



### Bipolar Mini-Invasive Surgery for children with neuromuscular and neuromuscular-like syndrome scoliosis

Souha Bennour, A. Msakni, M. L. Toumia, M. Zairi, R. Boussetta, M. N. Nessib

*Department of pediatric orthopedic surgery ; Children's Hospital Bechir Hamza Tunis Tunisia*

**Introduction:** Management of early onset spinal deformities in children with neuromuscular syndromes can be challenging due to the patient's fragile condition and poor bone quality. Bipolar mini-invasive techniques have emerged as a therapeutic alternative. The aim was to evaluate the results of Bipolar Minimally Invasive surgery for These patients.

**Methods:** Thirty-five children with neuromuscular or a neuromuscular like syndromic spinal deformities treated with a bipolar mini invasive technique as a definitive treatment or as growing rods procedure between January 2015 and December 2020 were retrospectively investigated.

**Results:** The mean Age was 10 years (4-16). Thirty-two patients were treated for scoliosis and 2 for kyphosis with definitive fixation for 4 patients. Mean follow up was 50 months, the mean major coronal curve improved from 65° to 32° and the pelvic obliquity from 15° to 5.8°. Complications were observed in 15 patients. Myelomeningocele was associated with the highest level of complications.

**Discussion:** Bipolar mini invasive instrumentation can offer a good stable correction for neuromuscular syndromes. Ilio-sacral screws provide a strong distal fixation even in case of poor bone quality which provide a strong base for lengthening and for correcting the spine and the pelvis. For patients with myelomeningocele, the risk of complication is very high

**Conclusion:** Bipolar Mini invasive instrumentation is an efficient alternative to manage neuromuscular syndromes related spinal deformities. Complications may be lessened by a strict application of the technique.

### Long-term follow-up of displaced femoral neck fractures treated conservatively in young patients

Rami Triki, Y. Mallat, R. Ayari, A. Abdennadher, K. Amri, L. Nouisri

*The Principal Military Hospital of Instruction of Tunis*

**Introduction and study objectives:** Femoral neck fractures in the young population are mostly caused by highenergy mechanism. Even in displaced fractures (Garden 3 and 4), conservative treatment must be tried to restore the anatomy of the hip. The goal of our study is to evaluate the long-term results of femoral neck fractures treated conservatively in young patients.

**Material and methods:** This was a retrospective descriptive study. We had 42 patients aged between 19 and 55 who had femoral neck fractures Garden 3 or 4. They had anatomic reduction and internal fixation by DHS or multiple compressive screws (MCS). We noted time before surgery, the type of fixation and evolution to osteonecrosis.

**Results:** Most of our patients were male (85,7%). They had Garden 3 type of fracture in 71,4% of the cases. The mean time before surgery was between 4 hours and 3 days. Most of our patients had fixation with MCS (69%). The mean follow-up was 8,3 years. 9 patients had evolved towards osteonecrosis from which 4 had total hip arthroplasty.

**Discussion:** The goal of the treatment of displaced femoral neck fractures in the young adults is restoration of the anatomy as much as possible. Even with the risk of osteonecrosis in Garden 3 and 4 fractures, conservative treatment must be tried. According to the literature, there is no significative difference in results in terms of the surgery technique or time of surgery.

**Conclusion:** The treatment of femoral neck fractures in the young adults must seek anatomic reduction and stable fixation, but evolution to osteonecrosis is still possible.

### Myositis Ossificans Hips: "femoral head at risk"

Khaled Shahin, Mohamed Shebani, Mansour Elgassi

*Tripoli University Hospital*

Over a period of 14 years [2006-2020] we have seen 15 Myositis Ossificans Hip cases (2 females & 9 males) Most of them are bilateral(7). All of them involved in motor vehicle accidents resulted in head injury(8) with average of days of coma 12-22 days however one case was due to spinal cord injury at T10 vertebral level. We operated upon 11 of these hips on separate sessions i.e one at a time even for the bilateral joint involvement. Three bilaterally affected patients had posteromedial myositis ossificans of unilateral knees and two of them had in addition posteromedial ossificans of unilateral elbows.

There are two patients were seen in the clinics within 3 months post injury on aggressive passive exercises (physiotherapy) of their stiff hips; one complained of severe pain post manipulations of affected joints; and the other was paraplegic presented with painless deformed subtrochaneric fracture. Two-year post surgery follow-up was attained only in 7 hips 6 of them have improved mobility with satisfactory range of joint motion. Femoral Head at Risk of fracture is expected when Xrays have demonstrated radiolucency of the shielded headneck compared to MO mass as well as soft bone is felt on finger pressure or intra-operative fracture on joint mobilisation. Out of the eleven hips of myositis ossificans only two affected hips had had bipolar replacements of femoral heads due to head - necksegment osteoporosis.

**CONCLUSION:** Although only 18% of patients had had transition hemiarthroplasty, one should preoperatively inform patient and prepare for more than excision of MO.

### Plates versus intramedullary nails for the treatment of proximal humeral fractures : A comparative study.

LAHMAR Ahmed Amine, O. Chouchen, A. Bel Haj Messoud, K. Garrach, M. Mbarek, S. Mahjoub

*Service de chirurgie orthopédique au centre de traumatologie et des grands brûlés, Ben Arous*

**Introduction:** Proximal humeral fractures are common injuries which incidence is in constant increase. Although various treatment options have been described, the management of PHF remains challenging

giving the lack of consensus. The aim was to compare functional and radiological outcomes of plates (PL) and intramedullary nails (IM) in order to suggest treatment guidelines.

**Method:** A retrospective and comparative study was led among 50 cases of PHF (IM=31, PL=19) that occurred between 2012 and 2016. We used NEER classification. Radiological assessments were performed immediately after surgery, in the early postoperative and at last follow-up. Constant scores (CS) were used.

**Result:** The mean age was 52 y. in the IM group and 51 y. in the LP group. The average operative time was significantly higher in the LP group. No statistically significant differences could be found between the 2 groups regarding synthesis quality, anatomical reduction quality and mean time to union. We observed a trend toward better shoulder function, better anatomical outcomes, and lower complication rate in the IM group for 2part PHF without reaching statistical significance. CS was 71 for IM group versus 55 for LP group.

**Patients with 3part fractures reaches 70 with CS for the two groups:** IM nailing and plate fixation yielded similar radiological and functional outcomes. The majority of patients with 4part fractures were treated by plate fixation and achieved satisfactory results

**Conclusion:** IM nailing is the best indication for 2part PHF. IMN and LP may be used for the 3part fracture with good results

### Risk factors for shoulder re-dislocation after arthroscopic Bankart repair

Mohammed Al-Awlaqi

King faisal street Egypt

Recent studies have shown effective clinical results after arthroscopic Bankart repair (ABR) but have shown several risk factors for re-dislocation after surgery. We evaluated whether patients are at a risk for re-dislocation during the first year after ABR, examined the recurrence rate after ABR, and sought to identify new risk factors. We performed ABR using bioabsorbable suture anchors in 102 consecutive shoulders (100 patients) with traumatic anterior shoulder instability. Average patient age and follow-up period was 25.7 (range, 14–40) years and 67.5 (range, 24.5–120) months, respectively. We evaluated re-dislocation after ABR using patient telephone interviews (follow-up rate, 100%) and correlated re-dislocation with several risk factors. Re-dislocation after ABR occurred in nine shoulders (8.8%), of which seven sustained re-injuries within the first year with the arm elevated at 90° and externally rotated at 90°. Of the remaining 93 shoulders without re-dislocation, 8 had re-injury under the same conditions within the first year. Thus, re-injury within the first year was a risk for redislocation after ABR ( $P < 0.001$ , chi-squared test). Using multivariate analysis, large Hill-Sachs lesions (odds ratio, 6.77, 95% CI, 1.24–53.6) and 3 anchors during ABR

### Treatment of Cam type femoroacetabular impingement using anterolateral mini-open and arthroscopic osteochondroplasty

Mutaz Elahj Simsaa, Mel S. Lee

Ad Diriyhia / Riyadh / saudia Arabia

**Background:** Femoroacetabular impingement (FAI) can cause early hip osteoarthritis. Surgical treatment is often required to halt the process of mechanical degeneration. The study investigated the short-to-midterm results of using a modified anterolateral mini-open and arthroscopic osteochondroplasty in the treatment of cam-type FAI.

**Methods:** Thirty-six patients (39 hips), with the mean age of 43.6 years, who had cam-type FAI, were operated by a miniopen and arthroscopy-assisted osteochondroplasty via the Watson-Jones interval between 2002 and 2016. Radiographic parameters and

Harris hip scores were retrospectively analyzed after a mean follow-up of 44 months.

