arthroplasty aims for perpendicular alignment of components to the limb's mechanical axis. However, individual knee anatomy variations raise concerns about its universal applicability. In contrast, Kinematic Alignment (KA) aligns implants with the knee's pre-arthritis anatomy, optimizing function and satisfaction. There have not been any gait studies in the Indian population, and the literature lacks comparative data between MA and KA techniques. Knee adduction moment (KAM) has been recognized as a good clinical surrogate for medial tibiofemoral joint loading and is associated with implant durability after TKA

Purpose

This RCT aims to compare gait parameters in Kinematic and Mechanical alignment.

Methods

A prospective RCT with 27 patients (54 knees) undergoing bilateral simultaneous TKA randomized one knee to KA and the other to MA. Gait analysis was done postoperatively during the 1-year follow-up period using external infrared sensors-based motion capture technology

Results

Comparing gait parameters, basic parameters like swing and stance phase durations showed no significant differences between KA and MA limbs. Knee Adduction Moment (KAM) was significantly lower in the KA limb compared to the MA limb despite increased proximal tibia varus in the KA group. No significant difference in peak Knee Flexion Moment (KFM) was noted between the two groups.

Conclusion

A smaller Knee Adduction moment indicates lesser medial tibiofemoral loading in the KA group, possibly leading to lesser implant wear and increased implant durability in longer follow-up. These warrant larger Multicenter RCTs with longer follow-ups for deeper insights.

Does modular component exchange improve the revision rate in patients undergoing debridement antibiotic and implant retention for persistent wound discharge in early postoperative period following total hip arthroplasty?

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Best Papers Session, Main Congress Hall ABC, September 26, 2024, 16:00 - 17:30

There is ongoing debate regarding whether the component exchange leads to decreased revision rates in debridement antibiotic implant retention (DAIR) for persistent wound discharge following primary hip arthroplasty. This study aims to compare the outcomes of DAIR procedures with and without the exchange of modular components in patients with persistent wound discharge in the early postoperative period following primary total hip arthroplasty (THA).

Methods

This retrospective study involved 18,233 consecutive patients who underwent primary THA at a tertiary center from January 2007 to December 2022. The comparison focused on patients with persistent wound discharge within 30 days of primary THA undergoing debridement and implant retention (DAIR) with modular component exchange versus those without. The primary outcome assessed was any-cause revision surgery, while secondary outcomes involved identifying risk factors for poor outcomes. Statistical analysis included Student t-test, chi-square, and logistic regression.

Results

110 patients underwent DAIR of which 37 had modular component exchange, while 73 did not. The average days to wash out post-primary surgery were 18.4 +/- 5.6 days. Revision surgery rates were 16.2% (6/37) for DAIR with modular exchange and 15.1% (11/73) for DAIR without modular exchange (Odds ratio: 1.09; 95% CI 0.36-3.22). Factors positively correlated with revision risk were CRP on readmission and polymicrobial infection, while age, sex, BMI, and Charlton comorbidity index showed no correlation.

Conclusions:

The exchange of modular components did not result in improved revision rates among patients undergoing DAIR for persistent wound discharge in the early postoperative period following total hip arthroplasty.

One-year mortality amongst elderly hip fracture patients following surgery: An institutional review of a Level-1 trauma centre

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Hip Free Papers 3, MR 9, September 26, 2024, 16:00 - 17:30

Introduction: We conducted a retrospective study to assess one year mortality rate in surgically operated elderly hip fractures patients and to see its possible association with various factors.

Methods: The study was a retrospective observational study conducted at a Level-1 trauma centre. Patients >60 years with hip fractures who underwent surgical interventions between July 2018 and March 2023 and having completed or died during one-year follow up were included in the study. Patients who were managed conservatively, age <60 years and patients who had a reoperation of the hip were excluded from the study. Patient evaluation was done on the basis of age, gender, mode of injury, fracture type, co-morbidities, blood parameters and timing of surgery. Follow up was done on OPD basis and telephonic conversations. Mortality rate was calculated for 1 month, 3 months and 1 year interval. **Results:** Out of a total of 198 hip fracture admissions, 144 met the inclusion-exclusion criteria. 20 patients were lost to follow up and 124 were eventually included. 44 patients were over 75 years of age. There was 19.4%(n=24) mortality within 1 year. One-third (n=8/24) died within the first month itself. There was higher mortality in patients >75 years old (32%) compared to those <75 years (12.5%). Common comorbidities amongst dying patients were hypertension(n=14/24) and diabetes mellitus(n=12/24). **Conclusion:** Elderly patients with hip fracture have a significantly high mortality. Higher age, presence of comorbidities, higher ASA grade, low haemoglobin level at the time of admission are some of the predictors of increased mortality.

Predictive values of functional status and comorbidities on treatment outcome of patients with femoral neck fractures

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Hip Free Papers 3, MR 9, September 26, 2024, 16:00 - 17:30

The hip fracture is the leading cause of disability and deaths in elderly. The aim of this study was to determine the predictive values of the functional status, present comorbidities, and the types of treatment on the long-term functional status and mortality in patients with femoral neck fractures. In the General Hospital Sarajevo in the period 01.07.2006. - 01.07.2016, 310 patients were treated for femoral neck fractures. The mean follow - up period was 36.5 ± 5.9 months. Data on patients with hip fracture (comorbidities, functional status at admission, discharge and check-ups, comorbidities, type of treatment and life expectancy) were analyzed. The functional status was approximately determined by dividing the patients in one of the four categories. The patients were also divided by the presence of comorbidities. According to the type of treatment, the patients were divided into: WS - without surgery, and S - those who underwent surgery. Patients with incomplete data, patients younger than 65 years of age, and patients with the previous history of hip fractures were excluded from the study. Female sex, older age, and poorer functional status upon admission, conservative treatment, the presence of neurological or lung disease, diabetes, were all significant risk factors leading to poorer functional outcomes on the latest follow-up. This study, among other results, showed that in patients with hip fractures there is a direct, statistically significant association between the existence of neglected internal and neurological conditions with increased mortality and poorer functional outcome at the last examination.

Femoral Neck Fracture, Treatment & Management with Minimal Invasive Hipp Alloarthroplastie, Artiqo A2 Stem and Implantec AnaNova Cup

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Hip Free Papers 3, MR 9, September 26, 2024, 16:00 - 17:30

Presentation Aim: is to outline our strategy for managing neck of femur fractures, specifically Garden classification III and IV, in patients aged between 55-75 years. This demographic typically experiences a high complication rate (30%) and a significant number of revisions (30-40%) with osteosynthesis, which has led to an increasing global trend towards total hip arthroplasty. At our hospital, minimal hip alloarthroplasty has become the standard procedure for treating coxarthrosis and neck of femur fractures. Study Design: we conducted a retrospective, descriptive evaluation over the first year of application. Results: We performed minimally invasive surgery on 134 patients using the Implantec AnaNova cup and Artiqo A2 stem, ceramic-on-ceramic. The gender distribution was 68 males and 66 females, with an average age of 66.7 years. The primary indications for surgery were coxarthrosis (120 cases, 88%) and femoral neck fractures (14 cases, 12%). We managed to adjust the center of rotation medially by 2.6mm and cranially by 1.8mm. Leg length discrepancy was maintained within +/- 4mm in 96% of cases, and lateral offset was within +/- 6mm in 78% of cases. Complications included intraoperative fractures (Vancouver A) in 3 cases, postoperative hematomas in 2, and no infections or dislocations. Conclusion: Artiqo A2 stem and Implantec AnaNova cup enable minimally invasive hip alloarthroplasty for both coxarthrosis and neck of femur fractures. This minimally invasive approach is safe, reproducible, and effective, offering all the associated benefits. Patients reported higher satisfaction levels and faster rehabilitation. Age, BMI, and gender were not exclusion criteria for joint replacement.

Early discharge in the elderly after hip fracture surgery in a low-resource setting

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Hip Free Papers 3, MR 9, September 26, 2024, 16:00 - 17:30

Introduction: While many studies are comparing early intervention versus delayed surgery in fragility hip fractures, there are few studies regarding the postoperative course of these patients. It is worth looking at the other end of the spectrum of the hospitalization of patients and finding out if an early discharge after hip fracture surgery is favorable. **Methodology:** This is a retrospective cohort study on elderly hip fracture patients. Subjects were divided into those discharged 1-2 days post-op (early discharge) and 3-6 days post-op (routine discharge). World Health Organization Quality of Life Brief version (WHOQOL BREF) in Tagalog was tabulated at two weeks, six weeks, and twelve weeks post-operation. Repeated ANOVA was used for the WHOQOL, while t-test and Chi-square were used for continuous and nominal data.

Results: Sixty-two subjects were included in this study. WHOQOL BREF scores of all subjects significantly increased up to 12 weeks follow-up. Physical domain score in the WHOQOL BREF was better in the early discharge group in the first 6 weeks only. Hospitalization costs for the two groups are not significantly different. No participant was readmitted due to complications of their index surgery. 73% said they were Very Satisfied with their course of hospital stay, while 27% were Satisfied.

Conclusion: This study shows that even in a low- resource setting, elderly hip fracture patients have good outcomes in terms of quality of life, have a high satisfaction rate, and have no post-op complications if discharged early.

Tackling The Challenge Of 90-Day Readmissions in Hip Fracture Management: A Retrospective Study

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Hip Free Papers 3, MR 9, September 26, 2024, 16:00 - 17:30

ABSTRACT

Background: Hip fracture readmissions within 90 days pose a significant challenge in orthopedics, burdening healthcare systems and affecting patient outcomes. This study, set against the backdrop of an aging population and rising hip fracture incidences, seeks to analyze the factors contributing to these readmissions and propose viable management strategies. **Methods:** Conducted at Whiston Hospital, this retrospective study reviewed 1264 patients treated for neck of femur fractures between April 2020 and December 2022. Data on patient demographics, comorbidities, surgical interventions, and readmission reasons were collected and analyzed using descriptive statistics and multivariable logistic regression. **Results:** The study found a 16.6% readmission rate, with the majority being for non-orthopedic reasons such as infections and cardiovascular events. Age and comorbidities were significant predictors of readmission, while surgical factors had a less pronounced impact. A year-wise trend showed a peak in readmissions during the COVID-19 pandemic. **Conclusion:** The findings emphasize the complexity of managing NOF fractures and the importance of a comprehensive, multidisciplinary approach to care. Targeted interventions, including orthogeriatric co-management and falls assessment, are recommended to mitigate readmission risks and enhance patient care, though further research is needed for more definitive strategies. **Keywords:** hip fracture, readmission, orthopedics, retrospective study, management strategies, NOF fracture, healthcare burden, multidisciplinary approach.

Treatment of non-displaced intracapsular femoral neck fractures with dynamic hip and cannulated screws resulting in avascular necrosis

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Objectives: To compare the complications associated with cannulated hip screws (CHS) and dynamic hip screws (DHS) techniques.

Methods: In this multicenter retrospective chart study, we reviewed the records and data of all patients operated upon by DHS or CHS for treatment of Garden type I and type II intracapsular non-displaced femoral neck fracture from January 2017 to December 2022. Patients with incomplete files or follow-ups of less than one year

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were excluded from the study.

Results: The study enrolled 85 patients, 35 males, and 50 females, with a mean age of 72 ± 5.4 for males and 70.6 ± 7.6 for females. A total of 44 patients were operated upon with DHS, and 41 patients with CHS. The mortality rate of DHS was 15.9% and was 17.1% in the CHS group ($p > 0.05$). Non-union was recorded in 4.5% of the DHS group and 4.9% of CHS patients ($p > 0.05$). Avascular necrosis (AVN) was significantly higher in DHS (9.1%) than in CHS (4.9%, $p < 0.05$).

A revision was required in 15.9% of DHS patients and 14.6% of CHS patients ($p > 0.05$).

Conclusion: This study found that DHS was superior to CHS in AVN rate. However, there was no significant difference between both methods regarding mortality, revision, and non-union.

Keywords: femoral neck fracture, internal fixation devices, complications

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Does hip-preserving surgery for femoroacetabular impingement syndrome slow down the development of osteoarthritis, and reduce the long-term risk of hip replacement surgery? A systematic review.

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Background: It is widely acknowledged that femoroacetabular impingement (FAI) syndrome predisposes individuals to early-onset radiographic hip osteoarthritis (RHOA). We aimed to ascertain whether hip-preserving surgery or conservative treatment for FAI syndrome better impacts the future need for hip replacement surgery, using total hip replacement (THR) rate as a measure of hip survivorship, and surrogate marker of RHOA development. **Methods:** We conducted PICO search strategy across MEDLINE (via PubMed), Embase (via Ovid), Web of Science and Cochrane Library following PRISMA guidelines. Selection criteria included clinical and radiological diagnosis of FAI syndrome as per the Warwick Agreement, hip-preserving surgery representing patient's index surgery, and 10-year minimum follow-up. Primary outcome measure was hip replacement rate (%); interpreting THR as a proportion of total hips reviewed. We calculated this for each cohort and conducted single-armed proportional meta-analysis. **Results:** We identified nine relevant cohort studies containing a total of 1818 hips (1619 patients). Overall, regardless of intervention, conversion rate ranged from 7% – 33% with a pooled effect of 11% (9 – 14) using a random effects model. There was no statistically significant heterogeneity in reported hip failure rates ($p = 0.09$). **Discussion:** Despite rigorous selection criteria, included cohorts displayed wide heterogeneity in patient characteristics, demographics and size. We believe that this systematic review has highlighted deficits in scientific literature and will direct future research, including long-term follow-up of published RCTs. Widespread dissemination of this paper would allow patients and clinicians to make better informed, shared decisions, leading to better patient care and clinical outcomes.

Custom-made components in acetabular reconstruction during revision hip arthroplasty with massive bone loss

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Introduction: The management of bone loss is a challenged procedure especially in complex defects. In past years the individual 3D components are one of the promising methods in revision surgery. **Objectives** was to evaluate the effectiveness of 3D components in III B bone defects acetabulum reconstruction by W.G. Paprosky. **Materials and Methods:** From 2017 to 2022 we analyzed 90 patients who underwent acetabular reconstruction with III B bone defects during revision hip arthroplasty. Patients with pelvic discontinuity predominated in the first group. Patients were divided into 3 groups: the 1st group was reconstructed with individual 3D components, the 2nd group – with hemispheric cup and augments, the 3rd group – with the reinforcement rings. Functional outcomes were evaluated with WOMAC, Harris hip score and VAS scales. **Results:** We found that before the operation the worse function scales were in the 1st group. The functional results after revision surgery in the 1st group were better than in patients in the 2d and 3d. In general, we got 27 (30%) complications in all groups. The number of all complications was higher in the 2nd and the 3rd groups. In the 1st group the periprosthetic infection was in 2 (6,6%) patients, dislocations were in 2 (6,6%) patients, one case of the sciatic nerve palsy and one aseptic 3D implant loosening. **Conclusions:** 3D implants allow to achieve personalize solution of each case with better functional results. It became a prior option in revision arthroplasty for III B defects especially in cases with pelvic discontinuity.

A 10-Year Cohort Study Of A Dedicated Fragility Hip Fracture Unit In A Major/Level 1 Trauma Centre

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Introduction: Hip fracture units (HFUs) within Major Trauma Centres (MTCs) have been shown to reduce variances in length of stay and trends to reduce time to theatre (TTT) in short-term studies.

This 10-year study aims to assess the sustained impact of a HFU on patient flow and mortality in a MTC setting.

Methods: A dedicated HFU was established at the study centre on 1st July 2015, our study period extended from 5-years prior to 5-years after its formation; “pre-HFU” and “post-HFU” respectively (bed spaces and theatre capacity remained constant).

Pre-HFU fragility hip fractures were managed concurrently to general and major trauma patients, post-HFU hip fractures were managed in a ring-fenced unit with co-located MDT support.

TTT, patient outcomes (length of stay (LoS), 30-day, 120-day and 1-year mortality) were ascertained from a retrospective interrogation of a prospectively collected database, cross-referenced against the trust’s NHFD dataset.

Results: There were 5346 fragility hip fractures, sustained by 4998 patients, during the study. 2533 cases in the pre-HFU period and 2813 in the post-HFU period, with no significant differences in outcome risk factors between the patient cohorts: age, gender, type of fracture, ASA grade and treatment type ($p>0.05$).

TTT, LoS, 30-day and 1-year mortality all showed significant improvements ($p<0.001$) post-HFU introduction when compared to the pre-HFU cohort.

Conclusions: To our knowledge, this is the largest non-registry study on the clinical efficacy of a HFU. In comparison to previous delivery models, the results demonstrate sustained improvements in the timing of surgical treatment, LoS and mortality rates.

Autologous cultured osteoblasts in avascular necrosis of head of the femur.

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Hip Free Papers 3, MR 9, September 26, 2024, 16:00 - 17:30

The incidence of avascular necrosis (AVN) of the head of the femur is on the rise. More so, it is seen in young adults where hip replacement may not be ideal. Though hip replacement increases the quality of life and pain relief, it does not allow everyday active life or sporting activities like a normal adult. Preserving the hip is the need of the hour. Autologous cultured osteoblasts are one of the few modalities available for the management of AVN head of the femur. Our study is on 31 adult hips managed with autologous cultured osteoblasts in the Ficat Arlet stages of I and II. The mean follow-up period was 2 years. Pathologies comprise of sickle cell (8), alcoholic (6), steroid (6) use and idiopathic (11). Though we included only stages I and II, the outcome was inconsistent with the disease stage. The results were promising, with complete pain relief and near-normal activities of daily living (ADL) in 30 % of individuals. Mean postoperative improvement in VAS was 7 +/-3, and Harris Hip Score 30 +/-10 from the preoperative values, which was statistically significant. In 2 patients, disease progression continued and has been planned for total hip arthroplasty. Even at two years though the patient is free of symptoms, the X-ray is satisfactory with a spherical head and lack of collapse but the MRI findings are not normal. Autologous cultured osteoblast implantation has the potential in the management of AVN head of femur averting a hip replacement.

Mid-term results of hip arthroscopy surgery in the treatment of Pipkin type I and II femoral head fracture-dislocations

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Hip Free Papers 3, MR 9, September 26, 2024, 16:00 - 17:30

Introduction: Hip arthroscopy-assisted surgery is the treatment of choice for Pipkin type I and II femoral head fractures. The purpose of this study was to review our mid-term results with posterior fracture-dislocations of the hip. **Methods:** We followed a consecutive series of 20 patients with Pipkin type I and II femoral head fracture dislocations via a hip arthroscopy surgery between 2016 and 2020. The clinical and radiological mid-term results were assessed. **Results:** There were two of Pipkin type II and eighteen of Pipkin type I in this study. The percutaneous screws fixation was performed in thirteen patients and excision in seven. The mean follow-up duration was 72.73 (range 50-84) months. The mean Harris hip score was 98.93 (range 95-100) at the last follow-up visit. One patient had grade I Heterotopic ossification. No one showed early osteoarthritis and avascular necrosis. According to The Matta criteria, there were four (30.7%) anatomical reduction, six (46.1%) imperfect reduction and three (23.0%) poor reduction. **Conclusion:** Managing Pipkin II and I fracture of the femoral head using hip arthroscopy surgery can be a safe, effective, and minimally invasive option.

Tibial Component Tilting Subsidence of The Cementless Unicompartmental Knee Replacement: Moving in Silence?

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Tilting subsidence of the tibial component is a poorly understood complication of the cementless Oxford Unicompartmental Knee Replacement (OUKR). The aim was to determine the incidence, pattern, risk factors, and outcome of tilting. 438 cementless OUKR between 2004-2017 with post-operative and subsequent antero-posterior (AP) and lateral radiographs were identified. The tibias of x-rays pairs were overlapped to measure component angle change. To determine the accuracy, radiographs of 15 patients of radiostereometric analysis (RSA) were measured in the same manner. Based on the RSA data, 3° tilt, the greatest expected error, was chosen as the tilting threshold. Identified cases with tilting were optimally matched based on several factors with a group of control with <2° tilt on a 1:1 ratio. Several radiographic features on the post-operative images were measured on FIJI and compared between the two groups. Nineteen radiographs had tilting subsidence (4.3%). All tilted into valgus (4.4°SD1.7) or tilted posteriorly (3.9°SD1). After the initial tilting there was no further progression. Between the tilted and non-tilted groups, there were no significant differences in patient, implant, and surgical factors, 1 year Oxford Knee Score (45IQR9v45IQR12), revision (10.5%v2.9%). However, tilted cases featured greater degrees of component underhanging, deeper vertical overcut, and more externally rotated femoral component relative to the tibial component. Tilting subsidence is rare (4%) and has a tendency into valgus or posteriorly. If treated conservatively the components stop tilting, with no difference in clinical outcomes from those that did not tilt. A few surgical factors could potentially play a role in tilting.

Efficacy of topical versus intravenous tranexamic acid in bilateral total knee arthroplasty

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Introduction Multiple strategies, used either in isolation or combination, are available to reduce the need for post-operative blood transfusion in joint replacements. Amongst them, the use of tranexamic acid (TXA) has been rising and this study was conducted to compare the efficacy of topical and intravenous TXA in bilateral total knee replacement patients. **Materials and methods** Randomised prospective study with 120 patients (male: female:: 25:95) undergoing bilateral TKA. Patients were divided into two groups A and B after computer randomization, who received intravenous or topical (intra-articular) TXA respectively. **Results** The average haemoglobin loss in intravenous group was 90.2379 g/L as compared to 39.137g/L in topical group ($p < 0.005$). Moreover, there was reduction in blood loss in topical (330.1602 ml) as compared to intravenous group (764.9622 ml). The blood transfusion rate was more for the intravenous group (average 1.73 units) than for the topical group (average 0.75, unit). WOMAC score at 6 weeks in the intravenous group was 12.50, and in the topical group was 7.23 (p value < 0.001). **Conclusion** Topical TXA is better than intravenous TXA for reduction of blood loss, which also reduces the need for blood in bilateral TKA patients.

The Efficacy of Topical Tranexamic Acid at Different Dosages with Tamponade Effect in Unilateral Total Knee Arthroplasty: A Randomized Double-Blinded Study

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The perioperative amount of blood loss among patients who undergo total knee arthroplasty (TKA) surgery is a significant cause of concern. Tranexamic acid administration have been described to reduce blood loss in TKA by various routes. This study aim to assess the topical tranexamic acid (TXA) efficacy in reducing blood loss in unilateral TKA surgery at 3 different doses; 1,2 and 3 grams. This was a prospective, randomized, double-blinded study involving 57 patients, undergoing unilateral TKA surgery. The patients were randomized to receive an intraarticular dose of either 1, 2 or 3 g of TXA in 50 mL of normal saline solution after capsule closure through the drain that was inserted intraarticularly. The tamponade effect was maintained for 4 hours before the drains were unclamped. Pre-operative and 48 hours postoperative haemoglobin (Hb), haematocrit (HCT) level, and drain output at 24 and 48 hours were recorded. The mean difference between preoperative and postoperative Hb and HCT for group 1,2 and 3 g were 1.36g/dL,1.40g/dL,1.23g/dL ($p=0.747$) and 4.15%, 4.26%,4.27% respectively ($p=0.950$). The mean volume of drain output at 48 hours was 336.84 mL,313.68 mL and 263.68 mL respectively ($p=0.195$). This study found no significant difference in dosage in terms of blood loss, however topical TXA exhibited a more promising result than other routes. However topical TXA exhibited a more promising effect with additional tamponade effect than other routes.

Evaluation of outcome following bilateral sequential TKA done at short interval

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Considerable debates exist encompassing different clinical and functional pros and cons of performing same day BTKA. There is no clarity on the optimal time interval for staging the procedure. There are no clear recommendations on the ideal time interval in between 2 surgeries in patients undergoing bilateral sequential TKA. The purpose of this study is to analyze the outcomes of sequential Bilateral Total knee Arthroplasty (BTKA) performed at time interval between 5-14 days.

Materials & Methods:

All patients undergoing sequential TKA within 5-14 days due to associated comorbidities were recruited and prospectively analysed over a span of 2 years. The functional outcomes were assessed after 6 months using the oxford knee society score (OKS), Visual analogue score (VAS), American knee society score (AKSS), and short form 12 (SF12) questionnaire.

Results:

57 patients undergoing sequential TKA were recruited and analysed. The mean age was 61.8(37-82). 22 of them were males and 35 of them were females. The mean BMI was 25.9. The mean interval between each knee TKA was 5.09(2-9 days). The mean Visual Analogue Score was 2.2 ± 1.5 . The mean AKSS was 74.3 ± 14.6 . The mean OKS was 10.7 ± 6.6 . The mean PCS12 was 52.1 ± 7.2 and the mean MCS12 was 60.2 ± 6.8 .

Conclusion:

Sequential BTKA done within a short interval of 5-14 days is safe and gives good functional outcomes. Both surgeries can be performed over a single admission over a short interval between the two knees

Fifteen Year Results of The Cementless Medial Oxford Unicompartmental Knee Replacement

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Introduction: The cementless Oxford Unicompartmental Knee Replacement (OUKR) was introduced to minimise the risk of aseptic loosening. However, there is a concern that the fixation may fail in the long term or that the interference fit of the cementless tibial keel may cause early periprosthetic fractures. The aim is to determine the 15-year survival and functional outcome. **Methods:** 1000 consecutive cementless OUKR were implanted between 2004 and 2017 for the recommended indications of antero-medial osteoarthritis (981) or avascular necrosis (19). All were independently followed-up. Mean follow-up was 10 years (maximum 19 years). Survival was assessed using various endpoints. The primary outcome measure was the Oxford Knee Score (OKS). **Results:** There were 52 (5.2%) re-operations at a mean of 6 years (SD4.3). 43 (4.3%) of these were revisions. The most common causes for revision were lateral compartment arthritis (1.8%), pain (0.9%), bearing dislocation (0.8%) and infection (0.3%). There was one aseptic loosening, which was a femoral component within the first year, and no fractures related to the cementless components. The 15-year survival for revision was 92% (CI 88.8-95.9), for major revision needing revision components was 99% (CI 98.2-100), and for all re-operations was 91% (CI 87.6-94.9). The mean OKS was 42 (SD7.7) at 10 years and 40 (SD8.4) at 15 years. **Conclusion:** Cementless OUKR has excellent long-term functional outcomes and survival when the recommended indications and techniques are used. Long-term fixation was reliably achieved with only a single case (0.1%) of loosening. There were no early periprosthetic fractures.

Comparative Analysis of Medial versus Lateral Unicdylar Knee Replacement in Patients Under 60 years age: A Prospective Study

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Background: Unicdylar knee replacement (UKR) is increasingly utilized for treating isolated compartmental knee arthritis in younger patients. However, the optimal choice between medial and lateral UKR in this demographic remains uncertain.

Methods: Prospective data from a study conducted between 2010 and 2014 were analyzed to compare outcomes of medial versus lateral UKR in patients under 60 years old. The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) and Short Form 36 (SF36) scores were collected preoperatively and postoperatively to assess functional outcomes.

Results: A total of 300 patients (67% male, 33% female) were included in the analysis. Both medial and lateral UKR demonstrated significant improvements in WOMAC and SF36 scores postoperatively ($p > 0.05$). There was no statistically significant difference between the two groups in terms of postoperative WOMAC and SF36 scores.

Conclusion: In patients under 60 years old, medial and lateral UKR procedures yielded comparable improvements in functional outcomes, as assessed by WOMAC and SF36 scores, with no significant difference observed between the two groups. This suggests that both medial and lateral UKR may be effective options for this age group, emphasizing the importance of individualized treatment decisions based on patient-specific factors and surgical considerations.

Unicompartmental Knee Replacement: Overcoming Misconceptions of Patellofemoral Osteoarthritis. A Comprehensive Analysis Of 110 Prostheses With 1-19 Years Follow-Up

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Purpose: To assess clinical and functional outcomes, complications and implant survival in lateral or medial unicompartmental knee arthroplasty (UKA) to treat femorotibial joint osteoarthritis (FTJ-OA), regardless of associated patellofemoral joint osteoarthritis (PFJ-OA) clinical symptoms or radiographic signs. **Methods:** Patients with or without preoperative symptoms or signs of PFJ-OA, treated with medial or lateral UKA with a minimum 1-year follow-up were included. Intraoperatively, knees were subdivided based on their PFJ-OA grade, using Outerbridge classification. Clinical and functional outcomes were analyzed using 2011 Knee Society Score (KSS). PFJ-OA was treated systematically, in a tailored, stepwise fashion according to its severity. Complication and implant survival rates were evaluated. **Results:** 110 UKAs were assessed; 81 (73.6%) were medial UKA. Average follow-up was 6 years (1-19.5). According to the Outerbridge classification for patellofemoral chondropathy, 22 knees (20%) were grade 2, 59 (53.6%) grade 3 and 29 (26.4%) grade 4. There were no significant differences in clinical KSS improvement and flexion contracture between Outerbridge groups ($p=0.07$ and $p=0.37$, respectively). Group 3 showed statistically significant improvement in functional KSS when compared to group 2 ($p=0.04$). In maximum flexion, groups 3 and 4 did significantly better than group 2 ($p=0.04$). Implant survival at 5, 7, 9 and 12 years was 100% (64 prostheses), 97% (31 prostheses), 93% (15 prostheses) and 89% (9 prostheses), respectively. **Conclusions:** Medial or lateral UKA is a safe procedure with low complication rates and favorable results regardless of PFJ-OA. Associated PFJ-OA is not a contraindication for UKA when treated systematically based on its severity.

Medial Unicompartmental Knee Arthroplasty. How To Identify and Prevent Overcorrection in High-Risk Patients Using Long-Leg Films and Valgus Stress Views.

