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ABSTRACT BOOK

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ORAL PRESENTATIONS

1. Title: Femoral Head-Neck Offset in Patients with ACL Injury

Authors: Abolfazl Bagherifard, Mahmoud Jabalameli, Hooman Yahyazadeh, Kaveh Gharanizadeh, Hosseinali Hadi, Mohammad Rahbar, Ali Jahansouz, Azadeh Shafieesabet

INTRODUCTION: Femoroacetabular impingement (FAI) is characterized by an early pathologic contact that limits the physiologic hip range of motion. Recent studies have pointed out the interaction between hip biomechanics changes and knee injury patterns. The purpose of this study was to correlate ACL injury with FAI. The hypothesis was that patient with an increased alpha angle, may increase in stresses applied to the ACL, thereby increasing the risk of ACL injuries during cutting and pivoting activities.

METHOD: In 127 patients with ACL injuries and 90 controls with non-ACL injury, two surgeons with a ICCs level of 0/97 representing good agreement, blinded to the diagnosis, took radiographic measures of the Dunn's view alpha angle of both hips in addition to hip range of motion. Inclusion criteria included no previous hip or knee pathology or surgery.

RESULTS: There was no difference in gender distribution, BMI or age between groups. ACL-injured patients had a significantly higher alpha angle (mean = 56.1, SD = 10.1) on the injured side than the controls (mean = 49.3, SD =9.4, $p<0.001$). Thirty one percent of the ACL injured group had alpha angles over 60°, while only 11% of the non-ACL-injured group had alpha angles over 60°($p = 0.001$).

DISCUSSION: The most important findings in this study suggest that the patients with ACL injuries had higher hip alpha angles compared to patients with non-ACL knee injuries. So our hypothesis confirmed that the patients with alpha angle greater than 60° have a restriction in hip internal rotation and an increased odds of having an ACL injury.

2. Title: The Effect of Femoral Tunnel Position on Knee Joint Laxity and Clinical Outcome of Anterior Cruciate Ligament Reconstruction

Authors: Aliakbar Esmailijah, Mohammadreza Abbasian, Keshavarz AH, Zafari A, Salehi Shahrbabaki Z, Farshad Safdari

PURPOSE: The aim of this study was to investigate whether a change in the femoral tunnel position between the 1-o'clock (high) and 2-o'clock (low) positions could change the laxity and functional outcome of the patients.

METHODS AND MATERIALS: Cross-sectional, double-blind, single-center study was performed on 44 patients (37 male – 7 male) who have undergone the ACLR surgery with semitendinosus and gracilis singe-bundle grafts. The patients were divided into four groups based on their femoral tunnel position in coronal and axial planes of radiograph and each group was examined by Lachman, Anterior drawer and Pivot shift tests. In addition, functional status of the patients was evaluated through the Lysholm form and Modified Cincinnati Scale.

RESULTS: In total, 9 patients in low-anterior group, 17 patients in low-posterior group, 18 patients in high-posterior group and No patients in the high-anterior group completed the study. There were no significant differences between the three groups in whole evaluations and the only significant difference was seen in Lysholm results in the low - posterior group in which the result was higher (96±3, p-value <0/001) than other groups. CONCLUSION: Making change in the femoral tunnel position among the patients with anatomic ACLR surgery, did not conduce to a marked discrepancy in the clinical results or

short-term functional outcome. The current study represented if femoral tunnel situate in the appropriate position in both axial and coronal planes, it will be in association with increased functional outcome. However, clinical and functional outcomes will be optimal and acceptable, even if ACLR performs in anatomic matter.

3. Title : Do We Need a National Protocol for DVT Prophylaxis after ACL Reconstruction?

Authors: Amir Mohammad Navali, Ali Naghiloo

Arthroscopy has been considered a benign procedure, and routine pro¬phylaxis is not the standard of care in many institutions; however, prospective studies have suggested that, in the absence of thrombopro¬phylaxis, the incidence of venographically detected DVT in patients undergoing knee arthroscopy can be as high as 18%. At an advance arthroscopic knee course in August 2006, the audience surveillance revealed that 4 out of 40 knee arthroscopic surgeons (10%) had experienced a fatal pulmonary emboli in their practice. The incidence of DVT in patients undergoing knee arthroscopy treated with the LMWH reviparin for 7 to 10 days was 0.85% versus 4.1% in patients receiving no thromboprophylaxis—for a relative risk reduction of 79.3%. In a study conducted by San Ye et al. (2013) the incidence of DVT after arthroscopic ACL reconstruction was 14%. Marieke C. et al in their study showed that the incidence of venous thromboembolism after arthroscopic ACL reconstruction is relatively high; a 9% incidence of asymptomatic proximal or distal deep vein thrombosis was found, whereas 4% of patients were symptomatic. In a recent systematic review and meta-analysis, the pooled risk ratio for the development of DVT was 0.18 for those who had LMWH prophylaxis compared with patients who did not receive prophylaxis. The incidence of proximal DVT is very low after arthroscopic surgery regardless of receiving prophylaxis (4 of 2,184) or not (29 of 1,814). The rate of proximal DVT in total DVT occurrence can be markedly reduced from 21.3% (29 of 136) to 11.1% (4 of 36).