**Results:** Of the 39 hips, the mean Harris hip score significantly improved from 61.1 preoperatively to 84.2 postoperatively ( $P < 0.01$ ). There were 9 hips (23%) undergoing total hip arthroplasty (THA) at a mean of 22 months (range, 3–64 months) due to progression of hip osteoarthritis. The 5-year survival for hip preserving was 74.9%. Cox proportional-hazards model showed that age  $\geq 55$  years ( $P = 0.03$ ) and preoperative Tönnis stage II ( $P = 0.02$ ) were independent risk factors for conversion to THA.

**Conclusions:** The mini-open osteochondroplasty for cam-type FAI can be a viable surgical option to relieve symptoms caused by the mechanical impingement. However, to prevent the progression of hip arthritis, early diagnosis and prudent surgical intervention are necessary to defer to need for future THA.

### A retrospective study of 140 bloody reductions for congenital hip dislocation

Marouen Elarbi, M. Amri, J. Ben Salah, M. Romdhani, Z. Jalia, M. Jenzri

service d'orthopédie infantile, Institut Kassab, Tunisie

In congenital hip dislocation (CHD), soft tissue retraction, capsular isthmus and dysplasia of the acetabulum and femoral head present obstacles to closed reduction, thus necessitating a surgical reduction (SR). Our aim is to present the preliminary results of approximately 140 SRs for CHD \*A retrospective study collecting 98 cases of LCH, 42 of which were bilateral, totalling 140 hips operated on, with an average age 3Y.0, and female predominance. The majority of cases were high dislocations (type IV TONNIS). The surgical indication was secondary after failure of orthopaedic treatment in 57% of the hips. In 60 hips, SR was performed immediately. A femoral shortening/derotation osteotomy and a pelvic osteotomy were performed in the majority of cases \*We analysed our results with a mean follow-up of 4 years. Radiologically, the mean postoperative VCE was 15° with a mean gain in HTE angle of 19°. We had 73% good results (SEVEREIN's radiological classification). We found 67% of good results (clinical classification of MC KAY) \* SR is usually reserved for patients who have failed non-operative treatment. However, primary surgery may be indicated if the dislocation is diagnosed late and can be performed until 8 years of age. The reduction step is crucial. If the diagnosis is made late, in contrast, reduction of the hip must be combined with corrective procedures on the femur and acetabulum designed to stabilise the reduction before the capsulorrhaphy. \*LCH RS is a difficult surgery, its indication must be well thought out and it should only be reserved for experienced surgeons.

### Clinical outcome of Latarjet Technique for Treatment of Anterior Shoulder Instability

Oussama Lassoued, Achour W, Zaibi M, A. chaabeni, Fekih A, Aloui I, Abid A

Department of orthopaedic and traumatology surgery, University Hospital Center Fattouma Bourguiba., Monastir, Tunisia

**Introduction:** Different techniques have been proposed for the treatment of recurrent anterior shoulder dislocation among them the Bristow-Latarjet procedure.

**Methods:** A retrospective study was performed for 46 patients treated during the period between 2016-2020 with an open Latarjet procedure for the treatment of post-traumatic recurrent anterior shoulder instability. Clinical outcomes were analyzed using the Walch-Duplay and the WOSI scores.

**Results:** The mean age of patients was 28 years with a male predominance (76%). the dominant shoulder was operated on in 27 patients. 72% of our patients were athletes. At the final follow-up (3,6 years), no patient reported an episode of dislocation. the mean

Walch–Duplay score was 82.7 (50–100) and 68% had an excellent and good result. The mean overall WOSI score was 57.04. The average for the “physical symptoms”, “sport and work”, “lifestyle” and “emotion” sectors were 32.56, 8.42, 12.51, and 3.55 respectively. One case of early infection was noted, non-union was reported in 3 cases and stage I osteoarthritis was identified in 7 patients. Among the prognostic factors, we distinguished: the age at the time of the surgery, the number of dislocations, constitutional hyperlaxity, and the damage to the rotator cuff muscles.

**Conclusions:** Our study demonstrated that the open Latarjet procedure is a reliable technique for recurrent anterior shoulder instability with excellent mid-term results.

### Risk factors affecting mortality in elderly patients with hip fractures

AM. Triki, K. Habboubi, W. Ben Jeddou, A. Mzid, H. Makhlouf, M. Mestiri

*service adulte de l'institut Mohamed Kassab d'orthopédie, Tunisie*

**Introduction and study objectives:** Hip fractures are a major worldwide public health problem and includes two main types of fractures: the intracapsular and the extracapsular fractures. It is known that mortality after hip fracture increases compared to the general population; the trend in mortality is a controversial issue. The objective of this study is to examine incidence, trends, and factors associated with mortality in patients with hip fractures

**Methods:** In a retrospective study, data were collected from all patients > 65 years admitted over 2 years with a hip fracture. Patient-related parameters included age, sex, fracture location, method of surgical treatment, time of surgery, duration of surgery, length of inpatient stay, blood transfusion, complications, comorbidities, support, ASA and Parker scale, Charlson Comorbidity Index. The relationship between these parameters and mortality was investigated.

**Results:** Data were collected from 328 patients undergoing 309 surgeries with a mean age of 78 [65-102] years. The overall mortality rate was 41% with a one-year mortality rate of 22.8% (n = 71). Factors increasing one-year mortality included: age > 75 years ; dementia ; time of surgery > 24 h ; CCI ≥ 6 ; ASA scale ≥ 2 ; parker scale ≤ 6 ; blood transfusion and the extracapsular type fracture.

**Conclusion:** Safety measures to prevent fall at elderly patient's accommodation might be a way to reduce the number of trochanteric and subtrochanteric hip fractures. Surgery as soon as possible without delay should be considered to reduce the mortality rate.

### Treatment of fractures of the humerus surgical neck : Retrograde pinning vs Antegrade nailing

Chatty Mohamed Wassim M. Zribi, H. Elleuch, MA. Khelif, K. Zitouna, M. Barsaoui

*Service de Chirurgie Orthopédique La Rabta*

Many osteosynthesis techniques are described for the treatment of fractures of the humerus surgical neck. Among them, antegrade nailing and ascending pinning. We will try to compare these two therapeutic techniques. We performed a retrospective study of 55 fractures of the surgical neck of the humerus. 27 were osteosynthesized by nailing and 28 by centromedullary pinning. We evaluated our patients clinically ( Constant score), radiologically postoperatively and at the last follow-up (tilting of the humeral head, translation of the humeral head and displacement of the greater tuberosity).

**Preoperative radiological study:** 34% displacement in varus and 40% in valgus. In 26% of cases, no displacement in the frontal plane. 52% retroversion. Important frontal translation was considered in 30% of cases.

**Postoperative study in cases osteosynthesized by nailing:** Frontal tilt of the head was reduced in 90% of the cases. Residual varus in 7% of cases and valgus in 3%. In the 28 cases treated by retrograde

pinning, the postoperative study showed that frontal tilt was reduced in 75% of cases. A varus persisted in 10% of the cases and a valgus in 15% of the cases. Nailing allows a better intraoperative reduction of the translation of the fracture site. We did not demonstrate any significant difference in the reduction of cephalic tilt or of a possible trochiterian fragment. The secondary stability of the lateral cephalic tilt reduction was better ensured by nailing. Anterograde nailing allows better control of the translation of the fracture site

### Comparative study of the posterior approach of the elbow in the management of the supra and intercondylar elbow fractures.

Lahmar Ahmed Amine, O. Chouchen, A. Bel Haj Messoud, H. Mrad, M. Mbarek, S. Mahjoub

*Service de chirurgie orthopédique au centre de traumatologie et des grands brûlés, Ben Arous*

**Introduction:** The supra-intercondylar elbow fractures are rather rare. The surgical approaches are essentially posterior, with or without the interruption of the extensor apparatus. The aim of our study was to compare the functional results of the osteosynthesis of the supra-intercondylar elbow fractures according to the surgical approach in use.

**Method:** It was comparative, retrospective including 42 cases of supra-intercondylar elbow fractures, all operated via the posterior approach with compulsory synthesis of the two columns, 28 of which were operated by the transolecranon approach and 14 by the para or transtricipital approach. Functional results were ranked according to the Mayo Clinic score.

**Result:** The average age was 48 years. Only one case of preoperative radial nerve was found. We used the AO classification. Type C3 was the most common with 45%. The trans-olecranon approach was used in 67% and the para or transtricipital approach in 33%. We noted six cases of olecranon nonunion and 11 cases of material discomfort. Our results are satisfactory in 91%. We found that patient operated by olecranotomy for C1 fractures achieved excellent results in only 30%. Patients operated without rupture of the extensor system for the same type of fracture have excellent results in 58%. For C2, the approach doesn't influence the functional results. And for C3, better results were obtained by olecranotomy (86%)

**Conclusion:** The trans-olecranon approach allows good exposure for C3 comminuted fractures. The para and transtricipital approach should always be favored for the C1 or C2

### Factors that influence high tibial osteotomy results in patients with medial gonarthrosis

Amine Chabchoub K. Habboubi, Y. Abcha, M. Meddeb, H. Makhlouf, M. Mestiri

*Service adultes, Institut Kassab d'orthopédie*

**Background:** High tibial osteotomy (HTO) for the treatment of uni-compartmental knee osteoarthritis is recognized as an effective treatment for young and active patients. The influence of certain factors in predicting the success and failure of HTO remains largely unknown. The aim of our study was to determine the factors associated with HTO failure in order to select the ideal candidate for successful HTO.