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Objectives: To develop a strategy to detect the postoperative overcorrection risk when implanting a medial UKA using preoperative radiographic data. Additionally, the study aimed to identify intraoperative protective factors that could help prevent overcorrection. **Methods:** Image-assisted robotic medial UKAs between 2022 and 2023 were included. Postoperative overcorrection was defined as a hip-knee-ankle angle (HKA) $\geq 180^\circ$. Receiver Operating Characteristic (ROC) curves were constructed to evaluate the predictive ability of: "preoperative HKA" (preHKA) measured on long-leg films, "preoperative stress HKA" (sHKA) (HKA measured on preoperative valgus stress x-rays), and the "estimated HKA" (eHKA) (HKA + JLCA). The area under the curve (AUC) was calculated to determine the best parameter for predicting the risk of overcorrection. Cut-off points were determined using the Youden method. A subanalysis was performed on patients at risk to determine if any specific cut-off value of residual laxity (sHKA - postoperative HKA) measured intraoperatively could be identified as a protective factor against overcorrection. **Results:** Eight cases of overcorrection over 95 patients were detected (8.4%, 8/95). The best overcorrection predictor was preHKA (AUC=0.96) with a cut-off point of 176° (Se=100%, Sp=86%), followed by eHKA (AUC=0.94) with a cut-off point of 179.7° (Se=100%, Sp=86%), and sHKA (AUC=0.81) with a cut-off point of 181.3° (Se=100%, Sp=85%). In the subgroup of 20 patients with preHKA $\geq 176^\circ$, a residual laxity $>2.6^\circ$ was found to be a protective factor against overcorrection ($p < .04$). **Conclusions:** PreHKA $\geq 176^\circ$ was the best overcorrection predictor. In this population, a residual laxity $>2.6^\circ$ was identified as a protective factor against overcorrection.

Correlation of PROMs With Joint Line Orientation Angle In Fixed-Bearing Medial UKA and TKA – Propensity score matched Comparative Prospective Observational Study

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Background

The joint line orientation angle (JLOA) has been reported to be one of the key factors related to postoperative outcomes after Total knee arthroplasty (TKA). However, no study reports the impact of JLOA on patient-reported outcome measures (PROMs) in fixed-bearing Medial Unicompartmental Knee Arthroplasty (FBM-UKA).

Objectives

The aim of our study is to evaluate the relationship between JLOA and PROMs after FBM-UKA compared to Matched TKA patients.

Methods

This is a single-centre, prospective, STROBE-compliant, propensity score matched (PSM) study approved by the institutional review board. All patients with medial varus osteoarthritis who underwent unilateral FBM-UKA or TKA with normal opposite knee were included. Test group (FBM-UKA) included patients operated with FBM-UKA. Matched TKA was taken as control. Primary outcome was to measure JLOAs by full-leg-length standing coronal radiographs and correlate with PROMs. PROMs were measured in terms of OKS and 2011 KSS PS.

Results

The study included a cohort of 56 patients (56 knees) in FBM-UKA group. Matched cohort included 168 patients in TKA group. At mean follow-up of 36 ± 6.23 months, mean postoperative JLOA in normal and operated knee were $0.3 \pm 2.4^\circ$ and $0.7 \pm 2.6^\circ$, respectively. The JLOA significantly positively correlated with the improvement of the OKS.

Conclusions

The JLOA after FBM-UKA was either horizontal or mildly medially tilted, which was statistically not significant and positively correlated with PROMs. An extreme medial tilt of the JLOA was associated with poorer postoperative outcomes of UKA.

The efficacy and satisfaction of three cryotherapy techniques for early postoperative pain control after TKA. A randomized controlled trial

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Background: Cryotherapy is a nonpharmacologic option that complements drug therapy to achieve the most comprehensive multimodal analgesia. Various techniques include gel cold packs, cryo-cuffs, and mobile cold compressive devices (MCCD). This study aimed to evaluate and compare the efficacy and satisfaction among three cryotherapy devices in patients undergoing TKA.

Methods: This randomized study included 108 patients scheduled for primary TKA. The patients were allocated to three groups for cryotherapy techniques: gel cold pack, cryo-cuff, and MCCD. All devices were applied immediately after surgery and replaced every 8 hours during the hospital stay. The visual analog scale (VAS), morphine consumption, knee range of motion, knee swelling, length of hospital stay, and patient satisfaction were collected.

Results: Postoperative VAS showed a significant difference among the groups at 8 and 72 hours after surgery ($p=0.002$ and 0.026). Post hoc analysis demonstrated that patients in the MCCD group had lower pain scores than the cryo-cuff group ($p<0.001$). However, cryo-cuff reduced knee swelling significantly compared to gel cold pack and MCCD at postoperative 72 hours ($p=0.01$ and <0.001). The satisfaction survey demonstrated a total satisfaction score of 86.8, 82.8, and 89.1 with gel cold pack, cryo-cuff and MCCD.

Conclusion: Cryotherapy is an adjunct to postoperative pain control after TKA at the surgical site. MCCD exhibits exceptional effectiveness in pain reduction in the early postoperative phase. On the other hand, knee swelling is well minimized by the cryo-cuff. However, any cryotherapy technique provides similar efficacy, and patients could use any cryotherapy method with their preferred device.

Bone resection planning for medial UKA using stress views is efficient. Protocol validation using an image-based robotic system.

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Knee Free Papers 3, MR 11, September 26, 2024, 16:00 - 17:30

Objectives: The objective of this study was to describe a planning method for medial UKA implantation using preoperative stress radiographs to measure the thickness of tibial and femoral bone resections, and to validate it with an image-based robotic surgery system data. **Methods:** 76 patients who underwent image-based robotic medial UKA were included. Preoperative anteroposterior valgus stress knee radiographs were used to simulate UKA implantation based on Cartier's angle and aimed at restoring the joint line. Measured gap was 14mm (8mm for minimal tibial component and polyethylene insert + 4mm for femoral component + 2mm for safety laxity). Bone resections were measured in preoperative valgus stress radiographs and compared with the robotic system intraoperative bone resection data. **Results:** The mean planned radiographic tibial resection was 4.3 ± 0.4 [2.9-5.8], while the mean robotic resection was 4.2 ± 0.5 [2.7-5.8]. There was a strong correlation between these two values ($P < 0.001$). The mean planned radiographic femoral bone resection was $2.7 \text{ mm} \pm 0.7$ [1-4.5], while the mean robotic resection was 2.5 ± 0.9 [1-5]. There was a strong correlation between these two values ($P < 0.001$). Intra- and inter-observer reliability were strong ($P < 0.001$ and $P < 0.001$, respectively). **Conclusions:** This study describes and validates a simple and reproducible preoperative planning method to determine femoral and tibial bone resection for medial UKA implantation. It represents a very valuable contribution to the understanding of UKA principles, which can serve to extend its indications, and increase reproducibility of the surgical technique.

Is the Ponseti Method effective in treating myelodysplastic clubfoot?

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Paediatrics Free Papers 1, MR 13, September 26, 2024, 16:00 - 17:30

Introduction: Ponseti Method is the gold standard for treatment of idiopathic clubfoot. Recently indications were expanded to arthrogrypotic and myelodysplastic feet. The aim of this study is to compare the use of this method in idiopathic clubfeet and clubfeet associated with myelodysplasia. **Methods:** We retrospectively reviewed the medical records of patients treated between 2001 and 2023. The sample was paired 1 for myelodysplastic to 3 idiopathics, in terms of laterality, gender and age of beginning treatment (< or = 2 years or >2 years). A total of 48 patients (81 feet) with myelodysplasia and 467 (819 feet) with idiopathic treated with the method were evaluated in terms of outcome, number of casts, relapses, and the need for secondary procedures. **Results:** The average age at the beginning of treatment was 2.3 years (SD 2.68 years) for myelodysplasia and 1.9y (SD 2.14y) for idiopathic (p=0,0001). The follow-up was bigger in idiopathic (5.1 x 3.9 years – p=0,006). There was no statistic difference between initial Pirani Score (4,9 idiopathic x 5,1 myelodysplasia), number of casts (3.2 x 3.5) and relapse (36% vs 33%). Tenotomy (84% idiopathics vs 68% myelodysplastic) and transposition of the tibialis anterior (21% vs 10%) were required significantly more in idiopathic patients than in myelodysplastic patients. There was no need for posteromedial release, just in one child. **Conclusion:** The Ponseti Method is a safe and reproducible treatment even in patients with myelodysplasia. It is an option without the need for extensive approaches.

Surgical treatment of unicameral bone cyst in children using endoscopic technique

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Paediatrics Free Papers 1, MR 13, September 26, 2024, 16:00 - 17:30

Objectives: To compare the outcomes of unicameral bone cysts (treatment using the endoscopic assistance and standard approach) . **Methods:** A retrospective analysis of data from 55 patients was conducted. All patients received surgery via standard approach (n = 23; mean age 9.9 years; CI = 95%; SD = 4.9) and endoscopic assistance (n = 32; mean age 11.7 years; CI = 95%; SD = 3.6). Cryotherapy was used: 1 group n = 13(56.5%), 2 group n = 15 (46.9%). Bicalcium phosphate was used: 1 group n = 19(82.6%), 2 group n = 26 (81.3 %); an allograft was used: 1 group n = 4 (17.4 %), 2 group n = 6 (18.7 %). Follow-up was 1.5-10 years. **Results:** The duration of hospitalization was: 1 group 7.6 days (CI = 95%, SD = 1.7), 2 group 6.9 days (CI = 95%, SD = 2.1); $p > 0.05$. The relapses were: 1 group n = 9 (39.1%), 2 group n = 5 (15.6%) ($p = 0.0640$). No statistically significant differences in the frequency of relapses were found when using or not using intraoperative cryotreatment ($p = 0.7585$); did not have a statistically significant effect on the recurrence rate and the type of graft used ($p = 0.6702$). All patients are satisfied with treatment. There were no fractures. 14 reoperations for recurrent cysts were performed with a positive outcome. **Conclusions:** The methods of the surgery have no effect on the outcome of the treatment; and depend of the surgeon's and the patient's preferences.

Pediatric Spinal Deformity Correction: Robotic Assistance in Pedicle Screw Placement.

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Paediatrics Free Papers 1, MR 13, September 26, 2024, 16:00 - 17:30

Introduction: Addressing paediatric spinal deformity poses challenges due to intricate 3D anatomy and alterations in pedicle morphology across all planes. Intraoperative computed tomography (CT)-guided robotic navigation systems have demonstrated success in achieving accurate pedicle screw placement. **Methods:** Twelve patients with diverse paediatric spinal deformities underwent robotic-assisted deformity correction, posterior spinal instrumentation, and fusion using the "scan and plan" workflow. A Schanz pin bone mount, placed either in the posterior superior iliac spine or vertebral pedicle, aided the procedure. O-arm time, Robot time, and mean radiation exposure were recorded. Post-operative O-arm scans assessed pedicle breach, with all procedures conducted under neuromonitoring.

Results Instrumentation ranged from the most cranial vertebra (T2) to the most caudal (L4). On average, most patients required two sets of O-arm scans. The mean O-arm time was 8.4 minutes, robot registration time averaged 7.5 minutes, and the mean time per screw was 2.5 minutes. The mean radiation dose to the patient was 41.1 mGy, with no instances of intraoperative neuromonitoring signal loss.

Conclusion: Robotic-assisted spine deformity correction mitigates the risk of pedicle breach, enabling precise drilling of trajectories. The navigable burr further facilitates safe execution of 3-column vertebral column osteotomies.

Effect of lengthening speed and lesion on lower limb lengthening and deformity correction in children with Ollier's disease

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Paediatrics Free Papers 1, MR 13, September 26, 2024, 16:00 - 17:30

Introduction: Osteotomy and limb lengthening with external fixation can correct severe lower limb deformity in children, which was caused by Ollier's disease(OD). There may be lesions in the osteotomy performed part (OP), and the external fixator inserted part(EP). This study evaluated:(1) new bone formation speed, (2) how many intact sides of the lengthened segments are necessary to provide enough stability, and (3) whether lesions influence the lengthening results.

Methods: Group OD comprised 11 lower limb lengthenings, and Group Control(normal lengthened bone) comprised 29 lengthenings. Two groups were compared with the number of intact sides of the lengthened segments, angular correction(AC), and lengthening length(LL), lengthening speed. In Group OD, the lengthening results were compared in lesion and non-lesion at OP/EP subgroups.

Results: Full correction of the lower deformity and length were achieved in all cases. The mean AC(14.3°-vs.-5.9°) and distraction index(DI, 0.99mm/day-vs.-0.80 mm/day) were significantly larger, while the lengthening gap(LG, 6.3days-vs.-7.2days), bone healing index(BHI, 30.0 days/cm-vs.-41.2days/cm), and external fixation index(EFI, 41.9days/cm-vs.-56.3days/cm) were all significantly shorter in Group OD than in Group Control(P<0.05). There was no significant difference in the incidence of complications. In Group OD, there was no significant difference in lengthening results(AC, DI, BHI, EFI) between Group-intralesional(9cases/9cases) and Group-extralesional(2cases/2cases), Group-intact cortex(4cases/2 cases) and Group-incomplete cortex(5cases/7cases, 2cases with only 2/1cortical surface intact) at OP/EP.

Conclusion: In children with OD, full restoration of the lower limb deformities could be achieved, even when performed intralesionally and incomplete cortex at OP/EP, and new bone formation accelerated throughout the lengthening period.

Treatment of relapse valgus deformity in fibular hemimelia with hemiepiphysiodesis

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Paediatrics Free Papers 1, MR 13, September 26, 2024, 16:00 - 17:30

Introduction: Valgus knee has a recurrent characteristic in patients with fibular hemimelia. Treatment may vary from osteotomy to gradual correction with guided growth. Recurrent valgus knee treatment was analyzed in fibular hemimelia patients with hemiepiphysiodesis in comparison to idiopathic cases. **Methods:** Sixteen consecutive patients with fibular hemimelia treated with hemiepiphysiodesis (57 physis) were compared to 21 physis of idiopathic cases, in terms of magnitude, speed and time of correction. Behavior of the operated and adjacent physis were also studied and recurrence characteristics. **Results:** Correction of valgus deformity was successfully achieved in all cases of femoral and tibial hemiepiphysiodesis. In the fibular hemimelia group, children 4 years and younger had a more correction than older ones (11° vs 6.9°) and greater speed (1° vs 0.6°), with statistical significance, while time for correction was similar among these groups (11.6 mo vs 12.3 mo). Femoral distal physis corrected faster than proximal tibial physis (10.8 mo vs 16.8 mo), with statistical significance. Thirty-three physis (57.9%) were isolated and 24 (42.1%) were tibia and femur simultaneously. We found no statistical difference between the two groups regarding time for correction, magnitude, or speed. Relapse was observed in 49 physis (86%) of the fibular hemimelia patients and undergone new surgeries. Relapse occurred after 2 years of the first procedure. **Conclusion:** Recurrent valgus deformity in fibular hemimelia can be successfully treated with single or multiple hemiepiphysiodesis with tension band plate in skeletally immature patients in an effective and gradual manner without risk to the physis.

Three cases of fibro-dysplasia ossificans progressive with extra long-term follow-up.

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Fibrodysplasia ossificans progressiva (FOP) is an ultra-rare and severely disabling genetic disorder. The worldwide prevalence is approximately 1 per 2 million. Heterozygous mutations in ACVR1/ALK2 gene exist in all sporadic and familial cases of FOP. The primary aim of this study is to describe the clinic and management of three children suffering from FOP and followed for nineteen, twenty-three and forty years, respectively. Secondary aim is to provide clinical advice on how to diagnose the condition with special reference to the great toes malformation and give current best therapeutic approaches, including controversial issue of surgery. The three cases characterized with malformed great toes initially followed by progressive loss of mobility for a period from nineteen to forty years. Two of three patients presented here had surgical intervention according to specific indication. Additional attention is given to the natural history of the great toe malformation and stepwise decrease of patients' mobility status. Conventional radiology indicates the diagnosis and RNA/DNA test confirm it. Conclusion: Short and valgus deformity of the great toe combined with progressive heterotopic ossifications in the soft tissue is "almost" pathognomonic for FOP, but the RNA/DNA testing of the ACVR1 gene is strongly recommended to confirm diagnosis. Long-term natural history of the great toe malformation shows influence on mobility status in patients with FOP. Maintaining of the best possible mobility status is of utmost important goal of conservative supporting treatment and even in selected cases surgical intervention. Prevention of any trauma, of soft tissue including intramuscular injection is recommended.

Therapeutic Effect of Intramedullary Reaming and Nailing for Long Bones Lengthening in Children with Ollier Disease and Maffucci Syndrome on Enchondromas: Retrospective Serie

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Introduction: Ollier disease (OD) and Maffucci's syndrome are rare diseases that produce leg length discrepancy and malalignment of long bones. In this case series, we propose our experience in motorized lengthening nail technique in such clinical scenarios. **Methods:** between 2014 and 2029, we reviewed retrospectively, in four different reference centers, patients with OD and Maffucci's syndrome with leg length discrepancy and had implantable lengthening nails with a minimum follow-up period of 24 months. We noted lengthening rate and target, clinical tolerance for lengthening, and complications. We measured bone healing index (BHI) and evaluated all patients' EQ-5D-Y functional and visual analog scores (VAS). We also analyzed the regenerate zone and the lengthened long bone to assess the evolution of the pre-existing enchondromas on all the radiographs obtained. **Results:** 10 limb segments underwent lengthening with the nailing technique, eight in the femur and two in the tibias. The mean age was 13.3 years (11-16). The mean follow-up time was 53.8 months (26-108). The mean correction amount for the femur and tibia was, respectively, 6.44cm (4-8) over a mean duration of 76.8 days (53-100) and 3.75cm over 44 days (38-50). We achieved the lengthening goal. The mean VAS score was 6.63 /15 (5-8), and the mean EQ-5D-Y was 81/100 (70-95). The reamed areas showed improvement in the cortical and medullary appearance of the bone, with the healing of enchondromas in eight segments out of ten. We had no mechanical complications. **Conclusion:** The motorized intramedullary lengthening nail is a safe and effective technique.

Is it possible to have a proximal femoral Re-Epiphysiolysis after fixation with screws in situ? – 4-year retrospective analysis.

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Paediatrics Free Papers 1, MR 13, September 26, 2024, 16:00 - 17:30

Aim:

The main objective of this study was to analyze the hypothesis of the occurrence of new epiphyseal slippage after in situ fixation in a 4-year retrospective study.

Materials and Methods:

A retrospective study was carried out that included 29 patients diagnosed with SCFE who were treated surgically with cannulated screw, minimum follow-up of 6 months. The screw-joint ration (SJR) was established, which was calculated as the distance from the tip of the screw to the femoral head in relation to the length of the screw. The neck-screw ratio (NSR) was also established, which was calculated as the distance between the joint and the physis divided by the length of the screw.

Results:

The 29 patients had a mean age of 12.1 year at the time of surgery and a mean follow-up of 1.16 years. The average SJR increased from 9.5 mm to 11.4 mm. The average NSR increased from 22.94mm to 34.2mm. In one case, there was a decrease in SJR and NSR.. In one of the operated cases, new epiphyseal slippage occurred 1 year after the initial surgery.

Discussion/Conclusion:

In the case where there was no growth, avascular necrosis of the femoral head occurred. This analysis demonstrates that there is the possibility of new epiphyseal slippage after in situ fixation, probably associated with the fact that in most patients there is persistent growth even after surgical fixation. The SJR and NSR may be useful in predicting this rare complication of SCFE.

Bow Legs & Blount's Disease - Mind-boggling Deformities and How to Tackle Them

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Paediatrics Free Papers 1, MR 13, September 26, 2024, 16:00 - 17:30

Introduction: Bow legs and Blount's disease is a multi-level and multi-planar deformity that affects the pediatric population leading to varus alignment of the lower extremities. The purpose was to assess the correction of deformity in patients with Bow Legs & Blount's disease using Ilizarov technique. These complex deformities can be corrected by corrective osteotomy with the use of Ilizarov external fixation which is a well-established treatment. **Materials & Methods:** From 2020 to 2023 a retrospective analysis of 60 consecutive patients (male 36, female 24 and mean age 7) with surgically corrected bow legs and Blount's disease using Ilizarov technique with tibial and fibular osteotomies was identified. Patient charts and radiographs at three different time points (pre-operative, fixator removal, and follow-up) were reviewed. With these deformities being multi-planar, it is not always possible to obtain a lateral radiograph of the femur and proximal tibia in the same view. Patients had frontal plane analyses consisting of mechanical axis deviation (MAD), tibial-femoral angle (TFA), medial proximal tibial angle (MPTA), and posterior proximal tibial angle (PPTA) measured. The total Ilizarov fixation time, total operative time, and post-operative complications were recorded. **Results:** The duration of Ilizarov fixation was 130 days on average. The deformity correction was achieved with a proper alignment in all the cases. **Conclusion:** Bow Legs & Blount's Disease can be corrected simultaneously by Ilizarov fixation with minimum complications. There were no recurrent deformities in our cases.

Efficacy of modified triple innominate osteotomy in the treatment of hip displacement in cerebral palsy children

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Paediatrics Free Papers 1, MR 13, September 26, 2024, 16:00 - 17:30

Objective: Pelvic osteotomies were used to treat hip displacement in Cerebral Palsy (CP) patients previously, but few studies about triple innominate osteotomy were seen. This study was to evaluate the efficacy of our extraperiosteal pelvic osteotomy (modified triple innominate osteotomy, MTIO) in the treatment of CP hip disorders. **Methods:** 28 hips in 23 CP patients were retrospectively reviewed. Pain was presented in 8 hips. All hips were treated with MITO and combined proximal femoral varus derotational osteotomy (VDRO). The median age at surgery was 7.7 (6.9, 8.9) years. The median follow-up time was 18 (13, 24) months. Clinical evaluation included hip mobility and pain. Radiographic parameters included acetabular index (AI), migration percentage (MP) and acetabular offset (AO). **Results:** Pain was released in 7 hips (87.5%), and hip mobility of 27 hips (96.4%) was preserved. Postoperative AI 1.0° (-3.3°, 11.8°) was statically different from the preoperative AI 29.4° (26.3°, 38.0°). Postoperative MP 0% (0%, 0%) was statically different from the preoperative MP 50.5% (38.2%, 75.8%). Postoperative AO 69.8 (66.0, 76.0) mm was statically different from the preoperative AO 72.3 (69.1, 81.1) mm. The follow-up MP 0% (0%, 10.0%) wasn't statically different from postoperative MP. No avascular necrosis of femoral head and redislocation were observed. There were 2 hips (7%) with nonunion in the iliac arcuate line. There was residual pain and stiffness in 1 hip postoperatively. **Conclusion:** MTIO combined VDRO could effectively address acetabular deformity and hip displacement in CP children. Longer following is needed to investigate this procedure.

Thumb carpometacarpal joint denervation: District General Hospital Clinical Audit on Service Transformation and Patient Outcomes Assessment

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Hand & Wrist Free Papers 2, MR 6, September 26, 2024, 16:00 - 17:30

Introduction: Thumb carpometacarpal (CMC) osteoarthritis (OA) is a prevalent condition causing significant pain and functional impairment. This study evaluates the efficacy and feasibility of thumb CMC joint denervation as a targeted therapy for CMC OA patients, in a local district general hospital (London, UK). **Inclusion Criteria:** (1) Clinical and radiological evidence confirming CMC OA (2) Satisfactory thumb posture (3) Exclusion of hypermobile patients due to unsuitability for procedure (4) Absence or minimal subluxation of CMC joint. **Methods:** A retrospective cohort study was conducted involving 12 patients who underwent CMC joint denervation between June 2017 and October 2021. Data on clinical outcomes were collected through telephone interviews at one-year post-operation and at present-day. **Results:** 12 patients, three were excluded due to advanced dementia. The remaining cohort, predominantly male (M:F ratio 8:1), exhibited CMC arthritis ranging from Eaton-Littler stages 2-4, with a mean age of 58 years. Significant improvements observed in pain scores, decreasing from 85.5 preoperatively to 21.1 at one-year post-operation and 24.4 at present day. Functional Index of Hand Osteoarthritis (FIHOA) scores also improved from 18.19 preoperatively to 7.39 at present day. Postoperative complications included; paraesthesia reported by three patients, and hypoesthesia around base of the thumb reported by two patients. **Conclusion:** Thumb CMC joint denervation provides short to medium-term benefits, including pain reduction and improved function. However, careful patient selection and consideration of potential complications are essential. This study contributes valuable insights into the treatment strategies for CMC OA patients, offering enhanced patient care in local DGH.

Use of hemiamate graft in the reconstruction of fracture-dislocation of the proximal interphalangeal joint, about a clinical case

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Hand & Wrist Free Papers 2, MR 6, September 26, 2024, 16:00 - 17:30

Objectives:The treatment of dorsal fractures and dislocations of the proximal interphalangeal joint (PIP) presents a challenge,with the essential need to restore adequate joint congruence to achieve stability and prevent late complications such as recurrent dorsal subluxation and degenerative arthritis of the PIP joint.We describe hemiamate graft arthroplasty as an appropriate method for treatment.**Materials and Methods:**An 18-year-old male suffered trauma to the 4th finger of his right hand 3 months ago.Clinically,he presented with pain,swelling and dorsal subluxation of the PIP joint, with flexion less than 40° and an extension deficit of 20°.Radiographically, a dorsal fracture-dislocation of the base of the middle phalanx (Eaton type IIIB, comminuted) was observed.Surgical intervention was planned, and hemiamate graft arthroplasty was performed.**Results:** Intraoperative stability was confirmed, with a normal range of motion of the proximal interphalangeal joint.After 1 year of follow-up, radiographs showed joint congruence, the patient was pain-free, with a flexion range greater than 90° and an extension deficit less than 10°.Quantitatively, the patient had a QuickDASH score of 6.8.There was a reported mild sensory alteration associated with the graft harvest site.**Discussion and Conclusion:**The stability of the PIP joint and the involvement of the base of the phalanx determine the need for surgery.Considering the repair capacity and the extent of the articular lesion, there are several surgical options: reinsertion of the volar plate, osteosynthesis, or defect reconstruction.Hemiamate graft arthroplasty stands out as a reliable technique in scenarios of irreconstructible fractures,offering mechanical stability, anatomical reconstruction of the articular surface, and minimal morbidity at the donor site.

Scaphoid Capitate arthrodesis and Lunate removal for late Kienbock disease

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Hand & Wrist Free Papers 2, MR 6, September 26, 2024, 16:00 - 17:30

Introduction: Treatment of advanced Kienbock disease has been accomplished by many methods. Most claim approximate results. Methods were selected according to the available facilities and patient preferences. Removal of the dead fragmented Lunate and, Scaphoid- Capitate arthrodesis is an option for minimal demands. **Purpose:** To assess the results of Lunate bone excision and Scaphoid-Capitate arthrodesis in relieving the symptoms and, improvement of the functions of the hand. **Methods:** A prospective study of treating 28 patients (18 males, 10 females), mean age was 35 (22-48), with stage III and IV Kienbock disease by excision of the Lunat and fusion of the Scaphoid and Capitate bones with temporary fixation by K Wiers, with or without bone graft. The mean follow-up was twelve months (8-20). Assessment of the outcomes included pain, range of motion of the wrist, grip strength, complications, and Mayo Clinic hand score. **Results:** Scaphoid-Capitate union gained in all 28 candidates, pain decreased, and power of grip improved, however, range of motion decreased. Mayo's hand score improved. No significant carpal collapse was noticed through the short follow-up. No significant complications were noticed. **Conclusion:** Lunate removal and scaphoid-capitate fusion is a useful method of treatment of advanced Kienbock disease with low-available facilities. **Type of study/ level of evidence:** Therapeutic IV
Keywords: Arthrodesis of scaphoid & capitate, Kienbock disease, Lunate excision.

Randomized control trial comparing mini screws versus mini plate fixation of oblique and spiral metacarpal shaft fractures

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Hand & Wrist Free Papers 2, MR 6, September 26, 2024, 16:00 - 17:30

Background: Metacarpal fractures are the most common hand injuries. The choice of the method of treatment depends on different clinical and radiological factors. The goal of the treatment of metacarpal shaft fractures is restoration of the hand function. **Aim:** To compare the results of fixation of oblique and spiral metacarpal shaft fractures with mini plate versus mini screws. **Methodology:** Randomized control trial for 28 patients with oblique and spiral metacarpal shaft fractures who had open reduction and internal fixation with mini plate or mini screws over a period of 18 months with 6 months follow-up afterwards. **Results:** The first group operated with the mini plate while the second group operated with mini screws, both groups were 14 patients. The mini plate group patients had better outcome regarding the time to return to work if compared to the mini screws group, 2 mean values of TAM and DASH scores were higher in the mini plate group however this was only in the first follow up, the function was the same at the second and third follow-ups for both groups. Regarding the fracture union, all the patients in both groups ended up healing. However, there was one case with delayed union in mini plate group and two cases in the mini screws group. **Conclusion:** Both groups operated with mini plate or screws had the same functional outcomes after the end of the follow-up.

Arthroscopic Assisted STT Arthrodesis for Kienböck's Disease

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Hand & Wrist Free Papers 2, MR 6, September 26, 2024, 16:00 - 17:30

Introduction: Kienböck's disease is characterized by avascular necrosis of the lunate that may proceed to sclerosis and collapse of the bone, wrist instability, and ultimately, end-stage arthrosis. Although considered a rare clinical entity, the disease often

requires surgical treatment due to symptoms of progressive wrist pain and loss of function.

Methods: October 2022-october 2023, We performed arthroscopic STT arthrodesis for two patients with Kienböck's disease (IIIB) . Arthroscopic debridement for the wrist and STT joint, then we performed arthrodesis the STT joint with Kirschner wire fixation. X-ray films were taken at 1 month, 2 months and 3 months after operation. The Kirschner wire was pulled out after bone fusion of STT joint. The Wrist Mayo score was recorded preoperatively and 6 months postoperatively.

Results: Both patients were followed up after operation. 2 months after operation, the STT joint had fused and the Kirschner wire was pulled out. Six months after surgery, the wrist Mayo scores were 60 and 55, respectively. The average score was 57.5.