The American College of Chest Physicians (ACCP) guidelines do not recommend routine thrombopro¬phylaxis other than early mobilization (grade 2B). For patients with additional thromboembolic risk factors or for those who have undergone a complicated procedure, thromboprophy¬laxis with LMWH is recommended (grade 1B).

The need for an accepted national protocol for DVT prophylaxis after ACL reconstruction is obvious. This scientific guideline can prevent disastrous fatal complications following apparently safe arthroscopic surgeries and legally support the surgeons' practice.

4. Title: Biomechanical Evaluation of Q Angle by Single Tunnel, Anatomic ACL Reconstruction with Allograft

Authors: Amirshahriar Ariamanesh, Mahdi Amel Khabazan, Ali Hoseleh

AIM: The Quadriceps or Q angle is an important index that is used as an indicator for patellofemoral joint dysfunction. The aim of this investigation was study about biomechanical evaluation of the Q – angle among football players before and 5 months after anterior cruciate ligament (ACL) reconstruction by single tunnel, anatomic reconstruction with allograft.

METHOD: The Q – Angle was obtained and evaluated among forty injured (ACL tear) football players who played in clubs (leagues) of Iran and their ACL were reconstructed. Digital X ray was done as standing position for them and it was measured and analyzed with specific software (Marco). Then data put into SPSS software (Ver 19) and paired t.test was used ($P<0.05$).

RESULTS: The results indicated that the Q – angle was significantly increased after ACL tear (pre – test) and after reconstruction (by single tunnel, anatomic reconstruction with

allograft in this research) and also 5 months rehabilitation, this angle came back to the normal position and it is closed to better condition (post – test).

CONCLUSION: Larger Q – angles increase the compressive forces applied to the lateral facet of the patella, and increase the tensile forces on the medial patellar restraint. So method of single tunnel, anatomic reconstruction with allograft along with rehabilitation training are able to effective decrease this angle among football players.

KEYWORDS: Q – angle, ACL, Single tunnel, anatomic reconstruction with allograft, Football players.

5. Title: Arthroscopic Ablation of Osteoid Osteoma of Elbow: Case Series with Minimum 18 Months Follow-up

Authors: Arash Sharafatvaziri, Shariar Reza Kamrani, Mohammad Hossein Nabian

BACKGROUND: Arthroscopic excision of osteoid osteoma was first reported in the knee joint and since then there are several reports of arthroscopic excision in knee, shoulder and elbow with inconclusive outcomes due to limited number of cases.

OBJECTIVES: The aim of this prospective study was to evaluate the medium-term functional effects of arthroscopic ablation in cases with osteoid osteoma around the elbow.

MATERIAL AND METHODS: We treated osteoid osteoma of the elbow via arthroscopic ablation in ten patients. The arthroscopic resection procedure was performed 23 ± 9 months (range, 12-36 months) after initiation of symptoms. At the preoperative examination and last follow-up; The elbow flexion/extension and fore arm supination/ pronation range of motions were measured, the patients were assessed with the Mayo Elbow Performance Score and the visual analog scale (VAS) for the elbow and wrist and the Quick DASH score. Finally, the patients' general satisfaction was assessed.

RESULTS: The postoperative elbow flexion/extension range of motion was significantly higher than ROM before surgery ($p = 0.001$, $r = 0.86$). Although forearm supination was higher after surgery compared to base line values, it failed to reach statistical significance. ($P>0.05$ (=0.051)). Forearm pronation was not significantly different before and after the surgery. According to the Mayo Elbow Performance Score, the average score increased significantly at the final follow-up. All patients were satisfied with the operation result.

CONCLUSION: According to the results of our study, arthroscopic ablation is a safe and efficient method of treatment for osteoid osteoma around the elbow with fast rehabilitation time.