**Methods:** We reported a retrospective study of patients operated in our department by Closing-wedge high tibial osteotomy between the year 2005 and 2020. Failure of this procedure was defined as the need for revision surgery, either by HTO or by total knee replacement, within 10 years after HTO. Several factors were evaluated: patient-related factors, osteoarthritis-related factors, surgery-related factors, and postoperative factors

**Results:** 30 patients were identified ( n = 9 males; n = 21 females) with a mean age of 58.7 years at surgery. The average years of pain

recurrence was 5.18 years. 30 % of patients underwent reoperation by HTO, and 87% converted to arthroplasty. Increased body mass index (BMI) ( $> 30 \text{ kg/m}^2$ ), age  $> 55$  years and Ahlbäck grading  $> 2$  were associated with HTO failure. Surgery-related factors and postoperative factors did not influence the outcome.

**Conclusion:** High tibial osteotomy is an effective procedure, associated with a significant improvement in patient-reported outcomes, a moderate complication rate, and a high survival rate provided that HTO is performed in appropriately selected patients and a rigorous surgical technique.

### Four-Corner Arthrodesis : clinical and radiographic outcomes of 20 cases

Firas Saibi, A. Ben Mahmoud, A. Gargouri, K. Saibi, M. Ounaies, L. Tarhouni

*service de chirurgie réparatrice, esthétique et chirurgie de la main Institut Mohamed Taieb Kassab Tunis*

**Introduction :** Four-Corner Arthrodesis with scaphoidectomy is part of the therapeutic arsenal for SLAC and SNAC wrists. The purpose of this study was to determine the functional, radiographic, and subjective outcomes of this technique.

**Patients and methods :** This is a retrospective study, carried out between 2010 and 2020, including 20 patients operated within our department. A clinical assessment of pain, strength, mobility, functional and radiographic scores were performed by an independent examiner.

**Results :** In our series, the mean age was 45.81 years with a sex ratio of 4. The mean follow-up was 32 months. The indication was a SNAC wrist in 85% of cases and a SLAC wrist in 15% of cases. On the clinical level, there was a significant improvement in the evaluation of pain, gripping force as well as functional scores. The loss of articular amplitude represented: 18% in flexion, 24% in extension, 6% in ulnar inclination, and 26% in radial inclination. In addition, a good radiological result was observed.

**Discussion :** Different arthrodesis fixation methods have been followed since the initial description of the 4-corner arthrodesis technique. We observed fewer complications with osteosynthesis by the screwed cup with a shorter period of immobilization and a faster return to professional activities. Conclusion arthrodesis of the four corners allows us to obtain indolence and gripping force while keeping a certain mobility.

### Influence of time to surgery on mortality after fracture of the upper extremity of the femur

Hassen Cheikh Rouhou M. Manai, I. Khalifa, O. Hamdi, N. Dammak, F. Abid

*Department of Orthopaedic Surgery, Taher Sfar Hospital of Mahdia*

**Introduction:** Traumatic hip fractures are a major public health burden. Surgical delay has been a subject of debate concerning whether its enlargement is associated with higher rates of morbidity and mortality.

**Purpose:** We aimed through this study to calculate the different delays that constitute the process of care of a hip fracture patient and their related outcomes.

**Patients and methods:** We performed a retrospective study of patients with hip fracture who were admitted for surgical treatment in our orthopedic and traumatology department during the year 2018.

**Results:** Our study contained 169 patients (87 men and 82 women) with a mean age of 74.8 years old. The hemoglobin level was lower than 12g/dl for 56% of the patients on admission. The surgical delay had a mean of 117.8 hours, the delay had a mean of 181.1 hours and the length of stay had a mean of 199.7 hours. The preoperative hemoglobin level had a significant association with

surgical delay which, by its turn, had a significant association with the length of stay.

**Discussion:** Little literature to our knowledge investigated this delay. It is mostly extended because of the lack of rooming and bed availability in the orthopedic department. Better control of factors that affect surgical delay will lead to better control of hip fracture in elderly.

**Conclusion:** The surgical treatment is the standard of care of hip fracture and establishing local guidelines is recommended to achieve better outcomes. Through this study we were able to identify hemoglobin level as a predictor of longer surgical delay.

### Modified Dunn procedure for slipped capital femoral epiphysis: The anterior approach

Sami Chebbi, M. Zairi ; F. Boussaadoun ; A.A. Mohsni; R. Boussetta; M.N. Nessib

*Department of pediatric orthopedic surgery ;Children's Hospital Bechir Hamza Tunis ; Tunisia*

**Background:** Modified Dunn procedure using an anterior approach has become popular for the treatment of severe cases of slipped capital femoral epiphysis (SCFE). We assessed the outcomes of 21 adolescents treated by the modified Dunn procedure.

**Methods:** All patients treated by modified Dunn procedure via the anterior approach between 2017 and 2021 were retrospectively reviewed. Records were reviewed to obtain demographic information to classify the slips by duration of symptoms, severity and physeal stability; and to assess the outcomes by the Paustel Merle d'Aubigne Hip score (PMA), the radiological changes and the rate of complications.

**Results:** Twenty-one patients with mean age of 12.7 years were treated by the modified Dunn procedure using an anterior approach. Fourteen SCFE were stable. All slips were severe with a mean Southwick Slip angle (SSA) of 54.7°. The mean follow-up was 3 years. Anatomical reduction was achieved in all cases. The average residual balance was 5.2°. We report 2 cases of postoperative chondrolysis and 1 case of avascular femoral head necrosis. Based on the PMA score, good and excellent results were achieved in 20 cases (95%) and poor results in 1 case (5%).

**Discussion:** Several modifications have been made to Dunn's original osteotomy technique, which involved certain tricky technical points. The anterior approach provides direct access to the femoral neck, and thereby a cautious osteotomy at the site of the slip.

**Conclusion:** This study adds to the evidence that the modified Dunn by anterior approach is safe and efficient to treat moderate and severe SCFE.

### New therapeutic approach in the management of degenerative meniscal lesions in sports subjects

Ait el hadj Lyes, A. Touati, B. Cartelo, M. Yakoubi

*EHS Benaknoun Alger*

While a surgical approach is most often undisputed in case of traumatic meniscal lesions in young patients, but the question arises in case of degenerative meniscal lesions in middle-aged and athletic patients. Degenerative meniscal lesions reveal cartilage lesions in three quarters of patients and radiological signs of gonarthrosis in almost half of patients. This study aimed to investigate the efficacy of intra-articular (IA) administration of a hydrogel formulation obtained from a hyaluronic acid derivative in the management of degenerative meniscal lesions. Thirty five patients with degenerative meniscal tears were reviewed. Clinical evaluations were performed at baseline and after 14, 30 and 60 days. Clinical outcomes included: reduction in pain (visual analog scale), improvement in knee functionality (WOMAC questionnaire), reduction in length and depth of meniscal tear (confirmed by MRI), a significant reduction in pain in EVA was recorded at D14 and maintained at all follow-up.

assessments. A significant reduction in the length and depth of the meniscal lesion, assessed by MRI, was found. The results of this study may indicate a new treatment option in the conservative management of patients complaining of pain due to meniscal tears. The MRI data suggest that the hydrogel formulation of HA used in this study may also play a role in the healing process of the lesion

### Fractures of the proximal tibia treated with external fixators

Mohamed Ghorbel, M. Ben Jemaa, H. chaabouni, N. Kallel, S. Sallemi, H. Keskes

*Service de chirurgie orthopédique et traumatologique, CHU Habib Bourguiba Sfax*

**Introduction:** Fractures of the proximal tibia present a particular lesion entity likely to raise numerous therapeutic difficulties. Through this study, we describe its clinical and paraclinical particularities.