Conclusion: Arthroscopic-assisted STT Arthrodesis is a common surgical method used to treat Kienböck's disease. It involves removing the cartilage between the scaphoid-trapezium - trapezoid, and then fixing these two bones together to distribute pressure evenly in the wrist joint, reducing pain and discomfort for the patient.

Radiologic and Clinical Evaluation of Trapeziectomy with Suture-Button Suspensionplasty for Basilar Thumb Arthritis: A Comprehensive Medium-Long Term Study

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Hand & Wrist Free Papers 2, MR 6, September 26, 2024, 16:00 - 17:30

Trapeziectomy and suture-button suspensionplasty (TSBS) has emerged as a crucial technique for treating end-stage trapeziometacarpal (TMC) osteoarthritis, providing an alternative to conventional methods using autologous graft. Medium-long term results of this procedure are, however, still controversial in the literature. This study presents a comprehensive clinical and radiological review of TSBS treatment in grade III-IV Eaton TMC osteoarthritis. A total of 34 patients, predominantly female (86%), underwent this procedure in the period of 2015-2022, in a central care hospital. All cases were operated by the Institution's Hand and Wrist team. The minimum follow-up period was 12 months. Clinical and radiological evaluation was performed at follow-up consults. Patient-reported outcomes revealed high satisfaction rates, with 62% reporting a Visual Analog Scale (VAS) score less than 3, and a Quick Disabilities of the Arm, Shoulder, and Hand (Quick-DASH) score at the final assessment was 21. Average Kapandji score was 9. The average time to return to previous activities was 2.4 months. Additionally, 56% of patients reported being "Satisfied/Extremely Satisfied" with the procedure. Complication rates and radiological measurements such as first metacarpal subsidence were also recorded and presented. This study demonstrates overall good functional results associated with TSBS. It highlights the efficacy and also the shortcomings of the treatment with TSBS, providing valuable insights for the treatment of Basilar Thumb Arthritis.

Arthroscopic assisted radial styloidectomy with reduction and association of the scapholunate (RASL) procedure and radio-scaphoid joint tendon interposition in an early stage scapholunate advanced collapse (SLAC) patient: a case report

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Objective: This case report aims to present the outcomes of a minimal invasive arthroscopic assisted radial styloidectomy combined with a reduction and association of the scapholunate (RASL) procedure and radio-scaphoid joint tendon interposition in the management of early-stage scapholunate advanced collapse (SLAC) of the wrist. **Methods:** A 63-year-old female diagnosed with stage I SLAC wrist resulted from the neglected scapholunate ligament injury. She underwent wrist arthroscopic assisted radial styloidectomy and RASL procedure with radio-scaphoid joint tendon interposition for stabilization of the scapholunate joint and the osteoarthritis wrist symptoms relief. The pain score according to the visual analog scale (VAS), wrist range of motion, grip strength, radiographic outcomes and functional outcomes according to the Modified Mayo Wrist Score (MMWS) were evaluated preoperatively and postoperatively during the follow-up period. **Results:** The patient reported significant improvement in VAS and grip strength postoperatively. Follow-up image demonstrated maintained scapholunate alignment. The patient achieved good to excellent results according to the MMWS. **Conclusion:** At a minimum of a year follow up, the patient with stage I SLAC wrist who underwent arthroscopic assisted radial styloidectomy and RASL procedure with radio-scaphoid joint tendon interposition resumed her previous activities and had satisfactory results as well. Further studies with larger sample sizes are warranted to evaluate the long-term efficacy and outcomes of this technique.

Some surgical solutions for basilar thumb arthritis – a series of cases

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Introduction: Osteoarthritis of the first carpometacarpal joint is one of the most common arthritis of the hand. Its prevalence increases notably in women after the age of 40 years and can compromise quality of life and work capacity. Patients with basilar thumb arthritis who present with refractory symptoms despite nonoperative measures may benefit from surgical treatment. **Results:** Twelve patients were operated between 2017 and 2024 in the same institution and by the same surgeon (the low sample being related to the loss of a few patients due to the SARS-CoV-2 pandemic). All of the patients were women with a median age of 67.1 years and had Eaton-Littler stage III and IV disease. Four patients were submitted to trapeziectomy and ligament reconstruction with flexor carpi radialis interposition, two to trapeziometacarpal joint replacement and six to trapeziectomy and suture-button suspensionplasty. Overall, the outcomes are good as the patients recovered quickly, with a mean QuickDASH of 15.72. However, in the group of suspensionplasty, one patient had hardware intolerance, for which a reoperation was necessary to remove the implant, having afterwards residual pain and discreet loss of grip strength. In the group of ligament interposition, two patients had residual pain with movement. **Discussion:** There is a multitude of surgical procedures to treat basilar thumb arthritis that offer similar functional results depending on patient's age, functional demands, arthrosis stage and surgeon experience, each one with its associated complications. Suture-button suspensionplasty is a newer technique that offers good results with less subsidence of the first ray.

First results with the new PIP prosthesis Haptic

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Limited availability of cement-free artificial joint replacements for the PIP hand joint poses a challenge commercially. The HAPTic prosthesis by Implantcast addresses this need exclusively, comprising a titanium-nitrite hardened proximal component with a bioactive surface and a hydrocarbon compound socket component for the middle phalanx. In our establishment, 10 such prostheses were implanted between January and April 2023, with promising initial results following a proposed surgical technique.

Initial follow-up, including a 6-month prospective study on 10 patients (average age: 61.6 years; 4 men, 6 women), demonstrated encouraging outcomes. Parameters such as range of motion (ROM), Visual Analog Scale (VAS) scores, Disability of the Arm, Shoulder, and Hand (DASH) scores, pinch grip strength, and collateral ligament stability were assessed. Mobility improved from 67° to 83°, VAS scores decreased from 5.9 to 3 points, and DASH scores improved from 34 to 18 points. Although pinch grip strength decreased slightly, all joints remained stable, with complete osteointegration observed radiologically after 6 months.

Close clinical and radiological monitoring is planned for further evaluation, with one-year results expected to be presented at the SICOT congress in Belgrade. In conclusion, the HAPTic prosthesis shows promise as a reliable solution for PIP joint replacement and we will continue to use this implant.

Peripheral Nerve Schwannoma of the Upper Limb:

A Retrospective Study of a Rare Tumor of the Upper Extremities

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Introduction: Despite being the most frequent tumor of the peripheral nerve, schwannoma (neurilemmoma) is frequently misdiagnosed or delayed in diagnosis due to its low incidence, slow growth, and ambiguous symptoms. The study's objective is to present a series of upper limb schwannomas, some of which have extremely uncommon occurrences.

Materials and methods:

A retrospective single center study was carried out on 18 patients with an isolated peripheral schwannoma operated between 2018 and 2024. Clinical examination and imaging tests were used to make the diagnosis; no prior biopsy was ever carried out. The decision to undergo surgery was made in response to symptoms or neurological deficit. The diagnosis of schwannoma was verified in each case. Histological and immunohistochemical analyses were used to confirm the diagnosis of schwannoma in each case.

Results:

Under a surgical microscope, a full tumor enucleation was carried out for each patient. Two years following surgery, there was no sign of recurrence. Patient satisfaction was high, and every case had full socio-professional integration. The average preoperative tumor volume measured on MRI was 2.54 cm. The most common preoperative symptoms were paresthesia (83%) and pseudo-Tinel sign (74%) and hypoesthesia (24%) were observed. On the other hand, preoperative neurological motor manifestations remained exceptional (6 %). The rates of new post-operative motor deficits, paresthesias, and sensory deficits were nil.

Conclusion:

Surgical resection may be a safe procedure for peripheral nerve schwannoma treatment with satisfying functional results and an acceptable risk of nerve injury.

WALANT anesthesia technique in management of "spaghetti wrist" injury

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Introduction:

Spaghetti wrist is described as lacerations between the distal wrist (Zone V) that involve at least three transected structures, including at least one nerve and often an artery. These are devastating injuries leading to lifelong disability and psychological, social and economic consequences. Recently WALANT technique has been advocated as a safe and effective anesthetic alternative for various hand surgery procedures.

Patients and methods:

A retrospective study was performed prospectively on thirty patients with spaghetti wrist injury who under-went primary repair using the WALANT technique.

Patient satisfaction with the anesthesia technique was rated from 1 to 5 points: 5 points, very satisfied; 4 points, satisfied; 3 points, neutral; 2 points, dissatisfied; and 1 point, very dissatisfied.

Results:

Mean waiting time from admission to operation was 40 minutes. Mean operating time was 110 minutes (range 90–180). During the operation, the mean VAS pain rating was 1.5 points (range 0-3). All patients were either very satisfied (n: 18) or satisfied (n: 12) with the overall treatment and the anesthesia technique.

Discussion:

The results of our study showed that spaghetti wrist lacerations could be safely managed with the WALANT technique. According to the present findings, WALANT is a safe and effective technique for major arterial anastomosis ; local anesthesia associated to adrenaline don't aggravate ischemia or increase the risk of thrombosis.

Conclusion:

WALANT can be used with success in spaghetti wrist injury. It could be the standard anesthesia technique almost for all types of hand and microsurgical procedures in the future.

Walant surgery: experience from Algeria, about 409 cases

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Introduction: Wide-awake, local anesthesia, no tourniquet (WALANT) is a technique that removes the requirement for operations to be performed with a tourniquet, general or regional anesthesia. We share our experience of Walant surgery. **Methods :** Between May, 2021 and Octobe, 2023, 409 (293 females and 116 males) patients with a mean age of 38 years (18–78 years) were operated under walant surgery. In addition to classic upper limb pathologies such as carpal tunnel syndrome, trigger finger and synovial cyst of the wrist, walant has also been practiced in traumatology (fractures, wounds) and tumors surgery. A standard walant protocol was applied for all patients. The quantity injected depended on the pathology. **Results :** Walant surgery procedures were correlated with high overall satisfaction about surgery and the postoperative care. 86% of patients were very comfortable during the surgical porcedure and 87% of them had a score of 0 or 1 on the hamilton anxiety rating scale. No distal ischemia or necrosis have been reported. Minimal cardiac manifestations : palpitations were reported in 4 patients, probably related to the use of adrenaline. **Discussion :** Many surgeries can be performed safely and painlessly under walant. The patient does not have to fast and can come to hospital unaccompanied and back home immediately afer surgery, permitting to free up hospital places. **Conclusion :** WALANT has been developed to improve utilisation of operating theatre time and inpatient stay with a high overall satisfaction about surgery and the postoperative care for patients.

Supramalleolar Osteotomy for ankle arthritis treatment; Single Tertiary Referral Centre 10 year overview comparing standard and custom made Implant

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Introduction: The aim was to demonstrate that supramalleolar osteotomy (SMO) is a valuable treatment method in eccentric ankle arthritis since it is one of the most under-utilised procedures. We retrospectively analysed the outcome of it performed over last 10-year period. We also compared the results of newly introduced computer-assisted custom-made implants with standard implant. **Material and Methods:** Data was analysed from 46 patients over a period of 10 years of which 40 were by standard implant and 6 by computer assisted custom implant. 29 varus, 17 valgus deformity. The mean age was 57 (26-79 y/o), male: female ratio was 27:19. Mean follow-up was 15.25 months; the computer-assisted 24 months. TAS, TTS and TT angels were measured pre and post-operatively. Fixation done using a standard plate or custom made implant with or without bone graft. All surgeries were performed by a single surgeon. MOXFQ and AOFAS questionnaires were completed pre and post-operatively. All followed similar rehabilitation programme. **Results:** Average radiological healing time was 24.3 weeks. MOXFQ score improved from 55.17 to 25.11 and AOFAS from 20.16 to 56.21. Complications were 2 non-unions, 1 stress fracture. 8 patients required fusion/replacement after 3 years. The computer-assisted cases gave improved correction accuracy than standard method. **Conclusion:** Our results are comparable to similar studies. Being a joint preserving technique, Supra Malleolar Osteotomy should be considered in addition to fusion and replacement, either as an interim or definitive procedure especially with the development of computer assisted technologies. Patient selection criteria is essential for a good outcome.

Radiotherapy, an Effective Treatment for Plantar Fibromatosis

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Background: Plantar fibromatosis is a hyperproliferative disease of the superficial plantar aponeurosis resulting in painful nodules and cords. Operative management, indicated in severe disease has high rates of recurrence and wound complications. Research investigating the effectiveness of radiotherapy for plantar fibromatosis is limited however demonstrates positive outcomes with minimal side effects. **Aims:** To determine the efficacy of radiotherapy in providing symptom relief from plantar fibromatosis. **Methods:** A retrospective review of patients with plantar fibromatosis treated with radiotherapy was conducted at the Cairns Base Hospital in Queensland, Australia. Patient demographics, treatment details and post operative satisfaction results were analysed. **Results:** The study included 53 patients. The mean age was 56.8 years and 60% of patients were female. Patients received 30Gr radiation over two treatment cycles 8-12 apart. Complete resolution occurred in 10 cases (18.9%), improvement in 25 cases (47.2%), initial improvement followed by recurrence in 10 cases (18.9%) and no improvement in seven cases (13.2%). Radiotherapy-related complications only occurred in eight cases (15.1%) the most common being fatigue experienced by three patients. **Conclusion:** This study demonstrated promising outcomes for patients with plantar fibromatosis treated with radiotherapy with rates of symptom improvement or complete resolution over 60% and low rates of complications.

The presence of an avulsion fracture of the 1st tarso-metatarsal joint in Lisfranc injuries is a useful adjunct in the detection of 1st TMTJ instability.

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Purpose

Ligamentous Lisfranc injuries often feature avulsion fractures of the tarso-metatarsal joint (TMTJ). A proportion of these will have a congruent TMTJ joint on initial imaging, and many of these patients will have an unstable TMTJ which requires stabilisation.

The study aimed to determine the relationship between the presence of an avulsion fracture on initial imaging and instability of the first TMTJ.

Methods

A prospective database of Lisfranc fracture-dislocations was analysed for the presence of TMTJ1 avulsion fractures. All cases were managed with examination under anaesthesia (EUA) and stress testing under image intensification prior to fixation or arthrodesis surgery. The rate of TMTJ1 instability and the sensitivity and specificity of the presence of an avulsion in detecting instability was determined.

Results

153 patients with a mean age of 35.2 years were included. 99 injuries (64.7%) had an avulsion fracture of TMTJ1 on imaging. Of these, 76.7% had a congruent joint on XR or CT scan. 91.9% of patients with an avulsion fracture demonstrated instability on EUA stress testing. Amongst the 54 cases showing no avulsion, 23 (42.6%) were unstable on EUA. The presence of an avulsion had a sensitivity of 79.8% and a specificity of 79.5% in the detection of instability.

Conclusion

The presence of an avulsion fracture of TMTJ1 is highly suggestive of instability. This finding should lower the threshold to perform EUA stress testing. A high proportion of Lisfranc injuries without avulsion fractures have TMTJ1 instability, and therefore the absence of this finding does not reliably exclude instability.

Radiological Characteristics and Injury Mechanism of Logsplitter Injury

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Background: Logsplitter Injury is a high-energy ankle fracture dislocation, a detailed understanding of the radiological features and pathological changes can further guide the treatment. **Methods:** 62 patients with Logsplitter injury were retrospectively analyzed. The characteristics of preoperative X-ray and CT scans were analyzed. The incidence of the different injury types was summarized. According to the Lauge-Hansen classification of ankle fractures, the correlation between Logsplitter injuries and the different mechanisms causing the injuries were analyzed. **Results:** Data are available in this study, 98.4% had open fractures. The fibula injuries included no fracture (1.6%), transverse or short oblique fractures (61.3%), butterfly fragments (25.8%) and comminuted fractures (11.3%). The tibial injuries included compression of lateral articular surfaces (38.7%) and posterior compressions (6.5%). Medial injuries, including medial malleolar fractures, accounted for 87.1%, and deltoid ligament rupture accounted for 12.9%. The injuries to the syndesmosis included simple ligament ruptures (11.3%), Tillaux fractures (8.1%), Volkmann fractures (43.5%), and Tillaux and Volkmann fractures (37.1%). Complete rupture of the lateral collateral ligament was found in 12.9% of cases. According to the Lauge-Hansen classification, 87.1% were pronation-abduction injuries, while 8.1% were pronation and external rotation injuries and 1.6% were supination external rotation injuries. In addition, 3.2% could not be classified. **Conclusion:** According to the current results, some cases may be accompanied by collateral ligament injury. Vertical violence combined with abduction may be the most common injury mechanism; however, in some cases, the mechanism may be a vertical combined external-rotation injury.

Chronic irreducible dislocation of the proximal interphalangeal joint of the fifth toe: a surgical solution

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Traumatic dislocation of interphalangeal toe joint are uncommon, usually managed in an acute phase with closed reduction. Irreducible dislocations occur when plantar plate of the capsular/collateral ligament of the flexor tendon becomes interposed between the joint. The management principles for this injuries has not been well defined with scarce surgical options described in the literature. Open reduction is usually required, since closed reduction is rarely successful, in part due to soft tissue interposition and rigidity.

The authors describe the surgical technique and the 6-month post surgery clinical and radiographic results of a fifty year old patient, presenting with traumatic chronic irreducible dislocation of the proximal interphalangeal joint of the fifth toe submitted to open reduction through a dorsal approach with temporary k-wire fixation and capsular and medial collateral ligament repair, to achieve a neutral stable position of the joint.

Evaluation of Medial Anatomic Structures Following the Application of Calcaneal Screws via Lateral Approach and Determination of the Correct Fluoroscopy Angle for Intraoperative Visualization: A Cadaveric Study

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Calcaneal fractures pose complex surgical challenges due to their intricate anatomy and proximity to vital tissues. This cadaveric study aimed to determine optimal screw lengths, identify high-risk zones, and prescribe an intraoperative fluoroscopic angle for visualizing screws in these areas. Using 20 fresh-frozen cadavers, calcaneus was divided into 7 zones. Initially, partitioned into three regions (Z1,2,3) by two vertical lines —one from the Gissane angle and the other from the posterior facet's terminus— each zone was further divided into upper and lower sections (Z1a,1b, 2a, 2b, 3a, 3b). The topmost region of Zone 2, designated as the subchondral area, is recognised as Zone 4. Subsequent meticulous drilling and screw placement via lateral extensile approach was followed by dissection from the medial aspect to measure distances to vasculature, nerves, and tendons, both from the point of exit and the projection of the screw. The optimal angle for C-arm fluoroscopy visualization post-Harris view was determined as the angle between two K-wires, one inserted into the joint and the other aligned with the risky proximity area axis. Our findings showed that the upper portions of Zones 1 and 2 (Z1a, Z2a) posed the most significant risk ($p=0.0043$). Additionally, hazardous proximities were observed along the sulcus, requiring an additional 32.312 ± 4.002 -degree angulation of the C-arm fluoroscopy following Harris views for adequate intraoperative visualization.

The lesser of two evils: arthrodesis of the Chopart joint or the subtalar joint?

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Introduction: reduced mobility of the tarsal joints leads to osteoarthritis of the ankle joint. In the literature, changes at the level of the Chopard joint and the level of the subtalar joint can lead to osteoarthritis of the ankle joint. But there is no conclusive evidence of which joint arthrodesis has a worse effect on the ankle joint.

Methods: The study included 15 patients (18 feet) who underwent Chopard arthrodesis (Charcot-Marie-Tooth disease, consequences of injuries and others). We assessed the mobility of the tarsal joints in patients after Chopard joint arthrodesis by functional radiographs.

Results: in all patients, the mobility of the subtalar joint was determined by functional radiographs ($p < 0.05$, Brunner-Munzel test).

Conclusion: the degree of the foot dorsiflexion during normal gate increases due to the mechanism of peritalar movement. Peritalar movement occurs primarily in the subtalar joint. Arthrodesis of the subtalar joint completely excludes perital movement and causes overload of the anterior part of the ankle joint. Arthrodesis of the Chopard joint preserves peritalar movement because functionally the Chopard joint becomes at the level of naviculo-cuneiform and cubo-metatarsal joints.

Bunionette minimally invasive surgery (MIS); to fix or not to fix

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Objectives: To present benefits of retention in MIS bunionette surgery potentially without temporary wire fixation. **Material and method:** In the past 12 months 8 MIS bunionette cases have been successfully performed using intensifying imaging guidance via a 5 mm incision, burrs were used and a Kirchnerwire was typically used for temporary fixation. The time for this surgery was in average 15-20 minutes. Taping and dressing was carefully planned for all 6 weeks. **Result:** Follow up was obtained at 6 and 12 weeks with good healing results already at 6 weeks. No infection cases, no neurovascular injury, wounds healed per primam, three cases resulted in earlier wire pull out, however, healed with no consequences. **Conclusion:** The implementation of MIS bunionette with K-wire could be avoided with good planning of dressing and patient compliance, surgical time would reduce as well as image intensifier exposure.

Retrospective analysis of 20-years surgical treatment for Giant Cell Tumor of Bone

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Giant cell tumor of bone (GCTB) is a locally aggressive and rarely metastasizing neoplasm which is mainly treated with surgery. The main issue with the selection of the most appropriate surgical procedure is its high recurrence rate, possible malignant transformation and location near the joints which may lead to significant functional impairment. In this retrospective study, we analyze data from patients with GCTB who were treated in the period 2000-2020 at the University Clinic for Orthopedic Surgery- Skopje. This institution is a tertiary care center and referral center for bone tumors in North Macedonia. The following data of each patient were reviewed: age, sex, location of tumor, type of operative procedure, follow up and recurrence. In the study period, total of 80 patients were treated: 30 males (37,5%), 50 females (62,5%), age: 6-79 (median 35 years). There were total of 108 surgical procedures performed on 80 patients with GCTB. Follow-up 36-144 months (average 84 months), 2 patients lost during follow-up for non-related reasons, 13 patients (16,25%) with 17 local recurrences (21,25%). After the initial surgical treatment, 23 patients required a second surgery. Group of 5 patients were treated with additional surgery. There was no significant association between age, sex, location of GCTB and type of operative procedure with local recurrence. There was a statistically significant association between Campanacci staging of tumor and local recurrence. We hope that our study provides useful insights into the management and prognosis of this challenging tumor.

En bloc resection of huge primary tumors with epidural involvement in the mobile spine using the “Rotation-Reversion” technique: feasibility, safety and mid-term clinical outcome

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Introduction: En bloc resection of spinal tumors provides better local control and survival outcomes than intralesional resection. Safe margins during en bloc resection of primary spinal tumors with epidural involvement are required for improved outcomes. The present study describes a “Rotation-Reversion” technique that has been used for en bloc resection of primary tumors in the mobile spine with epidural involvement, as well as reporting the mid-term clinical outcomes in these patients.

Methods: All patients with primary spine tumors who were treated with the Rotation-Reversion technique at our institution between 2015 and 2023 were evaluated retrospectively. Of the patients identified, those with both extraosseous soft tissue masses and epidural involvement were selected for case review. Clinical and radiological characteristics, pathologic findings, operative procedures, complications, and oncological and functional outcomes of these patients were reviewed.

Results: 23 patients identified with primary spine tumor who underwent en bloc resection using the Rotation-Reversion technique between 2015 and 2023. Median follow-up time was 26.6 months, mean operation time was 679.6 min (range 220–1340 min) and mean blood loss was 5430.4 mL (range 1500–17700 mL), with 14 (60.9%) of the 23 patients experiencing perioperative complications. The negative margin rate was 91.3%, with five patient (21.7%) experiencing local recurrence.

Conclusion: According to the mid-term clinical outcomes, the Rotation-Reversion technique is an effective procedure for the en bloc resection of primary spinal tumors to achieve more reliable and safe surgical margins.

Functional outcomes after scapulectomy for tumors of the shoulder girdle

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Introduction: Tumors of the shoulder girdle and other flat bones have shown worse prognosis than tumors of the extremities. Limb salvage is the treatment of choice in approximately 95% of shoulder girdle tumors in current day practice. Reconstruction of shoulder girdle tumors by various means have not shown to provide any better function than scapulectomy alone in previous studies.

Methodology: 14 patients with benign and malignant tumors of shoulder girdle were included in this study. All patients underwent either a partial or total scapulectomy in a single institution. These patients were reviewed in the follow up period for functional outcomes. All patients were operated in the study period between 2017 and 2022. Functional outcomes were measured in terms of range of motion (adduction, abduction, flexion, extension, internal and external rotation). The Musculoskeletal Tumor Society Score (MSTS) and DASH scores were also done to assess patient reported outcomes. **Results:** The mean age was 23.6 (4-85). 5 patients had a benign tumor of the shoulder girdle and 9 patients had a malignant tumor and underwent scapulectomy. 6 patients had a partial scapulectomy and 8 patients underwent a total scapulectomy. There was a significant difference in movements and patient reported outcome measures (MSTS and DASH scores) ($p < 0.005$) between the partial and total scapulectomy groups. **Conclusion:** Scapulectomy (partial/total) is a good treatment option for tumors of the shoulder girdle and avoids the need for forequarter amputation which has a significantly higher morbidity. Patients with partial scapulectomy had significantly better range of motion and functional outcomes compared to total scapulectomy.

Myofibroblastic sarcoma of bone: clinical features, surgical treatment and therapeutic challenge

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Diagnosis and treatment for myofibroblastic sarcoma of bone are challenge because of its rareness and benign-like appearance. Here, we aimed to review the clinical features, evaluate the clinical outcome and explore gene alterations of this distinct tumor. 22 cases between 2009 and 2020 were included in our study. The average age was 33.9 years old. Tumors' location varies, including 12 in femur, 5 in humerus, 3 in tibia, and 2 in pelvis. Seventeen patients were admitted to our hospital initially (Group 1), and five patients were transferred from other hospitals because of misdiagnosis and recurrence (Group 2). There were 12 patients with IB disease and 10 patients with IIB disease according to Enneking stage system. Two patients were received shoulder disarticulation. The other 20 patients were received local tumor en-block resection following different limb sparing reconstructions. Next generation sequencing was used to detect gene alterations of these tumors. All patients were followed-up with an average of 5 years. Five patients died because of multiple distant metastases and two patients got local tumor recurrence. The one-year and three-year survival were 84.1% and 70.7%, respectively. Overall survival of Group 2 patients was significant worse than that of Group 1 ($P < 0.05$). Rb missense mutation, KIT missense mutation and amplification were found. This disease can be easily misdiagnosed to benign bone tumor such as fibrous dysplasia. Recurrence of this tumor leads to a higher malignancy with multiple distant metastatic potential. Some targetable gene alterations may contribute to developing novel therapy for patients with this disease.

Cemented Endoprosthesis Stems Through Open Physis Alters Growth at the Proximal Tibia and Distal Femur

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Following limb salvage surgery at the knee in children, implantation of stemmed fixation opposite the resected bone can be performed via cementation with preservation of the open physis. Cementation technique can be performed either coating only the surface of the implant (“battered”) or cementing the entire stem. We sought to analyze if growth was disturbed at the site of cemented stem fixation and if type of cementation technique altered growth differently. Patients treated with expandable endoprostheses at the knee following primary bone sarcoma at two tertiary centers were reviewed. Patients were followed from 2003-2024 and included if they underwent surveillance for limb length discrepancy (LLD) until skeletal maturity. Fourteen patients (8 males; 6 females) underwent resection of Osteosarcoma (13) or Ewing’s Sarcoma (1) at the distal femur (11) or proximal tibia (3). Mean age was 9.7 ± 2.0 years. Mean follow-up was 122.2 ± 62.9 months. Mean overall LLD at latest follow-up was 1.7 ± 0.9 cm. Two (14%) patients had growth disturbance > 2 cm at the bone of stem fixation compared to contralateral. Mean growth of the stemmed bone versus contralateral bone was 4.0 ± 1.5 vs 5.2 ± 1.8 cm; $p=0.119$. The impact of “battered” (8) versus fully cemented (6) implants on LLD was comparable (0.4 ± 0.1 cm vs 0.6 ± 0.6 cm; $p=0.36$). Cemented endoprosthesis stems through an open physis disturbed growth incompletely at the proximal tibia and distal femur. Fourteen percent of patients had growth disturbance > 2 cm at sites of fixation. Further larger studies are worthwhile to assess estimated growth disturbance more accurately in these fixation techniques.

Analysis of Midterm Clinical and Functional Outcomes Following Sacrectomy for Primary Malignant Sacral Tumors: A Single Tertiary Care Center Study on Posterior-Only Approach without Reconstruction

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Tumours Free Papers, MR 12, September 26, 2024, 16:00 - 17:30

Introduction: Sacrectomy is a primary intervention for high-grade sarcomas and aggressive benign bone tumors, combined anterior and posterior approach with spinopelvic fixation, contributing to prolonged surgical duration and increased wound complications. We aim to analyze perioperative and functional outcomes following sacrectomy using a posterior-only approach. **Methods:** Between 2018 and 2021, 26 patients underwent sacrectomy for primary malignant tumors. Perioperative outcomes were evaluated during hospitalization, with subsequent assessments conducted at 2 weeks, 6 weeks, 3 months, and every 6 months thereafter. Final functional outcomes were appraised following a minimum follow-up period of 24 months. **Results:** 6 patients underwent total sacrectomy, 14 had high partial sacrectomy preserving the S1 body, and 6 had sacrectomy below S2. The overall final Musculoskeletal Tumor Society (MSTS) score averaged 23 (range: 16 to 28), with 24 patients walking unaided, one using a cane, and one requiring a walker. Prophylactic colostomy was performed in 12 patients due to tumor proximity to the rectum. The average surgery duration was 236 minutes, with a blood loss of 2645 ml. Hemodynamic instability necessitating vasoactive drugs occurred in 8 patients postoperatively. Complications included intraoperative ureter injury 3.8% , sciatic nerve sacrifice 15%, rectum injury 3.8%, and vaginal injury 3.8%, wound complications required repeat debridement in 15% patients. No spinopelvic migration was detected on the final X-ray at 24 months. **Conclusion:** This pilot study suggests that, even without spinopelvic reconstruction, patients undergoing total sacrectomy with a posterior-only approach can achieve good MSTS scores and experience limited perioperative complications.

