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### **The Effect of Distal Pole Scaphoid Resection on Wrist Biomechanics:**

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**Backgrounds:** Distal pole scaphoid resection arthroplasty (DPSR) provides pain relief and maintains motion in the face of chronic scaphoid non-union with limited degenerative arthritis. This study assesses the biomechanical implications of increasing levels of distal pole scaphoid resection.

**Methods:** Dorsally based exposure was used in each of six fresh frozen cadaveric upper extremities statically affixed to a wooden ballast. Scaphoid resection levels at 25%, 50%, and 75% of the longitudinal length of the scaphoid were made under fluoroscopic imaging. Physiologic axial load through the carpus in grip and pinch were simulated with weights affixed to the wrist and finger flexor and extensor tendons. Simulated grip, pinch, radial and ulnar deviation were performed for the intact scaphoid and for each resection level. The following radiographic parameters were assessed: radiolunate and capitulate angles, carpal height ratio, 1st metacarpal subsidence ratio, and percentage of ulnar carpal translation. These measurements were statistically analyzed by using repeated measures ANOVA at  $P < 0.05$ .

**Results:** Increasing levels of scaphoid resection is associated with a linear increase in radio- and capitulate angles and a decrease in the distance between the radial styloid and trapezium with simulated radial deviation. Of these, only the radiolunate measurements attained statistical significance. We found no significant differences in 1st metacarpal subsidence or carpal height ratios with scaphoid resection levels up to 75%. We also found increasing percentages of ulnar carpal translation in simulated grip,

pinch, and radial deviation with more proximal resection level. Simulated ulnar deviation showed sequentially decreasing percentages of ulnar carpal translation. Though we observed the prior noted changes in ulnar carpal translation, these measurements did not attain statistical significance.

**Conclusions:** More proximal resection levels showed increasing levels of bony impingement with wrist radial deviation as well as increasing radio and capitulate angles. While our study demonstrates changes in ulnar carpal translation with increasing scaphoid sectioning levels, these values did not reach statistical significance. However, we observed that ulnar carpal translation with simulated wrist radial deviation worsened radiographic radial styloid impingement. In cases involving more proximal levels of distal pole scaphoid resection, a concomitant radial styloidectomy may be considered to avoid radial styloid impingement.

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### **A simple technique for treatment of the hand fractures and dislocations with low price**

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Fracture dislocation is one of the most common and challenging problems in hand surgery. Pin fixation is the most common fixation device in the hand but some times we need to use external fixators in hand fractures and dislocations. Commercial hand external fixators are expensive and sometimes they are not available. Since it has been presented some alternative solutions for this technique to overcome these problems, like Suzuki technique, Pin stabilizing with syringe or orthopaedic cement and so on. We introduce a new alternative for this treatment which is simple, available and with low price. Pi frame can be used as static or dynamic external fixator.

From June 2016 to February 2018 twenty four patients with hand and finger problems and trauma underwent external fixation stabilizing with Pi frame, including 8 phalangeal fracture, 6 PIP fracture dislocations, 7 metacarpal fracture and 3 congenital diseases. 18 cases as static and 6 cases as dynamic fixator. We had one patient with delayed union, 6 patients with different degrees of limitation of joint motion. We had not seen any cases with pin tract infection, hyper sensibility to the frame pin loosening or complaint of the appearances of the device.

Pi mini external fixator is an available, simple with low price device with almost satisfactory results in difficult hand problems.

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**Carpal tunnel release**  
**carpal tunnel syndrome**  
**electrodiagnostic study**  
**endoscopic**  
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**Backgrounds:** The value of electrodiagnostic (EDX) study grades as a prognostic indicator of clinical results after carpal tunnel release (CTR) remains controversial. In this study, we tested the primary null hypothesis that symptom relief after CTR would not differ based on EDX grade. Secondly, we evaluated the degree of symptomatic and functional postoperative improvement relative to preoperative EDX grade

**Methods:** We prospectively evaluated 199 consecutive patients with 256 hands after CTR confirmed with EDX. Data were collected before surgery and patients were observed at 2 weeks and 3 months after surgery. There were 20 hands with mild, 126 with moderate, and 110 with severe involvement in the preoperative EDX. Demographic, EDX grade (mild, moderate, or severe); surgical parameters; Quick-Disabilities of the Arm, Shoulder, and Hand questionnaire; symptom severity scale, functional status scale, pain catastrophizing scale, and visual analog scale data were collected and analyzed.

**Results:** There was significant improvement in Quick-Disabilities of the Arm, Shoulder, and Hand, symptom

severity scale, and functional status scale scores from the preoperative to 2-week and 3-month postoperative visits in all categories of EDX grade. There was no significant difference in the extent of recovery by the 2-week and 3-month visits relative to EDX grade. Catastrophic thinking did not have a significant effect on any of the 3 groups. Pain decreased dramatically at 2 weeks after surgery but there was no additional significant difference in visual analog scale scores between the 2-week and 3-month postoperative visits. Postoperative pain improvement occurred regardless of EDX grade. There were no major complications or reoperations in any group.

**Conclusions:** Carpal tunnel release demonstrated consistently significant improvement in outcomes regardless of EDX grade at initial and final follow-up. The extent of postoperative improvement after CTR overall was also not statistically different between groups with differing EDX severity. Older patients with severe CTS achieved more modest gains.

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**Single-Bundle vs Double-Bundle (Anatomical)**  
**Reconstruction of the Thumb Ulnar Collateral Ligament:**  
**Biomechanical Study**  
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**Backgrounds:** The goal of this study is to compare the biomechanical properties of anatomic (double-bundle) versus single-bundle reconstruction of the thumb metacarpophalangeal (MCP) joint ulnar collateral ligament (UCL) in a cadaveric model

**Methods:** Twelve fresh frozen cadaver hands were randomly assigned to single- or double-bundle reconstruction groups using a palmaris longus autograft and tenodesis screws. Two blinded examiners performed mechanical testing and measurements using fluoroscopic imaging. We evaluated MCP joint congruence and angle in the coronal plane at 0,30 and 60 °of flexion with valgus loads of 1.36 and 2.72 kg. Maximum MCP flexion and extension with a 0.45 kg load was also measured.

**Results:** There was no significant difference between single-versus double-bundle reconstruction in ulnar congruence or MCP angle. With varying amounts of flexion, there was no significant difference in MCP valgus angle between the 2 techniques, suggesting comparable joint congruity and coronal MCP angle along the arc of thumb MCP motion

**Conclusions:** Single- and double-bundle UCL reconstructions of the thumb MCP joint have comparable biomechanical properties in regard to joint congruity under valgus load.

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#### Side-to-Side Versus Pulvertaft Extensor Tenorrhaphy-A Biomechanical Study

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**Backgrounds:** We hypothesized that a side-to-side (STS) tendon repair has biomechanical characteristics that match those of a Pulvertaft (PT) weave.

**Methods:** Thirty extensor tendons were harvested (4 extensor digitorum communis and 1 extensor indicis proprius from 6 cadaver arms). Three hand surgery fellows with similar backgrounds of training under the same conditions and precise standardized technique performed the repairs (5 PT and 5 STS per surgeon). After the repairs, the tendons were passed through a graft-sizing guide to determine bulk and results were expressed as a repaired versus native diameter ratio. The specimens were then tested for ultimate strength and fatigue properties. Failure type and mechanical properties were recorded and compared with those of the native tendon.

**Results:** The average peak force to failure was  $93 \pm 20$  N for the STS and  $62 \pm 32$  N for PT group. Relative strength ratio (repair strength compared with native tendon strength) was  $37\% \pm 21\%$  for the STS and  $22\% \pm 11\%$  for the PT group. In the STS group, all failures occurred as a result of tissue failure; however, in the PT, suture failures occurred in 3 tendons before tissue failure. The mean bulk ratio of the repaired site versus native proximal tendon was  $37 \pm 14$  and  $40\% \pm 22$  more for

the STS and PT groups, respectively. These values for native distal tendon were  $28\% \pm 9.9$  and  $26\% \pm 24$  respectively for STS and PT repair. Furthermore, the bulk of the repaired site for the STS and PT groups was  $4.2 \pm 0.50$  and  $4.7 \pm 1.2$  mm, respectively.

**Conclusions:** Side-to-side repair technique showed superior biomechanical properties while demonstrating comparable repair bulk of the tendon coaptation compared with the Pulvertaft weave.

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#### Results of lower trapezius transfer for restoration of shoulder external rotation in patients with brachial plexus injury

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Brachial plexus injury is a rare condition but result in serious disability. Today with microsurgical technique improvement and also popularization of nerve transfer, great improvement was achieved in functional recovery of these patients. In spite of this truth, results of these treatment method is not complete and perfect. One of the problem in these patients at the end of recovery period is weakness of shoulder external rotation which has been occurred in one third of patients. Although transfer of lower third of trapezius is well known and conventional method especially in patients with poliomyelitis, today this procedure was introduced in patients with brachial plexus injury and also rotator cuff injury.

In this study we reviewed results of this procedure in treatment of our patients.

Since May 2015 till January 2018, 11 patients with brachial plexus injury who had muscle power greater than 2/5 in shoulder abduction and elbow flexion but due to weakness of shoulder external rotation could not use their extremity underwent lower trapezius transfer with technique of Elhassan\_Valenti.

1 man and 3 woman with age between 18-43 and traumatic upper brachial plexus injury were operated. 2 of 11 patients had spontaneous recovery of shoulder abduction and elbow flexion and 9 of 11 patients had shoulder abduction and elbow flexion improvement

after previous nerve transfer. In all patient spinal accessory nerve were intact.

In 7 patients who underwent lower trapezius transfer, shoulder external rotation was improved after single operation and in 1 case external rotation was improved after second revision surgery. In 3 patients external rotation didn't had any improvement. External rotation were between 40-120 with mean degree of 88 and mean Quick DASH score decreased from 64 to 28 within 6 months follow up. Transfer of lower trapezius result in functional recovery in patient with brachial plexus injury so preservation of spinal accessory nerve is very important in primary surgery

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#### **Evaluation of outcomes in patients following arthroscopically assisted surgery of scaphoid nonunion**

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**Backgrounds:** The scaphoid is one of the most important bones of the human wrist, and the most common fracture of the wrist is related to it. Scaphoid surfaces are articulate. Due to the wide articular communications and high mobility of scaphoid, any disorder has a significant effect on the overall function of the wrist. On the other hand, delicate perfusion and less soft tissue attachments make it susceptible to nonunion and necrosis. Because this fracture is more common in young men, its morbidity affect active population of the community. The prevalence of scaphoid nonunion is 12%. Symptoms include chronic pain, limited motion, swelling and weakness of the wrist, and may eventually lead to complications such as deformity, instability, and degenerative changes. The most commonly used treatment is open surgery, which has consequences such as damage to soft tissue and small blood vessels, ligaments, volar capsule, and delayed onset of remission. While with arthroscopic surgery in addition to less soft tissue and vessels damage, direct vision is possible to restore alignment of articular surfaces meticulously and detect accompanying damage. In this study, we recorded the radiographic and functional results and the complications of arthroscopic treatment of scaphoid nonunion in an organized manner.