**Materials and methods:** We present a retrospective study of 35 patients operated on by external fixation collected between 2010 and 2021. Results They are 31 men and 4 women with an average age of 44.8 years. The fracture was open in 17 cases. It was articular in 21 cases. A CT scan was done in 14 cases. 8 patients had an angio-CT of the lower limbs objectifying a lesion of the vascular axes in 2 cases. External fixation was the therapeutic modality in our study. Three types of external fixator: the hybrid type external fixator (12 cases), the monoplane compressive external fixator (15 cases) and the Hoffmann type external fixator (8 cases). Rehabilitation was indicated in all cases. Complications were found in 15 cases such as pseudarthrosis

**Discussion:** Fractures of the proximal quarter of the tibia remain a frequent problem in traumatology. The difficulty and complications of open reduction with internal osteosynthesis contribute to the promotion of external fixation for the management of these fractures. In accordance with the different series, this method has many advantages by reducing the treatment time, the operating time and the complication rate.

**Conclusion:** The proximal tibia present a therapeutic difficulty, especially if osteoligamentary or cutaneous lesions are associated. Exo-fixation is the least invasive and most convenient technique.

### Gonarthrosis Ahlback stage III, Total Knee Arthroplasty(TKA) or Osteotomy ?

Ghadi ismail, Lyes ait Elhadj, Rahem Mahdi.

*Alger, Algeria*

Ahlback stage III is a hinge stage where the treatment remains divided between conservative and radical, and there is no consensus to date, at this stage of osteoarthritis.

**Objective:** The techniques of arthroplasties are in constant evolution what have reduced the field of application of the reaxation interventions. Our work is not intended to compare the two techniques, but rather to provide answers to this question that still drives the debate: knee osteoarthritis stage III of Ahlback, tibial osteotomy or TKA?

**Materials and methods:** Descriptive and prospective single-centric study between 2008 and 2020, including 350 patients with femoral-tibial osteoarthritis on genu varum at stage III of Ahlback, The evaluation of the results was clinical, functional, IKS, HSS, KSS and radiological.

**Results:** We obtained 88% very good results in the HSS-Insall score and 92% in the IKS knee score at the last follow-up for the OTV against 76% very good results, for the HSS and IKS knee scores Postoperative for TKA.

**Discussion:** At the different functional scores (IKS, HSS, KSS) there is a clear improvement and our results remain comparable to the literature for both the OTV and TKA groups.

**Conclusion:** Tibial osteotomies with relatively simple operative sequences do not cut the bridges for a future arthroplasty which would certainly offer a faster adaptation but with more demanding postoperative consequences. Our study found almost equivalent results between the two techniques but unfortunately we can not affirm it currently at this stage of our study in terms of survival

### Loss of extension after ACL reconstruction : should we immobilise all patients ?

Lahmar Ahmed Amine H. Ezzine, N. Belghith, A. Bel Haj Messoud, M. Mbarek, S. Mahjoub

*Service de chirurgie orthopédique au centre de traumatologie et des grands brûlés*

**Introduction:** The purpose of rehabilitation after anterior cruciate ligament(ACL) surgery is to reduce the postoperative inflammatory process, improve joint amplitudes and restore strength. The means implemented are very varied with different protocols according to the teams, moreover few studies are interested in the impact of immobilisation on the loss of extension of the knee. The aim is to evaluate the effect of knee braces on the knee function after ACL reconstruction.

**Method:** This is a prospective study conducted in the orthopedic surgery department at trauma center Ben Arous. We included in the study patients treated with ACL reconstruction during the period between January 2021 and October 2021, divided in two groups : group knee bracing(n=28) and group non bracing(n=18). The Primary endpoint was based on the loss of extension at 3 weeks, 6 weeks, and 3 months after surgery.

**Result:** 46 patients were included with a mean age of 26 years, All patients had ACL reconstruction with Kenneth Jones. Joint ranges were comparable between 2 groups. Loss of extension was noted between 5° and 10° in 3 patients at 3 months (2 of whom were in the removable knee brace group). Loss of extension was slightly more common in the removable brace group (2 patients) compared with the rest of the patients (1 patient) but without significant difference.

**Conclusion:** This study suggests a similar effect on knee extension loss by using a brace. However, an extended randomized controlled trial, applied to selected patients to have a brace, may have a better assessment of the bracing effect.

### Orthopedic residency in Tunisia: the experience of residents

Rim Boussetta, A. Sousou, A. Msakni, M. Zairi, AA. Mohseni, W. Saïed, S. bouchoucha, MN. Nessib.

*service d'orthopédie pédiatrique hôpital d'enfant Béchir Hamza*

**Introduction:** Orthopedic residency in Tunisia is based on practical training for 5 years, with a theoretical exam at the end of the cursus. until this time we have not the resident's point of view about their training and what's their actual demand.

**Methods:** Prospective online study, between November 2021 and April 2022. We perform a questionnaire on Google form. With multiple sections: emergency, patient's medical record, physical exam, radiology, surgery, theoretical training, and relationship. The answers were collected anonymously.

**Results:** We collect 84 answers, response rate:54%. Twenty-six percent of the participant were residents in their second year. Senior resident represents only 11.9%. In the emergency room, plaster realization represents less than 30% of the trainee's activity. Simple traumatology was the most important activity in the operation room, it represents more than 50%. This rate reached 70.6% for senior residents. For the orthopedic surgery (degenerative, arthroscopy, pediatric, spine...), they were first or second assistants. Fifty percent of the participants consider that their formation is acceptable (3/5), but we have 4 residents who regret their choice of specialty. More

than 50% consider that the relationship is acceptable. For the theoretical aspect, the most essential demand was more courses, the establishment of simulation workshops, and internship notebooks.

**Discussion and conclusions:** Introducing novel training models may help to improve practical skills. An internship notebook is important to guide the trainees.

### Return to sports after slipped capital femoral epiphysis

Gharbi Mohamed, Hedi A.A Mohseni, M.H. Sanaa, M. Zairi, R. Boussetta, M.N. Nessib

*Department of pediatric orthopaedic surgery, Children's hospital Bechir Hamza, Tunis, Tunisia*

Slipped Capital femoral epiphysis(SCFE) is the most common hip disease in adolescents. Treatment is always surgical and aims to prevent worsening of slippage of the epiphysis. The purpose was to evaluate the return to sports after in situ screw fixation We retrospectively reviewed 76 patients and 83 hips treated by percutaneous screw fixation over a period of 7 years with a minimum follow-up of 12months. Functional outcome was evaluated according to PMA score and the return to a normal athletic activity. The average age was 12.5 years. 58% had a weight of +3DS. In 60% of cases the SCFE was stable. At last follow up, one case of laminar coxitis, 3 femoral-acetabular impingement and 2 avascular osteonecrosis were identified. Using the PMA score the outcome at last follow up was excellent in 56 % of cases Good in 36% average in and poor 2.4%. In our series, the mean delay of return to sports was of 1 year. Studies showed excellent to good results with the percutaneous in situ fixation in Mild slips with low risk of complications; no sports were allowed before 3 months. The mean delay in most studies was of 3 to 6 months once the child regains full strength and is pain free. As athletic activity has a significant impact on the well-being of the child attention should be given to the subject. In our series sports were not allowed before a period of one year. And while most patients returned to their normal activity 14.4% never did because of fear of recurrence. Allowing early reprisal of athletic activity should be considered in these cases to avoid the impact on the development.

### Surgical treatment of isolated diaphyseal fractures of the ulna in adults. Pinning versus screwed plate, a case report of 30 patients

Amine Soussou, H. Eleuch, A. Madawkhi, S. Amine, M. Barsaoui  
*service de chirurgie orthopédique et traumatologie la Rabta*

Isolated ulnar shaft fracture is known to be a benign lesion. If not displaced, it is treated orthopedically. However, in case of displacement >50% of the ulnar shaft diameter, surgical synthesis is required.

**Purpose of the work:** The aim of this work is to compare the clinical and radiological results of the treatment of isolated ulnar shaft fractures treated with centromedullary pinning to those treated with screwed plates.

**Material and methods:** This is a retrospective study of 30 isolated ulnar shaft fractures collected at La Rabta Hospital between 2012 and 2022, half of which were treated by centromedullary pinning and the other by screw plate.

**Results:** The mean age was 34.7 years for the pinning group and 34.8 years for the plate synthesis group. Anatomically, centromedullary pinning allowed almost constant consolidation, earlier than the plate synthesis group, with a lower rate of complications, particularly major ones such as pseudarthrosis and osteitis. In terms of function, 62.5% of the patients in the plate group and 94% of the patients in the pinning group had a satisfactory result.

**Conclusion:** Centromedullary pinning is a simple and reliable technique. It is the technique of choice for the treatment of isolated fractures

of the ulna. However, it appears that fractures of the upper 1/3 of the ulna are more difficult to reduce and stabilize by simple pinning.