Osteofibrous dysplasia (OFD), osteofibrous dysplasia-like admantinoma (OFD-AD) and admantinoma (AD), experience on diagnosis, treatment and prognosis - a retrospective series report from single center

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Tumours Free Papers, MR 12, September 26, 2024, 16:00 - 17:30

Objective:

To observe the similarities and differences in clinical manifestations, surgical treatment, and prognosis of OFD, OFD-AD, and AD.

Methods:

A retrospective review was conducted on cases of OFD, OFD-AD, and AD diagnosed in our unit from 2015 to 2022. Imaging and pathology of these three diseases were summarized, as well as the impact of different treatment methods on the prognosis of these three diseases.

Results:

A total of 41 patients were retrospectively included in this study, including 16 cases of OFD (mean age of 10.5 years), 19 cases of OFD-AD (mean age 5.3 years), and 6 cases of AD (mean age 29 years). 30 patients underwent intralesional resection (R2) surgery, and 6 patients underwent complete resection (R0-R1), 5 cases did not accept surgery. After a follow-up of at least 24 months (24-90 months, median 56 months), tumor recurrence or progression occurred in 11 patients (2/16, 12.5% in OFD; 8/19, 42% in OFD-AD; 1/6, 17% in AD). One patient had simultaneous diagnosis of OFD-AD (fibula) and AD (tibia), one patient had OFD-AD recurrence diagnosed as OFD 4 years after surgery, and one patient had OFD recurrence diagnosed as OFD-AD. No patient developed pulmonary metastasis.

Conclusion:

OFD, OFD-AD, and AD share similarities in clinical and imaging manifestations, and show an evolutionary relationship as different stages of the same type of lesion in pathological behavior. They have different peak ages of onset and vary at recurrence risks, therefore, accurate diagnosis and selection of appropriate treatment are crucial for these diseases.

Factors Affecting Local Recurrence in Primary Chondrosarcoma: A Comprehensive Systematic Review

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Tumours Free Papers, MR 12, September 26, 2024, 16:00 - 17:30

The prognosis of patients after local recurrence of primary chondrosarcoma is heterogenous in the literature. The rates of local recurrence vary across grade, location, and surgical margins. We sought to answer: What factors influence local recurrence and prognosis in primary chondrosarcoma? A thorough literature review was conducted using the PubMed database. Included were peer-reviewed studies with at least 10 patients, that reported on local recurrence in the pelvis or long bones. Two independent reviewers screened the studies. Information was collected on tumor characteristics, surgical margins, and survival after local recurrence. Effect size was calculated via random effects model with residual maximum followed by a meta-analysis of proportions. 37 cases with 2,273 patients who received treatment for primary chondrosarcoma were analyzed. The overall summary proportion for local recurrence was 20.86 [95% CI 14.28 – 29.43]. Meta-regression indicated a positive association between presence of metastasis ($p < 0.001$) and grade 3 ($p 0.012$) lesions. Meta-regression revealed negative association between grade 1 lesions ($p < 0.001$), extremity lesions ($p 0.002$). Overall summary proportion of patients with local recurrence and alive with disease was 12.98 [95% CI 9.36 - 17.72] while those who died of disease was 8.95 [95% CI 5.67 - 13.85]. Metastasis and higher grade at diagnosis of chondrosarcoma were associated with local recurrence while extremity lesions were associated with lower local recurrence.

The first-time use of a modular movable prosthesis for the sternal handle in malignant chest tumors

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Tumours Free Papers, MR 12, September 26, 2024, 16:00 - 17:30

Surgical treatment of malignant tumors affecting the flat bones of the chest has always posed numerous challenges for surgeons. While modern imaging techniques, such as CT and MRI, facilitate precise resection planning based on oncological criteria, determining the most suitable approach for reconstructing the resulting defect remains a complex issue. A primary challenge arises from the chest's high mobility and flexibility, along with the need for multiple anchoring points for implant placement to ensure comprehensive and natural chest support. Insufficient support points often lead to implant instability, underscoring the ongoing need to investigate the optimal type for securing rib fragments post-resection. Malignant tumors originating in the sternum as a primary site are exceptionally rare in children, with limited descriptions of corresponding surgical interventions, prompting the development of a novel implant model. The developed prosthesis, tailored based on CT scan findings, not only ensures effective chest stabilization after extensive resection but also preserves mobility at the sternoclavicular joint. A unique experience of the replacement of the sternum handle in 4 patients demonstrates high efficiency in the long term compared to rigid constructs. The study outlines the enduring outcomes of using a prosthesis with a customized form, integrating titanium 3D printing technology and polymer compounds. The application of hybrid fixation methods has successfully delivered strong fixation of the sternum with a physiological amplitude of movements in the upper extremities.

Electrochemotherapy in spine metastasis: a technical report on surgical strategies and results

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Tumours Free Papers, MR 12, September 26, 2024, 16:00 - 17:30

Introduction. Due to prolonged cancer survival, bone metastases became an important issue in oncological patients, and the most frequent cause of death and disability. Bone is involved in a later stage of cancer disease and the spine is the most frequent site. The aim of the treatment of metastases remains control of disease and provide a satisfactory quality of life. Electrochemotherapy has emerged as an innovative method for treating various primary and metastatic solid tumors, showing promising outcomes in terms of inducing tumor tissue necrosis and alleviating symptoms. We reported our initial experience in treatment of spine metastasis with electrochemotherapy.

Methods. A systematic literature review was performed according to PRISMA guidelines. Operative protocol: treatment planning for electrode positioning and electrical pulse parameters was prepared for 6 needle electrodes. Open surgery with laminectomy was performed to introduce the electrodes. The patients were treated according to the established Electrochemotherapy Protocol with Bleomycin

Results. Three patients with Mixofibrosarcoma, squamous cell carcinoma and leiomyosarcoma spinal metastases were treated. Neither serious electrochemotherapy-related adverse events, nor bleomycin toxicity were reported. Pain relief and neurological improvement have been observed in all cases.

Conclusions. According to literature review and our experience, ECT enhances the toxicity of bleomycin administrated systematically changing the permeability of membrane cells. This effect is possible due to modify membrane cells polarization induced by electric pulses carried near to the tumor site with several techniques. ECT does not modify overall survival of oncologic patients but is an alternative option of treatment of spine metastases.

Maintained Articular Preservation with Subchondral Bone Grafting after Curettage of Giant Cell Tumor

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Tumours Free Papers, MR 12, September 26, 2024, 16:00 - 17:30

Giant cell tumors (GCTs) are managed surgically with the goal of sparing of the articular surface. These methods include polymethylmethacrylate (PMMA) cementation, and metal fixation with or without subchondral bone grafting, among others. Due to the difference in elastic modulus between PMMA and bone, there may be an increased risk of fracture or osteoarthritis in patients treated with PMMA. We sought to answer the following: Will the use of subchondral bone grafting affect rates of local recurrence, arthritis, and fracture? Medical records of patients treated for GCT from 1996-2022 at single institution were retrospectively reviewed. The patients were divided into two cohorts: PMMA only and bone graft. Information on adjuvant treatment, additional fixation, follow-up, presence of a fracture, arthritis, and local recurrence was obtained. The Musculoskeletal Tumor Society score percent was calculated. Fifty-two patients were analyzed. The mean age was 33 years with a mean follow-up of 91 months. Patients treated with PMMA alone had a 9x greater risk of arthritis and a 5x greater risk of fracture. The risk of recurrence following intervention was not statistically different. Functional analysis utilizing MSTs scores demonstrated an average of 92% with no statistically significant differences between the cohorts. The use of bone graft at the subchondral region in conjunction with PMMA was associated with reduced risk of later fracture or development of osteoarthritis at follow-up. This technique may delay or decreased the need for later revision surgery due to non-oncologic complications. No difference was seen in risk of local recurrence between groups.

Role of Micro RNAs (miR-22, miR-301a and miR-584) in ChemoResistance of Osteosarcoma- an observational study(MICRO)

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Tumours Free Papers, MR 12, September 26, 2024, 16:00 - 17:30

Introduction: Osteosarcoma is one of the most common primary malignant sarcomas of musculo-skeletal system, with bimodal age distribution. This study aims to investigate the possible role of microRNAs in the development of chemoresistance for their potential diagnostic and therapeutic applications. **Study Design:** Tumor tissue were taken from 13 cases of Osteosarcoma at time of diagnostic biopsy and tumor resection, after course of three cycles of neoadjuvant chemotherapy comprising of two drugs i.e., Doxorubicin and Cisplatin. Tumor tissue were stored in RNAlater solution at -80°C which were later processed and analysed for targeted MicroRNAs by RT-qPCR and patients were divided into two groups of good and poor responders to chemotherapy based upon necrosis seen in tumor resection specimen on histopathological analysis. **Results:** Based upon histopathological analysis, patients were divided into good and poor responders. A difference in fold change between good and poor responders was seen such that miR-22-3p is increased in poor responders while miR-301a-3p and miR-584 are increased in good responders. On analysing the fold change between two groups of good and poor responders by Unpaired t-test for all 3 microRNAs individually, the results were not significant as p values were more than 0.05. **Conclusion:** Our study had unique study design where tumor tissues were retrieved in vivo, from the human body during the course of NACT and then tested for microRNA expression. Relative expression of mir-584 revealed upregulation of miR-584 in good responders as compared to poor responders (fold change 5.9813) which is in concurrence with previous literature.

Phosphaturic mesenchymal tumor: diagnostics and radical surgical treatment

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Tumours Free Papers, MR 12, September 26, 2024, 16:00 - 17:30

Introduction. Phosphaturic mesenchymal tumor causes severe hypophosphatemic osteomalacia poorly corrected by pharmacotherapy. Extreme rarity of the disease, latent course, and difficulties in diagnostic process leads to delayed diagnosis, severe deformities and fractures. Often observed infiltrative growth of the tumor creates high tendency of recurrence.

Aim. To carry out diagnostics and radical surgical treatment of patients with phosphaturic mesenchymal tumor.

Patients and Methods. 17 patients presented with severe hypophosphatemia, high serum alkaline phosphate level, osteopenia, fractures and bone deformities (8 females, 9 male, aged 32-65 years). Duration of clinical manifestations ranged 2-13 years. SPECT-CT with 99mTc-tectrotide or 68Ga-DOTATATE-PET/CT revealed tumors located in soft tissues in 10 cases, and in bones in 7 cases. MRI clarified its relation to anatomical structures. Follow-up ranged 1-5 years.

Results. In 16 cases en-block resection was performed, in 1 case excochleation was carried out. Twice there was R2 resection with removal of residual tumor with surrounding tissue, in both cases we observed no recurrence, all other cases were R0. In 2 cases morphological study showed absence of tumor, these patients developed metastases. Patient who went through excochleation had a local recurrence within 5 years. Normal serum phosphate level was noticed on the 5th day after surgery except for 2 with metastases, alkaline phosphatase – 2-3 months later. In 6 months radiographs showed significant increase in bone density, restoration of normal bone architectonics and consolidation of fractures.

Conclusion. Application of advanced imaging modalities and radical surgery provides good results in treatment of patients with phosphaturic mesenchymal tumor.

Meeting high expectations: ACL reconstruction using an all-inside technique with internal brace reinforcement

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SOTA Sport Medicine, Road Traffic & War Injuries Free Papers, MR 7, September 26, 2024, 16:00 - 18:00

Introduction. Reestablishing optimal knee muscle strength following anterior cruciate ligament (ACL) reconstruction poses a persistent challenge. In certain cases, a patient's desire to resume pre-injury levels of activity prompts individuals to push their body over the boundaries of their rehabilitation regimen. This may compromise surgical outcomes, underscoring the imperative for additional support in our technique to meet the high expectations of our patients.

Materials and Methods. We performed a retrospective descriptive study of all ACL reconstructions performed in professional or highly demanding recreational athletes using the all-inside technique with internal brace reinforcement between January 2020 and March 2024 at our department.

Excluded were the patients in whom revision ACL surgery was performed. Patient-reported outcomes were evaluated with the International Knee Documentation Committee (IKDC) Score.

Results. Fifty patients (50 knees) were included in the study. All patients were between 19 and 24 years of age. Two patients required medial meniscus repair due to concomitant injury. There were no complications in the form of chronic synovitis or prolonged joint effusion. Up to this point, there was only one instance of chronic infection. The mean IKDC score was 76.9 at three months and 91.9 at six months follow-up.

Conclusion. The internal brace serves as a safeguard for reconstructed ACL, especially in the early stage assuring it matures properly without excessive stretching, thereby providing an additional degree of protection from graft failure. This reduces the time between surgery and the commencement of strengthening exercises, offering an additional assurance of success for high-demanding patients.

Essex Lopresti fracture-dislocation: An entity to be aware of

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SOTA Sport Medicine, Road Traffic & War Injuries Free Papers, MR 7, September 26, 2024, 16:00 - 18:00

Introduction: Essex Lopresti fracture-dislocation is a rare and often overlooked injury of the upper limb. While this condition is typically seen in older patients, it can also occur in younger individuals, posing a diagnostic and therapeutic challenge.

Methods: We report the case of a 36-year-old man, with no prior medical history, who sustained a closed forearm trauma following a traffic accident. He complained of right wrist pain and total functional impairment of the limb. X-rays revealed a proximal radius fracture with distal radio-ulnar dislocation suggestive of Essex Lopresti fracture-dislocation.

Results: The patient underwent surgery with reduction of the radio-ulnar dislocation and fixation with k wires followed by radial head resection. Follow-up included pin removal at 6 weeks postoperatively. At the last follow-up, 18 months postoperatively, the patient exhibited near-complete mobility of the elbow and wrist with a good Quick-DASH score.

Discussion: Essex Lopresti fracture-dislocation in young patients is rare but can have significant functional consequences. Surgical management may involve radial head resection with the risk of minimal to substantial loss of elbow mobility or radial head prosthesis offering good mobility at the expense of prosthetic implant lifespan, especially in young individuals.

Conclusion: Appropriate diagnosis and surgical management of Essex Lopresti fracture-dislocation optimize functional outcomes and reduce the risk of medium- to long-term complications, particularly in the young population with high functional demands.

Comparison of efficacy of meniscus allograft transplantation between discoid lateral meniscus and nondiscoid lateral meniscus

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SOTA Sport Medicine, Road Traffic & War Injuries Free Papers, MR 7, September 26, 2024, 16:00 - 18:00

Objective: To compare the clinical results of meniscus allograft transplantation (MAT) between patients with discoid lateral meniscus (DLM) and patients with nondiscoid lateral meniscus (NDLM). **Methods:** A total of 106 patients with lateral discoid meniscus or lateral nondiscoid meniscus who underwent unilateral MAT from January 2005 to December 2017 were included in the study. All patients were followed up for at least two years. Clinical outcomes were assessed by range of motion (ROM), visual analogue scale (VAS), International Knee Documentation Committee (IKDC) subjective score, Lysholm score and Tegner activity score. Magnetic resonance imaging was performed to evaluate the condition of plant and cartilage. **Results:** There was no significant difference in ROM, IKDC, Lysholm, Tegner and VAS before the operation between DLM group and NDLM group ($P > 0.05$). Except for ROM, the above clinical evaluation indexes were improved at final follow-up visit compared with that before operation in both groups ($P < 0.05$). According to functional scores of final follow-up visit, IKDC, Lysholm and VAS were better in NDLM group than in DLM group, while Tegner score had no statistically significant difference between the two groups. The mean meniscal extrusion was (3.653 ± 0.705) mm in DLM group and (3.074 ± 0.850) mm in NDLM group, and the difference was not statistically significant ($P > 0.05$). **Conclusions:** MAT is effective in treatment of both serious lateral discoid meniscus injury and lateral nondiscoid meniscus injury with knee function significantly improved, however, the efficacy of the latter is better than that of the former. The reason is still required further study and the difference should be informed to the patients.

Place of BTB Graft In Reconstruction of the ACL

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SOTA Sport Medicine, Road Traffic & War Injuries Free Papers, MR 7, September 26, 2024, 16:00 - 18:00

Patellar tendon autografts are used daily by orthopaedic surgeons for anterior cruciate ligament (ACL) reconstruction because they are known to give good and easily reproducible clinical results. The first surgeon who used part of ligamentum patellae for ACL replacement was Langworthy, in 1930s. Thirty years later Jones and Brückner refined the initial technique by using the central third of the patellar tendon. Following Franke's publication, BTB became one of the most popular graft sources and gained further popularity both in Europe and United States, through the work of Eriksson and Clancy.

The use of bone-patellar tendon-bone graft (BTB) is associated with 80-90% excellent clinical results, and some complications of the knee extensor mechanism, including BTB harvest site morbidity and disruption of the knee extensor apparatus. Bone-patellar tendon-bone graft it ensures strong initial graft fixation using interference screws, allowing direct bone-bone healing and consecutive bony integration at the fixation points of the reconstruction. The main disadvantage of BTB is a graft-tunnel mismatch due to a smaller cross-section area and incomplete filling of the tunnel compared to hamstring tendon graft.

This paper presents fundamental principles of knee arthroscopy. The paper discusses the techniques of this surgical procedure, its advantages and potential complications. This is all presented using own material covering the period between 1993 and 2024 and including over 6,000 ACL reconstructions.

Targeting zonulin alleviates bone mass loss by reducing intestinal leakage and inflammation to inhibit Th17 differentiation

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Research Free Papers, Main Congress Hall ABC, September 27, 2024, 08:00 - 10:00

Objective: The expression of zonulin is increased in osteoporosis patients, but its mechanisms in bone loss has not been revealed.

Methods: Blood and clinical information were collected from postmenopausal women. Immunohistochemistry was used to detect the expression of zonulin and intestinal epithelial barrier permeability in OVX mice. Flow cytometry was used to detect the intestinal lamina propria lymphocytes CD4+T cells. Intestinal organoid culture was used to clarify the effect of zonulin on intestinal barrier.

Results: Zonulin was significantly increased in postmenopausal osteoporosis patients (88.5 ± 25.4 ng/ml vs 22.4 ± 13.76 ng/ml, $p < 0.01$). Bone mineral density was inversely proportional to serum zonulin level in postmenopausal women. In vivo experiments, OVX mice had significantly increased serum zonulin (78.2 ± 19.8 ng/ml), intestinal epithelial ZO-1 and claudin-5 expression, and inflammatory factors TNF- α and IL-17A expression. The expression of TNF- α and IL-17A in intestinal epithelium was up-regulated. Flow cytometry analysis showed that the proportion of Th17 cells in lamina propria lymphocytes was significantly increased ($7.5 \pm 0.51\%$ vs $2.3 \pm 0.53\%$, $p < 0.05$). Transcriptome analysis showed that zonulin accelerated the expression of MHCII in intestinal epithelial cells through IL-17 signaling pathway. After targeting zonulin with larazotide acetate, 16s rRNA analysis showed that intestinal flora dysbiosis was restored, and flow cytometry showed that Th17 cell differentiation in intestinal lamina propria lymphocytes was decreased.

Conclusion: Zonulin aggravated intestinal inflammation and induced IL-17 differentiation by regulating the intestinal barrier to promote translocation of gut microbiota through paracellular pathways and targeting MHCII expression in intestinal epithelial cells through IL-17 signaling pathway, leading to osteoporosis.

Journal Metrics of the top-ranked Orthopaedic, Medical, and Surgical journals – A cross-sectional, comparative study.

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Research Free Papers, Main Congress Hall ABC, September 27, 2024, 08:00 - 10:00

Research metrics are crucial in assessing the impact and performance of the published literature. Journal Level Metrics (JLM) such as the h-index of the analysed journals, total citations, total documents, citable documents, references and external citations per document are considered crucial indicators of journals. We hypothesize that journals in medicine receive more citations than those in surgical journals like orthopedic surgery and hence have better JLM. This study aims to assess and compare the JLM of Medical and Surgical journals between two time zones, 2017-2019 vs. 2020-2022, i.e., pre and post-COVID-19 pandemic period. A cross-sectional bibliometric analysis of the top-ranked Orthopaedic, Medical, and Surgical journals was undertaken based on traditional JLM, using the SCImago database from 2017 to 2022. Our analysis focused on identifying trends in the h-index of the analysed journals, total citations, total documents, citable documents, references and external citations per document. Overall, Medical journals were found to have higher JLM than Surgical and Orthopaedic journals. The h-index of Surgical journals, Medical journals and Orthopaedic journals were comparable between the two periods (pre and -post-COVID-19 pandemic); Total Cites (3 years), total documents (2017), total documents (3 years), total references, and citable documents (3 years) of Surgical journals, Medical journals and Orthopaedic journals were significantly higher in the period 2020-2022. Medical journals have higher JLM than Surgical and Orthopaedic journals. Journal of Bone and Joint Surgery (Am), Annals of Surgery and Diabetes Care were the most published journals in Orthopaedics, General Surgery and Medicine-related topics respectively.

Idiopathic short stature and scoliosis in children treated with growth hormone

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Research Free Papers, Main Congress Hall ABC, September 27, 2024, 08:00 - 10:00

Introduction: The prevalence of scoliosis is not known in patients with idiopathic short stature, and the impact of treatment with recombinant human growth hormone on those with scoliosis remains controversial.

Methods: We investigated the prevalence of scoliosis radiologically in children with idiopathic short stature, and the impact of treatment with growth hormone in a cross-sectional and retrospective cohort study. A total of 2,053 children with idiopathic short stature and 4,106 age- and sex-matched (1:2) children without short stature with available whole-spine radiographs were enrolled in the cross-sectional study.

Results: In the cross-sectional study, there was an unexpectedly higher prevalence of scoliosis (33.1% (681/2,053) vs 8.52% (350/4,106)) in children with idiopathic short stature compared with controls (odds ratio 3.722; $p < 0.001$), although most cases were mild. In the longitudinal study, children with idiopathic short stature had a higher risk of the development and progression of scoliosis than the controls. Among children with idiopathic short stature without scoliosis at baseline, treatment with growth hormone significantly increased the risk of developing scoliosis ($p = 0.015$) and the need for bracing ($p < 0.001$). Among those with idiopathic short stature and scoliosis at baseline, treatment with growth hormone did not increase the risk of progression of the scoliosis, the need for bracing, or surgery. The impact of treatment with growth hormone on scoliosis in children with idiopathic short stature was considered controllable. However, physicians should pay close attention to the assessment of spinal curves in these children.

The Challenges and Strategies for Cleaning the Routinely Collected Data for Total Hip Replacements (THR) and Total Knee Replacements (TKR) in the Kingdom of Fife

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Research Free Papers, Main Congress Hall ABC, September 27, 2024, 08:00 - 10:00

Background: Knee and hip replacement have revolutionised orthopaedic medicine by providing individuals with surgeries resulting in pain relief, improved mobility and a better quality of life. NHS Fife has been collecting routine data since 1998 on patient demographics, surgeries, recovery time, follow-ups, and outcomes, including complications. **Methods:** The available data was cleaned using the programming language R. Two main elements of the data-cleaning procedure were eliminating fields with blank variables and grouping variables with similar meanings, providing a standardisation for the collected information. Subsequently, cleaned dataset files were merged to produce consolidated datasets for hip and knee replacements. **Results:** Data was available for 14,524 replacement surgeries performed in NHS Fife between 1998 and 2021. The original dataset consisted of several unique-structured files covering distinct periods and representing primary surgery, follow-ups, infections, mortality, and revision for THR and TKR. The rigorous data merging resulted in converting this complex collection of files into one single streamlined file for each of the five categories and each type of surgery (THR and TKR). **Discussion:** This work reports the challenges and strategies to clean the routinely collected data. The structured files can now be linked to studies across different datasets like social care, prescriptions, and primary care. It can also develop future machine learning models to assess the risk of multiple primary and revision hip and knee replacements and their outcomes.

Autologous Platelet-Rich Plasma in the Delayed Union of Long Bone Fractures.

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Research Free Papers, Main Congress Hall ABC, September 27, 2024, 08:00 - 10:00

Fractures of long bones unite without any complication except for 2% to 10% which may lead to delayed or non-union. Management of delayed union of fractures poses a great challenge for orthopaedic surgeons. Tissue Engineering and Regenerative Medicine (TERM) has revolutionized the era to use of biological substances to treat diseases minimally invasively. Various studies and research have proved the osteogenic activity of PRP. The growth factors present in the PRP induce the locally available resilient progenitor or stem cells and convert the atrophic environment into a trophic environment. We investigated the safety and efficacy of autologous platelet-rich plasma (PRP) injection in the delayed union of long bone fractures. A total of 25 cases of delayed union of long bone fractures were augmented with 3 doses of autologous PRP in every 3 weekly intervals and were followed up for 12 months. All the cases were documented with pre- and post-procedural and 12th-month visual analogue score (VAS) and Warden's score. Of 25 cases, 21 (84.00%) showed good fracture union with adequate callus formation by 10 – 12 weeks. No complications were noted due to autologous PRP application other than poor outcomes in 3 cases (2 cases of non-union, 1 case of implant failure, and 1 case of lost in follow-up). The mean pre-procedural VAS and Warden's score at final follow-up showed statistically significant results ($p < 0.05$). Autologous injection of PRP is safe and effective in managing delayed union of long bone fractures.

Planned vs Executed Trajectories: An Analysis of 1000 Robotically Placed Pedicle Screws

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Research Free Papers, Main Congress Hall ABC, September 27, 2024, 08:00 - 10:00

Introduction: Robotic assistance has enhanced safety margins in spine surgery by enabling precise placement of pedicle screws, even for surgeons with limited experience in spine procedures. We attempted to determine if surgeon experience and the manner of insertion may influence the difference in planned and executed trajectories of pedicle screws inserted with robotic assistance.

Methods: We analyzed 1000 pedicle screws in 200 patients by comparing postoperative CT scans with preoperative planned trajectories. Two independent observers, blinded to the study, overlapped the two images, measuring the angle between the planned and executed trajectories. Differences in these angles were assessed based on surgeon experience and the method of screw insertion (robotic arm guide vs. guidewires) using the student's t-test.

Results: The overall accuracy of screw placement was 99.8%. No significant differences were observed in the angles between the planned and executed trajectories when comparing the experience of the surgeon or the method of insertion.

Conclusion: Surgeon experience and the manner of insertion did not significantly impact the accuracy of pedicle screw placement, affirming the robot's utility in enhancing patient safety.

Early Experience of Robotic Thoracolumbar Instrumentation Surgeries: A Comprehensive Analysis of the First 200 Consecutive Cases

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Introduction: Pedicle screws, crucial for stabilizing the spine, are commonly used despite challenges posed by conditions such as osteoporosis. Robotic assistance has emerged as a valuable tool, significantly enhancing safety through precise pedicle screw placement. **Methods:** A total of 200 patients underwent diverse thoracic and lumbar instrumentation and fusion procedures. All surgeries, conducted by a single surgeon, involved intraoperative robotic registration and image acquisition. A comparative analysis between the initial 100 cases and the subsequent 100 cases was performed using the unpaired t-test or Mann Whitney's U-test, evaluating time per screw, robot time, blood loss, and radiation dose. Additionally, the impact of case order on these variables was explored by comparing cases starting before and after 2 pm.

Results: The study cohort, with a mean age of 47.4 ± 18.6 years and 49.5% female, exhibited no significant differences in time per screw, robot time, or blood loss between the first and second 100 patients. Furthermore, no significant distinctions were observed in blood loss, robot time, and time per screw between cases starting before and after 2 pm. These findings indicate that case order minimally affects the efficiency of robotic spine surgery. **Conclusion:** The analysis of operational variables, including time per screw, robot time, and blood loss, suggests that the learning curve for robotic spine surgery is not significant. Importantly, case order does not substantially impact operative efficiency. This study underscores the potential for a swift adoption of robotic assistance in spinal surgeries with enhanced precision and safety.

Targeting mutant TP53 as a potential therapeutic strategy for the treatment of osteosarcoma

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Mutant TP53 is a promising therapeutic target in cancers. Considering the current challenges facing the clinical treatment of cancer, as well as the urgent need to identify novel therapeutic targets in osteosarcomas, we aimed to evaluate the clinical significance of mutant TP53 in osteosarcoma patients and to explore the therapeutic effect of targeting mutant TP53 in osteosarcomas. We performed a meta-analysis to investigate the relationship between mutant TP53 and the overall survival of patients with osteosarcoma. A CRISPR-Cas9 system and a TP53 inhibitor, NSC59984, were also used to specifically knock-out and inhibit mutant TP53 in the human osteosarcoma cell lines, KHOS and KHOSR2. The meta-analysis demonstrated that mutations in the TP53 gene could be used to predict a poor 2-year survival in osteosarcoma patients. We also demonstrated that the expression of mutant TP53 in human osteosarcoma cell lines can be efficiently knocked-out using CRISPR-Cas9, and this decreased the proliferation, migration, and tumor formation activity of these osteosarcoma cells. Moreover, drug sensitivity to doxorubicin was increased in these TP53 knock-out osteosarcoma cells. NSC59984 also showed similar anti-tumor effects as CRISPR-Cas9 targeted TP53 in the osteosarcoma cells in vitro. We have also demonstrated that the knock-out or inhibition of mutant TP53 decreased the expression of the oncogene IGF-1R, anti-apoptotic proteins Bcl-2 and Survivin in osteosarcoma cells. Collectively, these results suggest that mutant TP53 is a promising therapeutic target in osteosarcomas. Therefore, further studies exploring novel strategies to target mutant TP53 may help improve the treatment outcomes of osteosarcoma patients in the clinic.