**Methods:** This study was carried out on patients with isolated and non-complicated nonunion and follow-up

for one year in terms of unionization (based on imaging methods) and function with the parameters of the range of active motion based on the angle between the forearm and the third metacarp (by hand goniometer), grip strength (by dynamometer), and the standard disability questionnaires such as Hand, Arm and Shoulder (DASH) score and Patient-Related Wrist Assessment (PRWE) score and Modified Mayo Wrist Score. Complications associated with the surgical procedure were also carefully recorded

**Results:** In this study, 15 patients were examined, of which 12 had fractures in dominant hand, and 3 were in non-dominant hands. 10 patients had scaphoid wrist fracture while 5 patients in the proximal pole. According to simple radiographic findings, the fracture of all patients was satisfactory united after 3 months. None of the patients had direct complications associated with surgical procedures such as erythema, infection or sensory impairment. In terms of function, the mean range of motion and the strength of wrist were compared in two parameters including grip and pinch. According to the patients answers to the DASH questionnaire, their satisfaction with treatment was evaluated and in 47% of patients, the results were excellent, 40% good and 13% were weak. Overall, the average score of patients was 13.54 and was equivalent to good function. According to the PRWE questionnaire, the satisfaction was answered by patients with a mean score of 16.11. According to the MAYO scoring system, the performance of the wrist was evaluated and 27% of the patients had excellent outcome, 27% had good, 40% had satisfactory, and 6% had poor result.

**Conclusions:** According to the obtained data, the arthroscopic treatment of scaphoid nonunion seems to be an effective method with low complications and favorable results

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#### **Changes in spinopelvic alignment after total hip arthroplasty in patients with hip osteoarthritis and low back pain**

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**Backgrounds:** It has remained controversial whether total hip arthroplasty (THA) can affect the sagittal

spinopelvic alignment. In current study, the changes in sagittal spinopelvic parameters was investigated in patients with end-stage hip osteoarthritis and low back pain (LBP) following THA .

**Methods:** There were 27 patients underwent THA enrolled in current study. Before and after the operation, lateral standing spinopelvic x-rays (from cervical spine to pelvis) were taken. The measured variables included: pelvic incidence (PI), sacral slope (SS), pelvic tilt (PT), lumbar lordosis (LL), lumbar scoliosis, sagittal balance and range of hip sagittal motion. In addition, Oswestry disability index (ODI) was completed before and after surgery. Patients were followed at least for 6 months.

**Results:** None of the radiographic spinopelvic parameters changed significantly after the operation. Range of motion increased significantly ( $84.6 \pm 12.5$  degrees Vs  $118.1 \pm 11.3$  degrees,  $p < 0.001$ ). Furthermore, ODI did not changed significantly after the operation ( $27.5 \pm 6.6$  Vs  $24.3 \pm 4.5$ ,  $p = 0.382$ ).

**Conclusions:** THA did not affect the sagittal spinopelvic parameters measured in standing static x-rays. Since ODI was the same before and after the operation, the authors suggest to address LBP before THA in patients in whom LBP comorbid the hip osteoarthritis.

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#### Does diabetes aggravate carpal tunnel release outcome among patients suffering from carpal tunnel syndrome

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**Backgrounds:** Carpal tunnel syndrome (CTS) is one the most common upper extremity conditions, mostly affects women. Management of patients suffering from both CTS and diabetes is challenging as diabetes affects diagnosis as well as treatment. Since the result of surgical treatment in coexistence of CTS and diabetes in contrast to idiopathic CTS is unclear, the aim of this study was to compare the results of CTS treatment in diabetic patients with non-diabetic patients .

**Methods :**Our meta- analysis had been done based on the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement. First, databases searches were done followed by primary identification, removing duplication, and abstract screening which were performed by two different researchers. After that analysis was performed using CMA (comprehensive meta- analysis) software (version 2.0 .)

**Results :**In our systematic research, two relevant studies were found using Quick DASH. There was no statistically significant difference between two studies regarding postoperative Quick DASH scores) P- value= 0.112). Analyzing the studies which used BCTS revealed that both the functional status and symptom severity status scores were statistically different between studies (FSS p-value=  $< 0.001$ , SSS p-value=  $< 0.001$ ). Also, all the nerve conduction parameters were statistically significant, except for MCV among diabetic and nondiabetic patients after carpal release (P value= 0.091 .)

**Conclusions :**Our study revealed that diabetes negatively affects the final results of carpal tunnel release operation such as severity of symptoms, function, and nerve conduction study results. Since various external factors contribute in diabetics 'carpal tunnel release surgery, their treatment should include both the external (ischemia, hyperglycemia, and growth factor deficiency) and internal (anatomical) factors .

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#### Focal Fibrocartilaginous Dysplasia in Distal Radius

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**Backgrounds:**Focal fibrocartilaginous dysplasia (FFCD) is a benign lesion and has been reported as a cause of tibia vara in proximal tibia and distal of the femur. It is rare in upper extremity and few cases have been reported in the ulna and radius.

**Methods:** The aim of the study was to review and report the clinical course, radiographic presentation and treatment results of three cases of FFCD in the distal radius.

**Results:** We reviewed the medical records, imaging files, intraoperative anatomical findings and treatment complications of three cases of FFCD in distal radius. All patients underwent tethering fibrotic band resection with lengthening of extensor tendons in one case and distal radius corrective osteotomy in another one

**Conclusions:** All three patients were male with a mean age of 21.3 (11 - 36) months. The mean follow-up period was 28 months. Clinical and radiographic examinations in patients who underwent tethering band resection without osteotomy showed considerable remodeling .

Nonunion, multiple surgeries and deformity were the complications in patient who received osteotomy as a part of treatment .The natural history of distal radius FFCD is not clear. Until receiving enough evidences regarding the natural history of this rare lesion, we can recommend the least invasive treatment for the lesion, which is the resection of the fibrous band

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**Mid-term results of scapholunate suture anchor fixation for treatment of scapholunate dissociation**

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**Backgrounds:**Scapholunate dissociation (SLD) is the most common and significant ligamentous injury of the wrist. The aim of treatment is restoration of carpal alignment. In current study, mid-term results of suture anchor fixation for restoration of normal scapholunate (SL) alignment have been evaluated.

**Methods:** Nine male patients (average age: 34.8 years) with symptomatic dynamic or reducible static SLD underwent scapholunate suture anchor fixation (SLAF) from 2011 to 2016 with average follow-up of 36 months. After dorsal wrist exposure, a 2.8mm suture anchor was inserted in dorsoproximal lateral articular surface of the lunate bone. The two ends of the sutures were traversed from two divergent canals that were made in opposing articular surface of scaphoid. The sutures were tied over the tuberosity after restoration

of normal SL alignment. Two K-wires supported SL and scaphocapitate (SC) alignment for 8 weeks. Radiographic parameters, wrist range of motion and grip strength were measured. Quick-DASH and Modified Mayo Wrist Score) MMWS) were used as outcome measures .

**Results :**The grip strength and passive motion reached 75% and 88% of other side, respectively. The SL gap was measured as 5.4mm, 2.6mm and 3.4mm in pre-op, after pin removal and follow-up stress x-rays as well as 81 . 7,51.8 and 65.1 degrees for the SL angle. Average Quick-DASH score corrected from 60 to 25. according to MMWS one, one, five and two patients gained excellent, good, satisfactory and poor results, respectively.

**Conclusions :**SLAF is a simple technique with minimal soft tissue manipulation which able to correct and maintain carpal alignment with favorable mid-term results, especially in dynamic SLD

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**Incidence of neuropathy associated with massive rotator cuff tear and the effect of tendon repair on improvement of the neuropathy**

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**Backgrounds:** Previous studies suggest an existing association between massive rotator cuff tear (RCT) and peripheral neuropathy. However, the findings are often inconsistent. In the present prospective study we assessed the prevalence of peripheral neuropathy in patients with massive RCT. In addition, we evaluated the effect of surgical repair of this rupture on the treatment outcomes of neuropathies

**Methods :**In this study, 58 patients were evaluated with a massive RCT. All patients underwent arthroscopic repair using suture anchor groups. Before surgery, electromyography (EMG)/nerve conduction velocity(NCV) were performed to check for neuropathy.In addition, before and after the surgery, Quick Disabilities of the Arm, Shoulder and Hand (DASH) score was calculated for all patients and the pain intensity was measured using visual analogue scale (VAS). Patients were followed up for 6 months. In the final visit, EMG/NCV was reperformed for those patients with neuropathy

**Results :**A total of 8 patients with neuropathy were observed (13.5%), of which 5 cases were presented with suprascapular neuropathy, 2 cases of upper trunk neuropathy and 1 case of neuropathy. In the final visit examinations, all cases except one suprascapular neuropathy and an upper trunk neuropathy were recovered. In the final visit, the average Quick DASH score was significantly reduced from 72.6 to 19.7 ( $p < 0.001$ ). Similarly, the severity of pain significantly decreased from 5.3 to 1/1 ( $p < 0.001$ ). In the final visit, the most important complaint of the patients was a limitation of motion in 11 patients (19%). Three patients also complained of pain, two of whom were those whose neuropathy had not improved

**Conclusions :**Precise screening for neurological damage is recommended in all patients with extensive RCT. Moreover, electromyographic studies can be of benefit in suspected cases of neuropathy before repair of rotator cuff.

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#### Visualization during endoscopic vs. open cubital tunnel decompression: A cadaveric study

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**Backgrounds :**To determine the minimum incision size needed utilizing an open cubital tunnel technique to obtain equivalent and adequate visualization comparable to endoscopic technique.

**Methods:**On ten fresh-frozen cadavers with a 2-cm incision, visualization was assessed by percutaneous needle localization using the endoscopic system. The most proximal and distal extent of field of view was marked .Next, an open cubital tunnel release was performed on each cadaver specimen. The incision size was increased incrementally and the most proximal and distal extents of visualization were recorded for each incision size. The mean visualization distance and standard deviation for each incisional length was calculated .

**Results :**The mean proximal field of view with the endoscopic technique was 8.1 cm. The mean distal field

of view was 8.3 cm. Using the open technique a 2-cm incision allowed 5.9 cm visualization proximally and 5.2 cm distally, which was significantly less than the endoscopic view. A 4-cm open incision provided similar visualization as the endoscopic technique. A 6-cm open incision was required to obtain statistically significant improvements in visualization compared to endoscopic .

**Conclusions :**A 4-cm open incision was required to obtain equivalent visualization to the endoscopic technique for cubital tunnel release. Incision of 6cm is required to visualize 10cm proximal and distal to the medial epicondyle.

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#### Effect of tranexamic acid on bleeding after femoral fracture surgery

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**Background:** Effect of tranexamic acid on bleeding after femoral fracture surgery

**Introducrion:** Orthopedic surgeries are associated with bleeding and require blood transfusions. Tranexamic acid is a drug for reducing these complications during surgery. The aim of this study was to evaluate the effect of tranexamic acid on bleeding during femoral fractures surgery.

**Methods :**In this clinical trial study, 90 patients with hip fracture under open surgery after written consent were examined. Demographic variables such as age and sex and clinical variables such as hemoglobin and hemorrhage before and after surgery and rate of thromboembolism were recorded in patients. Data were analyzed by SPSS software version 23 and analyzed by statistical tests. The significance level was less than 0.05.