6. Title: What is the Role of Gullwing Patelloplasty in TKA?

Authors: Arash Sharafat Vaziri, Mohammad Naghi Tahmasebi, Babak Haghpanah, Reza Ghorbani

BACKGROUND: Compromised patellar bone stock poses significant technical challenges in knee arthroplasty (primary and revision), leaving the surgeon with very few options for reconstruction. Options proposed in this setting include various patelloplasty procedures, patellectomy, and special patellar components. Various results have been reported with these methods, but not one of them has yet been widely accepted.

METHOD: Five patients who had a knee arthroplasty (4 revision surgery and 1 primary) in which a non-resurfacable patella was treated with a gull-wing patellar osteotomy were followed for one year.

RESULT: Radiographs revealed successful healing of the osteotomy in all 5 patients with central tracking of the patella in the trochlear groove. There was a significant improvement in the range of motion and Knee Society scores. There were no patellar fractures or significant patellar malalignment in this

series. we found acceptable function, no revisions for patellofemoral complications.

CONCLUSION: This technique has shown promising results for the treatment of the Non-resurfacable patella during revision total knee arthroplasty, and we conclude that it is a viable method of patellar salvage reserved for the most advanced cases of patellar bone stock compromise.

7. Title: Anthropometric Study of the Hemophilic Knee Joints Undergoing Total Knee Arthroplasty

Authors: Babak Haghpanah, Mohammad Hasan Kaseb, SM Javad Mortazavi, Alireza Ghorbani Amjad

AIM: Total knee arthroplasty (TKA) is the standard treatment in severe stages of hemophilic arthropathy (HA). HA usually starts in childhood when open physes are vulnerable to growth alteration and this may alter the anatomy of the knee joint. So especial considerations may be required when operating on a hemophilic knee for which little data is available about anthropometric characteristics. We studied the anatomical dimensions of hemophilic knees compared to usual osteoarthritic ones.

METHODS: In a prospective case-control study, anthropometric characteristics of 24 patients with hemophilic arthropathy and 28 patients with osteoarthritic knee were recorded. To eliminate the sex bias, only male osteoarthritic patients were enrolled. Several pre- and intra-operative indices were measured for each patient. The data was introduced to IBM SPSS software and were analyzed using appropriate methods.

RESULTS: Fifty-two patients were enrolled (24 with HA). Patients with HA had significantly wider medial-lateral diameter of distal femur compared to OA patients ($p<0.005$) while the anteroposterior size did not differ significantly between the two groups. The patients with HA had significantly higher medio-lateral to antero-posterior size aspect ratio compared to OA group ($p<0.05$). The patellae were also larger in hemophilia group.

CONCLUSION: The anatomic characteristics of hemophilic knee are different from osteoarthritic knee. This disparity may have an impact in intraoperative decision-making and selection of the type of the prosthesis to avoid mismatches in size and gap balancing.

8. Title: Clinical Course of Residual Flexion Contracture after Total Knee Arthroplasty in Patients with Hemophilic Arthropathy

Authors: Babak Haghpanah, Mohammad Hasan Kaseb, SM Javad Mortazavi, Mohammad Mehdi Ebrahiminasab

AIM: Flexion contracture (FC) is a commonly encountered deformity in patient undergoing total knee arthroplasty (TKA) due to hemophilic arthropathy (HA). Clinical course of FC after replacement of an osteoarthritic knee is well reported in the literature. However, to our experience in a high volume referral center, the course may be different in HA.

METHODS: Between April 2010 and April 2014, 65 patients with hemophilic arthropathy and flexion contracture were enrolled and underwent TKA. Preoperative and follow-up status of range of motion, knee society score, WOMAC and SF36 quality of life scores was recorded. The amount of flexion deformity was also observed immediately after wound closure and before termination of anesthesia. All patients were followed for at least 12 months.

RESULTS: Of 76 patients undergoing TKA, 65 (85.5%) had flexion deformity preoperatively. The knee scores had been significantly improved at 12th month post-surgery. The mean preoperative flexion contracture (27.6 ± 11.2) was significantly corrected (14.2 ± 6.2) at the end of the procedure ($p<0.000$). At

12th month, the flexion contracture decreased in all patients (mean 2.2±3.2) with respect to immediate postoperative values, largest part of the correction being during the first 6 months ($p<0.05$).

CONCLUSION: According to our data, residual on-table flexion contracture after TKA in HA can significantly improve over time. Our findings, is in contrast to most studies on osteoarthritic patients where flexion contracture tend to persist and complete intraoperative correction of the deformity is advised.