### Endobutton is not applied : does it matter?

Jelassi Moatassef Belleh, M.A. Gharbi, M. Nefiss, R. Bouzidi, K. Ezzaouia A. Tebourbi

*service orthopédie -Mongi Slim La Marsa*

**Introduction:** The major disadvantage of Suspended fixation of the graft is the interposition of soft tissue between the graft and the cortical bone, with a detached appearance that is a source of concern for the surgeon

**Objective:** Evaluate the repercussion of the endobutton detachment on the postoperative evolution

**Methods:** We reviewed patients who had ACL reconstruction under arthroscopy with endobutton femoral fixation. Any endobutton that was not perfectly applied to the cortex was considered detached. Postoperative anterior residual laxity was assessed by the Lachman test and we assessed pain, stability and mobility of the knee according to the APREGÉ functional score

**Results :** 32 patients out of 297 operated on had an endobutton detachment. 56% had a postoperative radiograph of less than 3mm, 25% between 3 and 6mm and 19% greater than 6mm. Four had residual laxity with no functional impact and two had an iliotibial band syndrome. At one year follow-up and according to the ARPEGE score, 20 had a very good functional result, 9 a good result and 3 had an average result without a statistically significant correlation with the degree of detachment

**Discussion:** Suspended cortical endobutton fixation requires adequate balancing and tensioning of the transplant. To achieve this, the endobutton must be well applied to the cortex. yet, soft tissue interposition remains frequent, especially at the start of the learning curve

**Conclusion:** Non-applied endobutton does not have a negative impact on the postoperative evolution as long as it does not extend beyond the iliotibial band

### Interest of early irrigation and debridement in periprosthetic joint infection

housem Eddine Chahed MA. gharbi, M. Jelassi, A. Zendaoui, R. Bouzidi, A. Teborbi.

*service orthopédie -Mongi Slim La Marsa*

**Introduction:** The rate of periprosthetic infection is increasing due to the increase in prosthetic implantation in recent decades, making it a public health problem.

**Objective:** Our aim is to evaluate the effectiveness of early irrigation and debridement(I&D)in periprosthetic joint infections.

**Methods:** Our retrospective study included patients with periprosthetic infection initially treated with I&D, combined with appropriate antibiotherapy. The primary endpoint was the rate of apparent cure of the initial infection at a minimum of 2 years' follow-up, defined by the absence of biological and radiological clinical signs of infection and the absence of death attributable to the infection or the treatment.

**Results:** A total of 40 patients were treated for periprosthetic infections and included in the study. Symptoms appeared after 22 days on average. Per operative sampling found *S. aureus* in 47% of cases. In our study, the early D&I followed by an efficient antibiotic therapy was sufficient to cure the infection in 77% of cases.

**Discussion:** I&D is an interesting tool in treating periprosthetic infections, with recovery rate that varies between 49% and 78%. Factors that may influence the success of treatment are essentially the ASA score of patients and the delay between intervention and the appearance of the initial symptoms.

**Conclusion:** Periprosthetic infections are rare but hard to treat. Appropriate care should be rapidly implemented since the appearance of initial symptoms. The early D&I remains as an interesting tool with satisfying results.

### K-wire fixation of distal radius fractures using WALANT versus general anesthesia : a prospective study.

Cherif Kamoun, M. Bellil, Y. Grissa, A. Ben Abid, M. Kooli, M. Ben Salah

*Orthopaedic and trauma surgery unit, Charles Nicolle Hospital, Tunis*

**Introduction:** Local anesthesia without the use of a tourniquet (WALANT) represents a revolution in the management of distal radius fractures (DRF) requiring surgical treatment. Our objective was to compare the level of anxiety, pain, short-term functional results and cost associated with K-wire fixation of DRF under WALANT and under general anesthesia (GA).

**Materials and Methods:** We conducted a prospective study including 72 patients with a DRF requiring K-wire fixation. 38 patients were included in the WALANT group (G1) and 34 patients in the group operated on GA (G2). We assessed preoperative anxiety using the Amsterdam Preoperative Anxiety and Information Scale (APAIS). For G1, pain was assessed using the intraoperative numerical rating scale (NRS) during injection of anesthetics, at the incision, during fracture reduction and during pinning. The NRS after two hours, one day, one week, one month and 3 months postoperatively was noted for both groups.

**Results:** Preoperative anxiety level was significantly higher in G2 (9.46) than in G1 (6.81). The average NRS was statistically higher at H2 postoperative and at one day postoperative for G2 (9.46) than in G1 (6.81). The average NRS was statistically higher at H2 postoperative and at one day postoperative for G2. We found no significant difference between the groups for the Quick Dash. The cost of care was significantly higher for G2.

**Discussion:** WALANT is not devoid of risks, but avoids complications related to GA and allows the patient to be operated on as an outpatient, reducing the cost of care. Conclusion WALANT is a reliable technique for the anesthesia of DRF treated by K wire fixation

### Locked intramedullary nailing for the middle-third tibial shaft fractures

Lahmar Ahmed Amine, O. Chouchen, A. Bel Haj Messoud, H. Belhassen, M. Mbarek, S. Mahjoub

*Service de chirurgie orthopédique au centre de traumatologie et des grands brûlés*

**Introduction:** Intramedullary nailing is currently considered the treatment of choice for tibial diaphyseal fractures. Locking, as a key element of its stability, remains a controversial subject as much on its polarity, as on the number of screws and their insertion plans. The aim of our study was to compare the results of locked IM nailing to the unlocked ones.

**Methods:** It is a retrospective comparative study from 2011 to 2014, in the Orthopedics department of the Trauma Center. We selected 120 cases of middle-third tibial shaft fractures treated by either unlocked or locked nailing. We divided them into two groups of 60 cases each. ECM- group and ECM+ group.

**Results:** The mean age was 34.9 years. The etiology was a road accident in 64.2% of cases. Skin lesions were found in 35.8% of cases. Type 42-A fractures of the AO classification was the most frequent with 66.7% of cases. Fracture of the ipsilateral fibula was found in 74.2% of cases. For the ECM+ group, locking was only distal in half cases and bipolar in the other half. We found no malunion case among fractures treated by IM nailing with both proximal and distal locking. We found a statistically significant correlation between the non-synthesis of the fractured fibula and malunion in

the ECM- group ( $X^2 = 0.003$ ). Functionally, no statistical difference was found between the AOFAS scores of the two groups ( $X^2 = 0.112$ ).

**Conclusion:** Proximal and distal locking, by providing greater stability, extends the IM nailing indications to comminuted and displaced tibial shaft fractures. It allows the best anatomical and functional results.

### Mid-term outcomes of uncemented total knee arthroplasty in patients aged 50 years or younger

Ayari Rabie, A. Abdennadher, S. Hamila, Y. Mallat, K. Amri, L. Nouisri

*Chirurgie orthopédique et traumatologique Hôpital Principal d'Instruction de Tunis*

**Introduction:** Total knee arthroplasty (TKA) has proven to be a reliable method of treating various types of knee osteoarthritis. Historically, indications were limited to the elderly. Today, the indications have expanded to younger patients. The results for these patients remain limited. Objective Evaluate the mid-term results of uncemented TKA in patients aged 50 years or younger

**METHODS:** We conducted a retrospective study of 20 cementless TKA in patients younger than 50 years-old with an average follow-up of 58 months. A standard technique without patella resurfacing was used. Preoperative and postoperative functional and radiological evaluation were performed

**RESULTS:** The mean age of the patients was 42 years. The main diagnoses were post-traumatic, degenerative osteoarthritis and rheumatoid arthritis. The mean preoperative Knee Society score was 65 and 100 postoperatively. Radiological analysis at the last follow-up showed no evidence of loosening. The complication rate was in accordance with the literature

**DISCUSSION:** The indications for TKA have expanded to include the youngest and most active subjects. Increasing loosening rates and the need for multiple revisions have discouraged the use of cemented implants. The main advantage of this technique is that if revision is needed, there is no excessive bone loss during prosthesis removal

**Conclusion:** Cementless implants for younger patients are an excellent choice with good survivability. The new highly crosslinked polyethylene and alternative bearing surfaces may allow longer component survival

### Functional Outcomes Following Anterior Transfer of the Tibialis Posterior Tendon for Dynamic Varus Deformity

Mohamed Achref Ferjani, S. Mahjoubi, M. Romdhani, Z. Jlailia, M. Jenzri, K. Kamoun

*Service d'orthopédie infantile, Institut M T Kassab, La manouba*

**Objective :** To investigate the effectiveness of tibialis posterior tendon transfer for dynamic varus deformity

**Introduction :** Equinovarus affects about one-third of children with spastic hemiplegic cerebral palsy (CP). It is the second most common deformity of the foot and ankle in this group, closely following equinus. The varus component is considered to be the result of muscle imbalance between the inverters and evertors of the foot and ankle.

**Methods:** We report the cases of 12 patients treated with this technique. They had preoperative and 12 months (4 to 13 months) postoperative radiographic foot alignment measurements and completion of the Foot and Ankle Ability Measure (FAAM). At follow-up we tested with the star-excision test for standing balance, ankle plantarflexion and dorsiflexion isokinetic strength.