**Results :**In terms of hemoglobin changes in subjects who did not have blood transfusions; in the control group, hemoglobin before and after surgery decreased  $1.68 \pm 0.43$  mg / dl and in the case group it was  $0.91 \pm 0.31$  This difference was statistically significant between the two groups in the case and control groups ( $P < 0.001$ , %95CI: -0.96; -0.6). Hemoglobin before and after operation in subjects without blood transfusion during operation was  $12.02 \pm 0.91$  and  $0.89 \pm 10.8$  mg / dL ( $P < 0.001$ ) and in patients with transfusions during surgery it was  $11.37 \pm 0.99$  and  $9.83 \pm 0.63$  mg / dL ( $P < 0.001$ ). The rate of

bleeding during the operation in the control and case group was  $513.78 \pm 121.74$  and  $325.11 \pm 68.08$  ml ( $P < 0.001$ ) and the rate of bleeding in 6 hours after the operation in the control group and the case  $36.22 \pm 9.60$  and  $22.89 \pm 8.95$  ml ( $P < 0.001$ ) respectively. The mean of bleeding during 6 hours after surgery was evaluated between two groups of case and control in different age groups and between the two sexes. As can be seen, the difference between the case and control groups was significant in terms of age and gender. The rate of thromboembolism was not significant between two groups.

**Conclusion :** Based on this study, tranexamic acid has beneficial effects in reducing bleeding and intraoperative blood transfusion in patients undergoing femoral fractures surgery and has no effect on thromboembolism.

Keywords: Tranexamic acid, femoral fracture, hemoglobin, blood transfusion, bleeding, thromboembolism.

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#### Dual mobility cups for recurrent THA dislocation

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**Backgrounds:** Instability following total hip arthroplasty (THA) is a serious disabling complication. Even revision THA due to the recurrent dislocation can be associated with persistent instability. Dual mobility implants (tripolar prosthesis) are used to reduce the risk of recurrent hip dislocation. However, there is little knowledge about the mid-term and long-term outcomes of using these implants. In current study, we evaluated the midterm results of treating recurrent THA dislocation using tripolar prostheses

**Methods:** Between 2005 and 2011, 24 consecutive patients were revised due to recurrent hip dislocation. The patients aged  $62.4 \pm 10.6$  years at the time of surgery. All of the patients had at least 2 episodes of dislocation.

Preoperative Harris hip score (HHS) was  $46.1 \pm 11.5$ . Patients were followed for  $6.2 \pm 4.1$  years.

**Results:** At the last visit, HHS improved significantly ( $83.5 \pm 12.6$   $p < 0.001$ ). Radiolocalization occurred in one patient who required a more revision surgery (4.1%). No patient developed infection and or symptomatic deep venous thrombosis. Also, we found no patient with implant loosening or periprosthetic fracture.

**Conclusions:** Tripolar hip prostheses are useful and effective for treatment of patients with recurrent hip instability after THA. However, more large long-lasting prospective studies are required.

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#### The predictors of core decompression success in patient with AVN

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**Backgrounds:** Avascular necrosis of hip typically presents in young patients. Core decompression (CD) in precollapse stage provides pain relief and preservation of femoral head. The results of CD vary considerably despite early diagnosis. Clinicians concur that primary treatment should focus on preservation of the natural surface of the joint.

**Methods:** To identify the predictive risk factors of the failure of CD of the femoral head AVN (ONFH), we retrospectively reviewed 135 patients (208 hips; 72 males [128 hips], 58 females [80 hips] who underwent CD (average age: 34.78 years [21-71]) between April 2010 and December 2017. The mean follow-up period was 57 months. All hips were in precollapse stage (Ficat I, II).

**Results:** Of 208 hips, 77 patients were bilateral, 24 hips had SLE-associated, 18 hips had Renal failure-associated, 10 hips had Lymphoma-associated ONFH, 4 hips had IBD-associated ONFH, 13 hips had Transplantation-associated, 13 hips had Trauma-associated, 44 hips had used weight gain drugs-associated, 7 hips had used weight loss drugs-associated, 115 hips had used corticosteroid-associated, 1 hip had used Radiotherapy-associated, 9 hips had used chemotherapy-associated, 77 hips had used smoke-associated, 41 hips had used alcohol-associated and 20 hips had used opium-

associated ONFH. We investigated age; sex; body mass index (BMI); etiologic factors; preoperative Imaging classification and staging; Arco score, Ficat score, Kerboul score, Number of focal of femoral head AVN and various clinical data. Univariate and multivariate logistic regression analysis was performed to analyse the data. Of 208 hips, 88 (42.03%) were failed. In univariate logistic regression analysis, the Kerboul and Ficat, Arco classification, number of focal AVN femoral head involved, alcohol, smoking, opium, corticosteroid demonstrated statistically significant association. This means that the factors mentioned above were significantly higher in patients whose CD surgery was unsuccessful. However, to predict the success rate of treatment multivariate logistic regression analysis is needed. In multivariate logistic regression analysis, the Kerboul and Ficat classification, alcohol, number of focal AVN femoral head involved were significantly correlated with failure of CD. The largest failure of CD predictive factor was the Ficat II, Kerboul stage3, multifocal of femoral AVN, alcohol user. The preoperative Imaging classification (Kerboul, Ficat), alcohol user, Multifocal femoral head AVN can predict failure of CD and suggest which patients with ONFH are appropriate for CD treatment

**Conclusions:** Our new predictor factor for CD improves the reliability of hip preserving surgery, and further research is warranted.

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#### **Investigating the Function and stability of intra-osseous the Distal Radius Ulnar Joint prosthesis on cadavers**

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**Backgrounds:** One of the common injuries in the distal radius-ulnar joint is arthritis in this area. Many prostheses have been made for the radioulnar joint, but none have an acceptable performance, since two parts of prostheses are not placed in the bone. We have designed a prosthesis that is replaced with a distal segment of the bone. This prosthesis is drive from the Kapandji method, which is a common surgical method. In this study, we are going to test the prosthesis on the corpus

**Methods:** In this study, we investigated the stability and biomechanics of artificial intra-osseous Distal Radius Ulnar Joint prosthesis on 4 corpses. The range of wrist movements was recorded in six directions before and after the operation. Artificial wrist stability tests were performed as side tensile tests in three modes (Supination, neutral and pronation), axial loading, and rotational loading in supination and pronation for artificial joint stability. Ultimately, anteroposterior and lateral radiographs were performed.

**Results:** All 4 prostheses were placed without problems. The range of motion of the wrist did not changed before and after placement. The results of lateral traction tests were applied in three modes (supernatant and permeation) of the axial stretching, and lateral traction in supination and pronation demonstrated complete joint stability in all four patients. The amount of torque in supination in three patients was 4, 8 and 7.2 N/m, respectively, and 4, 7, and 8, respectively in pronation. We had prosthesis failure only in one case. The amount of displacement of the removed segment in the pronation and supination has been at most 2 mm.

**Conclusions:** Intra-osseous Distal Radius Ulnar Joint artificial prosthesis presented proper function on cadaver study.

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#### **Posterolateral interbody Fusion with Laminoplasty in the treatment of lumbar isthmic spondylolisthesis. A prospective clinical study**

**Introduction:** The technique for the surgical treatment of isthmic spondylolisthesis (ISL) is still controversial. Different opinions have been expressed by various authors on the timing, type of surgery, type of the graft used as well as on whether reduction should be applied or not value of reduction. In light of these data describe our technique in the treatment of ISL and its outcomes .

**Methods:** Between January 2013 and December 2016, we examined 40 consecutive patients that had been operated in our clinic due to ISL. The patients have been assessed clinically and radiologically. The same posterior surgical technique was used in all patients (interbody fusion using bone substitute, reduction of the olisthesis and reinsertion of the lamina .

**Surgical technique:** In prone position, after exposure of the spine posteriorly and transpedicular screw fixation of

the affected segment, the lamina of the affected level was removed en-bloc through the Facet joint and site of lysis on both sides. Decompression of the nerve roots on both sides followed by discectomy and the endplates were prepared for bone substitute and cage. Partial reduction of the olisthesis could be achieved through the discectomy and additional reduction through the application of lordotic rods. Finally after preparation of the lamina and removal of the cartilage on the joint surfaces the lamina was placed and fixed through small screws 2.7mm through the facet joint on both sides .

**Results** The mean age 24 females and 16 males was 53.2 years (18-78). The main complaint at the time of presentation was low back pain (mean VAS 5.9/10) in 36 patients with mean duration of 11.9 months. Leg pain was also in 17 cases; L5 radicular pain in 14 of them. Two patients had foot weakness due to foraminal disc herniation. Olisthesis grade I was in 22 patients, grade II in 14 and grade III in 4 cases. The technique was performed in 30 patients for L5/S1, in 8 patients for 4/5, in 2 patients for L4-S1. Fusion of adjacent degenerative level was in 7 cases. Mean operative time was 182 min. and blood loss of 630 ml. Complete reposition could be obtained in 33 patients. Two patients had dural tears intraoperatively, one patient had foot weakness postop., improved completely with the first postop. week and 2 had superficial wound infection; one needed wound revision. Solid fusion found in 37 patients at the last FU; 2 patients developed symptomatic screw loosening of L5, who had to be re-operated. VAS reduced to 3/10 before the discharge and to 1,2 at the last FU (mean of 20.5 months).

**Conclusion:** Removal of the lamina facilitate decompression of the nerve roots and enables the reduction of Olisthesis. The use of bone substitute prevents the donor site complications. The laminoplasty preserve the osseous structures of the posterior column and therefore prevents scar formation by inhibition blood collection in the paravertebral muscle. It also facilitates performing the revision surgeries.

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#### Extrafocal Percutaneous transpedicular fixation for the treatment of pyogenic spondylitis

Dr.E.Sadat

**Introduction:** Pyogenic spondylodiscitis (PS) is a challenging disease with poor prognosis that requires immediate diagnosis and treatment. It can be treated nonsurgically with antibiotics and immobilization with an external orthosis for several weeks to months. If surgical intervention is required, a combined anterior and posterior approach is usually performed. We report here on our experience with the use of minimally invasive percutaneous transpedicular fixation (PTPF) for the treatment in patients with PS.

**Methods:** We reviewed data of 12 patients, between June 2013 and June 2017, treated for PS, without extensive bone destruction or significant neurological deficit, with PTPF. Demographic, operative, and perioperative data were collected and analysed.

**Results :** Six females and six males with mean age of 75.9 years (57-90). Renal insufficiency was found in 9 patients and DM in 5. Four cases were class II ASA-Score and 8 were class II and IV. Three patients suffered from a lumbar, three from thoracolumbar, six from thoracic and four patients has multifocal PS (33%). More than three segments were fixed in six patients. The average operative time was 88 minutes. The average blood loss was 160 ml. Intraop .biopsy for microbiological and histopathological examination in 10 patients; organism could be isolated in 7 cases (70%). There were no intraop. complications, one patient died two days postop. due to cardiac infarction. Three patients had been reoperated for shortening of the fixation after fusion of the infected segments; occurred in 9 patients within 6 months. Preop. VAS of 6/10 reduced to 2 at the last FU. Seven cases had ASIA-D, six improved postop. to ASIA-E with neurological improvement rate of 86% .Preop. CRP and WBC were 83.2 and 10.7 reduced to 32.5 and 8.8 at the last FU respectively .

**Conclusion:** Long-term immobilization is critical, especially in elderly patients because of severe comorbidities. We present a minimally invasive surgical procedure to avoid immobilization and to overcome the disadvantages of ventrodorsal procedure in patients without significant neurological deficit or extensive bone destruction. The internal immobilization and antibiotic therapy without touching the infected tissue is sufficient to completely resolve the spondylodiscitis. Short and midterm outcomes are promising. A larger series and continuing follow-up examinations are necessary in order

to clarify and define benefits and limitations of the presented technique .