A comprehensive decision support system for clinical risk management in traumatology and orthopedics

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Research Free Papers, Main Congress Hall ABC, September 27, 2024, 08:00 - 10:00

Clinical risk management (CRM) is the basis for systemic improvement of healthcare quality and safety. CRM system is a set of tools, structures, processes and measures aimed at identifying, analyzing and responding to clinical risks. In the era of digital transformation in healthcare software tools are becoming most compelling, but their effectiveness depends on ability to solve changeable and highly specialized tasks. An electronic CRM system for trauma and orthopedic hospitals (CRM-TO) have been developed, containing four decision support modules: "Hospital adverse events (HAEs) prevention", "Diagnostics and treatment", "HAE prevention audit" and "Incident analysis". The first two modules are based on the automation of clinical guidelines related to the HAE prevention, diagnosis and treatment. The third module is designed to control the HAE prevention by an auditor (clinical expert); the fourth module supports the standardized incident analysis including criteria for HAE in-hospital nature, its severity, contributing factors and proposals for HAE risk mitigation. The CRM-TO system is supplemented by a set of HAE triggers, the prevention and incident registries, as well as quality and safety indicators, that are calculated automatically on the basis of registry data and statistical parameters. The CRM-TO system is built as a user-configurable information system, in which interfaces, security policy rules, the database structure and business logic can be configured. Flexible system configuration and graphic user interface allow the clinical experts to compose complex knowledge artifacts directly working with the system, without engagement of knowledge engineers.

Signature Based on Tumor Essential Gene Pairs Identifies Osteosarcoma Patients with Different Survival Outcomes

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Purpose: Osteosarcoma is a malignant tumor originating in children and adolescents. Recent advances suggest the necessity of developing new therapies to improve patient prognosis rather than intensifying anti-tumor chemotherapy. Some genes are essential for tumor growth and predicting poor prognosis in patients; however, their roles in osteosarcoma remain unclear. **Methods:** Three osteosarcoma datasets with sufficient clinical information were obtained from public databases. Essential genes for osteosarcoma were identified through genome-scale CRISPR screening of the datasets. A tumor essential gene pair (CRGP) signature was constructed using minimum absolute shrinkage and selection operator regression based on prognosis-related CRGPs. Differences in immunity, metabolism, and ferroptosis among CRGP signature groups of patients were evaluated. Finally, SubMap analysis was used to assess patient response to immunotherapy in the CRGP signature groups. **Results:** The CRGP signature reliably predicts overall survival of osteosarcoma patients. CRGP features are also associated with the metastatic status of osteosarcoma patients and can be used for further risk stratification of metastatic patients. Immunotherapy is more likely to benefit patients in the low-risk CRGP group. **Conclusions:** The signature based on tumor essential gene pairs can assess the prognosis of osteosarcoma patients.

Delayed weight bearing with the use of Hydroxyapatite-Coated pins to decrease pin tract infection:

A Randomized blind clinical trial

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Abstract

Purpose:

To compare between immediate and delay weight bearing with the use of Hydroxyapatite-coated Schanz pins in external fixation as regard osteointegration and pin tract infection.

Methods and materials:

Our protocol included 43 adult patients: all treated for nonunion or deformity by uniplanar external fixation and Hydroxyapatite-Coated Schanz pins for fixation. We compared pins osteointegration and pin tract infection rate and timing in 2 groups based on duration of delay for weight bearing of 6 weeks. Group A (16 patients): immediate post-operative weight bearing "early group". Group B (29 patients): weight bearing delayed for 6 weeks "6w group".

Results:

Patients were followed up on a weekly basis from week 0 to week 30. There was non-significant difference between both groups as regards age, sex, diagnosis, number of pins, distribution and duration of external fixation ($p>0.05$).

There was significant difference between both groups as regards timing of infection ($p<0.05$), duration of infection ($p<0.001$), number of infected pins ($p<0.001$), grade of infection ($p=0.05$). and treatment of infection ($p<0.05$).

Conclusion:

The results of 6 weeks duration of delayed weightbearing is superior to the results of immediate post-operative weightbearing in adult patients treated for nonunion or deformity by uniplanar external fixation (orthofix or similar devices) and Hydroxyapatite- Coated Schanz pins regarding osteointegration and pin tract infection rate and timing.

Technical Preferences of Bone Reconstruction in Latin America

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Introduction: This study seeks to ascertain the preferences and techniques used for bone reconstruction and lengthening among professionals in Brazil and Latin America. **Methods:** An electronic questionnaire was used (59 questions). It was applied among groups of specialists in the field of bone reconstruction and lengthening. **Results:** From 823 doctors, 123 orthopedic surgeons who perform bone reconstruction and lengthening procedures responded to our questionnaire, from Brazil (101), Argentina (3), Bolivia (1), Chile (4), Colombia (1), Costa Rica (1), Mexico (7), Uruguay (1) and Paraguay (1). 92.98% of the specialists had a fellowship in Bone Reconstruction but overlapped with other subspecialties that included 68.42% in Trauma, 30.70% in Pediatric Orthopedics, 24.56% in Knee or Hip, 13.16% in Foot and Ankle, 0.88% in Hand. 66.67% of the participants work in both public and private services, 11.40% only in public services and 21.93% in private services. Concerning indications for circular fixation, acute trauma had 53.51% (frequent or very frequent), infection (86.85%), post-traumatic deformities (76.32%), congenital deformities (48.25%) and deformities secondary to metabolic/acquired disorders (28.07%). Pre-operative planning is still predominantly in printed films (58.77% frequent and very frequent). The circular fixator model used is mostly the original circular frame, with the hexapodal frames having a low representation. **Conclusions:** We found that reconstruction techniques are being used in latinoamerican countries, for adult and pediatric patients, trauma is still the major indication. However, there is increasing representation of virtual planning and still rare is the use of more expensive devices such as the hexapodal frames.

Sustained notch signaling inhibition with a gamma-secretase inhibitor prevents traumatic heterotopic ossification

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Research Free Papers, Main Congress Hall ABC, September 27, 2024, 08:00 - 10:00

Traumatic heterotopic ossification (THO) is a devastating sequela following traumatic injuries and orthopedic surgeries. To date, the exact molecular mechanism of THO formation is still unclear, which hinders the development of effective treatments. The process of THO formation is believed to recapitulate a series of spatiotemporal cellular and signaling events that occur during skeletal development. The Notch signaling pathway is a critical genetic regulator in embryological bone development and fracture healing. However, few data are available concerning whether Notch signaling regulates THO development and maturation. Herein, we first demonstrated that several Notch target genes were upregulated in both mouse and human THO tissues. We further isolated tissue-resident mesenchymal progenitor cells (TMPCs) which contribute to THO under inflammatory insult, and found that sustained Notch signaling inhibition by the gamma-secretase inhibitor-DAPT reduced proliferation, osteogenic and chondrogenic differentiation of TMPCs in a time-dependent manner. Moreover, DAPT administration within 3 weeks could inhibit ectopic cartilage and bone formation in a mouse THO model without affecting the total body bone mass. Collectively, our data suggest that the Notch pathway serves as an important therapeutic target during THO formation and sustained gamma-secretase inhibition by DAPT has great potential in repressing chondrogenic and osteogenic differentiation of TMPCs, providing new insight into THO prophylaxis and treatment.

Audit on the safe use of intra-operative tourniquets in a District Hospital in the UK

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Introduction/Background: As per the British Orthopaedic Association, the ischaemic tourniquet time (TT) should ideally be less than 120 minutes and can only be extended beyond this after a clinical assessment of the relative risks and benefits. We reviewed the safe use of tourniquet intraoperatively at Worthing hospital in two different theatres.

Aim: The aim of the audit was to review the safe use of tourniquet time in the two trauma theatres (Theatre 8 & Theatre 9) in Worthing hospital.

Materials and Methods: We did a retrospective data analysis of 40 patients in each theatre from March 2022 until June 2022.

Results: There was minimal documentation of tourniquet time in the operation notes throughout (less than 10 percent). The compliance rate was 97.5 percent in theatre 8 and 95 percent in theatre 9. There was no justification in clinical notes in cases where tourniquet time was exceeded.

Conclusion: In our audit, there was a systematic lack of documentation of the need for a tourniquet and documentation around tourniquet use.

Recommendations/Implications: There is a need for teaching the importance of documenting TT in every operation when it is needed, justifying a TT above the limit of 120 minutes and re-audit to look at the impact of our intervention on the rate of compliance of the BOA guidelines on the safe use of intraoperative tourniquet

Disclosure: No conflicts of interest.

Advancing the Direct Anterior Approach (DAA) in Complex Primary and Revision Total Hip Replacements

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Hip Free Papers 4, MR 9, September 27, 2024, 08:00 - 10:00

Introduction:

The Direct Anterior Approach (DAA) has garnered attention as a surgical technique for total hip arthroplasty due to enhanced patient outcomes. However, its application in complex primary and revision cases remains a subject of exploration and investigation. We share insights from our experience with the DAA in the context of 15 complex primary and revision total hip replacements, focusing on early outcomes and an extensile approach tailored to revision cases.

Methods:

We followed 15 cases involving intricate primary and revision total hip replacements, all carried out using the Direct Anterior Approach. These cases were selected based on the complexity of hip pathologies, including severe osteoarthritis, prior failed hip surgeries, and challenging anatomical variations. The documentation involved patient demographics, intraoperative findings, implant selection, and postoperative outcomes.

Results:

Our analysis revealed DAA approach is compatible with THA for complex hip pathologies and revision surgeries. Early outcomes from our series indicate favourable early functional recovery and pain relief, accompanied by a low incidence of complications. The length of hospital stay was an average of 2.7 days. Additionally, we will demonstrate an extended application of the DAA for revision cases, facilitating access to the acetabulum and femoral components while minimizing disruption of the abductor mechanism.

Conclusion:

The Direct Anterior Approach holds promise as an option for complex primary and revision total hip replacements. The present study offers insights gained from 15 cases, emphasizing surgical techniques tailored for complex primary cases and an expanded approach to revision procedures.

Outcomes from the first 12 months following implementation of a day-case hip and knee arthroplasty pathway in an NHS hospital

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This study aims to evaluate the implementation of a day-case pathway for total hip (THR), total knee (TKR) and unicompartmental knee (UKR) arthroplasty within an NHS hospital. The primary outcome was the rate of successful same day discharge (SDD). Secondary outcomes included length of hospital stay, post-operative pain scores, opioid consumption, time to mobilisation, performance during physical therapy, Oxford Hip/Knee Scores and 30-day re-admission rate. A consecutive series of 47 cases was studied comprising patients undergoing THR (19/47), TKR (20/47) and UKR (8/47).

The overall rate of SDD discharge was 25/47 (53%). Reasons for failure included delay in physiotherapy assessment, pain management and hypotension. The 30-day re-admission rate was 2/47 (4%). The rate of SDD for THR patients was 11/19 (58%). Their mean length of hospital stay was 9 hours and time to mobilisation was 206 minutes. The mean pre- and post-operative Oxford Hip Scores were 23 and 42, respectively. The mean visual analogue scores (VAS) for pain were 4/10 (immediate), 5/10 (6 hours) and 5/10 (24 hours).

The rate of SDD for TKR patients was 11/20 (55%) and for UKR patients was 3/8 (38%). Their mean length of hospital stay was 8 hours and time to mobilisation was 191 minutes. The mean pre- and post-operative Oxford Knee Scores were 24 and 34, respectively. The mean post-operative VAS for pain were 4/10 (immediate), 5/10 (6 hours) and 5/10 (24 hours).

Our experience highlights the feasibility of employing a day-case pathway for hip and knee arthroplasty within an NHS hospital.

Clinical and Radiological results of the integrated acetabular MUTARS® RS cup system in revision of geriatric patients

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Background: Acetabular revision surgery is challenging due to the occurrence of bony defects that complicate the fixation of implants. Poor bone quality in geriatric patients makes it even more difficult. The MUTARS® RS cup system is a cementless revision cup with an integrated polyethylene cup. It offers the option for a tripolar head in unstable conditions. The aim of this study was to evaluate the clinical and radiographic results after revision arthroplasty with the MUTARS® RS cup system in geriatric patients (age > 70 years). Methods: From 2019 to 2023, 22 geriatric patients, 10 males, 12 females, with a mean age of 79.2 years (range 70-94 years) were provided with the MUTARS® RS cup system (implantcast GmbH, Buxtehude, Germany). After a mean follow-up of 2.5 years (range 1-4 years), the Harris Hip Score (HHS), Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), Oxford Hip Score (OHS), EQ-5D-5L, and radiographs (AP and axial view) were analyzed. Results: A total of 17 patients (77.3%) remained. Two patients died. One patient was revised for reinfection (4.5%), and 2 (9%) for recurrent instability. The average HHS was 71.8 (range 52-93), the average OHS was 32.4 (range 27-40), and the average WOMAC was 12.6 (range 4-20). According to EQ-5D-5L there were 10 patients (58.8%) with slight problems, 6 patients (35.3%) with moderate problems, and 1 patient (5.9%) with severe problems. The x-ray showed no migration of the components, in 15 cases (88.2%) radiolucent lines around the caudal flap in the os ischii were seen.

Total hip arthroplasty in proximal femur deformities: A systematic review to highlight the outcomes and the implant survivorship

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Introduction: Total Hip Arthroplasty(THA) is procedure of choice hip arthritis. But this procedure can become technically challenging in presence of a deformed proximal femur. A proximally deformed femur may necessitate corrective osteotomies and there is a need to use special custom made stems. Little is known about the outcomes of THA in proximally deformed femur. We carried out this systematic review of literature to determine the most common causes of proximal femur deformity and to look for outcomes and survivorship of the THA implants in this scenario. **Methods:** A literature search was conducted in databases like PubMed, EMBASE, SCOPUS and Cochrane. A total of 21 studies out of 882 studies met our inclusion criteria. A total of 819 THA were included in study in which the average age of 39 years with a mean follow up of 7.26 years. **Results:**Most common cause of proximal femur deformity included Development dysplasia of hip and post traumatic deformity of proximal femur. 8 studies reported the use of corrective osteotomies for deformity correction with the subtrochanteric osteotomy being the most commonly employed technique. The most commonly used stem was the non-modular stem (57.14%) followed by modular stem like S-ROM and custom made stems. Modified Harris Hip Score remains the most commonly used tool to assess the functionality which increased in all the cases with final scores being in the range of 74-89. Femoral canal perforation is the most common complication. Stem survivorship ranged from 76% to 94% with 9 studies reporting revision THA .

Does total hip arthroplasty benefit patients with minimal radiographic osteoarthritis?

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Background:

The efficacy of total hip arthroplasty (THA) for patients with minimal or no radiographic signs of osteoarthritis (OA) is unclear. We aimed to evaluate their outcomes, identify predictive factors (comorbidities, CT or MRI findings), and compare their results with to the expected outcome of THA for hip OA.

Methods:

Adults undergoing THA for hip pain without significant radiographic features of OA (Tönnis grading scale ≤ 1) were selected from 1,925 consecutive THAs. Exclusion criteria included inflammatory arthritis, femoral head osteonecrosis, and patients lacking ≥ 1 -year follow-up or patient-reported outcome measures (PROMs). Primary outcome: Oxford Hip Score (OHS). Secondary outcomes: EQ-VAS, UCLA scale, and validated patient satisfaction assessment ('better', 'same', 'worse').

Results:

107 patients (median age 41, range 18-73) were included with mean follow-up $6.0 \pm SD 3.1$ years. All received a diagnostic hip injection as decision aid. Median postoperative Oxford Hip Score (OHS) was 34 (IQR 28-42); 33% achieved OHS ≥ 42 —lower than typical THA patients in international registries. Secondary outcomes: UCLA 6 (4-8), EQ-VAS 73 (51-80); 89% felt 'better' and would 'undergo surgery again.' Patients with chronic pain syndrome or hypermobility had lower OHS (-6 points, $p < 0.01$). 84 had CT, 34 had MRI. Those with subchondral cysts (OHS 42, 37-45 vs. 35, 26-36; $p=0.01$) or joint space narrowing on CT (OHS 42, IQR 37-44 vs. 35, 26-36, $p=0.02$) had higher function.

Conclusion:

Despite high satisfaction, THA patients without radiographic OA had lower postoperative function. We recommend obtaining CT imaging and a diagnostic hip injection to aid decision-making.

Revision Hip Replacement by Minimally Invasive Technique with Anterior Approach

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Hip Free Papers 4, MR 9, September 27, 2024, 08:00 - 10:00

Revision total hip arthroplasty is becoming more and more popular. The surgical approach can vary based on anatomy, patient position, experience, and surgeon habits. Surgeons often choose the posterior incision, while the current literature has very few articles on revision total hip arthroplasty using anterior incision. In this paper, we present 3 cases of revision total hip arthroplasty using minimally invasive anterior incision technique for those who had been treated the primary total hip replacement combined with the disaster complications to emphasize the feasibility of this approach and re-evaluate the clinical, X-ray imaging, and patient satisfaction. These cases highlight that total hip replacement can be successfully performed through anterior incision with a minimally invasive procedure that offers many advantages such as minimizing soft tissue damage, early rehabilitation, improve mobility rapidly.

Fast track elective total hip arthroplasty is applicable surgical procedure into the standard hospital orthopedic surgery settings: a randomized prospective study

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Introduction: Fast track elective arthroplasty (FTS) is well defined opioid sparing orthopedic procedure.

Methods: The first aim of this study was to determine is it possible to do FTS into the general orthopedic and trauma hospital. The second aim was to compare clinical outcome between standard and fast track elective hip procedures.

Study was last for 2 years and follow up was at least one year. Including criteria for the study was hip osteoarthritis foreseen to primary elective total arthroplasty from single surgeon. Patients were randomly distributed from surgeon's elective list into „Fast track“ and „Standard“ group.

Total number of 295 patients were mobilized for the study. Inhospital length of stay (LOS) was recorded, laboratory values during hospitalization and up to 3 months, average pain in intervals, Harris hip score (HHS) and overall complications during the follow up.

Results: There was significantly shorter LOS in FT group. There was no blood transfusion in FT group and 7 (5.1%) in S group. CRP level was significantly less elevated in FT patients and comes faster to normal values in both check points postoperatively. Average VAS in FT group was lower, HHS was higher in FT group in control intervals. There was 4 readmissions in FT group and 5 in S group.

Conclusion: This study showed that elective hip FTS is safe and efficient orthopedic procedure applicable into standard hospital organisational settings. FTS brings benefits to patients itself for faster recovery. Overall complications was not different in both groups.

Direct Anterior or Other Surgical Approaches in Patients with Lumbar Stiffness Undergoing Total Hip Arthroplasty:

A Systematic Review and Meta-Analysis

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Background: Whether the direct anterior approach (DAA) for total hip arthroplasty (THA) is associated with improved outcomes compared to other approaches in patients with lumbar spine stiffness is uncertain. **Methods:** We conducted a systematic review and meta-analysis comparing DAA versus other surgical approaches in patients with lumbar spine stiffness undergoing THA. PubMed, Embase and Cochrane Central databases were searched for cohort studies and randomized controlled trials. Risk ratios (RRs) with 95% confidence intervals (CIs) were calculated to assess dislocation rates. **Results:** In an analysis of 11 nonrandomized studies involving 2,505 patients, 738 patients (29.4%) underwent DAA. Patients who underwent THA via DAA had reduced rates of dislocations (RR 0.31, 95% CI 0.14–0.67, $P=0.003$, $I^2=0\%$) compared to other surgical approaches. Subgroup analysis demonstrated significantly lower dislocation rates in DAA patients compared to the posterior approach (RR 0.22, 95% CI 0.10–0.52, $P=0.001$, $I^2=0\%$), while no statistically significant difference was observed compared to the lateral approach (RR 0.53, 95% CI 0.19–1.47, $P=0.22$, $I^2=0\%$), despite a lower numerical rate. **Conclusions:** In patients with lumbar spine stiffness undergoing THA, DAA was associated with lower dislocation rates compared to other surgical techniques.

Hip Replacement Throuth Modified Anterior Approach. Comparative Analysis

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Aim: Evaluation of the results of using the modified anterior approach developed by us - without dissection and damage to muscles, blood vessels, and lateral cutaneous nerve during hip replacement.

Materials and methods: A comparative analysis of two groups of patients. The control group consisted of 185 people who underwent total hip replacement using the Anterior Approach (Smith-Petersen) technique in the supine position. The experimental group consisted of 200 patients who underwent surgery through modified anterior lateral access. The analysis of the frequency of damage to anatomical structures in the area of intervention was carried out.

Results: In the Experimental group, damage to the tensor fascia latae was noted in 5%, and in the control group – in 87%. When performing the classical anterior access on the back, coagulation of the vessels encircling the femur was performed in all cases, and with a modified anterior access on the side – in 7%. Postoperative neuropathy of the lateral cutaneous nerve of the femur in the experimental group was diagnosed in 1%, in the control group in 12.4% of cases. **Conclusion:** Performing hip replacement through our modified anterior approach, the risk of damage to the lateral cutaneous nerve of the thigh, lateral vessels encircling the femur, and muscle fibers decreases; the severity of pain syndrome decreases, which contributes to earlier activation of the patient and acceleration of rehabilitation.

Free bone fragments are associated with the development of heterotopic ossification after hemiarthroplasty for femoral neck fracture: A retrospective observational study

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Background: Heterotopic ossification (HO) can occur after hemiarthroplasty (HA) for femoral neck fractures (FNF). The present study aimed to investigate the frequency of and factors contributing to the development of HO after HA. **Methods:** Data from 92 (26 male, 66 female) of 183 patients who sustained FNF and underwent HA between April 2019 and January 2022, were included in the present study. HO was identified on postoperative radiographic images, which in turn were the basis for calculating the incidence of HO. Patient background, operative duration, blood loss, and the presence of free bone fragment(s) immediately after surgery identified on radiographic images were compared between the HO and non-HO groups. Statistical analysis included the independent-sample t-test for continuous variables and the chi-squared test for categorical variables. Multivariate analysis using logistic regression analysis was performed with HO as the objective variable. **Results:** HO occurred in 47 of 92 (51%) patients. There were no statistical differences in patient backgrounds. Univariate analysis revealed that mean operative duration and blood loss were significantly greater in the HO group. Free bone fragments in the immediate postoperative period were observed in 25 of 47 (53%) patients in the HO group and in 5 of 45 (11%) in the non-HO group, a difference that was statistically significant. Logistic regression analysis revealed that the presence of free bone fragments was an independent explanatory factor for the development of HO. **Conclusion:** The presence of free bone fragments immediately after surgery may be significantly associated with the development of HO.

The influence of preoperative diagnostic aspiration on the treatment before the 2d stage of revision hip arthroplasty

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Introduction: Despite the importance of infection eradication after the 1st stage of RHA (revision hip arthroplasty), some specialists ignore the necessity of PJI examination before the 2nd stage of RHA. The goal was to compare the diagnostic accuracy before the second stage of revision hip arthroplasty in patients with hip joint spacer. **Methods:** In our prospective study from 2018-2023 we examined 107 patients with the hip joint spacer to exclude reinfection/recurrence of PJI. The patients were divided into two groups. In the 1st group (prospective) were included 55 patients with extended diagnostic protocol: hip joint aspiration, blood tests for ESR, CRP. In the 2d group (retrospective) were 52 patients with only preoperative ESR, CRP blood tests. **Results:** The reinfection among patients in both groups according to the results of intraoperative microbiological examination during the RHA 2d stage was identified in 40% of cases: in the 1st – 9 cases, in the 2d group – 31 cases. The diagnostic accuracy of serum markers level in both groups demonstrated weak results. In the 1st group - 55.5% and 65.5% (for ESR and CRP, respectively) and 53.2% and 64.7% (for ESR and CRP, respectively) in the 2d group. The diagnostic accuracy level of preoperative aspiration in the 1st group patients demonstrated 82.6%. **Conclusion:** The extended preoperative protocol with aspiration allows to reduce the risk of PJI by 3.44 times during the RHA 2d stage. The highest diagnostic accuracy marker was the hip aspiration – 82.6%, which allow to changed treatment tactics in 9%.

Effect of intra-operative capsular infiltration of Tranexamic Acid on incidence of Heterotopic Ossification in Total Hip Replacement: A Retrospective analysis

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Introduction: Heterotopic Ossification (HO) is one of the commonest complications after Total Hip Arthroplasty (THA) with incidence ranges from 15-90%. As per recent studies, HO can be attributed to immune cell infiltration and inflammation involving cytokines and Interleukin (IL). Tranexamic Acid (TXA) is a synthetic derivative of lysine which is mainly used as a fibrinolysis inhibitor in THA to prevent excessive bleeding. Recent studies have shown TXA modulates inflammatory response by reducing levels of CRP, IL-6, TNF- α , reactive oxygen species and MMP-9. Another study showed that TXA reduces the recurrence of HO after excision in elbow injury. There are currently no studies demonstrating effect of local TXA on HO after THA. **Methods:** Patients undergoing elective primary THA at district hospital in Wales from 2017-2023 were selected and divided into two groups depending on whether they received TXA capsular infiltration during the time of closure. Their immediate post op and follow up X rays were then evaluated based on Brooker classification for evidence of HO. **Results:** There were 90 patients in Group A (No TXA) and 45 patients in Group B (TXA). About 55.56% patients in Group A developed HO, with 10% having Grade 3or4. In Group B, 18.7% patients developed HO with 3.125% having Grade 3. There was no significant difference between cemented and uncemented implants. **Conclusion:** Local infiltration of TXA significantly reduces incidence of HO after THA due to its anti-inflammatory properties. However, there is a need of further studies with a larger patient population to support these findings.

Comparison of Distal Femur, Pathological Femur and Peri-Prosthetic Femur Fracture Management: Audit on Adherence to National Guidelines at Local District General Hospital

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Introduction: This study assessed adherence to national guidelines for managing distal femur and pathological fractures at a London district general hospital. As these fractures become more prevalent, adherence to evidence-based guidelines become crucial for optimal outcomes. **Methods:** A retrospective cohort study including distal femur, pathological, and peri-prosthetic fractures. Data collected at 6 months and 1 year postoperatively. **Results:** 44 patients, 16 had distal femur fractures DDF (average age 81), 12 had pathological fractures PF (average age 75), and 5 had peri-prosthetic fractures PPF (average age 85). 3 patients were non-operative due to comorbidities, and 8 patients deceased before 6-month review. The average length of stay was 22 days for DDF, 6 days for PF, and 61 days for PPF. Wait times for surgery were 3, 18, and 32 days, respectively. 9 distal femur patients were allowed full weight-bearing postoperatively, compared to 2 pathological femur fracture patients; none of the peri-prosthetic fracture patients were permitted full weight-bearing. Patients permitted full weight-bearing had shorter stays (average 13 days FWB vs. 23 days NWB). At 6 months, 8 patients had non-union (39%), and 11 were wheelchair-bound (52%). Discharge destinations varied. **Discussion:** Standardized protocols and multidisciplinary collaboration are crucial in fracture management. Addressing gaps in adherence to guidelines, particularly in post-operative care and rehabilitation, helps improve patient care. **Conclusion:** This audit provides insights into current practices and areas for improvement in managing distal femur and pathological fractures. Enhancing adherence to evidence-based guidelines, especially in post-operative care, can improve patient outcomes.

The influence of joint line restoration on functional outcome after primary total knee arthroplasty: A prospective study of 120 patients.

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Background: Restoration of proper joint line position after TKA improves knee function and kinematics. We reviewed magnitude of joint line alteration and its effect on knee outcomes scores at one year.

Materials and methods: 120 patients of Primary TKA were included. Joint line position assessment before and after surgery was performed: Medial epicondyle joint line distance (MEJL), Lateral epicondyle joint line distance (LEJL) and fibula head joint line distance (FHJL). Post-operative knee function was assessed using WOMAC and KSS scores at one year follow-up.

Results: Joint line was elevated in 104/ 120 (86.7%) patients and 16 (13.3%) patients had no elevation. Mean joint line elevation was 3.00 (± 2.13) mm. No depression in joint line seen. KSS and WOMAC scores for every 1 mm change was calculated. A rising trend in WOMAC score and declining trend in KSS score with every 1 mm rise was seen. Group A- Joint line elevation < 5 mm and Group B- Joint line elevation ≥ 5 mm. KSS score was significantly higher in patients in Group A compared to Group B {52.82 \pm 7.564 vs. 40.73 \pm 7.146; $p < 0.001$ }. WOMAC score was lower in patients in Group A compared to Group B {65.51 \pm 14.762 vs. 75.64 \pm 8.203} and the difference was statistically significant ($p < 0.002$).

Conclusion: Elevation of joint line ≥ 5 mm has a negative impact on post-operative functional outcome in primary TKA. It is advisable to perform minimum bone cuts and use distal and posterior femoral augments in cases of bone loss even in primary TKA to prevent proximalisation of femoral components.

A comparative study of the trend of inflammatory markers following robotic unilateral and bilateral total knee replacement

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Purpose: The present study examined five common inflammatory markers [IL-6, CRP, LDH, AST and ESR] in patients who underwent robotic knee replacement surgery using the CORI robotic system. **Methods:** Baseline venous blood samples were collected 12 hours before, 12 hours, 24 hours after surgery, and every 24 hours after that until the patient was discharged. A total of 48 participants were included in the study. In group I, 13 patients underwent bilateral knee replacements; in group II, 35 underwent unilateral knee replacements. **Results:** IL-6 increased significantly, 229.69 at 12 hrs in the bilateral group and 115.51 post 24 hrs in the unilateral group. CRP peaks were observed at 60 hrs post in the bilateral group at 34.87 and 16.71 in the unilateral group. It was found that ESR levels differed significantly preoperatively, and a postoperative peak was observed at 60 hrs in both the groups, 89 in the bilateral group and 46 in the unilateral group. In terms of serum LDH, the absolute rise at post 48hrs in both the groups was 245.67 in the bilateral and 244.15 in the unilateral group. AST level peak was observed at 48hrs, with 32.74 in the bilateral and 32 in the unilateral group. **Conclusion:** This study may be one of the first to comprehensively describe five common inflammatory markers trends among patients who undergo unilateral or bilateral robotic total knee replacement surgery. The only two markers that showed statistically significant increases in bilateral knee replacements compared to unilateral knee replacements were IL-6 and CRP.