**Results:** A total of 10 patients with symptomatic spastic equinovarus met the inclusion criteria. Mean age at surgery was 9.8 years (6 to 18). Foot pain and problems with shoe wear improved after

surgery. Seven radiological criteria showed a clinically and statistically significant improvement at follow-up, the majority being in the normal range.

**Conclusion:** Although the posterior tibialis lengthening technique is the most common for correction. The Tibialis Posterior transfert procedure is a successful surgery that does not restore normal strength and balance to the foot and ankle but allows individuals with dynamic varus demormity and a functional tibialis posterior muscle to have significantly improved outcomes

### Mid-term results of transtibial pullout of meniscal root injuries

Rami Triki, H. Ezzine, M. Ben Ayed, M. Nefiss, R. Bouzidi, A. Tborbi

*Mongi Slim Hospital La Marsa*

**Introduction and study goals:** Root meniscus injuries are lesions localized in the tibial insertion of the menisci. They are serious injuries which can cause accelerated arthritis of the knee. The aim of our study is to evaluate mid-term results of transtibial pullout for this lesion.

**Material and methods:** This was a descriptive longitudinal retrospective study conducted between 2016 and 2021 with a minimum follow-up of 6 months. We studied the patients' records and rewatched the arthroscopic videos to describe the lesion according to Laprade classification. Patients had clinical examination with calculation of IKDC Subjective score pre and postoperatively.

**Results:** We had 18 patients and 20 root injuries. Most of our patients had lesion of the postero-lateral meniscus root (70%). 2 patients had combined lesion of both roots. Type 2 of Laprade was found in 65% of the cases. Transtibial pullout was made for 19 lesions. Mean IKDC Subjective score jumped from 52 to 81 postoperatively. We noted no evolution towards arthritis. Mean follow-up was 26 months.

**Discussion:** Meniscal posterior root injuries are serious injuries which are biomechanically equivalent to total meniscectomy. In fact, the loss of the tibial insertion of the meniscus causes the loss of the hoop stress effect of the meniscus which is protective for the cartilage. Transtibial pullout can restore the anatomy and function of the meniscus.

**Conclusion:** We had encouraging results for this surgery technique in the treatment of meniscal root injuries. These lesions should be well diagnosed as they can be destructive for the knee.

### Outcomes of total knee replacements after tibial valgus osteotomy

Ayari Rabie, Y. Mallat, S. Hamila, A. Abdennadher, K. Amri, L. Nouisri

*Chirurgie orthopédique et traumatologique Hôpital Principal d'Instruction de Tunis*

**Introduction:** Tibial valgus osteotomy (TVO) is a common operation that has been shown to be effective in the management of osteoarthritis of the medial compartment of the knee. It provides satisfactory functional results and delays arthroplasty. The superiority of results after primary TKA compared to TAK after TVO is controversial in the literature

**Objective:** Evaluate the results of TKA after TVO methods We conducted a 10-year retrospective study with a mean follow-up of 60 months involving 50 TKA after TVO. There were 39 closing wedge and 11 opening wedge osteotomies. The indication was progressive osteoarthritis with functional impairment. Pre- and postoperative functional and radiological evaluation was performed Results The mean age of our study was 58 years. The mean time from TVO to revision was 102 months. The functional results were

satisfactory. The mechanical axis was varus in 70% of cases. The complication rates were similar to the literature.

**Discussion:** TVO has proven to be the operation of choice for medial tibiofemoral osteoarthritis in young patients with satisfactory results. It allows preservation of bone stock. However, TKA after TVO can be difficult. The major problem remains the patella Baja. Most of the series in the literature have concluded that there is no significant difference between the results of primary TKA and TKA after TVO. The type of TVO does not seem to influence these results as well

**Conclusion:** The functional and radiological results of TKA after TVO are satisfactory and comparable to those of primary arthroplasty

### The interest of intramedullary nailing in the treatment of distal tibia fractures

mohamed Jlidi, N Baghdédi. W Bouaicha. O Ben Mohamed. M Lamouchi. S Daas

*orthopedic and traumatology department Nabeul*

**Introduction:** Fractures of the distal quarter of the leg (FDQL) are rare. Because of their instability and their anatomical situation, they have always been a real therapeutic challenge. The aim of our work is to study the epidemiological and anatomopathological aspects of these fractures as well as to determine the place of intramedullary nailing (IMN).

**Materials and methods:** This is a retrospective study conducted at the orthopedic and traumatology department in Nabeul between 2014 and 2020, involving 41 patients with FDQL, treated by IMN.

**Results:** Our series of 41 patients included 32 men and 9 women, with an average age of 45.5 years old. The right side was affected in 26 cases. The majority of the fractures were classified as A1 types according to the AO/OTA classification. A fracture of the fibula was associated in 38 cases. The mean follow-up was 51 months. The average Olerud and Molander score was 95.3. The average time to healing of the tibia was 128.3 days and of the fibula was 93.5 days. 12 patients had malunion. Two patients presented with early sepsis and 18 patients with algoneurodystrophy. No cases of nonunion were reported.

**Discussion and conclusion:** FDQL are rare and notoriously difficult to treat. Their best treatment strategy is still subject to debate. Although the plate offers a better reduction, this comes with the price of a higher complication rates especially infections that can be totally devastating. The IMN seems to be a good therapeutic option provided that the distal fragment allows effective locking.

### Treatment of Thoracolumbar Junction Fractures by Short Segment Instrumentation: Does it allow the Long-Term Maintenance of the Reduction?

Ammar Ameni, Mohamed Taghouti, Karim Belkahla, Hamdi Grami, Mahmoud Smida, Mohamed Samir Daghfous,

*Traumatology department, KASSAB Institute, Tunisia*

The treatment strategy for thoracolumbar vertebral fractures has always been controversially discussed due to its anatomical and functional repercussions. Our purpose was to determine whether the osteosynthesis of the thoracolumbar spine fractures by a short segment instrumentation alone allows the maintenance of the long-term reduction. We did a retrospective study of patients with thoraco-lumbar spine fractures operated by short segment instrumentation alone. We measured vertebral kyphosis, regional kyphosis and segmental kyphosis. These measurements were performed preoperatively, postoperatively and at follow-up. From these measurements, we calculated the loss of the correction. Thirty-one patients were selected for the study. The average loss of correction in segmental kyphosis was 14.7%. The average loss of correction in vertebral kyphosis was 23.2%, and the average loss of correction in regional kyphosis was 0.6%. In conclusion,



osteosynthesis by a short segment instrumentation alone seems to be insufficient to maintain the long-term reduction.

### Use of hemostatic powder in prosthetic surgery about 20 case

Ait el hadj Lyes, A. Touati, B. Cartelo, M. Yakoubi

*EHS Benanoun Alger*

Total knee (TKP) and hip (THA) arthroplasty are part of the most common operations. However, there are ongoing efforts to improve outcomes by limiting postoperative wound complications such as formation of hematomas and infections. The aim of this study is to assess the effectiveness of Hemosphere Polysaccharide Microporous (HPM) and to study any influence on formation rates hematoma and wound infection after prosthetic surgery. we used HPM in 20 patients, 8 TKP and 22 THA. Blood loss postoperative was quantified by hemoglobin levels obtained 24 and 48 h after surgery. A single dose of HPM was applied before the closure of the skin on suction redon. For PTH also a single dose was applied; it is 10 prostheses bilateral simultaneous anterior approach without orthopedic table without use of redon, as well as 2 prostheses per lateral approach on suction redon. The expected blood loss was low with an average of 265 cc quantified in the vials. The average decrease in hemoglobin on the first day postoperative at the second postoperative day was (0.52 g/dL  $\pm$  0.65). HPM have been studied more extensively in other surgical specialties. Bruckner et al. described PMH as part of cardiothoracic surgery; they showed a decrease in hemostasis time. Some investigative reports on the use of HPM in total hip arthroplasty concluded that it reduced postoperative wound drainage, reduction of hemoglobin and the need for blood transfusion. HPM demonstrates a good check on postoperative drainage, the amount of postoperative blood transfusion (24 hours) so on the reduction in hemoglobin levels.

### Complications Associated With Staged Versus Simultaneous Bilateral Total Knee Arthroplasty: An Analysis of 7747 Patients

Mohammed Al-Awlaqi

*King faisal street Egypt*

**Background:** Benefits of simultaneous bilateral total knee replacement (TKR) include lower costs, decreased hospital stay, and shorter rehabilitation. This study evaluated complications associated with simultaneous versus staged bilateral TKR within 12 months. We hypothesized that after controlling for comorbidities, the simultaneous group would have the highest rate of complications.