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### Curve pattern of lumbosacral list in patients with lumbar disc herniation

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**Backgrounds:** There are many unanswered questions about the characteristics and mechanism of lumbosacral scoliotic list (LSL). In current study, the pattern of LSL, the level of maximal bending (take-off) and the relationship between location of disc herniation (DH) on magnetic resonance imaging (MRI) and LSL direction on x-rays were investigated.

**Methods:** 37 Patients with extruded lumbar DH and LSL enrolled in current study. The following variables were measured on standing antero-posterior and lateral lumbar x-rays: LSL (from L1 to L5), the take-off level and the coronal shift (the distance between the plump line from T12 spinous process to the central sacral vertical line). The direction of LSL was recorded as the bending side of the patient opposite to the convexity of the curve. The location of DH was determined as right, left or central on MRI.

**Results:** LSL averaged  $9.9 \pm 56.9$  In right and left hernias, the list occurred significantly to the opposite side of the herniation direction ( $p=0.04$ ). There was no significant relationship between level of herniation and level of take-off ( $p=0.391$ ), however, in 67.6% of patients with L4-L5 and L5-S1 hernias, take-off was found at a level above. The take-off was found at L3-L4 or L4-L5 levels in all the patients.

**Conclusions:** LSL occurs usually in opposite side of the herniation location. Furthermore, due to the biomechanical properties, take-off is found in L3-L4 or L4-L5 levels in most of the patients with LSL. It seems that LSL pattern is not affected by the level of herniation.

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### The Relation of femoral notch index and ACL Tear

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**Backgrounds:** Objective: ACL is one of the most commonly encountered elements in knee trauma. The purpose of this study was to compare the Necch Intercondylar width index in patients with and without knee ligament rupture following knee trauma.

**Methods** This is a case-control study. Knee trauma patients referred to hospitals were categorized in two groups with and without knee cruciate ligament rupture as case group ( $n=47$ ) and control ( $n=47$ ). Width Nachch Intercondylar is calculated based on the knee MRI results and is compared in two groups. Data were analyzed using SPSS 22 software.

**Results** mean of medial and lateral posterior tibial slope of knee trauma patients with cruciate ligament rupture was significantly higher than patients with knee trauma without cruciate ligament rupture ( $5.78 \pm 0.74$  and  $6.31 \pm 1.13$   $P < 0.05$ ). The mean of Intercondylar Notch width index in patients with knee trauma with cruciate ligament rupture was significantly lower than patients with knee trauma without cruciate ligament rupture ( $0.25 \pm 0.02$  and  $0.24 \pm 0.02$   $P < 0.05$ ). The mean of intercondylar notch angle in knee trauma patients with cruciate ligament rupture was significantly lower than patients with knee trauma without cruciate ligament rupture ( $54.29 \pm 8.47$  and  $50.93 \pm 11.99$   $P < 0.05$ ). In multivariate logistic regression analysis, notch width of intercondylar and posterior tibial slope were statistically significant ( $P < 0.05$ ).

**Conclusions:** Intercondylar nach width index and intercondylar notch angle and medial and lateral posterior tibial slope are associated with cruciate ligament rupture in patients with knee trauma.

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### Comparison of Clinical Outcomes between Different Femoral Tunnel Positions after Anterior Cruciate Ligament Reconstruction Surgery

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**Backgrounds:** It has been shown that the proper placement of ACL graft during the ACL reconstruction surgery significantly improves the clinical outcomes. This study investigated whether a change in the femoral tunnel position in both axial and coronal planes can significantly alter the postoperative functional and clinical outcomes of the patients

**Methods:** This comparative, retrospective, single-center study was performed on 44 patient's undergone single-bundle anterior cruciate ligament reconstruction (ACLR). Radiographic assessments were done to evaluate the tunnel position in coronal and axial planes. Patients were classified into 4 groups based on radiographic data. The time interval between surgery and last visit averaged 23.6 ±2.2 months (18-30 mos.). Lysholm knee score and Cincinnati score were completed for all of the patients. Furthermore, the Lachman, anterior drawer and pivot-shift tests were performed.

**Results:** Of the 44 patients included in the study, 9 patients (20.4%) were classified as the low-anterior group, 17(38.6%) were classified as the low-posterior group and 18(40.9%) were classified as the high-posterior group. None of the patients were included in high-anterior group. A greater mean Lysholm score (96 (̄±in low-posterior group was the only significant difference between the three groups (P<0.001)

**Conclusions:** Findings of the current study demonstrated that low-posterior placement of the ACL graft through the intercondylar notch, based on both antero-posterior (AP) and tunnel-view x-rays, is associated with better clinical outcomes in short-term compared to the routine tunnel placements.

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**Probability of ACL tear in the contralateral knee and sibling**

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**Backgrounds:** Recent studies have shown that several genetic factors can cause an individual's susceptibility to anterior cruciate ligament (ACL) rupture. The aim of the

present study was to evaluate certain underlying factors in increasing the risk of ACL rupture.

**Methods** Eight hundred thirty-six patients with ACL rupture, who had undergone ACL reconstructive surgery from 2010 to 2013 in an academic center and at least 5 years have passed since their surgery, were enrolled. Our variables included gender, age, height, weight, exercise level, time interval between ACL rupture in the first knee and contralateral ACL rupture, the dominant leg, the side of involved knee and the history of ACL rupture in the patient's sibling. Data were analyzed using SPSS version 21.

**Results** Mean follow-up of patients was 6.9 years. Eighty-three patients (9.9%) had contralateral ACL rupture and 155 patients (18.54%) had history of ACL rupture in their siblings. Based on our results, contralateral ACL rupture was three times higher in women compared to men and in patients with history of ACL rupture in sibling compared to who without this history. In addition, the risk of contralateral ACL rupture was higher in age lower than 30 years, BMI 20-25 kg/m<sup>2</sup> and who with regular sport activity. However, the dominant or defeated damaged knee had no effect on the incidence of contralateral ACL rupture. Our results indicated that 83.13% of contralateral ACL rupture occurred during the first two years after the primary operation.

**Conclusions** The risk of contralateral ACL rupture and ACL rupture in sibling in the 6.9 years <follow-up is 9.9% and 18.54%, respectively. Also, the risk of contralateral ACL rupture is 3 times higher in women than in men .

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**Revision single stage anterior cruciate ligament reconstruction using 3anterolateral tibial tunnel**

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Shahid Beheshti University of Medical Sciences**

**Backgrounds:** Purpose Revision Anterior Cruciate Ligament Reconstruction (ACL-R) is a technically demanding enterprise. Management of widened or previously malposition tunnels is a challenging issue and often requires innovative approaches. The purpose of this study was to evaluate the function and clinical results of

revision single stage ACL surgery using the anterolateral tibia tunnel.

**Methods:** Methods 93 revision ACL reconstruction knees from 2012 to 2015 were involved in this study. We focused on 25 knees with malposition or dilatation of the tibial tunnel. All these patients underwent revision single stage ACL reconstruction using the anterolateral tibial tunnel, with a minimum of 2 years follow-up. The clinical results were evaluated by means of the Lysholm score, IKDC score and Tegner activity level scale, and the knee stability was assessed by the Lachman test, pivot shift test, and anterior drawer test. MRI of the index knee before the surgery and two years after revision surgery was assessed

**Results:** Patients were followed-up for a minimum of 2 years (range 24 - 51 months). The mean preoperative IKDC subjective score improved from  $60.45 \pm 6.92$  preoperatively to  $72.29 \pm 4.71$  at last follow-up ( $P > 0.001$ ). (The mean Tegner activity level scale improved from  $5.09 \pm 1.89$  to  $7.69 \pm 1.25$   $P < 0.01$ ), and the mean Lysholm score improved from  $63.4 \pm 8.23$  to  $80.86 \pm 6.41$  ( $P < 0.015$ ) preoperatively and at last follow-up respectively.

**Conclusions:** Creation of the lateral tibial tunnel is an applicable solution in ACL revision surgery when the surgeon is not able to perform an optimal medial tibial tunnel because of the partially misplaced tunnel or altered bone stock encountered in the medial side. One should expect acceptable tunnel length, intact and fresh bony surrounding, perfect graft fixation and comparable stability in ACL revision surgeries using the anterolateral tibial tunnel in comparison to the standard anteromedial tibial tunnel

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#### **Cartilage Matrix Derived Scaffolds for Cartilage Tissue Engineering Applications**

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**Backgrounds:** Routine surgical methods for articular chondral defects have failed to regenerate Hyaline cartilage. Tissue engineered scaffolds particularly those derived from cartilage extracellular matrix are potential substitutes for filling the chondral voids. In this study,

cartilage extracellular matrix derived scaffolds from two different methods were accessed.

**Methods:** Bovine articular cartilage samples were subjected to one of the following processing

**Methods:** Vigorous washing with various detergents like SDS and Triton-X for decellularization

Homogenization, decellularization, molding, and lyophilization Characterization was performed through scanning electron microscopy, porosimetry, and mechanical tests .

**Results:** Detergent-decellularized scaffolds showed dense porous with very small pore sizes; however their compressive strength was about 0.55 MP. Contrarily, homogenized scaffolds had big interconnected pores, but lower mechanical properties (0.43 MP).

**Conclusions:** Engineered cartilage matrix derived scaffolds can be potential choices for treatment of articular chondral lesions .

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#### **Rhenium-188 radiosynovectomy for chronic hemophilic synovitis: evaluation of its efficacy in hemophilic patients and establishment of radiosynovectomy at Joint Care Clinic**

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**Backgrounds:** Radiosynovectomy (RSO) is widely used in management of chronic synovitis in haemophilia. Commercially available radiopharmaceuticals are costly, and therefore new agents may be of interest. Radiocolloids labelled with less costly and more accessible radionuclides like rhenium-188 are of interest to developing countries. The aim of this study was to evaluate the efficacy of radiosynovectomy by rhenium-188 in patients with chronic synovitis due to hemophilia.

**Methods:** All patients were enrolled after taking the history and recording the number of intra-articular bleedings, the required amount of factor, and other information of the disease. The questionnaires and checklists related to the patients' function and the amount of pain were completed. After the above, the

rhenium-188 was injected into the joint and its distribution analyzed by using a gamma monitor. Six months after the injection synovial thickness was measured by MRI. Also, at a time interval of 6 and 12 months after the injection, simple radiography was repeated. Patients' performance and pain questionnaires (FISH, VAS), the range of motion, number of bleeding episodes and required amount of factor were recorded at intervals of 1, 3, 6 and 12 months after injection.

**Results:** In this clinical trial, 20 patients with hemophilia were studied during a one-year period. All of them were male and the mean age was  $22.99 \pm 13.88$  years. The Trend of changes in the mean number of patients bleeding episodes per month ( $P = 0.015$ ), the amount of factor requirement ( $P < 0.001$ ), the mean score of VAS at resting ( $P = 0.014$ ) and activity time ( $P < 0.001$ ), FISH score ( $P < 0.001$ ), Gilbert score ( $P < 0.001$ ) and synovial thickness ( $P < 0.001$ ) were significant. The trend of changes in the average score of Peterson ( $P = 0.623$ ) and Denver ( $P = 0.331$ ) among the patients were also evaluated using repeated measurement analysis, which was not significant.

**Conclusions:** The results of this study indicate a high clinical impact, safety and low invasion of rhenium 188 in radiosynovectomy of hemophilic patients. Considering the availability and relatively low cost of rhenium 188 in our country, this can be a good treatment option for hemophilic patients.