Total Knee Arthroplasty in End-Stage Knee Osteoarthritis with Tibia Stress Fractures

– A Propensity Score Matched Comparative Study

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Objectives

Knee osteoarthritis (KO) is a leading contributor to disability years, with a prevalence ranging from 22% to 39%. Tibia stress fractures (TSFs) are well-described for end-stage arthritis patients undergoing TKA. This study primarily aims to compare and determine the clinical, functional, and radiological outcomes of TSFs in end-stage KO treated with TKA by propensity score-based matching.

Methods:

It is a retrospective study. The TSF group included all patients of end-stage KO who underwent primary TKA with TSFs, and the TKA group included matched patients without TSF. Cases were 3:1 (TKA: TSF) propensity score-matched (PSM). The primary outcome was a PSM comparison of patient-reported outcome measures (PROMs) and 1-year Postoperative Complications and Adverse Events (POCAE).

Results:

Study includes thirty-seven patients. Both groups showed no statistically significant difference in KSS FA and KSS PS scores. At the final follow-up, MCID for KSS FA was achieved by 31 patients (96.9%) in the TSF group compared to 92 patients (95.83%) in the TKA group. MCID for KSS PS was achieved by 29 patients (90.63%) in the TSF group compared to 91 patients (94.79%) in the TKA group.

Conclusion:

End-stage KO patients with coexisting TSFs who undergo primary TKA with stem/ plate fixation as per fracture location may expect favorable PROMs, POAECs, radiological outcomes, and rates of achieving the MCID at a minimum 2-year follow-up. Accurate management of such cases results in excellent outcomes and minimized revision rates. All patients achieved complete bone union. These results were comparable to the PSM control group.

Examining the Correlation Between Preoperative Day One Blood Glucose Levels and Postoperative Complications in Total Knee Arthroplasty Patients

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Introduction: Diabetes represents a substantial risk factor for complications in surgical procedures due to its profound effects on wound healing, infection control, and immune function. Elevated blood glucose levels disrupt microcirculation, impede tissue repair, and increase susceptibility to infections. Total knee arthroplasty (TKA), a common orthopedic intervention, aims to alleviate pain and improve joint function in patients with severe knee arthritis. This article delves into the correlation between blood sugar levels at preoperative day 1 and the occurrence of postoperative complications in TKA patients. **Methodology:** This retrospective analysis focused on preoperative blood sugar levels in TKA patients measured one day before surgery. Postoperative complications, including surgical site infections, delayed wound healing, and prosthesis-related issues, were documented and correlated with preoperative blood sugar levels. **Results:** Preliminary findings indicate a significant correlation between elevated blood sugar levels at preoperative day 1 and increased incidence of postoperative complications in TKA patients. Patients with poorly controlled diabetes exhibited a higher likelihood of experiencing complications such as infections, prolonged hospital stays, and a slower recovery process. **Conclusion:** The observed correlation underscores the importance of preoperative glycemic control in TKA patients with diabetes. Recognizing the impact of diabetes on surgical outcomes and managing blood sugar levels effectively in the preoperative period may contribute to a reduction in postoperative complications, ultimately enhancing the overall success of the surgical intervention. Further research and prospective studies are warranted to validate these findings and establish clear guidelines for managing diabetic patients undergoing TKA.

Five-year results of robotic total knee replacement: double-blind, randomized, double-controlled study.

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Background: Recent advancements have introduced computer-assisted (CAS) and robot-assisted (RA-TKA) surgical techniques as alternatives to conventional methods in Total Knee Arthroplasty (TKA), promising improved accuracy and patient outcomes. However, comprehensive comparative studies evaluating outcomes and prostheses survivorship among these techniques are limited. **Methods:** This prospective controlled study compares Five-year outcomes and prostheses survivorship following TKA using conventional, CAS, and RA-TKA techniques. One hundred seventy-eight patients requiring TKA were randomly assigned to one of the three surgical groups. The primary outcomes were knee function (KSS knee score) and functional recovery (KSS function score) assessed before surgery and annually for five years postoperatively. Secondary outcomes included prosthesis alignment, knee range of movements, and complication rates. Survivorship analysis was conducted using Kaplan-Meier curves, with revision surgery as the endpoint. **Results:** Five-year results indicate that while all three groups showed significant improvements in knee function postoperatively, the CAS and RA-TKA groups demonstrated superior prosthetic alignment and higher survivorship rates than the conventional group (98,2%, 96,8% and 96,3% respectively). But although the RA-TKA group had a 98,2% survivorship rate, its knee score was significantly lower than following CAS and conventional techniques (mean 91±3SD vs. mean 93±3SD). **Conclusions:** The RA-TKA technique offers advantages over conventional and CAS methods regarding alignment accuracy and five-year survivorship of TKA prostheses, presented research data has a promising indication of the improved TKA prostheses long term survivorship by implementing RA-TKA.

The Role of Tibia Vara and Femoral Bowing in Choice of Total Knee Arthroplasty Alignment Strategy – A Practical Classification for CPAK I Knees

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Introduction: The Coronal Plane Alignment of the Knee (CPAK) classification in the field of Total Knee Arthroplasty (TKA) distinguishes knee phenotypes based on anatomic hip knee angle (HKA) and joint line obliquity (JLO). This study aims to firstly describe the epidemiological CPAK distribution of arthritic knees in the Asian population; secondly, to divide the most prevalent CPAK phenotype (CPAK 1) into mild, moderate, and severe subtypes. Lastly, to determine if KA or MA affects post-operative outcomes in different CPAK phenotypes. **Methods:** Prospectively collected data from 2014 to 2021 was obtained from a high-volume single-institution involving 342 patients. Outcomes were recorded at pre-operative, post-operative 6 months and post-operative 2 years using oxford knee score (OKS), Functional score (FSC), Knee society clinical score (KSCC), and SF-36 scores. Restricted KA-TKA were performed using stryker makoplasty technique and unrestricted KA-TKA was performed using Howell's technique.

Knees were further classified into Mild (MTPA $\geq 85^\circ$), Moderate (MTPA $< 85^\circ$ with no coronal bowing of the femur) and Severe (MTPA $< 85^\circ$ with coronal bowing of the femur) varus subtypes. Student's t-test, or one-way ANOVA with post-hoc Bonferroni adjustment were used. **Results:** CPAK I (varus, apex distal) was the most prevalent (45.32%) in the Asian population, followed by CPAK II (varus, neutral) (23.68%); in contrast to CPAK II most prevalent in caucasians. Patients with severe varus and coronal bowing showed better 2 year post-operative outcomes with restricted-KA compared to unrestricted-KA. **Results:** unrestricted-KA preferable in moderate deformities, whereas restricted-KA preferable in severe deformities.

Comparison of accuracy and functional outcome between robotic assisted surgery and gyroscope based instrument in primary total knee arthroplasty: A Randomized controlled trial

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Purpose: The objective of this study was to compare the accuracy of robotic-assisted surgery (ROSA) and gyroscope-based surgery in primary total knee arthroplasty

Material and methods: A randomized controlled trial was conducted with 72 participants who had moderate knee osteoarthritis (Kellgren and Lawrence grade 2-3). The patients were randomly assigned to either the robotic-assisted or gyroscopic-assisted group. Baseline characteristics, including age, BMI, length of stay, and estimated blood loss, were recorded. The primary outcome measure was the accuracy of the hip-knee angle, measured by scannogram film preoperatively and postoperatively at 3 months. Secondary outcomes included functional outcomes (KOOS, Oxford knee score, EQ-5D-5L, range of motion) assessed preoperatively and postoperatively at 3 months, as well as at 6 months postoperatively.

Results: No significant differences were found in the accuracy of robotic-assisted surgery (ROSA) and gyroscope-based surgery, with mean differences of 1.59 ± 1.46 degree and 1.38 ± 1.58 degree, respectively ($P=0.248$). Additionally, there were no significant differences observed in the functional outcomes, including KOOS, Oxford knee score, EQ-5D-5L, and range of motion.

Conclusions: The robotic-assisted surgery (ROSA) in primary total knee arthroplasty did not significantly enhance the accuracy of the hip knee angle at 3 months compared to gyroscope-based surgery in cases of moderate knee osteoarthritis

Keywords: Comparison of accuracy, robotic-assisted surgery (ROSA), gyroscope-based surgery, Total knee arthroplasty

Preoperative mental health status shows moderate correlation with patient reported outcomes one year after total knee arthroplasty

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Introduction: The clinical results of total knee arthroplasty (TKA) have been proved to be influenced by previous mental health status. Postoperative patient reported outcomes (PROMs) one year after TKA were compared with preoperative results of the SF-12 scale to evaluate the correlation of mental health status with postoperative results in a prospective cohort of patients. **Methods:** Patients receiving a TKA completed the SF12, Oxford and WOMAC questionnaires preoperatively and one year after surgery. The preoperative SF12 mental health component was compared with the results in the postoperative Oxford and WOMAC questionnaires and pain in a Visual Analogue Score (VAS) one year after surgery using the Pearson method. **Results:** A total of 100 patients completed the questionnaires pre and postoperatively. The preoperative SF12 mental component showed a correlation of 0.43 with the results of the Oxford questionnaire, -0.50 with the pain component of WOMAC, -0.44 with the rigidity component of WOMAC and -0.39 with de function component of WOMAC, all of them with a p-value <0.001. Similarly, SF12 compared with VAS postoperatively showed a correlation of -0.37 with p=0.001. A SF12 mental score above 29.73 correlates with a postoperative Oxford score greater than 30. **Discussion and conclusion:** The final result of TKA is influenced by the mental health status measured by the SF12 before surgery, with a moderate correlation with PROMs one year after surgery. A minimum score of 29.73 in SF12 mental questionnaire shows a greater probability of obtaining a good or excellent result in the postoperative Oxford questionnaire.

Kinematic Vs Mechanical Alignment in Bilateral Total Knee Arthroplasty: A Prospective Randomized Controlled Trial to Evaluate Clinical, Functional and Radiological Outcomes

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Background

Neutral Mechanical Alignment (MA) in total knee arthroplasty (TKA) aims for perpendicular alignment of components to the limb's mechanical axis. However, individual knee anatomy variations raise concerns about suboptimal outcomes with MA, leading to a debate on its universal applicability. In contrast, Kinematic Alignment (KA) aligns implants with the knee's pre-arthritis anatomy, optimizing function and satisfaction. Research, especially in the Indian population, lacks comparative data between MA and KA techniques.

Purpose

This randomized controlled trial (RCT) aims to compare functional, radiological outcomes, joint awareness, and complications between MA and KA in TKA

Methods

A prospective RCT with 27 patients (54 knees) undergoing bilateral simultaneous TKA, randomized one knee to KA and the other to MA. Pre, intra, and post-operative data were recorded. The primary outcome was the Forgotten Joint Score (FJS) at a minimum 6-month follow-up. Secondary outcomes included intraoperative parameters, limb preference, Knee Society Score, and radiographic parameters.

Results

Comparing clinical, radiological, and functional parameters, KA showed a higher FJS (70.9 vs. 66.88), with more patients preferring KA for appearance and rehabilitation. KA induced proximal tibia varus and distal femur valgus. KSS scores and overall limb alignment were similar. KA required fewer soft tissue releases and bone resections. More patients preferred KA over MA in questionnaire assessment.

Conclusion

KA and MA demonstrated comparable outcomes, with early preference for KA. KA didn't increase complications at 12 months, suggesting it a viable alternative. Concerns about long-term aseptic loosening with KA warrant further multicenter trials with larger cohorts and longer follow-ups.

The exchange of modular components does not improve the revision rate in patients undergoing debridement and implant retention for persistent wound discharge in early postoperative period following total knee arthroplasty

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The standard practice of considering modular component exchange is rooted in the belief that it can improve surgical access and disrupt biofilm, potentially enhancing the efficacy of debridement. However, it's not clear if this exchange contributes to lower revision rates. This study aims to contrast the results of debridement antibiotic implant retention (DAIR) procedures with and without modular component exchange in patients experiencing persistent wound discharge (PWD) after primary total knee arthroplasty (TKA).

Methods:

This retrospective study involved 16551 consecutive patients who underwent primary TKA at a tertiary centre from January 2007 to December 2022. The comparison focused on patients with PWD within 30 days of primary TKA undergoing DAIR with modular component exchange versus those without. The primary outcome assessed was any-cause revision surgery, while secondary outcomes involved identifying risk factors for poor outcomes. Statistical analysis included Student t-test, chi-square, and logistic regression.

Results:

77 patients underwent DAIR of which 24 had modular component exchange, while 53 did not. The average days to wash out post-primary surgery were 20.6 +/- 4.8 days. Revision surgery rates were 16.7% (4/24) for DAIR with modular exchange and 15.1% (8/53) for DAIR without modular exchange (Odds ratio: 0.889; 95% CI 0.24-3.27). Factors positively correlated with revision risk were CRP on readmission and BMI>30, while age, sex, and Charlton comorbidity index showed no correlation.

Conclusions:

The exchange of modular components did not result in improved revision rates among patients undergoing DAIR for persistent wound discharge in the early postoperative period following total knee arthroplasty.

Debridement, Antibiotics and Implant Retention (DAIR) with or without modular component exchange in acute hip and knee peri-prosthetic joint infection.

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Abstract: Introduction: Debridement, Antibiotics and Implant retention (DAIR) has been the mainstay of treatment for acute periprosthetic joint infection in spite of variable results. Modular component exchange is a widely recommended strategy to improve success rates with DAIR though very strong evidence to support its practice is still lacking. Materials and Methods: patients underwent DAIR for acute PJI following primary hip and knee arthroplasty were divided into two groups for this retrospective review. 45 patients (group 1) underwent DAIR with modular component exchange and 41 patients without exchange (group 2). We compared success rates based on infection eradication (primary outcome variable) and need for revision surgical procedures between these two groups. We also assessed differences in primary outcome based on type of arthroplasty, timing of DAIR and addition of local antibiotics. Results: The overall success rate after DAIR was 71%. The outcome was similar in both groups (69% vs 74%, $P = 0.66$). The need for revision surgical procedures was 27% which was similar in both groups ($P = 0.98$) with 23% needing revision of prosthetic components. Type of arthroplasty (hip or knee) and addition of local antibiotics had no bearing on infection eradication after DAIR with or without modular component exchange. DAIR within 45 days of primary arthroplasty had significantly higher success rate compared to DAIR after 45 days in both groups. Conclusion: We observed that modular component exchange did not improve infection eradication after DAIR for acute PJI following hip and knee arthroplasty.

Functional Activities After Total Knee Arthroplasty for Valgus Knee are Inferior to Those for Varus Knee

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It remains unclear whether the clinical outcomes of total knee arthroplasty (TKA) for valgus knees are comparable to those for varus knees. This study aimed to compare the clinical outcomes of TKA in varus and valgus knees in a background-matched cohort. Patients who underwent primary TKAs from eleven hospitals were enrolled. Preoperative and 2-year postoperative scores, specifically the Original Knee Society Score (OKSS) and New Knee Society Score (2011KSS), were obtained. Clinical assessments were performed on the propensity score-matched cohorts of TKA for valgus and varus knees with malalignment $\geq 5^\circ$ each, ensuring age, sex, primary diagnosis, body mass index, deviation angle from neutral alignment, hospital type, surgical approach, patellar resurfacing, and implant type parity. From included 1145 TKAs of 104 valgus, 200 neutral, and 841 varus knees, propensity score-matching yielded 62 valgus-varus knee pairs. Preoperatively, both groups showed similar clinical scores. At two-year, the median 2011KSS functional activities (59, interquartile range: 36–73) and OKSS Function Score (70, interquartile range: 55–80) of valgus knees were 10.5 ($p = 0.01$) and 10 points ($p = 0.01$) inferior to those of varus knees, respectively. Valgus knees also showed inferior 2011KSS symptom and satisfaction scores. In conclusion, Postoperative clinical scores related to function after TKA were inferior in valgus knees compared to varus knees in the background-matched comparison. Valgus knee itself, carries the risk of limited postoperative function after TKA.

Ilizarov technique combined with intramedullary nail fixation for treatment of congenital pseudarthrosis of tibia

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Introduction: We combined Ilizarov technique and intramedullary nail fixation, with iliac cancellous bone auto graft and the use of Zoledronic Acid two weeks before surgery . The outcome of the last follow-up was evaluated. **Methods:** we retrospectively studied 15 cases of congenital pseudarthrosis of tibia treated from 2016 to 2024. The mean age of operation was 6.3 (5-18) years, and the mean follow-up was 62 months. The therapeutic effect was evaluated by comparing the length difference of both lower limbs, ankle joint function score and other postoperative complications. **Results:** According to the last follow-up, the union rate of tibial pseudojoint was 90%. The average difference of lower limb length was 3.51 (0.8-5.5) cm before surgery and 1.23 (0.5-2.3) cm after surgery, which was statistically significant ($p < 0.05$). The average ankle joint function score was 77.3 (55-92) points before surgery and 79.3 (65-92) points after surgery. Statistical analysis was not significant ($p > 0.05$). Other complications included refracture (1 case), abnormal tibial alignment (3 cases), and infection (1 case). **Conclusion:** The combination of Ilizarov technique and intramedullary nail fixation in the treatment of congenital tibial pseudojoint can effectively promote the healing of fracture site. Correcting the length discrepancy of the lower limbs, and preserve the function of the ankle joint.

Clinical analysis of closed reduction and percutaneous K-wire fixation in the treatment of Jakob type III fracture of the lateral humeral condyle in children

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We investigated the possibility of closed reduction with percutaneous needle fixation for the treatment of Jakob type III LHCF in children. The patients were divided into a closed reduction percutaneous K-wire fixation group (CR group) and an open reduction K-wire fixation group (OR group). We recorded the demographic characteristics, surgical data, postoperative complications, and elbow joint scores in all patients. Twenty-one cases were in the CR group and 20 cases in the OR group. All patients were followed up for an average of 23 months. Among the 25 children who attempted closed reduction initially, 21 cases (84%) successfully achieved acceptable reduction. The surgical duration and hospitalization in the CR group was shorter than that in the OR group, and the bleeding during operation was lower in CR group, and all of the differences were statistically significant. There was no statistically significant difference in fracture healing. In terms of postoperative complications, lateral bone protrusions occurred in 13 cases (61.90%) in the CR group and 8 cases (40.00%) in the OR group, with no statistically significant difference. None of patients had bone and joint infection, early closure of epiphyses, bone non-union, or necrosis of the humeral head. Nineteen patients receiving CR treatment (90.48%) showed excellent efficacy, and 18 children receiving OR treatment (90.00%) achieved excellent efficacy. There was no statistically significant difference between the two groups. In conclusion, CR could be attempted firstly, and it might not be necessary to open reduction in most children with Jakob type III LHCF.

Reoperation Rates and Early Outcomes of Isolated Tibial Tubercle Fracture Versus Combined Tibial Tubercle Fracture and Patellar Tendon Injury

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Intro: Tibial tubercle fractures (TTF) are uncommon injuries, comprising less than 3% of proximal tibial fractures. Rarely, they occur in conjunction with patellar tendon injury (PTI). We aimed to compare reoperation rates and short term post-operative outcomes in patients with TTF versus combined injuries. **Methods:** A retrospective review of patients presenting to a single, children's hospital with TTF was performed. Demographics, operative details, injury patterns, complications, and post-operative milestones were analyzed. Operative reports were reviewed to identify concomitant PTI. Outcomes included reoperation, weeks to full weight-bearing and full range of motion (ROM), and return to sport. Patients with <4 months of clinical follow-up were excluded from analysis. **Results:** We identified 117 fractures in 111 patients (mean age: 13.75±1.27, 5% female). 101 fractures were isolated TTF and 16 were combined TTF with PTI. There were 31 secondary surgeries in the TTF group (30 implant removal, 1 limb-length correction), and eight in the combined group (7 implant removal, 1 reinjury). There were four post-operative complications in the TTF group and one complication in the combined group. There was no significant difference in secondary surgery rates ($p=0.128$), complications ($p=0.527$). There was no significant difference in time to full weight-bearing ($p=0.253$), return to sport ($p=0.401$), time to full ROM ($p=0.863$). **Conclusion:** There is no significant difference in early outcomes between isolated TTF and combined TTF and PTI patients. No current guidelines exist for management of combined TTF and PTI. Our data suggests combined TTF and PTI can be managed similarly to isolated TTF.

Disease Specific Care Certification to Improve Efficacy in Screening Developmental Dysplasia of Hip

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Introduction

Developmental dysplasia of the hip (DDH) represents a prevalent and consequential pediatric orthopedic condition while certain prevention strategies were reported to elevate awareness of risk factors and prevention methods, improve diagnostic and management standards, and decrease the need for surgical interventions. Our research aims to innovate a targeted disease-specific care (DSC) for DDH.

Materials and Methods

Our multidisciplinary team formulate individualized care strategies in alignment with contemporary guidelines, and conduct ongoing reviews, audits, and educational initiatives. Our integrated referral network with regional obstetric and pediatric healthcare facilities bolsters our service delivery. We then evaluate the efficacy of DSC.

Results

Implementing DSC for DDH, we adopted a case management approach within a structured care pathway for diagnosis including alliances with obstetric and pediatric institutions, ultrasound screenings for newborns with risk indicators or positive clinical findings, and refined swaddling methods. These interventions led to improvements in alpha/beta angles, femoral head coverage, and International Hip Dysplasia Institute (IHDI) grading, alongside a marked reduction in necessity of surgical interventions. Our quality metrics indicate outstanding achievements: 100% DDH-related education rate, 0% surgery, 97% ultrasound screening rate for at-risk individuals, and a patient satisfaction score of 4.7 out of 5.

Conclusions

The application of DSC for DDH at our facility employs quality indicators for ongoing monitoring and evaluation of our care processes, facilitating both vertical and horizontal integration of services. This approach has enhanced clinical outcomes, promoted the healthy development of neonatal hip joints, and contributed to significant decrease in the necessity for surgical interventions.

Comparison of two methods of treating O'Brien type II and III radial neck fractures in children

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To compare the outcome of percutaneous reduction with K-wire internal fixation versus traditional open reduction with absorbable rod fixation in O'Brien II, and III type radial neck fractures in children.

According to the surgical management, there were two groups: Group A underwent open reduction with absorbable rod internal fixation, and Group B underwent percutaneous prying reduction with K-wire fixation. We evaluated the elbow joint function and compared the trauma time, surgical duration, hospitalization costs, and postoperative complications between two groups. A total of 28 children were enrolled in this study, including 13 males and 15 females. Nineteen cases were O'Brien type II and 9 cases were type III radial neck fractures. There are 12 cases in Group A (open reduction) and 16 cases in Group B (percutaneous prying reduction). Compared with in Group A, there was shorter surgical time, lower hospitalization costs, and less bleeding in Group B. There was no early closure of the epiphyses, infection, iatrogenic nerve injury, or ischemic necrosis of the radial head in both groups. The elbow function was evaluated at the last follow-up, there was no statistically significant difference between the two groups. In conclusion, both methods could have achieved good prognosis in the treatment of O'Brien type II, and III radial neck fractures in children. There have the advantages of minimal trauma, shorter duration of surgery, low cost, and no increase in the incidence of complications in percutaneous reduction group compared with open reduction group, however learning curve is needed.

Pediatric Humerus Lateral Condyle Fractures: Kirschner Wire vs. Cannulated Screw Fixation

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Introduction: This study aimed to assess the clinical efficacy of two surgical approaches and the practicality of two internal fixation materials for treating pediatric humerus lateral condyle fractures. **Methods:** A total of 28 children, 15 males and 13 females, who underwent surgery for humerus lateral condyle fractures between June 2016 and June 2020 were included in the study. Patients were divided into two groups: cannulated screw (group A) (n=12) and Kirschner wire (group B) (n=16). Operation time, Dhillon Score (DiS), Mayo Elbow Performance Score (MDPS), postoperative carrying angle, Baumann angle, and X-ray measurements of distal humerus anteversion angle were compared, and surgery-related complications were recorded. **Results:** Operation times were 44±16 minutes in Group A and 48±14 minutes in Group B, with DiS of 8.0 ±0.8 in Group A and 8.2 ±0.6 in Group B, and MDPS of 92 ±5 in Group A and 89 ±4 in Group B (p > 0.05). There were no significant differences in carrying angle, Baumann angle, or distal humerus anteversion angle between the groups (p > 0.05). At follow-up, excellent or good elbow joint function was observed in both groups. Complications included skin irritation in 2 cases in Group A and avascular necrosis of the lateral condyle and extension/flexion loss in 1 case each in Group B. **Discussion:** Both surgical methods showed comparable outcomes in terms of operation time, elbow function recovery, and X-ray measurements for pediatric humerus lateral condyle fractures. Both approaches can be effectively utilized for treating such fractures.

Anterograde ESIN for displaced unstable distal radius fractures in children

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Distal forearm fractures are frequent in children. Treatment of displaced, unstable metaphyseal fracture may be challenging. Different fixation techniques exist. Anterograde ESIN for distal radius fractures was not recommended due to risk of injury to motor branch of radial nerve. Recently, Du and Han (2019) published excellent results of this novel approach. We have analyzed our single center experience in the treatment of unstable distal radius fractures using anterograde ESIN. In the four-year period we have treated 26 patients (24 males and 2 females) with anterograde ESIN for unstable, displaced distal radius fractures. Mean age of patients was 11.01 years (range 5.63- 15.79), with left side predominance (21 vs. 5). Five patients had isolated radius fractures while 21 had concomitant distal ulna fracture. Mean time from injury to surgery was 1.95 days and from admission to surgery 0.91 days. Open reduction was performed in 4 radius and 5 ulna fracture while all other fractures were reduced by closed reduction. Mean duration of surgery was 61 minutes. Average length of postoperative cast immobilization was 31 days. Follow up was 15 months. Patients were followed-up clinically and by X-ray at one-month, three-months, six-months, nine-months and one-year visits. Functional results were assessed according to Daruwala's criteria. There were 22 excellent and 4 good functional results. The results of our study are comparable with single so far published investigation of Du & Han in 2019. We can conclude that anterograde ESIN is safe and reliable technique for treatment of unstable distal radius fractures.

Subsequent external and internal fixation in paediatric femur lengthening

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Introduction. Distraction regenerate fracture is a common complication after femur lengthening surgery in children. A possible way to prevent it is performing internal fixation after external frame demounting. A surgical technique “lengthening and then nailing or plating” is frequently used in adult. But this method has been neglected in children till recently due to the lack of proper internal fixators.

Materials and methods. The study included 56 patients(85 femora) that underwent femur lengthening surgery with Ilizarov apparatus. Group 1 (with subsequent plating or nailing) included 45 femora. Group 2 (with no subsequent plating or nailing) consisted of 40 femora. Reference lines and angles, amount of elongation, external fixation index, number of complications were analysed.

Results. Mean elongation was $7\pm 1,82$ cm in group 1 and $7\pm 1,79$ cm in group 2 ($p>0.01$). External fixation index was $31\pm 7,7$ days/ cm in group 1 and $45\pm 8,4$ days/ cm in group 2 ($p<0,01$). Distraction regenerate fractures were observed in 15% in group 2 and 0,45% in group 1.

Conclusion. Subsequent external and internal fixation in femur lengthening decrease overall treatment period and prevents distraction regenerate fractures in children.

Finite Element Analysis of Kirschner Wires Combined with External Fixation Device for Pediatric Supracondylar Humeral Fractures

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Introduction: Kirschner wires (K-wires) fixation is a standard treatment for pediatric supracondylar humeral fractures, in which crossed two pins and lateral two pins are most used. However, the smooth nature of K-wires can lead to complications, including sinking into the skin or slipping off. To solve these problems, a K-wire fixation device (KFD) was developed to improve the fixation stability. This study aims to investigate the effect of the KFD on crossed two pins and lateral two pins fixation by finite element analysis. **Method:** The humeral model was reconstructed using computed tomography images of an artificial pediatric humerus. We set torsion and bending as finite elements, and measured strain, stress, and displacement of the K-wire in below conditions: 1. Whether the bridge device was used or not, 2. Different bone-bar distance of the KFD. **Result:** In torsion analysis, the usage of the bridge device effectively enhances the stability of fixation. Besides, the closer the bridge device is to the articular surface, the higher the stability of the fixation. **Discussion:** These results were simulated using a computer program. Their consistency with reality needs to be verified through further studies. **Conclusions:** The use of the bridge device in both crossed and lateral K-wire fixation reduces relative displacement between fracture fragments, improving fixation stability.

Can the Achilles tendon regenerate completely following percutaneous tenotomy in older children with clubfoot?

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Purpose: The aims of the study were to document the outcomes of percutaneous Achilles tenotomy (pAT) performed in older children with clubfoot treated by the Ponseti method, by assessing the clinical, functional and ultrasonographic evidence of Achilles tendon regeneration. **Methods:** A retrospective case series of older children with clubfoot treated between August 2011 and July 2020 were studied. Clinical assessment of ankle range of motion & calf strength, functional assessment of triceps surae muscle endurance by single leg heel-rise test, and ultrasonographic assessment of Achilles tendon echotexture and dimensions to assess tendon regeneration were performed. **Results:** Percutaneous Achilles tenotomy was performed on 31 children (48 clubfeet) at a mean age of 5.24 +2.14 years (1–10.2 years). At a mean follow-up of 4.86 +1.97 years, all children demonstrated normal calf strength with mean dorsiflexion range of 13.64 degrees (0–25 deg) and mean plantarflexion range of 37.95 degrees (10–40 deg). The heel-rise endurance test was completed by 27 children with mean 25.85 heel rises/minute (range 17–30) and mean height of heel rise of 6.29 cm (range 4–10 cm). Normal fibrillar tendinous echotexture with homogenous echogenicity was seen on ultrasonography in 41 feet (85.4%) with mean tendon width of 9.7mm (3.3–16mm) and thickness of 5.1mm (1.8–15mm), comparable with unaffected feet. **Conclusions:** Clinical, functional and ultrasonographic parameters unequivocally demonstrate complete regeneration of the Achilles tendon, when pAT is performed in older children with delayed-presenting idiopathic clubfoot treated using Ponseti principles upto 10 years of age.