**Methods:** This retrospective study analyzed the Humana subset of the PearlDiver Patient Records Database. CPT 27447 and associated modifiers were used to identify patients who underwent simultaneous or staged bilateral primary TKRs. Staged bilateral TKRs were performed within 12 months and were stratified by the time between procedures. Primary outcomes were the Centers for Medicare & Medicaid Services' publicly reported complications. Risks of complications were compared using multivariate logistic regression controlling for age, gender, and comorbidities.

**Results:** Seven thousand seven hundred forty-seven patients underwent simultaneous or staged bilateral TKRs between January 2007 and April 2015. There were lower odds of transfusion and all-cause 90-day readmission but higher odds of mechanical complications and infection for all staged groups compared to the simultaneous. Patients whose staged surgeries were 3 months apart had significantly higher odds of undergoing manipulation under anesthesia (MUA).

**Conclusions:** Higher rates of blood transfusion and readmission were associated with simultaneous bilateral TKR, while higher rates of mechanical complications and infection were associated

### Percutaneous fixation for thoracolumbar fractures on ankylosing spondylitis : About 8 patients.

Meriem Souissi, M. Bellil, O. Ketata, K. Bouzid, M. Kooli, M. Ben Salah

*Orthopaedic Surgery Department, Charles Nicolle hospital, Tunis, Tunisia*

**Introduction:** Ankylosing spondylitis alters spinal structure and biomechanics, making it prone to fractures that tend to be unstable requiring surgical stabilisation. Open reduction and fixation is linked to high complications due to patients' vulnerability

**Objectives:** We aimed to evaluate percutaneous surgery in non-deficit patients in terms of stable fixation and complication rates.

**Methods:** We collected clinical and radiological data of all patients treated at our institution, over 10 years, for thoracolumbar fractures on ankylosing spondylitis without neurological deficit.

**Results:** 8 patients underwent percutaneous pedicle fixation, using a long construct. 6 fractures occurred between T10 and L2. All patients had CT-scans and 4 had MRI. There were no perioperative complications. One patient had a construct failure requiring re-intervention.

**Discussion:** Patients with ankylosing spondylitis are 4 times more prone to spinal fractures, which involve the three columns and are unstable requiring surgical management. Associated cardiovascular and metabolic comorbidities in this population, the need for a long construct and osteoporosis increase blood loss and complication rates. Autoimmune disease and paravertebral fatty dystrophy increase the risk of postoperative infection. Percutaneous fixation reduces the surgical incision, muscle dissection, infectious risk, blood loss and surgical time. Low corporeal mineral density exposes to construct failure, thus the benefit of cement-coated screws in enhancing the construct's stability

**Conclusion:** Percutaneous surgery offers less complications.

### Surgical treatment of lateral condyle elbow fracture in children: parallel versus divergent pinning

Saifeddine smaoui, A.A. Mohseni, M.H. Gharbi, M. Zairi, R. Boussetta, M.N. Nessib

*Department of pediatric orthopaedic surgery, children's hospital Bechir Hamza, Tunis, Tunisia*

**Introduction:** Lateral condyle fracture is the second most common elbow fracture in children. The objective of our work was to evaluate the results of surgical treatment of displaced fractures of the lateral condyle by comparing the configurations of the wires (parallel and divergent wires).

**Patients and Methods:** We retrospectively analyzed the clinical and radiological outcomes of 104 children younger than 14 years of age treated for a surgical stage lateral condyle fracture over a 5-year period from January 2016 to December 2020. The HARDACRE score was used to evaluate functional results and plain X-rays were used to evaluate the radiological outcome.

**Results:** The average age of our patients was 5.85 years. All patients were treated with open reduction and internal fixation (ORIF) with the placement of two Kirschner wires, parallel in 58% of cases, divergent in 42%. The HARDACRE score was excellent in 39.37% of cases with parallel wires and in 50.9% with divergent wires. On radiological examination, all the fractures consolidated after 6 weeks.

**Discussion:** The overall results of open pinning were satisfactory in 42.8% to 100% of cases, depending on the authors. Leonidou et al reported excellent

**Results:** In 105 patients treated openly with divergent Kirschner wires. 96% achieved an excellent Hardacre score and 4% obtained good scores, which is similar to the results obtained in our series.

The average results reported by the same authors varied between 3.1% and 52.4%

### The In-Out Meniscal repair of bucket handle tears in the stable knee

Rami Triki, MA. Gharbi, A. Bousrih, M. Nefiss, R. Bouzidi, A. Tborbi

*Mongi Slim Hospital La Marsa*

**Introduction and study goals:** The treatment of bucket handle meniscus tears is made easy with arthroscopic In-Out technique. The aim of our study is to evaluate the result of repairing these lesions in the ACL-efficient knee.

**Methods:** This was a descriptive longitudinal retrospective study between 2017 and 2020. Intraoperative arthroscopic videos were replayed. Postoperatively, we performed a clinical examination and calculated functional scores in order to evaluate the mid-term results and to study the prognostic factors.

**Results:** Our study was conducted on 20 bucket handle meniscus tears. The mean LYSHOLM score was 84.8. The mean IKDC score was 82.2. 80% of the patients had a good LYSHOLM score and an IKDC score above 80. Clinical evaluation was in favor of meniscal healing in 17 patients. Functional scores were significantly better in patients with a narrow lesion. The classical pejorative factors (age, chronicity, circumferential location) did not have a significant influence on the outcome of meniscal repair.

**Discussion:** Meniscus bucket handle tears heal more easily when associated with ACL reconstruction. In fact, the preparation of the bony tunnels release growth factors which can promote meniscal healing. In stable knees, multiple techniques can be used to have biologic augmentation to promote the meniscal healing. In our series, we did not have to use these techniques, with promising results.

**Conclusion:** The ACL efficient knee should not be a limit to do the meniscus in-out repair. When performed properly, the healing rate can exceed 80%.

### Use of 3d printing in orthopaedic surgery. PSI Do It Yourself.

Djidi Mohamed Faouzi, H. Amouri, A.E Maiza, A. Tahrat, K. Aitallaoua, L. Nebchi

*Algeria*

**Introduction :** Additive manufacturing, commonly known as 3D printing, is defined as the process of joining materials to manufacture parts from 3D model data, usually layer by layer. Custom-made cutting guides (PSI) are a new concept in computer-assisted surgery (CAOS) to provide patientspecific instruments that can enhance or replace conventional techniques

**Study objectives :** Through this presentation, we aim to demonstrate that using 3D printing in our clinical practice is useful, accessible, inexpensive with a gentle learning curve.

**Material and methods :** We present 03 case examples where 3D printing of surgical models was easily achieved in a Do It Yourself concept, and how we used the models with all steps in the different clinical scenarios.

**Results :** The 3D printed PSI is designed to control cutting and shrinking. Which, in theory, should improve the predictability of the procedure.

**Discussion :** Although the usefulness of these guides should not be underestimated, they remain technically demanding procedures. This technique has enabled us to improve the surgical performance of unibi or multiplanar corrective osteotomies. Modeling helps surgeons for more precise preoperative planning in all spatial planes.

**Conclusion :** These techniques will revolutionize our way of practicing orthopedic surgery at all stages of the care of our patients and should become natural to the surgeon. They can be integrated into daily practice

### Achilles tendon rupture in athletes: functional outcomes of 20 cases

Oussama Lassioued, W. achour, M. Zaibi, A. chaabeni, M. ben hnia, J. Saadana, A. Abid

*Department of orthopaedic and traumatology surgery, University Hospital Center Fattouma Bourguiba., Monastir, Tunisia*

**Introduction :** Rupture of the Achilles tendon is more and more common nowadays due to the considerable development of sports activities, the increase in their intensity, and the lack of means of prevention. Diagnosis is usually easy but treatment is still controversial.

**Materials and Methods:** This is a retrospective study of 20 cases of Achilles tendon rupture in athletes treated surgically. The sports activity and level have been noted. The circumstances of the trauma as well as the time between the rupture and the management were noted. The operating techniques used varied between simple sutures and grafting according to Bosworth or Chigot procedures. The evaluation of functional results was based on the calculation of the McComis score.

**Results:** Our patients were predominantly male with an average age of 36 years. Three patients were competitive athletes and 17 were recreational. 13 patients had direct sutures, 4 repaired according to Bosworth's technique, and 3 according to Chigot's technique. At the final follow-up of 3 years, results were considered excellent and good in 85% of our patients, the return to sports was on average at the 8th month However only 60% reached the same previous level.

**Conclusions :** The management of Achilles tendon rupture remains a controversial topic between the effectiveness of the operative and nonoperative treatment. This lesion can be a devastating injury to athletes.