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#### The effects of axial alignment of components on the outcomes of total knee arthroplasty using CT scanning

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**Backgrounds:** There are limited studies regarding the axial alignment of the prosthetic knee components and its effects on the outcomes of the surgery. Furthermore, appropriate method for determining the axial alignment of the components remains controversial. In current study, the effects of axial alignment of the prosthetic knee components on radiographic, functional and subjective outcomes after total knee arthroplasty (TKA) were investigated.

**Methods** In current descriptive analytical study, 102 TKA patients investigated at least 1 year after the operation. Full length radiography of lower extremity was performed. Correct coronal alignment (HKA angle =  $180^\circ$ ) was present in 89 patients and others were excluded. CT scanning of the prosthetic knee with 0.6 mm thickness was performed. On CT scans, the axial alignment of the components and total prosthetic joint were evaluated. Correct axial alignment of the prosthetic joint was defined as correct axial alignment of the both components in addition to parallel axial axes of the components. To measure the angle between two axes, the related CT slices were incorporated. The patient satisfaction was measured using visual analogue scale (VAS). Further, Knee injury and Osteoarthritis Outcome Score (KOOS) was completed to evaluate the functional outcomes. In all measurements, deviation up to 3 degrees was acceptable. The measurements were performed using MicroDicom software and a specialized software for the CT scan system by two radiologists and two orthopedic surgeons.

**Results:** 7 Patients were excluded because of the internally rotated components. The correct axial alignment of the femoral and tibial components were found in 67 (81.7%) and 58 (71.6%) of the patients, respectively. The correct axial alignment of the both components were found in 48 patients (58.5%). In 35 out of these 45 patients, the axial axes of the components were parallel. In addition, parallel axes were found in 10 patients in whom at least the axial alignment of one of the components was incorrect. Mismatch between axial axes ranged from 0 to 18 degrees. The correct axial alignment of the prosthetic joint did not significantly increase KOOS ( $84.7 \pm 8.6$  versus  $81.4 \pm 7.2$   $p = 0.061$ ). Parallel axial axes, also, did not affect the KOOS ( $83.6 \pm 9.3$  versus  $81.7 \pm 8$   $p = 0.318$ ). While mismatch  $> 10^\circ$  significantly decreased KOOS and satisfaction ( $p < 0.05$ ).

**Conclusions:** The current study showed that mismatch  $> 10^\circ$  between axial axes of the components is associated with poor functional outcomes and decreased satisfaction. The authors advise that Akagi's line is an appropriate reference line to determine the axial alignment of the tibial component, since the tibial component was placed inappropriately related to this line in patients with  $> 10^\circ$  mismatch.

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**Total Knee Replacement in the Varus Knees: What Measurement really matters? Introducing a new classification system**

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**Backgrounds** TKA is one of the surgeries that has a high level of satisfaction in patients and can greatly improve the patients' function and life style. One of the most important factors in increasing the outcome of patients is appropriate preoperative planning. Varus deformity is one of the challenges in many patients before TKA, and in various studies, different surgical techniques have been proposed. Our purpose in this study is to present a new classification and surgical technique patients with Varus deformity Candidate for total knee replacement.

**Methods** In this study, 81 patients (including 81 knees) were studied. 68% of patients were female and the rest were male. After the initial pre-op planning, Patients were operated based on the medial defect and lateral laxity (opening the lateral of knee more than 5 mm and/or lateral trust) and finally classified. Then cut-off size of the lateral tibia was determined based on new classification

**Results** In the present study, Varus varies in the range of 9 to 42 degrees. According to the new classification system, 13 % of patients were in type 1 (without defect -without laxity) , 18 % in type 2 ( without defect - with laxity) , 27 % in type 3( with defect - without laxity) , 42 % in type 4 ( with defect - with laxity) . 13 % of patients needed medial release. all patients were placed under the TKA with PS system. The size of the liner in 78% of patients was 10 mm, 17%, 8 mm and other were larger sizes

**Conclusions** According to the analysis, in patients with same JCA and same lateral trust, those without bony defect will need more medial soft tissue release. So, we suggested in those patients, lateral tibial cut should be minimally

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**Amputation as a devastating complication of total knee arthroplasty: systematic review**

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**Dr.MohammadHossein Ebrahimzadeh, Dr.Omid**

**Shahpari, Dr.Amirreza Kachooei, Dr.Nafiseh Elahpoor**

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**Backgrounds** Total knee replacement is a growing attractive alternative for any non infected end stage knee disease. Yet there are some certain devastating complications to be discussed with patient preoperatively. Limb amputation is one of these potential end stage results. Our objective was to find all reported amputation cases related to total knee replacement.

**Methods** We made a through literature review between 2005-2017 aimed to find any paper which reported knee amputation in their short or long term follow ups. 9398 article were extracted from EBASE, SCOPUS, PubMed, Web of Science, MEDLINE, Ovid SP, CINAHL (EBSCO), Web of Science ,<sup>TM</sup>and Cochrane. Included studies were level 3 or 4 on evidences including registries, follow up studies , case series and case reports. Key words were all relevant expressions of (total knee replacement) and (complication or amputation or results or outcome). With title screening 536 articles were screened. 99 item were duplicated. Two researchers reviewed 437 full texts. 60 papers had been reported our intended outcome (Amputation). 15 were excluded because they were case reports.

**Results:** 7.621 cases resulting from 45 studies were reported total of 41 amputations as end result (0.05%). Infection, fracture and bone losses, vascular complication and compartment syndrome consisted all reported causes of amputation with infection as 96% of all cases. Amputation was as 3.9% in infected total knee arthroplasties .

**Conclusions** amputation is a real end result for knee replacements either in primary or revision knee arthroplasties which needs to be discussed with patients for their decision making .

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**The impact of depression, personality and mental health on early outcomes of Total Knee Arthroplasty**

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**Hosseinzadeh, Amir Khazanchin, Mehdi Moaiedfar,**

**Atefeh Ghanbari Jolfae.**

**Iran University of Medical Sciences**

**Backgrounds:** Increasing more attention to mental health and psychological determinants, may be useful in identifying patients at risk for poor postoperative outcomes of Total Knee Arthroplasty (TKA). The aim of

this study was to investigate the influence of depression, personality and physical and mental health in early outcomes of patients undergoing TKA .

**Methods:** 54 patients undergoing unilateral TKA were assessed preoperatively with Oxford Happiness Inventory (OHI), Eysenck Personality Inventory (EPI), 12-Item Short Form Health Survey (SF-12) and Knee Injury and Osteoarthritis Outcome Score (KOOS) for evaluating depression, personality traits, physical and mental health and function, respectively. Six months after surgery, Health-Related Quality of Life (HRQL) and function were assessed using SF-12 and KOOS.

**Results** HRQL and function of all personality traits increased significantly after TKA, without significant difference between them. Extroversion and neuroticism did not have significant correlation with subjective well-being, HRQL and function before and after surgery. Subjective well-being and baseline physical and mental health scores were correlated strongly and directly with postoperative Physical Component Summary (PCS), Mental Component Summary (MCS), KOOS scores and their improvement. Among many factors that significantly affect early outcomes of TKA, the only independent predictor of physical, mental and functional outcome was depression.

**Conclusions** Outcomes of surgery were not significantly different between diverse personality traits. Patients with less depressive symptoms and higher baseline mental and physical scores had significant greater improvement in HRQL after surgery. The only independent factor affecting the physical, mental and functional outcome was depression.

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### **The Effects Of Low Level Laser And Light Therapy On Range Of Motion In Patients With Total Knee Arthroplasty**

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**Backgrounds:** The aim of this study was evaluation the effect of low level laser and light therapy on range of motion in patients with total knee arthroplasty.

**Methods:** Material and methods: In this study we evaluated 45 cases of total knee arthroplasty in hospital for three months. The patients were under went in three

approaches intervention (LASER, LIGHT and CONTROL group) in order to improve range of motion and reduce rehabilitation period in all groups. forty-five randomized patients were enrolled in this study; they were undergoing primary total knee arthroplasty.

**Results:** Results: ROM in LASER and LIGHT groups were changed significantly (p value<0/00001 (

There was significant difference ROM between control group and intervention groups ,

It should be noted ROM in the LASER group changed more than LIGHT group. Knee ROM after knee arthroplasty in laser group improved significantly (p<0.0001 ).

**Conclusions:** Discussion and Conclusion :

The result of the present trial research showed using LL-Laser therapy and Light therapy can reduce the rehabilitation period and improve range of motion in patients with total knee arthroplasty .

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### **Root avulsion and para-root tear of the posterolateral meniscus: repair versus untreated**

**Dr.Sohrab Keyhani, Dr.Mohsen Mardani Kivi, Dr.Arash Sherafat Vaziri**

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**Backgrounds:** This study aimed to assess the outcomes of repairing posterolateral meniscal (PLM) root avulsion and para-root tear in association with anterior cruciate ligament (ACL) reconstruction and compare with those whose PLM tear was left untreated.

**Methods:** Patients with PLM root avulsion or para-root tear accompanying ACL tear were evaluated for eligibility. Group A was composed of patients whose ACL tears were reconstructed without any lateral meniscal repair (33 patients) from 2006-2009. From 2009-2012, patients had ACL reconstruction and additional PLM repair (group B: 40 patients). Both groups were evaluated for knee stability (Lachman test), return to previous level of sports activity, subjective International Knee Documentation Committee form (S-IKDC) and Lysholm knee scores (LKS).

**Results:** Functional results (IKDS and LKS) at 12 and 24-month follow-up were similar between the two groups (all P>0.05). Eight patients (24%) in group A, and two patients (5%) in group B were unable to achieve the previous sports activity level (P=0.036). Return to

previous sports activity level was significantly better in group B. Short-term (34.5 mo) and mid-term (73.5 mo) functional results of group A patients were compared, and it was demonstrated that IKDC  $4 \pm 4.5$  and LKS (87.7  $\pm 3$  scores were decreased significantly ( $P < 0.0001$ ).

**Conclusions:** Functional outcomes of repairing PLM root avulsion and pararoot tear with those whose PLM tear was left untreated are similar in short-term follow-up; however, as the time passes, the sports activity level and mid-term subjective outcomes may worsen in patients whose PLM tear was left untreated.

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**The Long Term Follow up on p32 Colloid  
Radiosynovectomy for Haemophilic Synovitis**  
**Dr.SMJ.Mortazavi, Dr.Mohammad Mehdi Ebrahimi  
nasab ,  
Dr.Mohammad Hassan Kaseb,  
Tehran University of Medical Sciences**

**Backgrounds:** Repeated intra articular bleeding with subsequent development of chronic synovitis and cartilage changes. Radiosynovectomy is a familiar therapeutic choice in management of chronic synovitis in haemophilia. The aim of this study was Long Term Follow up on p32 Colloid Radiosynovectomy for Haemophilic Synovitis .

**Methods:** This a observation study on 43 (46) patients who underwent p32 Colloid Radiosynovectomy for Haemophilic Synovitis. The Lost to follow was happen for 3 patients. In this article 52 (55) joints were assay . P32 snoviorthesis protocol was 1 mCi for Knee and 0.5 mCi for other joints

**Results:** The Mean age was 30.2 (19-43) and the mean of Follow up duration was 14.9 y (Longest FU ever reported in the literature) , the Distribution joint s were included 44 knee, 7 ankle, 1 elbow (Type: 46 A ,4 B2 ,VWB. The mean of Range of motion and Flexion Contracture was 119.21 , 4.74 ,at time of synoviorthesis and Range of motion and Flexion Contracture was 114.74 , 10.13 at 15y follow up , so Range of motion and Flexion Contracture had shown a significant difference during both times. In latest follow-up (14.9y) 67% of patients reported at least a 50% decrease in bleeding frequency after treatment. WFH Pain score decrease in long term follow up from 2.6 to 1.03 ( $P$  value: 0.002) after synoviorthesis. For seven joints, TKA surgery was performed (16%). Three

reinjections 11m/10yrs/15yrs after initial procedure were reported. due to FC, for two joints, distal femoral trapezoid extension osteotomy was performed .