Q-TLIF technique introduction and application in lumbar degenerative diseases

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Introduction: In recent years, the minimally invasive concept has been fully demonstrated in lumbar fusion. We developed a set of percutaneous lumbar interbody fusion instruments and applied them in a novel technique (rapid transforaminal lumbar interbody fusion, Q-TLIF) to treat degenerative lumbar disease and evaluate its efficacy. **Methods:** From May 2021 to December 2022, 153 cases of lumbar degenerative diseases were treated with Q-TLIF, including 46 cases of lumbar disc herniation (LDH), 67 cases of lumbar spinal stenosis (LSS) and 40 cases of degenerative lumbar spondylolisthesis (DLS). The operative process and perioperative indexes of all patients were recorded and analyzed. **Results:** All patients were successfully operated. Operation time: LDH 98.35 ± 9.49 min, single segment LSS 109.46 ± 10.67 min, double segment LSS 141.57 ± 17.38 min, DLS 113.78 ± 15.12 min. Postoperative lumbar and leg pain was significantly relieved in all patients. VAS score: Preoperative vs Day 1 vs Day 3 vs week 1 = 5.94 ± 0.97 vs 1.93 ± 0.59 vs 1.56 ± 0.47 vs 1.03 ± 0.38 , and the difference was statistically significant at all-time points after surgery ($P < 0.05$). All patients wore waist girth to get out of bed on day 1 or 2 after surgery. The mean fusion time of all patients was 7.56 ± 1.47 months. **Conclusion :** Q-TLIF is feasible and effective in the treatment of degenerative lumbar spine diseases. Q-TLIF technology enriches the minimally invasive treatment of degenerative lumbar spine diseases and has a wide range of clinical application value.

The influence of anesthesia on intraoperative neuromonitoring in spinal surgery

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The most crucial goal of intraoperative neuromonitoring (IONM) in spinal surgery is to preserve the functional integrity of sensory and motor nerve pathways. Multimodal IONM combines somatosensory evoked potentials (SSEPs) and motor evoked potentials (MEPs). The amplitudes and latency of the obtained potentials are used in interpreting the results. Warning criteria are decreasing amplitude by 50% and prolonging latency by 10% compared to baseline. For the application of IONM to be feasible, an adequate selection of drugs and anesthesia techniques is required. Goals can be best achieved using target-controlled infusions (TCI) or total intravenous anesthesia (TIVA), with depth of anesthesia monitoring with bispectral index (BIS). Before induction, it is safe to give dexamethasone, pregabalin, and acetaminophen as part of preemptive analgesia. Midazolam and other benzodiazepines can be given preoperatively for sedation but should be avoided during surgery because they reduce MEP signals. Neuromuscular blockade should be avoided, except for intubation, when using succinylcholine or rocuronium, as it allows rapid spontaneous decurarization. Inhalation anesthetics and nitrous oxide reduce SSEP and MEP amplitudes and are not suitable for maintaining anesthesia. Propofol and remifentanyl are most suitable for maintenance of anesthesia, with fentanyl boluses if necessary. During surgery, patients are ventilated with an O₂:AIR gas mixture. Adequate neurophysiological monitoring is ensured by normotension, normothermia, euvolemia, adequate depth of anesthesia, absence of anemia, muscle relaxants, and inhalation agents. TCI is expensive and requires multiple infusion pumps; rapid titration and change of depth of anesthesia is impossible.

Cervical Pott's Disease with Neurological Complication: A Case Report

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SOTA Spine Free Papers, MR 7, September 27, 2024, 08:00 - 10:30

Introduction:

Cervical Pott's disease, a rare manifestation of tuberculosis affecting the spine, poses significant challenges due to its potential for neurological complications if left untreated. We present a case highlighting the importance of prompt diagnosis and intervention in managing this condition.

Methods:

A 39-year-old woman presented with cervical spine stiffness, neck pain, and cervicobrachial neuralgia, progressing to paraparesis and significant weight loss. Radiological and MRI evaluations confirmed C7 vertebral body compression with associated cortical lysis and medullary replacement lesion at the 6th cervical vertebra. Emergency surgical intervention involved anterior spinal cord decompression, corpectomy of C6 and C7, and tumor excision, followed by histopathological confirmation of tuberculous etiology and initiation of antituberculous therapy.

Discussion:

Cervical Pott's disease is a serious condition, often leading to neurological deficits if not promptly treated. Surgical decompression, combined with medical management, is essential, particularly in cases of rapid and severe spinal cord compression. Timely intervention is crucial to prevent permanent neurological impairment and optimize patient outcomes.

Conclusion:

Early recognition and comprehensive management, including surgical intervention when warranted, are essential in addressing cervical Pott's disease and minimizing its potential for neurological sequelae. This case underscores the importance of a multidisciplinary approach and highlights the significant role of surgical decompression alongside antituberculous therapy in achieving favorable patient outcomes.

Is spondylodiscitis still diagnostic challenge?

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Introduction: Spondylodiscitis in the lumbar spine caused by the bacterium *Serratia marcescens* is a rare infectious disease described in the world literature in only a few cases, mainly in immunocompromised patients, as well as in elderly patients after elective spine surgery. **Case report:** We present the case of a 45-year-old man who presented with pain in the lower back, with an elevated body temperature up to 39C, with no history of previous injury, infection or any chronic disease. An NMR of the LS spine was performed, which showed clear signs of spondylodiscitis in the L2/L3 region with a prevertebral abscess collection. The patient was initially treated conservatively, with combined parenteral antibiotic therapy for a period of four weeks, and then with oral antibiotic therapy for another two weeks. After the conservative treatment, the patient still had pain in the lower back, despite calm parameters of inflammation in the laboratory findings, while the control NMR LS spine showed a stationary finding compared to the previous one. Considering the clinical findings, NMR findings and previous treatment, an indication for operative treatment (intervertebral fusion and stabilization of L2-L3) as well as biopsy was established, and the presence of *Serratia marcescens* bacteria in large numbers was proven intraoperatively from the obtained biopsy. **Conclusion:** Despite the availability of modern diagnostics (NMR, laboratory analyses), isolating the causative agent of spondylodiscitis is still a challenge, especially when dealing with previously healthy patients and a rare bacterium that causes the most frequent intrahospital urinary infections in immunocompromised patients.

Spinal Aspergillosis: A Case Report and Literature Review

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Spinal aspergillosis is a rare but fatal disease. This case report describes a 58-year-old male patient who was admitted with a 3-month history of back pain. The patient had a history of hepatitis B-related cirrhosis, chronic liver injury, and schistosomiasis. On admission, the patient presented with back pain, fever, elevated ESR, and elevated C-reactive protein. Imaging studies showed infection of the T3, T4, and T5 vertebrae. The patient was initially diagnosed with spinal tuberculosis and received anti-tuberculosis treatment. However, the patient's symptoms did not improve, and pathological examination suggested non-tuberculous infection. Eventually, the patient was definitively diagnosed with spinal aspergillosis after surgery. The patient was treated with a combination of linezolid and voriconazole for antifungal therapy, and follow-up at 1 month showed that the infection was under control. Literature review revealed that spinal aspergillosis has diverse and nonspecific clinical manifestations, making diagnosis difficult. Early diagnosis and treatment are crucial. Surgical debridement combined with antifungal therapy is an effective treatment for spinal aspergillosis.

Tuberculous Spondylitis Mimicking Presacral Metastasis: Case Report

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Tuberculosis is an endemic disease in our country. Spinal localization represents a serious form, given the risk of neurological complications and loss of spinal statics. Sometimes, the clinical and radiological picture is atypical and may mimic a tumoral pathology.

Case report

A 52-year-old woman complained of 8 months of low back pain associated with left cruralgia and partial functional impotence of the left lower limb.

The blood count showed a hemoglobin level of 10.3g/dl and a normal leukocyte count. The patient had an erythrocyte sedimentation rate of 48 mm/h and a C-reactive protein of 45 mg/l. Standard X-ray showed narrowing of the intervertebral space between L5 and S1.

MRI showed a heterogeneous hyperintense anterior mass extending to the presacral region. MRI was followed by CT scan, which showed heterogeneous enhancement of the lesion margin.

Given this clinical and radiological picture, neoplastic pathology was suspected.

In view of this picture, we opted for a scano guided biopsy.

Anatopathological and bacteriological examination confirmed the diagnosis of tuberculosis.

Given the absence of neurological deficit and the preservation of spinal statics, we opted for medical treatment without recourse to surgery.

The patient progressed well on ATB therapy adapted to the Tunisian protocol, with no complications.

Tuberculosis in its osteoarticular, and more specifically spinal, location may mimic a neoplastic form, hence the need for an appropriate diagnostic approach.

Traumatic Spine Injury - Portugal Epidemiology

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Introduction:

Traumatic spinal cord injuries (TSCI) have a significant impact on global health and economic systems due to their high treatment costs.

According with literature, there are approximately 23.0 TSCI cases per million habitants annually, most result from falls and motor vehicle accidents (MVA). These data change according to countries specificities, therefore understanding epidemiological trends of each country is crucial for prevention and may also help to improve outcomes in care of TSCI.

This is particularly important in Portugal since it's the first epidemiologic study addressing TSCI.

Objectives:

To determine the incidence, mortality rate and evaluate the characteristics of newly injured patients with TSCI in Portugal over a 3-year period (2020-2023)

Methods:

A cohort retrospective study was conducted over a period of 3 years.

Results:

Over a 3-year period, 679 new patients with TSCI were identified in Portugal. The mean annual incidence of TSCI was 21.9 per million. Falls (60.1%) and MVA (24.9%) were the leading causes of injury. Among patients > 65 years, 72.6% were injured by falling and 53.0% became tetraplegic. The incidence of TSCI was higher during the summer and autumn months. The intrahospital mortality rate was 15.2%, with age and neurological injury being predictive factors. 60.2% of fatalities were due to cervical lesions.

Conclusion:

The mean annual incidence of TSCI was 21.9 per million corresponding to 226 new annual cases in Portugal.

Biomimetic nanovesicles alleviate compression-induced intervertebral disc degeneration via integration with mechanically responsive miR-1249

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Abnormal compressive loading plays a crucial role in the progress of the intervertebral disc degeneration (IDD). Several microRNAs (miRNAs) have been reported to be involved in IDD. However, mechanically responsive miRNAs in IDD have not been fully investigated. Furthermore, the deficiency of an effective miRNA delivery system is a key prerequisite for achieving intradiscal therapy. In this study, to identify miRNAs in the progress of IDD and explore an efficient miRNA-delivery system to treat IDD, mechanically responsive miRNAs are identified via miRNA-sequencing in compression-induced IDD of rats and confirmed in clinical sample. Extracellular vesicle-mimetic nanovesicles integrate with mechanically responsive miRNAs are developed by extruding NP cells and locally injected into IDD rats, and the therapeutic effect is assayed by imaging examination and histological analyses, respectively. As results, miR-1249 is identified to be down-regulated in compression-induced IDD of rats, which exerts a protective effect on the metabolism of the extracellular matrix of the nucleus pulposus (NP) by targeting Nrarp. Extracellular vesicle-mimetic nanovesicles are developed by extruding NP cells as a miRNA therapeutic system to integrate with miR-1249 mimics (NV-mimics). In vivo, the local injection of NV-mimics could effectively alleviate the progression of abnormal compressive stress-induced IDD, including the retention of the water content and height of the discs, and the conservation of the NP tissues. Thus, our study uncovers the mechanically responsive miR-1249 rescue NP from degeneration, while providing an NV-based miRNA drug delivery system that targets NP cells with mechanics-response, which is a promising platform for intervening in the progression of IDD.

Why We do not Perform Interlaminar Surgeries instead of Transforaminal Endoscopic Approach

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To evaluate the disadvantages of interlaminar intervention versus transforaminal surgery.

Introduction:

Traditional interlaminar surgery, which is more than a century old, is still valid for the surgical solution of pathologies that cause medullary or root compression, whether discogenic or not. It was accepted as the gold standard five decades after interlaminar surgery began to be performed with microscopic assistance with the development of optical systems. While transforaminal surgery defined the concept of minimally invasive surgery in spine surgery, the introduction of endoscopy with interlaminar approach attempted to reduce the tendency towards traditional surgery in central disc problems. The long learning curve of transforaminal surgery has led traditional interlaminar surgeons away from this surgery, as they can more easily adapt to unilateral uniportal and unilateral biportal surgical treatments. In fact, the drawbacks of interlaminar surgery continue even though it is performed by endoscopically.

Material and methods:

The retrospective single-center study which were included failed back spine surgery patients who had undergone interlaminar surgery at least once and at most seven times. Results before and after treatment using Oswestry disability index and visual analog score. compared

Results

All patients underwent transforaminal foraminoplasty and decompression. The result was significant differences ($p < 0.05$). There was no significant difference were observed During the up to 6 years follow-up (average 3 years), observed in postoperative VAS and ODI scores

Conclusion:

Percutaneous full endoscopic transforaminal lumbar disc surgery is a safe and effective procedure instead of interlaminar approach. Transforaminal endoscopic technique can be performed safely for recurrent and failed back spine.

Boundaries of Percutaneous Kyphoplasty for Treating Osteoporotic Vertebral Compression Fractures

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Background: Percutaneous kyphoplasty (PKP) effectively treats osteoporotic vertebral compression fractures (OVCFs), providing rapid pain relief and restoring vertebral height. The occurrence of sandwich vertebral bodies (SVBs) after PKP has become increasingly common. However, there is still controversy regarding the optimal timing for PKP surgery and whether SVBs are more prone to fractures.

Objectives: This study evaluated PKP timing's impact on outcomes and compared post-op fractures between SVBs and adjacent vertebrae to guide clinical decisions.

Research design and methods: We analyzed 824 OVCF patients treated conservatively or with PKP from January 2018 to December 2023. Groups included conservatively treated (Group A), PKP within a week (Group B), and PKP after a month (Group C). Pain (VAS), function (ODI), vertebral height (AVH), and kyphosis were assessed pre- and post-operatively. Post-op fractures in SVBs vs. adjacent vertebrae were compared in Groups B and C.

Results: Early PKP (Group B) showed comparable or better pain relief, function, height restoration, and kyphosis correction than conservative (Group A) or delayed (Group C) treatment. SVBs and adjacent vertebrae had similar VAS (2.67 ± 0.69 vs 3.49 ± 1.14 , $P=0.241$) and ODI scores (28.41 ± 7.16 vs 29.31 ± 4.31 , $P=0.395$). SVBs had a 16.3% new fracture rate, similar to adjacent vertebrae (12.7%).

Conclusions: Early PKP optimizes OVCF treatment outcomes. Although SVBs may have higher fracture rates, prophylactic PKP isn't necessary; regular anti-osteoporosis treatment suffices.

Keywords: Percutaneous kyphoplasty; Sandwich vertebral bodies; osteoporotic Vertebral compression fractures

A clinical outcome based prospective randomized study of arthroscopic ACL reconstruction with adjustable- versus fixed-loop device for femoral side fixation.

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Background: Suspension devices are the standard femoral fixation device for arthroscopic ACL reconstruction. It is important to determine whether its two variants -fixed and adjustable provide comparable results in clinical settings. **Aims:** to compare clinical outcomes between patients who underwent ACL reconstruction with fixed loop device (group I) versus adjustable-loop device (group II). **Methods:** Patients were divided into two groups of sixteen patients each. Both groups were equivalent in demographic, preoperative, and intra-operative variables. Clinical outcome assessment was done with IKDC score, Lysholm Score and knee stability tests at preoperatively, 6 months after surgery and finally at 1 year post-operatively. **Results:** Mean pre-operative IKDC score were 61.4 ± 4.2 and 59.4 ± 4.4 . Mean Post-operative IKDC scores of groups I and II were 72.2 ± 4.8 and 70.3 ± 5.2 at 6 months and, 85.8 ± 5.3 and 84.5 ± 5.8 after 1 year. Mean Lysholm scores were 54.6 ± 4.8 and 56.1 ± 3.9 pre-operatively and 78.7 ± 3.6 and 77.6 ± 3.5 after 6 months and 86.8 ± 2.9 and 88.1 ± 3.1 at 1 year. The groups were compared based on scores and difference in the outcomes was statistically insignificant ($p > 0.05$). All patients showed improvement in pre-operative and the post-operative results in all three tests at 6 months and at 1 year. **Conclusion:** No significant difference in outcomes was found between the two groups. Hence both suspensory devices are efficient for fixing femoral side grafts in arthroscopic ACL reconstruction. This study showed that lengthening associated with adjustable-loop devices in biomechanical studies may not be relevant in clinical settings.

Influence of Lateral Femoral Notch Impaction Fracture Characteristics on ACL Failure after Reconstruction

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Purpose: During the pivot shift mechanism of an ACL tear, an impaction fracture of the lateral femoral condyle, also known as “lateral femoral Notch” (LFN), can occur. The aim of this study is to verify if the morphology of the LFN has an impact on the risk of recurrence of ACL tear. **Methods:** This is a retrospective study on 730 patients operated for ACL reconstruction between 2008 and 2019, with minimum 2-years follow up. Clinical data such as age, sex, stability (Lachman, Pivot Shift), graft size, and concomitant meniscal tear were collected. Radiological data, including depth, length, and LFN position (from the Blumensaat line), were collected from both X-Ray and MRI. Descriptive analysis and comparison of clinical and radiological data between stable and unstable groups (confirmed re-rupture, revision, Lachman ≥ 2 , Pivot Shift ≥ 2) were performed. **Results:** Of the 730 patients, 75 were classified as unstable and were matched using a 3:1 ratio to stable knees based on sex, age and graft diameter. Radiologic data analysis failed to show differences between the two groups for LFN morphology, including depth ($p= 0.746$), length ($p= 0.781$) and position from Blumensaat line ($p= 0.989$). **Conclusion:** Despite its retrospective design, this study's clinical significance primarily stems from the scarcity of prior research on the subject and its statistical power. No difference between knee stability after ACL reconstruction and LFN lesion severity (in terms of depth, length, and position) was shown, weakening the relevance of treating this impaction fracture.

Functional Outcome of ACL Reconstruction with and without Internal Bracing in 100 Cases

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INTRODUCTION : ACL tear and its reconstruction has been increasing in numbers due to increased sports injuries and road traffic accidents. Internal bracing is the augmentation of a ligament with high strength suture tape, which reinforces the ligament and acts as a secondary stabilizer to share the load of the ACL graft especially in the ligamentization phase, which in theory due to its structural support can help to reduce the re-tear rate and improve the knee function during the early stages of healing. In our study, we want to compare the outcome of both the techniques. **METHODS :** We had two groups each of 50 patients.

Both the groups underwent ACL reconstruction with hamstring graft, with suspensory fixation on femoral side and screw on tibial side. In cases with fiber tape, the anchorage was done separately in the tibia with help of bioanchor, with knee at zero degree extension. Both IKDC and Lysholm score was used for assessment. The results of both the groups was comparable, but patients with augmentation were mobilised faster and were weaned off the knee brace earlier than the other group. The group with internal bracing were back to the sports activity earlier than the other group. **DISCUSSION:** Younger patients with high levels of physical activity whom requires an earlier and more secure rehabilitation, application of internal bracing has been found more beneficial.

Clinical and Functional outcomes of acute displaced Posterior Cruciate Ligament Tibial avulsion fracture: A retrospective study of arthroscopic Endobutton fixation techniques

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Posterior cruciate ligament injuries are very uncommon and PCL avulsion fractures are an extremely rare variant of PCL injuries. Conventionally these injuries were treated with open reduction and internal fixation but newer arthroscopic techniques have now gained popularity over recent times

Objective: The main objective of our study is to report the clinical, radiological, and functional outcomes of posterior cruciate ligament tibial avulsion fracture using the Endobutton

technique.**Materials and methods:** All the consecutive patients aged between 18-50 years with PCL avulsion fractures who underwent arthroscopic fixation via Endobutton device were included in this study. The clinical and Functional outcome was recorded at 1 year by evaluating the range of motion of the knee joint, stability, and Lysholm score along with post-operative complications. **Results:**

Excellent outcome was recorded in all six of the patients with full range of motion and no posterior tibial sagging. All of them returned to their routine activities within two weeks and no postoperative complications were recorded. **Conclusion:** Previous literature has shown that the utilization of the

Endobutton technique has not only achieved excellent clinical outcomes but has also resulted in fewer complications as compared to the traditional treatment modality, the only long-term complication that was observed was the development of arthrofibrosis. In our cases, the intramuscular septum was not breached hence none of the patients experienced arthrofibrosis.

keywords: Arthroscopic, Avulsion fracture, Endobutton, Posterior cruciate ligament

Video Assisted Home-Based Rehabilitation Versus Supervised Physiotherapy Rehabilitation for the First 6 Months Post Anterior Cruciate Ligament (ACL) Reconstruction. A randomized and single-blinded study

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Home-based (HB) rehabilitation is an alternative method of physiotherapy after ACL reconstruction to regain the pre-injury state level. This study aims to assess the effectiveness of a new modified home-based physiotherapy program for chronic anterior cruciate ligament (ACL) deficient patients. 34 ACL patients were randomly allocated before surgery to either supervised physiotherapy (SP) or HB group. 27 patients completed rehabilitation (15 in SP;12 in HB). Patients were given an instructional video CD and equipments to perform rehabilitation at home. They were reviewed at 6-week, 3-month and 6-month to evaluate knee motion, muscle strength and power, knee stability, and functional outcomes. Only 1 patient in SP group did not achieve the targeted motion. Functional outcome scores improved at 6 months, but were statistically insignificant (P value 0.652 at 3-month and 0.323 at 6-month). Knee laxity did not show any significant difference at 6 months (p: 0.371) as well as muscle strengths and power were measured at 2 speeds (180° and 300°/s). Our modified HB rehabilitation protocol is based on principle as the available regime that could be as effective as SP regime that is similar to previous studies in term of functional outcome, knee motion, graft laxity, muscle power and muscle strength. Evaluation of both flexion and extension power can elucidate the balance of knee function that reflect on the knee stability. A structured HB rehabilitation was as effective as SP in achieving acceptable short-term outcomes post ACL reconstruction and improving patient compliance in rehabilitation and reducing healthcare cost and burden

Arthroscopic anterior cruciate ligament reconstruction using quadrupled hamstrings graft- A comparison between endobutton and interference screw fixation

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Purpose: The goal of this study was to assess the effectiveness of remote fixation with endobutton & screw and aperture fixation with bioabsorbable interference screw (BIS) for hamstring anterior cruciate ligament (ACL) reconstruction. **Type of Study:** Retrospective comparative study. **Methods:** This included two groups of 25 patients each who had autogenous hamstring ACL reconstruction at least 18 months follow-up. The BIS group underwent interference screw fixation at both femoral and tibial tunnels and the ENDO group underwent endobutton fixation on the femoral side and screw fixation on the tibial side. The International Knee Documentation Committee (IKDC) and athrometer measurements were part of clinical evaluation. MRI and radiography were used to assess tunnel enlargement, screw integrity, graft integrity, and graft-tunnel interface. Statistical analyses were performed using the Student t test. **Results:** Revision rates were reviewed. Patients in both groups had functionally normal or near-normal IKDC scores. The average IKDC subjective knee form scores were 85 +/- 11 versus 81 +/- 17 (BIS v ENDO) For both groups, tunnel enlargement was present on radiographs at both femoral and tibial sides (36% to 77%), more significant on the femoral side. The grafts had full or partial integration at every tunnel for both groups. Measurements of tunnel expansion obtained from MRI closely match those obtained from radiography. **Conclusions:** At 18 to 24 months of follow-up evaluation, the ENDO and BIS showed similar clinical outcomes. The femoral side had statistically significant tunnel enlargement. MRI scans revealed that even two years after surgery, BIS had not degraded.

The effect of PRP injection post arthroscopic primary ACL reconstruction on early return to work on Saudi population

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Background: Many studies have documented the use of platelet-rich plasma (PRP) alongside anterior cruciate ligament (ACL) reconstruction (ACLR) in the management of ACL injury, but evidence on the benefits of PRP in improving the outcomes of ACLR is inconsistent. **Purpose:** To help in our understanding, we undertook this study that evaluated the effects of PRP on patient-reported functional scores, complications and return to work time. **Method:** After thorough search in literature, we found that the most useful outcome evaluating methods assessing the effects of PRP on ACLR were visual analog scale (VAS) for pain, International Knee Documentation Committee (IKDC) scores and pivot-shift test. We designed our study based on two groups of 20 ACLR patients. The first group that received PRP injections at 2,6,12 weeks post ACLR. The other group that did not receive any injections. Both groups were followed up at 2,4,6,10,12 and 24 weeks postoperatively. **Results:** There were a significant improvement in the first group in comparison to the second group in IKDC score ($P < 0.0001$). While the VAS score showed a significant improvement between the two groups ($P < 0.0001$). Pivot shift test results and complications showed no differences in both groups. The mean return to work time in the second group was 8 months while in the first group it was 5 months. Which shows a significant value. **Conclusion:** PRP applied post ACLR could reduce postoperative pain, improve knee function and hassle the return to work time. PRP does not improve knee stability.

Early Results And Return To Sports Following Arthroscopic Anterior Cruciate Ligament Reconstruction Comparing Quadruple Hamstring And Peroneus Longus Tendon Autografts: A Randomize Control Trial

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Aims: This study presents clinical outcomes and functional results after anterior cruciate ligament (ACL) reconstruction using quadruple hamstring tendon autograft or peroneus longus tendon autograft. **Methods:** Between February 2018 and July 2019, patients who underwent ACL reconstruction were randomly assigned to two groups: hamstring and peroneus longus. The functional outcomes and pain intensity were evaluated using IKDC, Lysholm and visual analogue scores at 3 and 6 months, 1, 2, and 5 years after the surgery. At the 5-year follow-up, anterior stability was tested using the 3D printable Knee Arthrometer. In addition, in the peroneus longus group, ankle functional assessment was performed using the American foot and ankle score. **Results:** Sixty patients, with 30 in each group, were included in the study. After five years of follow-up, there was no significant difference in functional assessment scores (IKDC and Lysholm) between the two groups (P-value > 0.05). The mean Arthrometer testing measurements (AMT) for the operated knees in the hamstring and peroneus longus groups were 5.85 ± 1.83 and 5 ± 1.13 . There was a statistically significant difference in AMT measurements between the two groups at five years follow-up (P-value 0.04). In the peroneus longus group, the mean postoperative foot and ankle score was 98.63 ± 3.8 that showed excellent ankle function after harvesting. **Conclusions:** Peroneus longus tendon autograft for arthroscopic ACL reconstruction is a feasible alternative. The graft diameter is sufficient, and the results regarding laxity and functional outcomes are like those achieved with hamstring tendon autografts.

Can I trust you?

Evaluation of ChatGPT's Answers About ACL injuries

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Anterior cruciate ligament(ACL) injuries pose a significant problem frequently encountered by active individuals. Many questions arise from patient perspective regarding this injury, often leaving them without access to professional healthcare providers for answers. Consequently, alternative avenues for solutions are sought. The era once dominated by Dr.Google has now given way to artificial intelligence technologies. This study aims to address the questions frequently asked by patients about ACL injuries through an artificial intelligence-based model, ChatGPT, and to evaluate responses by sports surgeons. Using Google, ten most commonly asked questions by patients regarding ACL injuries were identified. These questions were automatically answered by the ChatGPT 3.5. Subsequently, the responses were compiled into a survey. Ten sports surgeons were asked to evaluate the responses. A four-point scoring system was utilized (excellent response, satisfactory requiring minimal clarification, satisfactory requiring moderate clarification, unsatisfactory).In the evaluation of responses provided by ChatGPT, none were deemed unsatisfactory. Five questions were predominantly rated as excellent responses. The remaining five questions were mostly categorized as satisfactory requiring minimal clarification. However, in three questions, some evaluators marked the option of satisfactory requiring moderate clarification.This study demonstrates that the information provided by ChatGPT is generally understandable. However, in some cases, there may be deficiencies or the need for clarification in the responses. This study highlights the potential of artificial intelligence-based models in meeting the information needs of patients regarding ACL injuries. Nevertheless, the use of these models should be supported by expert evaluation and current clinical knowledge.

Single bundle Anterior Cruciate Ligament Reconstruction has less graft failure than Double Bundle Anterior Cruciate Ligament Reconstruction? a multicenter retrospective cohort study from CGRD (Chang Gung Research Database)

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ACL reconstruction is a widespread sports medicine surgery, varying studies on single vs. double bundles techniques. This study investigates outcomes between the two techniques. Method:

A retrospective cohort study was undertaken, identifying individuals aged 15 to 65 with an ACL tear in Taiwan's Chang Gung Research Database (CGRD) spanning January 2001 to December 2020. The study drew upon the CGRD, utilizing diagnostic registrations initially coded under the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) system, and transitioning to ICD-10 codes post-2016. Additional insights into the CGRD have been previously disseminated. For further analysis, clinical characteristics (age, sex, BMI, etc.), surgical interventions (single or double bundle reconstruction), and outcomes (osteoarthritis, knee arthroplasty, meniscectomy, graft failure) were retrospectively collected.

Result: The study initially included 1884 patients in the single-bundle ACL reconstruction and 454 in the double-bundle group. After propensity score matching (PSM), 453 patients for both single and double-bundle. Post-inverse probability of treatment weighting (IPTW), the groups comprised 1879 and 438 patients, respectively. The double-bundle group showed a higher likelihood of graft failure (HR 1.922 - 8.02, 95% CI) and meniscectomy (HR 1.727 - 4.077, 95% CI) compared to the single-bundle group. Discussion: The choice between single or double-bundle depends on surgeon preference and patient characteristics. The double-bundle approach may be recommended for specific cases. Conclusions: Single bundle technique may be more optimal than double bundle technique for anterior cruciate ligament reconstruction due to less graft failure and meniscectomy possibility.