### Outcome of retrograde drilling in osteochondral lesions of talus with subchondral cysts: Case series

Ossama A. Elshazly, Ahmed Ramy Zakaria, Mohamed Mokhtar, Mostafa Abo Elnour, Ossama A. Elshazly

*Ain Shams University,*

**Background:** About 50-73% of acute ankle ligamentous injuries and fractures are associated with talar osteochondral lesions (OLT). The treatment of OLT is challenging because of the avascular nature of the articular cartilage and being unable to heal when injured. Arthroscopic drilling provides a satisfactory treatment options for OLT especially the retrograde drilling when the articular cartilage is intact. This study aims to evaluate the outcome of retrograde drilling in osteochondral lesions of the talus with subchondral cysts.

**Methods:** In this study, 94 patients with osteochondral lesions with subchondral cysts and intact articular cartilage were treated with retrograde drilling during the period from 2008 to 2020. The registry of the cases was reviewed retrospectively to evaluate the radiological and the functional outcome using AOFAS and VAS scores during follow up period at 1, 2, 4, 6, 12, 24 weeks and one year postoperatively.

**Results:** Ninety four patients were included in this study with 74 (78.7%) males and 20 (21.3%) females. The mean age was 38.9 ± 10.8 years. The mean follow-up was 42.2 ± 11.3 months. The mean AOFAS score significantly improved from 65.7 (47 to 81) preoperatively to 92 (90 to 100) (p < 0.01) and the mean visual analogue scale (VAS) score improved from (4 to 0.9) at final follow-up.

**Conclusion:** Despite it is technically demanding but the arthroscopic retrograde drilling provides a dependable treatment option for the

talar osteochondral lesions associated with subchondral cysts with a satisfactory functional and radiological outcome.

### Creation of an original animal model of femoral pseudarthrosis in rabbits

Lajmi Achraf, N. Sahnoun, M. Mellouli, M. Turki, S. Sallemi, H. Keskes

*Department of Orthopedic Surgery and Traumatology, Habib Bourguiba hospital, Sfax*

**Introduction:** Treatment of pseudarthrosis remains a subject of controversy. In order to prove the validity of a therapeutic technique, it is necessary to create an experimental model.

**Study objective:** Create an animal model of non-union using a muscle interposition technique.

**Materials and methods:** It is a descriptive, comparative and prospective experimental study carried on 24 rabbits. Principle was to perform loss of femoral bone substance and muscle interposition stabilized by an external fixator. Bone consolidation was analyzed at 8 and 12 weeks. The analysis of results was based on a radiological, anatomic-pathological and molecular study.

**Results:** In groups of pseudarthrosis, radiological assessment showed persistence of the inter-fragmentary gap, obturation of medullary canal and resorption of bone extremities. Histologically, we observed fibro-cartilaginous tissue in the interposition zone associated with residual muscle tissue. Comparing groups, bone resection area, at 8 and 12 weeks, contained significantly less bone and more fibro-cartilaginous tissue with muscular interposition. The comparison of the interposition groups did not show any significant difference concerning the fraction of bone and fibro-cartilaginous tissue. Molecular study showed significant under-expression of the COL1 and Runx2 genes in case of pseudarthrosis.

**Discussion and conclusion:** The difference in results is mainly explained by muscle interposition. We succeeded in creating an original model of pseudarthrosis in rabbits which will be used later to test new therapeutic methods.

### Functional and oncological outcome of wide resection and Modular endoprosthesis reconstruction in bone tumours

Hassan Elbahri, H. Mohammed Ali, A. Ayman Mohammed Sudan

**Introduction:** In Sudan, we started limb salvage procedures among our patients in year 2012. Diagnosing of Malignant bone tumours is increasing in numbers within the last decade in Sudan due to availability of modern imaging techniques and the well trained histopathologist.

**Study Objectives:** The aim of this study is to determine the short term outcome of Endoprosthetic lower limb salvage procedures that have been done in Sudan since May 2013 to October 2020.

**Material and Methods:** Sixty five cases of bone tumours that have a limb salvage procedure were retrospectively identified. Limb salvage procedures using of modular endoprosthesis as re-constructive methods post wide resection for different types of bone tumours were examined for oncological and functional outcome.

**Results:** Good to excellent functional results was achieved without compromising the oncological principles. There were three cases of local recurrences out of sixty five cases. There were three cases of deep infection out of sixty five cases and one with superficial infection. MSTs Enneking's scoring system for functional assessment post limb salvage procedure of modular endoprosthesis cases scored 27/30.

**Conclusion:** Modular endoprosthesis malignant bone tumours are safe, of good functional result.

### The impact of associating chest trauma with Dorso lumbar spinal trauma on perioperative morbi-mortality

Ahlem Boussabeh, S. ketata, O. terkaouchi, R. dammak, A. ayedi, I. zouche

*Department of anesthesiology and intensive care, Habib Bourguiba hospital, Sfax, Tunisia*

**Introduction :** Spinal injuries cause management problems due to the frequency of multi lesion association. Our study aimed to evaluate the impact of the association of chest trauma with dorso lumbar spinal trauma on perioperative morbi-mortality.

**Patients and methods:** We conducted a retrospective observational study for 4 years involving 80 patients with traumatic osteosynthesis of the Dorso lumbar spinal column. The patients were divided into two groups: patients presenting dorso-lumbar spinal trauma associated or not to chest trauma. We compared the duration of surgery, transfusion, post-operative ileus, resumption of surgery, and neurological and infectious complications. The software IBM SPSS® 25.0.0.1 was used for the statistical analysis. Statistical significance was defined as  $p < 0.05$ .

**Results :** 80 patients with dorso lumbar spinal trauma were included. 7 patients were associated with chest trauma (9%). We found a significant difference between the 2 trauma groups in favor of the spine trauma group associated with chest trauma in terms of surgical duration ( $p=0.001$ ), blood transfusion ( $p$

### Vascular damage due to traumatic Knee dislocation: a retrospective study of 31 cases

Karoui sirine B. Derbel, R. Miri, C. lassoued, M. Ben Hammamia, R. Denguir

*sevice de chirurgie cardiovasculaire La Rabta*

**INTRODUCTION:** Popliteal artery injuries in knee dislocation are associated with a high rate of morbidity and a high frequency of amputation. The surgical management of this dual orthopedic and vascular location remains open to debate, especially with regard to the surgical sequence.

**OBJECTIVE:** The aim of our study is to evaluate the results of management of this type of arterial trauma in terms of mortality and morbidity and to determine the predictive factors for limb salvage.

**METHODS:** It is a retrospective descriptive and analytical study of a serie of 31 patients who were treated between January 2010 and December 2020. Were Included all patients who had an arterial injury post Knee dislocation

**RESULTS:** This study includes 31 patients. The average age is 33,2 years. The average time to revascularization was 10.2hours.

Arterial repair was done by venous bypass in all cases. The postoperative course was marked by 01 death, 03 cases of infection, 01 case of bypass thrombosis, 01 case of haemorrhage, 02 cases of revascularization syndrome and 03 cases of compartment syndrome. Amputation was performed in 03 cases (9.6%).

**The statistical study established as predictor factors of limb amputation:** The delay greater than 6 hours ( $p = 0.001$ ), the infection ( $p=0.001$ ), the separate surgery ( $p = 0.001$ ) and the severe ischemic signs ( $p = 0.001$ ).

**CONCLUSION:** The results of surgical management of osteo-vascular trauma around the Knee is conditioned by the revascularization delay, which is the main predictor factor of limb salvage ( $p=0.001$ ).

## **Pie crusting of the medial collateral ligament in the treatment of meniscal lesions**

Rafik elafram, M. Ben Romdhane, M. Sghaier, A. lessoued, H. Annabi

*Department of Orthopedic Surgery and Traumatology of the FSI Hospital - La Marsa*

Arthroscopic meniscectomies and medial meniscal sutures are common surgical procedures that can be complicated by iatrogenic cartilage lesions, especially in tight knees. To avoid this complication, needle pie crusting of the medial collateral ligament has been proposed. This technique is practiced, but its influence on longterm medial knee laxity is not precisely known.

**Methods:** It's a retrospective study about 20 patients whose average age ranged between 20 and 40 years, all internal security agents, operated between 2017 and 2019 by arthroscopy for internal meniscal lesion. The assessment of the laxity was based on clinical and radiological criteria Results 14 patients had a partial meniscectomy and 6 had a meniscal suture All 20 patients required Pie Crusting to better approach the internal femoro-tibial compartment. This was done using an intramuscular needle under arthroscopic control, opposite the medial meniscus, at the posterior 2/3 junction of this compartment until an opening deemed satisfactory. The study of medial laxity was carried out after a 6-week follow-up postoperative with a clinical and radiological evaluation on dynamic X-rays Clinical evaluation showed no residual internal knee laxity, the patient could undertake heavy physical activities with manageable pain levels and a sub optimal knee function

**Conclusion:** Needle Pie Crusting is a common per operative gesture, it is usually necessary to ease the access to the internal femoro tibial compartment. Our Clinical and radiological evaluation showed no residual internal knee laxity