**Conclusions:** Radioactive synoviorthesis highly effective , decreases both the frequency and the severity of hemarthrosis , P32 synoviorthesis has a long lasting effect on Reduction of bleeding and Pain . in our study 64% of patient reported pain less or minimal pain, Radiographic worsening continue to progress and ROM Decrease significantly after a long period of synoviorthesis. P32 synoviorthesis at earlier age(stage) is associated with better outcome. The mean age of patients at time of synoviorthesis was significantly different in the two groups that had joint replacement compared with other patients

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**Survey Of Platelet-Riched Plasma Injection With And  
Without Calcium Gluconate in Treatment Of Patients  
With knee Osteoarthritis Referred to hospital during  
1395-96:A clinical randomized Trial**  
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Dr.Mohammad Sheibani  
Kerman University of Medical Sciences**

**Backgrounds:** Since many studies have not done so far on the effect of calcium salts in the process of activating PRP on the clinical outcome of patients before intra-articular injection, this study aimed to evaluate the effect of PRP with and without calcium gluconate on the clinical outcome. The intra-articular injection of this substance has been designed in patients with knee steviaarthritis.

**Methods** After selecting eligible patients, patients randomly (Randomization Allocation) by the researcher were divided into two groups of plasma-enriched plasma-treated patients with calcium gluconate as activator and controlled plasma-enriched platelets without The use of calcium gluconate was divided and treatment was started. It should be noted that all therapeutic measures in this study were performed by a person who had the necessary skills.

**Results** The results of the study are shown in Table 2. Generally, during the study, the pain level in patients after receiving both treatments significantly decreased during the six-month period, while the pain in the case group significantly decreased significantly. ( $P$  Value  $< 0.05$ ).

**Conclusions:** From the results of this study, it can be concluded that simultaneous injection of PRP and calcium gluconate can further improve the results of injection .

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**A new technique for BTB tendon fixation in anterior cruciate ligament reconstruction. A bio mechanical study**

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Uremia University of Medical Sciences**

**Backgrounds:** Many grafts are used for ACL reconstruction with different methods of fixation. We have presented a new technique for BTB (bone-tendon-bone) graft preparation and compared its biomechanical properties with the classic one to see if the suspensory method of fixation is applicable for BTB grafts.

**Methods:** Eight fresh frozen human BTB grafts were prepared. Grafts were randomly divided into two separate groups. Each containing 4 grafts. In the first group grafts were prepared with standard BTB graft method and in the second group grafts were prepared with new enfolded method. All the grafts were assembled in a universal testing machine for testing the mechanical properties of the grafts. Maximum tensile strength, failure load and failure mode were derived from machine and the values were compared in each group.

**Results:** Mean failure load for classic group was 1660.25 and for enfolded group it was 1579.25 (P = 0.25). Mean stiffness for classic group was 285.25 N/meter and for enfolded group it was 268.75 N/ per meter (P=0.1) .In classic group, all failures happened at the bone-ligament junction. In the enfolded group, failures also occurred through the tendino-osseous junction except for one case

**Conclusions:** Enfolding BTB graft preparation had the same biomechanical indexes of classic method. Therefore this graft preparation method can be used for ACL ligament reconstruction surgery with used of suspensory fixation by Endobutton.

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**Quantitative three-dimensional computed tomography analysis of posterior cruciate ligament avulsion**

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**Nejad, Dr.Farshid Bagheri, Dr.Maryam Emadzadeh, Dr.Mohsen Samghani**

**Mashhad University of Medical Sciences**

**Backgrounds:** Tibia avulsion fracture of posterior cruciate ligament is a particular type of damage to this ligament. Advanced imaging modalities such as CT scans and MRIs can provide valuable information to define the extent of these types of injuries. The aim of this study was to investigate morphological and mapping features of a tibia avulsion fracture of posterior cruciate ligament of tibia by 3D CT scan.

**Methods:** We did a cross-sectional study in hospitals. All adult patients with PCL avulsion from 2011 to 2016 that CT scan was done for them were included in this study. Data were collected from PACS of Emdadi Hospital in Mashhad. After excluding patients with exit criteria the data was exported into Mimics researcher 20 for measuring the fragmentation characteristics.

**Results:** The present research showed higher prevalence of PCL avulsion fractures of tibia in men. The mean age of patients with PCL avulsion fractures of tibia was significantly higher (P = 0.038) in women (mean=3) 14.02 ±3.42 (than men (mean=26.27 .(±7.18The means of the volume of fractured piece (P=0.012), anterior posterior diameter of the piece (P=0.049), mediolateral diameter of piece (P=0.036), anterior posterior diameter of tibia (P<0.001), mediolateral diameter of Tibia (P<0.001) and volume of the tibia (P<0.001) were significantly higher in men than women. There was a significant correlation between the number of parts of fractured bone with anterior posterior diameter of the piece (P=0.018) and anteroposterior ratio (P=0.024). There was a significant correlation between the volume of fractured pieces with anterior posterior diameter of the piece (P<0.001), mediolateral diameter of the piece (P<0.001), anterior-posterior diameter of the tibia (P<0.001), tibia mediolateral diameter (P=0.003), volume of the tibia (P<0.001), anteroposterior ratio (P<0.001) and mediolateral ratio (P<0.001). There was no significant correlation between the numbers of screws used in treatment of patients with PCL avulsion fracture with other variables.

**Conclusions:** This study increased the information of morphological characteristics and mapping of avulsion fragment which could help us to improve the current

treatments and find new surgical fixation such as using plate in PCL avulsion.

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#### Proximal Humerus Tumor Resection and Reconstruction Using Osteoarticular Allograft

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**Backgrounds:** Proximal humerus is one of the most common sites of tumor, and a principal therapeutic approach in patients with tumor in the extremities is limb salvage and osteoarticular allograft reconstruction. This study was designed for evaluation of tumor resection and reconstruction of proximal humerus using osteoarticular allograft

**Methods:** 18 patients with proximal humerus bone tumors were included in this study. In all cases, tumor site was resected and then reconstructed using osteoarticular allograft. The outcomes including allograft survival, complication, and the functional rating system of the Musculoskeletal Tumor Society (MSTS) were evaluated

**Results:** In patients with a mean age of  $27.26 \pm 14.56$  years after 3.6 years of follow-up, 11% reported infections, 16% recurrence, 11% allograft fracture, and 22% nonunion. There was no significant difference between MSTS scores and tumor types ( $p = 0.584$ ). A patient with Ewing's sarcoma died during three years of follow-up

**Conclusions:** The purpose of orthopedic surgery is to restore function while resection is performed for malignancy. Given that proximal humerus allograft has an optimal effect in terms of short-term complications, patients may need to undergo revision surgery in the long run. Therefore, studies with a larger sample size and prolonged follow-up are recommended

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#### The Effect of Neoadjuvant Radiotherapy on the Treatment of Soft Tissue Sarcoma

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**Backgrounds:** In the last decade, limb-salvage surgery in combination with radiotherapy has increased the local control rate to more than 90% for soft tissue sarcoma. Given the controversy surrounding adjuvant and neo-adjuvant radiotherapy, this study seeks to compare the effectiveness of these two methods.

**Methods:** In this study, 20 patients with STS undergoing neo adjuvant radiotherapy surgery were examined and 20 patients received radiotherapy after surgery. Shrinkage of tumor and 5 years Survival and recurrence rate were assessed using Kaplan Mayer were analysis.

**Results:** The mean age of patients was  $57.8 \pm 15.3$  of whom 45.9% were female. The average size of tumor was 9.3 cm before neo adjuvant radiotherapy that it was decreased and patients undergoing wide resection. The overall five-year survival rate in RT group was 74.8% before surgery and 69.3% after the surgery. The results of univariate analysis showed that preoperative RT had a tendency to improve overall survival.

**Conclusions:** This paper suggested that neo-adjuvant radiotherapy could be recommended for the treatment of soft tissue sarcomas, but further studies are needed to demonstrate its effectiveness

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#### In vitro and in vivo investigation of PLA/PCL scaffold coated with metformin-loaded gelatin nanocarriers in regeneration of critical-sized bone defects

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Shahid Beheshti of Medical Sciences

**Backgrounds:** Large bone defects constitute a major challenge in bone tissue engineering and usually fail to

heal due to the incomplete differentiation of recruited mesenchymal stem cells (MSCs) into osteogenic precursor cells. As previously proposed, metformin (MET) induces differentiation of MSCs into osteoblastic lineages in vitro, however the potential effects of this drug on the regeneration of critical sized-defects were not established yet. The current study is aimed to fabricate a novel scaffold to examine the effect of metformin on bone regeneration via a controlled local delivery system .

**Methods:** We fabricated a Poly (lactic acid) and Polycaprolactone (PLA/PCL) scaffold to deliver MET-loaded gelatin nanocarriers (MET/GNs) to critical size calvarial bone defects in a rat model. The fabricated scaffolds were characterized by biomechanical analysis, scanning electron microscopy, porosity, contact angle, degradation rate, and blood compatibility test. Moreover, the effect of fabricated scaffolds on cell viability and their osteogenic differentiation was evaluated under in vitro condition. In animal study, the defects were randomly filled with autograft, scaffolds and a group was left empty without any treatment .

**Results:** qRT-PCR analyses showed the expression level of osteogenic and angiogenic markers considerably increased in MET/GNs-PLA/PCL. The in vivo results showed that sustained release of metformin improved bone ingrowth, angiogenesis and defect reconstruction at 8 weeks post-implantation as evaluated by histological, immunohistochemical, CT scan and biomechanical analysis .

**Conclusions:** These data strongly indicate that local delivery of metformin can help improve the bone healing process. The results of the present study provide the first-time in vivo evidence regarding induction of osteogenic differentiation of MSCs by sustained local delivery of metformin.

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#### **Role of Bone Morphogenic Protein-2 in femoral head osteonecrosis: a systematic review**

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#### **Rothman Orthopedic at Thomas Jefferson University,**

**Backgrounds:** Despite widespread research on non-traumatic femoral head osteonecrosis (FHON), there is no consensus about preventative treatment options. Insufficient blood supply and increased intraosseous pressure are the initiating events in the majority of cases. BMPs are growth factors that belong to the transforming growth factor  $\beta$  TGF $\beta$  (superfamily. Two specific formulations of BMPs have already been approved by the FDA: 1. BMP-2 (Infused, Medtronic) for the treatment of tibial open fractures and spinal fusion; 2. BMP-7 (OP-1, Stryker) in the setting of long bone nonunions. To our knowledge there is no published work reviewing the utility of BMP-2 in the setting of FHON.

**Methods:** online databases (EMBASE, Cochrane, MEDLINE and PubMed) for literature relating to the use of BMP-2 in the treatment of FHON on 2nd June 2017.

**Results:** A total of 169 animal subjects with induced FHON were treated with BMP-2 in all the included in vivo studies. In combination, 96 human hips were treated with BMP-2 and mean follow-up was at least five years.

**Conclusions:** The present review of animal and clinical studies concludes that preliminary evidence supports the utilization of BMP-2, and this has an acceptable impact on the midterm outcomes of FHON.