The pros and cons of grafts used in primary and revisional anterior cruciate ligament reconstruction

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Anterior cruciate ligament rupture is one of the most common causes of ending the professional career of an athlete. The loss of one of the main knee stabilizers makes it impossible to play sports at a high level and significantly complicates daily physical activity. Considering the impaired quality of life and lack of biological regenerative capacity of LCA, arthroscopic reconstruction is currently the best approach. When going with reconstruction, the most important factor is appropriate graft selection. There are several choices regarding grafts: autografts or allografts, soft tissue grafts or grafts with bone block. Among arthroscopic surgeons, the most popular grafts are semitendinosus-gracillis (ST-G) and bone-patellar tendon-bone (BTB) grafts, with now increasing popularity of quadriceps tendon (QT) grafts, while Achilles tendon (TA), peroneus longus tendon (PLT), and iliotibial band (ITB) grafts are less used in everyday practice. The optimal graft should have histological structure and biomechanical characteristics as similar as possible to the native ligament, to restore structure and kinetics of the knee joint. This review aims to investigate recent literature and point out the advantages and disadvantages of currently used grafts in primary and revision reconstructions. Apart from biomechanical characteristics, donor site morbidity and postoperative results, the graft selection decision should also be included a patient's level of physical activity and postoperative expectations.

Keywords: LCA rupture, LCA reconstruction, graft choice

Modified loop plate technique plus Nice knot technique for ulnar coronoid process fractures

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Background Ulnar coronoid process fracture is usually caused by high-energy injury of the elbow joint bone structure and ligament structure of the complex injury. The loop plate technique was used to treat ulnar coronoid process fracture in our hospital and achieved good results.

Objectives The aim of this study is to investigate the efficacy of modified loop plate technique combined with Nice knot technique in the treatment of ulna coronoid process fractures, and to provide a better choice for the treatment of ulna coronoid process fractures.

Design and Methods **Methods** From June 2020 to June 2023, 45 patients with ulnar coronoid process fracture were treated in our department. Among them, 22 patients were treated with modified loop plate technique and Nice knot technique for ulnar coronoid process fracture with traditional loop plate technique, and 23 patients were treated with traditional loop plate technique for ulnar coronoid process fracture. The postoperative elbow flexion and extension, rotation range of motion, Mayo elbow function score were analyzed. P value was set at <0.05.

Results There were no significant differences in operation time, length of hospital stay, total treatment time, intraoperative blood loss, pain management, fracture healing time, and range of motion between the two groups. the clinical efficacy and functional recovery of the two surgical methods are basically the same.

Conclusion This study shows that the modified loop plate technique plus Nice knot technique has the same effect as the traditional loop plate technique in the treatment of ulnar coronoid process fractures.

The Relationship Between Achieving the Minimal Clinically Important Difference and Patient-Reported Satisfaction After Arthroscopic Superior Capsular Reconstruction With Fascia Lata Autograft

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Purpose: Surgeons used minimal clinically important differences (MCID) to interrogate outcomes using patient-reported outcomes (PROMs) to determine whether a patient can achieve clinical benefit following orthopedic surgeries. This study aimed to investigate the association between achieving MCID and patient-reported satisfaction after ASCR. **Methods:** Patients with ≥ 2 -year follow-up and receiving questionnaires were included. Patient-reported outcome measures were collected pre and postoperatively, including VAS, ASES, and SANE scores. MCID were determined using the anchor-based method. Patient-reported satisfaction was evaluated with the following question: "Are you satisfied with your superior capsular reconstruction surgery?" [Yes/No]. The association between achieving MCID and patient-reported satisfaction was evaluated.

Results: All three scores had acceptable areas under the curve values for MCID. Patients achieving MCID for patient-reported outcome measures had significantly greater improvement levels in clinical outcomes than their counterparts, except for the VAS score that demonstrated no difference between patients achieving and not achieving the MCID for SANE score. Achieving MCID for PROMs was associated with a significantly higher proportion of patients feeling satisfied with the outcomes than the group failing to achieve the MCID. However, the percentages of patients who failed to achieve MCID for pain VAS, ASES, and SANE scores feel satisfied at 63.3%, 54.5%, 59.1%, and 43.8%, respectively.

Conclusion: Achieving MCID thresholds on the VAS, ASES, and SANE scores was predictive of patient-reported satisfaction after ASCR two years postoperatively.

However, half of the patients who failed to achieve MCID were still satisfied, regardless of clinical outcome improvements.

Scapula fracture with glenoid comminution in politrauma patient: How and when to approach those fractures? A complex clinical case

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Introduction: Scapular fractures are relatively uncommon (less than 1% of all fractures). Scapula has a special biological and mechanical environment that impact the displacement and stability of the fracture and that is why most are treated non-operatively. The outcome of scapula fractures is less favourable in polytrauma patients, due to higher fracture complexity. Indications for surgery are intra-articular displacement greater than 5mm, “displaced floating shoulder”, glenopolar angle < 20° and intra-articular involvement greater than 20%. **Methods:** Clinical case of a 28 yo male who made a suicide attempt resulting in polytrauma. He suffered a left sacral, left femoral neck, right femur shaft and an explosive spine (multifragmentary glenoid fossa) fractures. Sacral and both femur were stabilized in the same day. Spine fracture only when stable – 2w later.

Results: For spine fracture treatment we made a double approach. First in lateral decubitus we performed a classic Judet approach, reducing the medial and lateral borders and the posteroinferior part of glenoid with specific plates. Secondly, we made a deltopectoral approach and reduced the other glenoid fragment with screws. **Discussion:** The timing of shoulder surgery in polytrauma patients is always determined by emergent situations that should be treated first, sometimes leading to surgery out of the ideal timing. The complexity of glenoid fractures, associated with extra-articular scapula fractures demand a double approach, as in our case. **Conclusion:** Complex scapula fractures, especially in polytrauma, are still a great challenge and the decision of going to surgery, the approaches and type of fixation should be individualized.

Preserving elbow motion following olecranon osteotomy for fixation of distal humerus fractures

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Introduction: Regaining normal range of joint movement is the second most important goal following the aim of union of any intra-articular fracture. This is only achieved by reestablishment of joint line via adequate exposure; i.e., wide tissue dissection and/or osteotomy. The complexity of regional elbow anatomy and multifragmentary fracture pattern made the exposure challenging and the procedure demanding (by dissection and multiple hardware insertion), then adversely affect joint function. There are many approaches for distal intra-articular humerus fractures: triceps-splitting (very limited articular visualization), triceps-reflecting, triceps-reflecting anconeus pedicle (though entire extensor mechanism reflection; limited exposure, triceps weakness and/or avulsion) and trans-olecranon osteotomy (maximum visualization on fracture fragments with a minimal consequence on extensor mechanism). **Method:** From 2015 to 2023 prospectively 18 patients (14 male and 4 female) aged (17-62 years) with type B&C AO/OTA distal humerus Fracture. All fractures approached posteriorly via olecranon osteotomy after isolation and taping of ulnar nerve. The fractures fixed with double column anatomical plates. Active Elbow movement started immediately post operatively, followed by intense course of physiotherapy. **Results:** All fractures get union within 12-14 weeks with full range of elbow movement apart of one case of 5 degrees limitation of full extension. There was no major complication like nonunion (at fracture and osteotomy), infection or stiffness. **Conclusion:** Though it is demanding and associated manageable complication(s), Trans-olecranon osteotomy approach ensures maximum exposure with a minimal effect on extensor mechanism, resulted in adequate fixation and proper union and hence normal range of elbow movement.

Acute Distal Biceps Tendon Repair With Cortical Button Offer Good Functional Outcomes: A Retrospective Study Focusing on Range of Motion, Muscle Strength and Pain

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Introduction: Distal biceps tendon (DBT) rupture is not one of the most common upper limb injuries. Surgical intervention is recommended for these injuries to restore muscular strength and functionality. Multiple different techniques are documented in the literature, however there is no definitive consensus on the most effective surgical treatment. The objective of this study was to assess the functional results of patients who underwent repair of DBT utilising cortical button fixation procedures. **Methods:** This study is a retrospective single-unit case series consisting of 54 patients who underwent DBT repair at Heartlands Hospital in Birmingham, United Kingdom. The patients' functional outcome was assessed by the Mayo Elbow Performance Score (MEPS). **Results:** The mean age was 51 ± 11.01 years. Patients were operated 4.72 ± 7.083 days after the injury. The mean pain Visual Analogue Scale (VAS) 6 months after the surgery was 0.54 ± 0.50 . At 6 months follow-up, the average extension deficit was 2.69° (0-10), flexion 132° (120-140), supination 76° (50- 85) and 77° for pronation (78-95). Patients were followed up routinely for 6 months. Mayo Elbow Performance (MEP) Score was utilised to assess the functional outcome and the mean MEP score was 91.43 ± 8.26 which showed excellent functional outcomes for the cohort. **Conclusion:** The functional results of the DBT repair with cortical button fixation are very favourable 6 months postoperatively. The surgical treatment has achieved restoration of supination strength.

Reconstruction plate combined with cannulated screw for the treatment of scapular fractures through the glenoid

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Objectives: To explore the clinical efficacy of reconstruction plate combined with cannulated screw for the scapular fractures through the glenoid.

Methods: From October 2021 to May 2023. 21 patients with scapular fractures through the glenoid were treated in our department. They were 16 males and 5 females. 28 to 53 years of age (mean, 37.5 years). All the patients were treated through Judet approach, using reconstruction plate and cannulated screw to fix fracture. The shoulder function was evaluated at the last follow-up by Hardegger evaluation standard.

Results: 21 patients were followed up for 9 to 18 months (average, 12.8 months). All the 21 patients obtained bony union after 6 to 18 weeks (average, 14.8 weeks). At the last follow-up, the shoulder abduction from 80°~180° (average, 158°). According to Hardegger evaluation standard, 17 patients were excellent, 2 good, 1 fair, and 1 poor. The excellent to good rate was 85.7%. None of the patients had deep wound infection and nerve vascular injury, One patients appeared shoulder stiffness.

Conclusions: Reconstruction plate combined with cannulated screw is an effective method to treat scapular fractures through the glenoid. It can reduce and fix the fracture effectively and can avoid nerve vascular injury. It has satisfactory clinical effect.

Keywords: Scapular; Fractures; Internal fixation; Reconstruction plate; Cannulated screw

The sling effect in patients with anterior shoulder instability with bone loss: myth or reality? A systematic review and meta-analysis of outcomes comparing the Latarjet procedure with alternative bone block techniques

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Background: This study compared clinical, biomechanical and radiological outcomes in Latarjet vs alternative bone block (ABB) procedures in adult patients experiencing recurrent traumatic anterior shoulder instability or in cadavers in order to evaluate the effectiveness of the sling effect. **Methods:** PubMed, Embase and Medline databases were searched on February 22nd, 2024. Only comparative studies were selected. We assessed studies using RoB 2.0, ROBINS-I, and QUACS tools. **Results:** Twenty studies met the inclusion criteria. 7 studies (545 patients, mean age 27.4 years, mean follow-up 37.9 months) underwent meta-analysis, including 3 retrospective, 3 prospective cohort studies, and 1 randomised controlled trial, while 13 studies were synthesised narratively, including 7 biomechanical and 6 anatomic studies. The meta-analysis showed no significant differences in PROMs (WOSI, Rowe, VAS, SSV) between Latarjet and ABB. For ROM, only abduction favoured Latarjet (157.8° vs 146.5°; SMD: 0.47; 95% CI: 0.19-0.74; P=.03; 2 studies, 150 patients), with no significant differences in other measures. Rates of adverse events and recurrence showed no significant differences, although Latarjet had a higher, nonsignificant reoperation rate (7.04% vs 3.87%; RR: 1.51; 95% CI: 0.86-2.67; P=.11; 5 studies, 380 patients). Studies assessing area restoration, contact pressure, peak force, and translation reported conflicting data or no significant difference between procedures. **Conclusion:** The limitations of our meta-analysis include high heterogeneity and risk of bias of studies. There was no clear clinical benefit from the sling effect of Latarjet, indicating that ABB procedures could be a viable and safe alternative whilst preserving the native coracoid process. PROSPERO CRD42024517955.

Collagen Isoforms in Post-Traumatic Stiff Elbow Anterior Capsules - A Differential Expression

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Shoulder & Elbow Free Papers, MR 10, September 27, 2024, 10:30 - 12:30

Background: Our aim was to determine an expression timeline of various collagens in contracted post-traumatic elbow joint capsules, from the initial trauma.

Hypothesis: We hypothesized that several collagens are expressed in response to capsular injury, in addition to the well documented collagen types I and III.

Methods: We surgically excised the anterior capsules of 7 post-traumatically injured and stiff patients' elbow joints, recalcitrant to conservative management, in order to improve their range of motion. These excised capsules were immediately preserved in dry ice and underwent basic histological and more detailed western blot analysis for collagen sub-type analysis.

Results: The results indicated that type I and type III collagen levels, as well as lesser collagens II, V, VI and X, were detected at differing levels in all patients. The amalgamated data of all the specimens showed a maximum expression of collagens between 3 and 7 months from the traumatic event. After 4 months post-trauma, the levels of collagen type II, V and X were consistently less than collagen VI. Collagen VI showed consistent expression throughout the time from injury (1 to 18 months). There was a relative down-regulation of collagen II, V, and X, which progresses as the time from elbow trauma increases.

Conclusions: Our study demonstrates a complex time-dependent expression of various collagens from the time of elbow injury. This data may be useful for understanding an elbow contracture at the molecular level, and for future work into the complex interplay between collagen subtypes.

The Outcome of Uncemented Reverse Shoulder Arthroplasty Versus Cemented Stemmed RSA in Traumatic Proximal Humeral Fracture Dislocation: Comparative Analysis Study of a 7-Year Series

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Background: Proximal humeral fractures are the third commonest fracture in the elderly population and these fractures can be complex and challenging to manage. In recent years, reverse shoulder arthroplasties (RSA) have been increasingly performed to treat these fractures. Traditionally, prosthesis fixation using methylmethacrylate cement has been the gold standard. However, uncemented fixation has been gaining popularity in the field of shoulder arthroplasty as it presents with many advantages. **Objectives:** At present, only few comparative studies are available in the current literature between uncemented and cemented RSA. This study aims to address this existing literature gap. **Study Design:** Case series. **Level of evidence:** 4. **Methods:** Data for a consecutive series of patients who underwent RSA between 2016-2023 from two hospital sites was collected retrospectively. The operative indications, outcomes and post-operative images was reviewed and collected using electronic records and PACS systems. **Results:** Clinical and radiological follow-up was obtained for all 59 patients. The mean age for this patient cohort was 75 years (range, 54–91 years). The median operating time was 2 hours 36 minutes. At 1-year post-surgery, the median Oxford Shoulder Scores for this cohort was 45/48. Patients were very pleased with the surgical results and have good post-operative functional outcomes. All patients had satisfactory post-operative radiological findings with satisfactory tuberosities healing and no humeral periprosthetic fractures/dislocation identified. **Conclusion:** Our study revealed a superiority in clinical outcomes of uncemented fixation in comparison to the documented literature results of cemented RSA, suggesting uncemented RSA as a good treatment option for traumatic PHFs.

Comparison Of Suture Button With Interference Screw Fixation Vs Suture Button Alone For Distal Biceps Brachii Tendon Reconstruction. Does The Addition Of Interference Screw Affect Outcomes?

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Background: Distal biceps brachii tendon rupture, often resulting from sports activities, significantly impacts elbow flexion and forearm supination strength. Surgical reconstruction using various fixation methods, notably suture button fixation with or without an interference screw, is commonly preferred due to poor tolerance of the injury by patients.

Objectives: This study evaluates the outcomes of distal biceps tendon repair using suture button fixation alone versus a combination with an interference screw, focusing on the potential benefits or risks associated with the additional fixation.

Methods: A retrospective review of 44 patients who underwent surgical repair for distal biceps tendon rupture at our institution, utilizing either suture button fixation alone or combined with an interference screw. All procedures were performed using an anterior single-incision approach. Patients adhered to a standardized rehabilitation protocol. Outcomes measured included the Quick Disability of Arm, Shoulder, and Hand Score (Q-DASH), Mayo Elbow Performance Score (MEPS), Visual Analogue Pain Score (VAS), and rates of complications, re-ruptures, and patient satisfaction.

Results: Most patients were male, with the dominant arm predominantly affected. Functional outcomes, as measured by Q-DASH, MEPS, and VAS, showed no significant differences between the two fixation techniques. The primary complication observed was paraesthesia of the lateral antebrachial cutaneous nerve. No infections or significant re-ruptures were reported.

Conclusions: Distal biceps tendon repair using either suture button fixation alone or in combination with an interference screw yields similar functional outcomes. The addition of an interference screw to suture button fixation does not appear to enhance surgical results and may be considered unnecessary.

Anterior Elbow Arthroscopic Portal - Parameters of Safety Study

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Introduction

Elbow Arthroscopy is a high stakes procedure due to numerous neurovascular structures surrounding the surgical site. Multiple portal locations have been described in the literature, but no single approach has been accepted as the standard. The purpose of this study is to define a novel approach to placement of an anterior portal for elbow arthroscopy that is normalized to each individual patient. Our proposed location for portal placement is the transepicondylar distance (TED) distal to the midpoint of the transepicondylar line (TEL).

Methods

Using our proposed method of portal placement, portals were placed in 43 cadaver arms. The cadavers were subsequently dissected and the distance of the portal from essential neurovascular structures was measured.

Results

The transepicondylar distances of the cadaver elbows used in this study averaged 63.45 mm with a standard deviation of 5.88 mm. The range of the transepicondylar distances was 23 mm. The portal placement averaged 2.77 ± 2.79 mm from the lateral cutaneous nerve, 7.17 ± 3.16 mm from the radial nerve (RN), and 14.5 ± 9.00 mm to the radial artery.

Discussion/Conclusion

In conclusion, this novel method for placement of an anterior portal offers access to the radial tuberosity, radial head, coronoid, anterior capsule, and the brachialis insertion while consistently avoiding all neurovascular structures other than the lateral cutaneous nerve. Care should be taken when making the portal due to the locality of the lateral cutaneous nerve branches, with in-line blunt spreading dissections substituted for sharp dissections.

The effect of subscapularis repair in reverse total shoulder arthroplasty depends on the design of the implant: a comparative study with a minimum 2-year follow-up

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The role of subscapularis does not yet have a well-defined role in RSA. The purpose of the present study was to evaluate if the repair of the Ssc in RSA improves overall clinical and radiographic results and if it has the same results using a medialized design humeral stem compared to a lateralized design. 84 patients undergoing RSA were retrospectively analyzed. Patients were divided into four groups for data analysis depending on whether they had received a medialized or lateralized design and Ssc repair or not. Patients were reviewed at an average follow-up of 40.8 ± 13.1 months. Clinical outcome measures included ROM, strength, VAS, Constant-Murley and ASES. Radiographic evaluation at final follow-up was performed. No statistically significant clinical differences ($p > 0.05$) emerged between Lat/Ssc+ and Lat/Ssc-. Conversely, the patients belonging to the Med/Ssc- group reported statistically worse ($p < 0.05$) results than the Med/Ssc+ group in terms of VAS, ASES and CMS. Statistically worse ($p < .05$) results in the Med/Ssc- group than in the Med/Ssc+ were found also in active ROM in FE, ABD, ER1 and ER2, and in the strength in FE, ABD and ER2. Scapular notching was reported in 3 shoulders (15.7%) in Lat/Ssc+ group and in 7 shoulders in Lat/Ssc- group, while it was reported in 4 shoulders in Med/Ssc+ group and in 6 shoulders in Med/Ssc- group. Stress shielding was observed in 6 cases in Lat/Ssc+ group, in 8 cases in Lat/Ssc- group, in 3 cases in Med/Ssc+ group and 4 cases in Med/Ssc- group. Patients undergoing RSA show clinical improvements at mid-term follow-up with a low rate of complications, regardless of the use of a medialized or a lateralized humeral stem design. Ssc repair is associated with better outcomes in the cohort of medialized stem, while it did not yield significant differences in the cohort of lateralized stem.

Hip arthroscopy capsular closure versus unrepaired interportal capsulotomy in patients without femoroacetabular impingement

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SOTA Hip & Pelvis Free Papers, MR 7, September 27, 2024, 10:40 - 12:30

Background: The aim of this study is to establish whether it is necessary to perform an interportal capsular closure in isolated labral rupture hip arthroscopy repairs in patients without any FAI pathology. **Methods:** This retrospective study started in 2019 till 2023 and was conducted on patients with isolated labral rupture without femoro-acetabular impingement. Hip arthroscopy labral repair was performed by using interportal capsulotomy. Patients were divided into two groups according to capsular repair. **Results:** Twenty patients (15 female, 5 male patients) with isolated labral ruptures had capsular repair (group A), 20 patients (10 females, 10 male) had unrepaired capsule (group B). The average age for both groups (37 years). Respective mean follow-up was 1 year for both groups. Patients were evaluated 6 months after the operation and one year after by using Harris Hip Score. Patients in the repair group (A) after 6 months had better scores post-operative (93.2) than in unrepaired group (83.8). One year after surgery, hip score was better in repair group (99.4(A)), but with a less significant margin (92.4 (B)). **Conclusions:** The results show evidence that there is better to perform an capsular closure after interportal capsulotomy because it shows superiority regarding unrepaired capsulotomy regarding first 6 months postoperatively.

Femoral anteversion assessment: 3D modelization insight

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Introduction: Accurate measurement of femoral anteversion is essential for preoperative planning of hip reconstructive surgery and treatment of lower limb deformities. Beside clinical assessment (cFA), several methods of radiological femoral anteversion measurements (rFA) can be used. However, the relevance of both clinical and radiological methods is still challenged. The development of three-dimensional modelling allows for greater precision in morphological measurements (3D-FA). The objective of this study is to look for a correlation between these three measurements method.

Methods: Clinical femoral anteversion measurements were performed on 26 ambulatory diplegic subjects (52 measurements) before multi-stage surgery. Radiological measurements were performed on 17 subjects (22 measurements) before surgical hip reduction. Using low-dose CT scans and 3D preoperative modeling, 3D-FA was measured using CREO Parametric 6.0 software based on geometric primitives. The measurements are compared in a paired manner using Wilcoxon tests, correlation analysis, and graphically using the Bland and Altman method (significance $p < 0.05$).

Results: cFA and rFA show significant differences compared to 3D-FA measurements of $3.40 \pm 10.23^\circ$ and $9.95 \pm 7.63^\circ$, respectively. cFA and rFA show strong correlations ($R=0.66$; $p < 0.05$) and very strong correlations ($R=0.96$; $p < 0.05$) with 3D-FA values, respectively.

Discussion and conclusion: In comparison to 3D measurement, cFA assessment present a range of errors comparable to those reported in the literature for CT scans or EOS, while showing higher correlations. rFA measurement has a very strong correlation with 3D measurement but seems to overestimate it by about 10 degrees.

Toward 3D planning and patient specific guided corrections for complex proximal femur deformities in children and adolescents

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SOTA Hip & Pelvis Free Papers, MR 7, September 27, 2024, 10:40 - 12:30

Introduction: Pediatric-specific pathologies such as slipped capital femoral epiphysis, coxa vara or Legg-Calve´-Perthes disease can lead to three-dimensional complex deformities of the proximal femur. 3D planning and patient-specific guides may provide a solution for optimal correction of these deformities.

Methods: A total of 42 proximal femoral osteotomies have been performed with GPS in our department since 2020. Osteotomies performed in conjunction with acetabular dysplasia correction were excluded. Fifteen proximal femoral osteotomies (in 14 patients) were included. 3D reconstruction from a low-dose lower limb CT scan allowed angular measurement of deformities and surgical planning using patient-specific guides. Postoperative clinical and radiological outcomes were evaluated.

Results: The etiologies of deformities included: sequelae of slipped capital femoral epiphysis (3), coxa vara and breva (3), exostotic disease (2), fibrous dysplasia (2), and malunion (2). The average age was 12 years (ranging from 8 to 16). The average surgery duration was 186 minutes (ranging from 125 to 241). The mean radiation dose was 206 mGy/cm².² The average follow-up was 18 months (ranging from 6 months to 2 years). The anatomical goal (<5° difference from the target) was achieved in 96% of cases in the frontal plane, 100% for sagittal subtrochanteric corrections, and incompletely (60%) for transverse corrections of epiphysiolysis sequelae.

Discussion and Conclusion:

Radiographic results assessed using standard imaging were satisfactory. However, a postoperative comparative three-dimensional study would be desirable.

3D modeling allows for a better understanding of anomalies, guiding the corrections to be proposed. GPS faithfully translate these corrections during the surgical intervention.

Bilateral Total Hip Arthroplasty in Patient with Achondroplasia - Case Report

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Ovaj prikaz slučaja pruža istoriju pacijentkinje, visine 118 cm, sa ahondroplazijom koja je bila podvrgnuta bilateralnoj totalnoj artroplastici kuka korišćenjem Fitmore stema. Prema našim saznanjima, ovo je najniži odrasli pacijent koji je podvrgnut totalnoj bilateralnoj artroplastici kuka na svetu. Takođe smo otkrili značajno izvijanje femoralnih dijafiza i u koronalnoj i u sagitalne ravni. Nakon operacije, pacijent nije imao pritužbi na operaciju, hod se značajno poboljšao, povećao se opseg pokreta oba kuka. Kod pacijenata sa ahondroplazijom koji razvijaju krajnji stadijum osteoartritisa kuka, postoji jedinstven izazov za hirurge, uključujući izbor dizajna implantata, dimenzionisanje, pozicioniranje i meka tkiva balansiranje. Verujemo da bi upotreba kratkih femoralnih stemova mogla predstavljati prihvatljivu hiruršku strategiju u lečenju pacijenata sa ahondroplazijom.

Health related quality of life and hip function comparing between intramedullary and extramedullary internal fixation of pertrochanteric fractures

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Introduction: Quality of life is a crucial factor in pertrochanteric fractures treatment, being influenced directly by hip function in the injured limb. This study is about intramedullary and extramedullary fixation comparing of pertrochanteric fractures regarding health related quality of life (HRQL) and hip function, at least two years after surgery. **Material and Methods:** Internal fixation methods compared in the series of 82 patients with AO/OTA A1 and A2 trochanteric fractures were intramedullary fixation (IM group), and Selfdynamisable Internal Fixator, as an extramedullary method (SIF group). Hip function was determined by Harris Hip Score (HHS) and HRQL was assessed by SF-12 questionnaire, containing its mental (MCS) and physical (PCS) component score. **Results:** Average scores in IM group were: 67.8 PCS, 71.1 MCS and 75.1 HHS. Average scores in SIF group were: 61.4 PCS, 65.3 MCS and 71.6 HHS. There was not significant difference between the groups regarding three followed parameters ($p > 0.05$). There was the correlation between all parameters ($p < 0.05$). **Conclusion:** Final functional outcome in pertrochanteric fractures treatment are expected to be similar between intramedullary nailing and Selfdynamisable Internal Fixator methods. The influence of hip function on health related quality of life was confirmed as significant.

Use of porous metal augments for solving bone defects of acetabulum in hip arthroplasty

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The number of cases of revision hip arthroplasty is constantly increasing. One of the biggest challenges in this surgery is solving bone defects of the acetabulum. According to the German hip endoprosthesis registry, aseptic loosening of the acetabular component is one of the most common reasons for revising primary hip arthroplasty. Bone defects can vary in both, size and location. In order to adequately classify the defect, it is necessary to perform conventional X-ray and a computerized tomography. The Paprosky classification is most commonly used. This study includes patients operated on between July 2021 and December 2023. There were 30 patients, of whom 22 (73%) were women and 8 (27%) men. The average age of the patients was 67,9 years, and average follow-up time were just over three months. The surgeries were performed by 14 surgeons, all using a posterolateral hip approach, with augmentation done using Gription® TF augment. Acetabular defects were represented as follows: Paprosky IIb in 9 (30%) cases, type IIc in 5 (16%) cases, type IIIa in 12 (40%) cases, and type IIIb in 4 (14%) patients. The osseointegration of the acetabular component and metal augment was observed in 29 (97%) patients, while one patient showed a linear radiolucent line up to 2mm. Complications were observed in 5 (16%) patients, with 3 (9%) experiencing prosthesis dislocation and 2 (6%) developing infection. It can be said that adequate use of metal augments allows good establishment of biomechanical conditions in the hip joint while solving various acetabular bone defects.

Using Of the Stoppa Approach for Complex Acetabular Fractures

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Treatment of dislocated and complex fractures of the acetabulum is a challenge for the orthopedic surgeon, characterized by a high percentage of complications with poor functional results. Fractures are often accompanied by associated injuries. We present 48 subjects with 51 acetabulum fractures, treated from 2015-2022, within 3 weeks of injury, age varies between 19-71 years, majority were male 70%, follow-up 16-30 months. All subject treated with a Stoppa approach and fixation with a suprapectineal plate, an additional surgical approach was used in 18 cases. According to the Judet and Letournel fracture classification, we had both column 13; anterior column 5 and with posterior hemi-transverse 7; T type 11; transverse 9 and with posterior wall 6. The most common major associated injuries, in a total of 26 (54%) subjects, were injuries to the spine, pelvis, lower leg, head, abdomen and chest. For functional results we using the Merle D'Aubigne score, 65% of patients had an excellent result. Matta radiographic postoperative assessment of fracture reduction with anatomical position is 75%. The reoperations rate were 8%. Complications included infections 8.35%, deep vein thrombosis 6.25%, pulmonary embolism 6.25%, obturator nerve lesion 2%, inguinal hernia 2%, hip osteoarthritis 8.35%, heterotopic ossification 8.35%. The Stoppa approach provides good bone visualization with the possibility of reduction and fixation for most complex fractures, especially in the lamina quadrilateralis, sacrum and anterior pelvic ring. Also additional surgical approach is required for fixation of some types of posterior column and wall fractures, iliac wing or sacrum fractures.

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