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#### **The agreement between pelvic radiography alone and radiography with CT scan in determination of treatment of fractures of the pelvic ring**

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Dr.Moghademeh Mirzaee, Dr.Shahab Ilka,  
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**Backgrounds:** CT scan is one of the routine modalities in diagnosis of the pelvic fractures. An unanswered question is if CT scan can alter treatment plane of these fractures?

**Methods:** At first, radiographs of 100 patients with fracture of the pelvic ring were evaluated by one surgeon and type of the fracture according to Young and Burgess classification and treatment plane (surgical or non-surgical) were identified. Then 3 months later the same radiographs with CT scans were evaluated by the same surgeon and type and plane of treatment were determined again and Results were analyzed with SPSS 22.

**Results:** Fractures of the pubic rami were the most common injury in radiography and CT scan. The least common injury in radiography was fracture of the ilium but in radiography and CT scan was diastasis of symphysis pubis. CT scan was more accurate than radiography in diagnosis of the sacral fractures and crescent fractures of the ilium ( $p=0.000$ ) but there was no significant difference in classification of fractures. Non-surgical treatment was suggested for 63 patients and surgical for 37 patients according to radiography and with adding of the CT scan, non-surgical treatment was suggesting for 69 and surgical for 31 patients and this difference was not significant again.

**Conclusions:** Although CT scan gives more accuracy in diagnosis of the fracture lines, it cannot alter plane of the treatment

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#### Epidemiology of Generalized ligamentous laxity in 17-40 years population

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**Backgrounds:** Ligamentous laxity is defined as the excessive movement of the joints in comparison with the range of its main and defined movement, with a high percentage in healthy people in the absence of other diseases, which is referred to as the joint articular joint of the benign generalized ligamentous laxity, It can be a predisposing factor for musculoskeletal injuries

**Methods:** In this descriptive-analytic study, by simple sampling method, among the young population aged 17-40 years old , 378 people were selected, taking into account the roughly equal sex ratio of different ethnicities, the ligamentous laxity with clinical examination by Beighton criteria (scale 4 and above) were evaluated. The collected data were analyzed by SPSS software version 16 at 95% confidence level

**Results:** The prevalence of generalized ligamentous laxity in the present study was 22.8%. The most common ligament laxity was on the fingers. More than 90% of patients with general ligament laxity had no knowledge of their problem and their importance in choosing a field of sports; 14% had a history of sports injury and 36.5% had skeletal or articular disease. The overall prevalence of general ligamentous laxity was significantly higher in

women than in men, and the percentage of articular and skeletal diseases in patients with generalized ligament laxity was significantly higher than that of non-affected individuals .

**Conclusions** The prevalence of generalized ligamentous laxity in the population aged 17 to 40 years in Hamadan province, especially in women, is relatively high regardless of ethnicity. Most of the patients were unaware of their problem and its importance in choosing a sports field, and the history of articular and skeletal diseases was significantly higher in hyperlax individuals

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#### The Study of Pathologic Reactions to orthopedic hardware (Neil and Plaque (

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**Background:** So far, various studies have been done on the local and systemic effects of orthopedic hardware. The aim of this study was to investigate comprehensive pathologic reactions to orthopedic hardware (Neil and Plaque) in patients.

**Method:** In a descriptive study, the pathologic reactions of 15 patients (12 males and 3 females) with an average age of 37.41 that all of them were under the orthopedic hardware placement surgery in Imam Khomeini Hospital and Bu-Ali Sina Hospital in Sari, had been studied through a questionnaire, observation and laboratory.

**Results:** There was no skin reaction after the insertion of hardware in any of the patients. Only in 6.66% of the patients observed infection after insertion of hardware and do not boil, and bloating was also seen in 1 patient.

Furthermore, no systematic complications were observed in any of the patients. The majority of patients had moderate tissue inflammation at the hardware site. There was no evidence of malignancy in any of the patients pathology samples.

**Conclusion:** According to the results of this study, it seems that apart from moderate tissue inflammation, Moderate tissue inflammation in the use of nail and plaque orthopedic hardware is a common complication of using nails and orthopedic plaques in Imam Khomeini and Bouali Hospitals of Sari.

**Keywords:** Orthopedic fixation devices, Orthopedic equipment, Bone nails, Bone plates, Pathology .

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#### Comparison of Therapeutic Results of Plateau Tibia fracture by Hybrid Method with Double-Plate Classic Methods

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Dr.MohammadHossein Kariminasab, Dr.Seyed Mehran  
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**Backgrounds:** The Tibia Plateau fracture is the most prevalent in the 3rd to 5th decades of life, seen in older men and in older women, especially the 6th and 7th decades of life. Falling down is the most common cause of this fracture in the elderly and the most common form of fracture is Split depression. In high energy traumas, Split and Rim Avulsion fractures are common. The axial force releases more energy than Angular, and Valgus pure force causes fractures, and the pure axial force causes the local depression. The combination of these two forces results in the fracture of the split depression. The Tibia Plato is exposed to Valgus force because it is in the normal state of 5 to 7 degrees Valgus. These forces in the healthy bone cause Split fracture and in the osteoporotic bone, it causes the fracture of the depression.<sup>1,2</sup> Non-surgical treatment is used in the case of a non-deformed fracture or an elderly person or severe medical illness. In the lateral plato, in the case of a small fracture of the joint surface less than 10 mm thickness, localized results are obtained with a non-surgical technique used for non-surgical treatment of the cast brace to unload the damaged side of the joint. Most surgeons prefer early onset movements with a hinged brace that allows for

detailed movements. The duration of the intolerance of weight (NWB) is based on the fracture pattern from 4 to 8 weeks.<sup>2,3</sup> Surgical treatment is indicated in cases of transient and unstable fractures, which is not likely to be near normal. Surgical treatment is considered for individuals including almost all cases of Shaft Dissociation, all condylar medial fractures (with the exception of low displacement) and lateral fractures with valgus alignment without Open Reduction Internal Fixation (ORIF) .

**Methods:** Method of study implementation all patients with split fractures of Plato Tibia who were referred to the hospitals between 1393 and 1395 were evaluated. Patients with a history of diabetes, immunocompromised, simultaneous fractures of other bones, history of fracture, or previous surgery in the platoitbia region, multiple trauma patients, or patients with concurrent trauma were excluded from the study. The sample size required for study with 80% strength and 95% confidence interval)  $\alpha=0.05$  ,and according to previous studies, 6 was determined by the statistical formula of 40 patients (each group of 20 patients) and Accordingly, 40 patients were enrolled in the study .

#### Results

In this study, 56 patients were evaluated for inclusion in the study. Of these, 12 patients did not have the required criteria and 4 patients did not want to participate in the study. Finally, 40 patients were enrolled in the study. The patients were randomly divided into two groups of 20 (Hybrid and Double groups).40 patients remained in the study until the end of the study, with 20 patients in the double group and 20 in the hybrid group. 14 patients (70 %in Double group and 13 patients (65%) in hybrid group were male. There was no statistically significant difference between the sex of the two groups ( $P = 0.736$ ).

**Conclusions:** Patients were followed up for  $30.68 \pm 18.63$  months (10 to 60 months, 26.5 Median =). In the study of the complications of patients, no case was observed with Mal-Union, and in all patients the union was properly formed. Also, skin necrosis was not seen in any condition. Deep site infection was seen in 5 patients (25%) in the double group, with no disease from the hybrid group. The prevalence of deep site infection was significantly higher in patients with double, so that the risk of this complication in patients undergoing surgery was 2.33 times higher than those treated by hybrid method (RR 2.33, 95% CI: 1.59-3.42,  $P = 0.024$ ). The infection of the Pin Tract Infection was observed in only

8 patients (40%) of the hybrid group during follow-up. Depression was seen in 3 patients, one patient in the hybrid group and 2 in the double group. Contraditionally, in this study, we considered depressing more than 3 mm as Cut off of Depression. Considering this criterion, depression in 5 patients in the double group (25%) and 9 patients in the hybrid group were seen (45%), There was no significant difference between the two groups ( $P = 0.16$ ). In the quantitative study, the mean of depression in the hybrid group was  $3.84 \pm 0.95$  mm (range 3 to 5 mm, 3 = median) and in the double group was  $3.44 \pm 1.04$  mm (between 2 and 5 mm, 3 = Median) There were no statistically significant differences between the two groups ( $P = 0.23$ ). In total, the complications were observed in 9 patients (45%) in the double group and 13 cases (65%) in the hybrid group. The incidence of complications was not significantly different between the two groups ( $P = 0.17$ ).

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#### **Initial results of Vertical Talus treatment by reverse ponseti method**

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**Backgrounds:** The most common method of historical treatment for vertical talus is the extensive soft tissue release. A minimal-invasive method based on Dobb (Reverse Ponseti) serial casting has been introduced 15 years and has yielded significant results. The aim of this study was to investigate the results of midterm treatment of vertical-talus, treated with minimal-invasive method, and extensive soft tissue release group.

**Methods:** Twelve patient with Vertical Talus including 20 feet were prospectively followed on average of 2 years. Minimal invasive method was investigated in 6 patients with 10 feet and extensive soft tissue release in 6 patients with 10 feet. Patient demographics, Oxford questionnaire, ankle range of motion and radiological measurements were analyzed.

**Results:** In the last follow-up, the mean range of motion in the Minimal invasive group was comparable to the degree in the extensive soft tissue release group. The score of the Oxford questionnaire was not significantly different in the minimal-invasive group with the extensive soft tissue release

group. The same proportion of lateral talar axis-first metatarsal base angle in the minimal-invasive group compared with the extensive soft tissue release surgery group

**Conclusions:** The less invasive method of Vertical Talus treatment had a same outcome in terms of movement and Oxford score in the middle term compared to the high-risk group. More extensive and longer-term studies needed to examine long-term outcomes in adolescence. In general, minimal invasive method similar to The ponseti method in Club foot can be associated with a better result

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#### **lipid profile changes in patients with plantar fasciitis: a case-control study**

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**Backgrounds:** plantar fasciitis is the most common treatable foot disorder, which responsible for the 15% of the foot abnormalities. As the obesity is usually considered as a contributing factor for the plantar fasciitis, lipid profile changes may be a risk factor for plantar fasciitis. The aim of this study was to determine lipid profile changes in patients with plantar fasciitis in compare with control group.

**Methods:** we recruited 78 plantar fasciitis patients and 117 healthy controls into this cross-sectional study. All patients were aged between 18 to 60 years old. The inclusion criteria were as follows: history of characteristic heel pain and less than 3 month of pain duration. Patients were asked to complete the written informed consent. Demographic data, height, weight and BMI from all participants were recorded. Then the laboratory findings evaluated, which were included: cholesterol, LDL, HDL, Triglyceride (TG) and FBS. Finally, the Manchester Oxford Foot and Ankle (MOXF) questionnaire completed for all patients.

**Results:** TG, cholesterol and LDL level were significantly higher in patients compare to healthy controls. However, HDL and FBS were not significantly different between the two groups. The relation between gender and lipid profile were also investigated and we found no significant relation between these two variables. Our data showed that there is

a significant correlation between duration of the disease and TG level ( $p=0.0001$ ,  $r=0.72$ ).

**Conclusions:** Results of this study showed that the LDL, TG and cholesterol level was significantly higher in plantar fasciitis patients compare to control group.

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#### **Reliability of early postoperative x-rays in ankle fractures**

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**Backgrounds:** Evaluating the accuracy of reduction of ankle fractures using postoperative x-rays remained controversial. Some authors demonstrated the advantages of postoperative CT scanning in these injuries. In current study, we investigated the efficacy of postoperative x-rays compared to CT scanning to evaluate the reduction accuracy and stability.

**Methods:** There were 44 patients with ankle fractures underwent open reduction internal fixation (ORIF). After the operation, if the reduction was appropriate and stable on x-rays, CT scanning was performed to evaluate the accuracy of fracture reduction. Abnormal CT findings included malreduction, device malpositioning, missed fracture, intraarticular fragment.

**Results:** Abnormal CT findings were present in 25 patients (56.8%). In 19 patients, CT confirmed the appropriate and stable reduction without device malpositioning. The most common CT findings were malreduction in 23 patients and device malpositioning in 18 patients. There was no abnormal CT finding in lateral malleolar fractures while two third of syndesmosis injuries were inappropriate on CT images.

**Conclusions:** Based on the considerable percentage of patients with abnormal CT findings (malreduction, device malpositioning, missed fracture, intraarticular fragment) after ankle ORIF, it is necessary to evaluate the accuracy of ankle fracture reduction on postoperative CT images.

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#### **Comparison of partially threaded and fully threaded 4mm cancellous screws in fixation of medial malleolar fractures. A randomized clinical trial**

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**Backgrounds:** Displaced medial malleolar fractures typically require open reduction and internal fixation. Purchase of two partially threaded screws may be poor in the sparse cancellous bone of distal tibial metaphysis especially in osteoporotic bones. An increased number of threads in fully threaded screws can improve purchase of screws and enhance the pullout strength thereby leading to better outcomes.

**Methods:** In a randomized clinical trial study 44 patients with displaced closed medial malleolar fracture randomly divided into two groups. In the first group two fully threaded 4 millimeter cancellous screws were used for fracture stabilization (FT group) and the second group was operated by use of two partially threaded 4 millimeter cancellous screws (PT group). Clinical results and complications were compared in two groups at one year follow up.

**Results:** 19 patients in the FT group and 21 in the PT group were present at final follow up. Non-union was not developed in either group however two cases (9%) of delayed union occurred in the PT group. The rate of postoperative infection and symptomatic hardware were not statistically different. ( $p=0.33$ ,  $0.6$ ) Functional assessment using AOFAS, MOXFQ and VAS scores showed no significant difference between the two groups. ( $p=0.11$ ,  $0.84$ ,  $0.12$ )

**Conclusions:** Both fully and partially threaded 4mm cancellous screws can be considered as acceptable fixation devices for the fixation of medial malleolar fractures with good and comparable clinical results.

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#### **Surgical Treatment of Chronic Patellar Tendon Rupture: A Case Series Study**

**Dr.Salman Ghaffari, Mahmoud Jabalameli, Abolfazl Bagherifard, Hoseinali Hadi, Mohammad mojob Mohsen, Amin Yusefzadeh**  
**Iran University of Medical Sciences**

**Backgrounds** Patellar tendon can tolerate a force up to 17.5 times body weight. It is the second strongest tendon in the body after the Achilles tendon. Within the patellar tendon is the largest sesamoid bone in the body, the patella.

The patellar tendon inserts to the tibial tuberosity (1-3). Rupture is less common in the patellar tendon than in the quadriceps tendon. Eccentric contraction of the quadriceps muscle with partial flexion of the knee and foot on the ground is the most common mechanism that causes rupture of the patellar tendon. Degenerative changes may be presented due to repetitive micro-trauma before rupture. Trauma, total knee arthroplasty, anterior cruciate ligament reconstruction with bone-patellar tendon-bone graft, intramedullary nailing of tibia and corticosteroid therapy, and systemic or local injection may cause patellar tendon rupture (4, 5).

**Methods** This retrospective study included adult patients with chronic patellar tendon rupture, either at mid-substance or due to avulsion from patella or tibial tuberosity, who were treated surgically by the senior author. A search of the hospital records from 2006 to 2013 was done to identify these patients. Late or chronic cases were considered as those that had been done three or more months after injury (7, 8). Preoperative subjective international knee documentation committee (IKDC) (9) and modified Cincinnati knee scores (10) were collected from hospital documents. Records of complications such as infection, knee stiffness, rerupture, hospitalization for manipulation or surgical release and device failure or removal were evaluated. All patients came back for a final visit to take lateral knee radiography and complete subjective IKDC and Modified Cincinnati score forms. Conditions of patella Alta or Baja were determined according to the Insall-Salvati index (11).

**Results** From 2006 to 2013, ten patients with chronic patellar tendon rupture were operated by the senior author at the hospital of a referral center in the capital city. Two patients had bilateral injuries; one was male and the other was female. The mean time from injury to surgery was 23 months (range 3 - 132). Seven cases of injury had been due to traffic accidents and three cases due to a fall. Both patients with bilateral injury had sustained injuries in a high energy traffic accident. The mean age of the patients was 34.4 years (range 18 - 58). Six ruptures were in the right knee and six in the left. The mean follow-up time was 6.2 years (range 3 - 9). Augmentation was made with both semitendinosus (ST) and gracilis (G) autografts in six of the knees and the only semitendinosus autograft was used in two knees, one knee treated with Achilles tendon allograft and one with tibialis anterior (TA) tendon allograft. In two of

the knees with good remaining tendon tissue without quadriceps, the muscle retraction direct repair was made without tendon graft augmentation. In nine knees, reinforcement was made with a cerclage wire and in three knees with fiberwire between the patella and tibial tubercle.

**Conclusions** All chronic patellar tendon ruptures had enough tissue for direct repair. In all but exceptional cases, tendon graft should be added to the procedure, preferably autogenously semitendinosus and gracilis; alternatively, an allograft could be applied. All patellar tendon repairs must be reinforced by cerclage wire between the patella and tibial tuberosity. Intraoperative lateral knee radiography is strongly recommended to determine patellar position. A period of four weeks of knee immobilization is recommended with a long leg or cylinder cast. Cast immobilization does not compromise a range of motion of the knee joint. After cast removal, a hinged knee brace should be fitted that permits resumption of ROM 10° - degrees/week. Routine removal of the cerclage wire is not recommended. Broken wire only needs to be removed in symptomatic cases. All patients must be informed preoperatively about

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#### **Endo – Exo Prosthesis for Lower Limb Amputated People**

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People with lower limb amputation have many problems with socket prosthesis including dermatitis, infected sores, difficulty with socket fit, fatigue due to high energy consumption, impaired quality of life and other complications. The aim of the Endo-Exo Prosthesis is to prevent problems at the interface between the sleeve of the socket-prosthesis and the soft tissue coat of the limb stump. In 2018, I implanted endo module prosthesis into the left femur of a 32 years old male by a cobalt-chrome alloy device covered with spongiosa metal. It creates a deep porous surface and favorable modulus for bone formation. Closure of the soft tissue over the stump just to give the spongiosa of the femoral bone enough time to integrate. After six weeks, through the intermediate module, Exo-prosthesis is attached. The result of Endo- Exo prosthesis represents a significant improvement such as the absence of skin irritations, pressure-related injuries, improved mobility as a result of less restriction of movement, an improvement in sense of

position and tactile sensation following care with the Endo-Exo prosthesis. This in turn leads to an improved gait pattern and life.

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**VTE Prophylaxis in patients undergoing THA: Aspirin is enough**

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**Backgrounds** Both ACCP and AAOS guidelines approved aspirin as a safe and efficient chemoprophylaxis for VTE in patients undergoing THA. We conceive this study to see the efficiency and safety of aspirin in our THA patients.

**Methods** In a Prospective series of consecutive 2145 THA patients between January 2011 to January 2017 we used Aspirin as the only prophylaxis regimen against VTE. Patients with major risk factors for VTE were excluded. There was no mechanical prophylaxis at our patients except early ambulation of patients with weight bearing as tolerated on same day of surgery or the day after surgery. Hemoglobin (Hb) concentration preoperatively and postoperative day(POD) 1 and 3 were calculated as an indicator of blood loss. All operations except 256 were done through direct anterior approach. Routinely we use no suction drain in our patients

**Results** There are 5 cases (0.002%) of clinically symptomatic VTE. Two patients were died with probable diagnosis of PE one of them receiving low molecular weight heparin for VTE prophylaxis. No hematoma formation requiring surgical drainage observed in our patients. One patient with gastrointestinal bleeding requires admission. There were 18 patients with wound drainage on POD 1 to 3 requiring dressing change. Mean Hb concentration reduction were 2g/L (1-4g/L) and no patient required blood transfusion

**Conclusions** Considering enormous potential of aspirin in reduction of symptomatic VTE as recommended by AAOS and ACCP guidelines and in light of very low cost of aspirin we recommend routine use of aspirin as 1st line chemoprophylaxis against VTE in patients undergoing THA. We still recommend more potent anticoagulants for patients with high probability of VTE

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**Total Hip Arthroplasty (THA) in patients with haemophilia: Direct Anterior (DA) Approach is an asset**

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**Backgrounds** THA in patients with haemophilia is associated with higher incidence of complications including blood loss. We conceive this study to see if using DA approach for THA in a patient with hemophilia could affect complications especially blood loss

**Methods** In our prospective institutional database, we identified 13 patients who underwent THA through DA approach between January2011 to January 2016. 12 out of 13 patients had severe hemophilia A(<1% Factor VIII (and one had severe hemophilia B(<1% factor IX). One patient (two hips) had high titre on inhibitor. Cementless prostheses (cup and stem) were inserted via DA approach in all patients

**Results** There are 13 male patients and 15 hips (two simultaneous bilateral patients) who were followed-up for 36 months (range, 12 to 74). The average blood loss was 550cc(300-850cc). Mean operation time was 65min(5-95 min). There are no serious complications such as hematoma, deep vein thrombosis (DVT) or infection. Only one patient needed blood transfusion. The mean Harris Hip Score improved from 43 (ranged,38-53) to 83 (ranged, 50-97) (p<0.05(

**Conclusions** DA approach is a viable option for patient with bleeding tendency in terms of reducing blood loss and subsequent complications. It needs to be done by surgeons who have already passed their learning curve for this approach

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**Tranexamic Acid (TXA) and lowering perioperative blood loss in total hip arthroplasty (THA)**

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**Backgrounds** There can be considerable blood loss during THA requiring blood transfusion. Considering transfusion cost and possible serious risks and complications, we design this cohort to evaluate does TXA could reduce blood loss and subsequently blood transfusion

**Methods** In a prospective cohort study 45 patient in TXA group got a single injection of 15mg/kg TXA on operating table before surgical incision and, there were 45 patients in

control group. Total blood loss was calculated from haemoglobin(Hb) balance preoperatively and postoperation day(POD) 1 and 3, intraoperative blood loss was estimated volumetrically and visually from bloody guazes. Both groups received Aspirin as anticoagulation medication. All operation performed through minimally invasive direct anterior approach

**Results** With the threshold of Hb under 8 g/L for transfusion there were no blood transfusion in TXA group compare to 8 patients (17%) in control group (P value .006). Mean Intraoperative blood loss in TXA group was 500cc(300-750cc) compare to 800cc(500-1100cc) blood loss in control group(P

value .001), there was 2g/L reduction in Hb concentration(1-4g/l) in TXA group compared to 4g/L(2-6g/L) reduction in Hb in control group(P value .001). No thromboembolic complications occurred in both groups

**Conclusions** in light of the great potential of TXA in lowering blood loss and need for transfusion in THA and considering its cost we recommend for routine use of TXA in THA patients

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