9. Title: Comparing the Clinical, Functional and Radiologic Outcomes of Total Knee Arthroplasty: Conventional Method versus Patient Specific Instrumentation

Authors: Firooz Madadi, Ali Keipourfard, Soheil Mehdipour, Sohrab Keyhani, Seyyed Morteza Kazemi, Morad Karimpour, Farshad Safdari

BACKGROUND: Recently, patient-specific instrumentation (PSI) systems have been developed in order to increase the accuracy of component positioning during total knee arthroplasty (TKA). However, the findings of previous studies are controversial. In current randomized clinical study, we compared the outcomes of CT-based pin guided PSI TKA and conventional TKA (CTKA).

MATERIALS AND METHODS: There were 50 TKA candidates assigned randomly to two equal groups: PSI and CTKA. The patients were followed for 2 years. After 2 years, the hip knee ankle angle (HKAA), femoral component flexion and orientation of components in coronal plane were measured. Also, Western Ontario & McMaster Universities Osteoarthritis Index and knee society score were completed for all of the patients. Other variables included volume of blood loss and operational time.

RESULTS: The rate of outliers of HKAA was significantly higher in CTKA group (44% Vs 12%, $p=0.025$). The rate of outliers of other radiographic measurements and the operational time were the same. The volume of blood loss was significantly higher in CTKA group (226.3±21.4 cc Vs 187.3±25.5 cc, $p<0.001$). Furthermore, there was no significant difference in term of WOMAC and KSS.

CONCLUSION: CT-based pin guided PSI TKA can significantly improve the postoperative mechanical alignment of the limb and significantly decrease the postoperative blood loss.

10. Title: Dose Triple Semitendinous Autograft Tendon Have the Same Thickness as Quadrapled Semitendinous and Gracilis Autograft Tendons in ACL Reconstruction?

Authors: Hamidreza Yazdi, Ali Jahansouz, Aida Sanaie, Armin Ghadi

BACKGROUND: ACL injury is a common knee ligament injury. Semitendinosus (ST) and gracilis (G) autografts are usually harvested for ACL reconstruction. The most common construct for ACL reconstruction is the quadrupled ST and G tendons, but using both tendons has an adverse effect on leg internal rotation and knee flexion forces. Theoretically, harvesting only one tendon can reduce these adverse effects. This study aimed to compare the thickness of tripled ST tendons versus quadrupled ST and G tendons.

MATERIAL AND METHOD: 120 patients (110 males and 10 females) with documented ACL tears were enrolled in this study. In the first (case) group, ST tendon and in the second (control) group, ST and G tendons were used for arthroscopic ACL reconstruction. The thicknesses of the grafts were measured using a tendon thickness tester.

RESULTS: The mean age of the case group was 34±12.6 years (21 to 47 years) and of the control group was 35.5±11.3 years (17 to 48 years). There were no significant differences

in age, male-to-female ratio, height, and BMI between the groups. Mean graft thicknesses were 7.89±0.59 mm in the control group and 7.87±0.50 mm in the case group. The analytical study showed no significant difference in graft thickness between the two groups (p value=0.87).

CONCLUSION: This study showed that a triple ST tendon graft has the same thickness as a quadrupled ST and G graft.

11. Title: Staged Anatomical Reconstruction of MCL Using Achilles Allograft, a Modification to Marx's Technique

Authors: Hamidreza Yazdi, John Y Kwon, Ara Nazarian, Mohammad Ghorbanhoseini

AIM: Medial collateral ligament (MCL) is the primary stabilizer of the knee against valgus forces. Most patients who sustain MCL injuries regain their activity level with non-operative treatment, but in some cases MCL reconstruction is needed. Marx described his technique for reconstruction of MCL using Achilles tendon allografts. While good results have been reported using this technique, some issues have been observed. The allografts don't stay with the bone proximally and metallic hardware irritation is noted. Loss of ROM in some patients, potentially due to simultaneous multiligaments reconstruction was reported. The aim of this study was to modify this technique using anchor sutures and to do staged MCL reconstruction.

MATERIAL AND METHOD: 11 patients were enrolled. We used Achilles tendon allograft. The allograft was fixed on proximal and distal attachment footprints of the superficial MCL with 3 anchor sutures. All MCL reconstructions were done at 2 stages. At the last follow up we evaluated the ROM, knee ligament laxity and functional outcome scores, subjective IKDC and Lysholm score. Follow up range was from 12 to 27 months.

RESULTS: Knee motion was maintained in all cases. Two cases demonstrated 1+ valgus instability at 30 degree of knee flexion. Both were treated for combined MCL and PCL tear, the rest were completely stable. Average IKDC score was 93 ± 4 and Lysholm was 92 ± 3. All patients were completely satisfied and returned to their previous level of activity.

CONCLUSION: This modified technique has excellent short term results.

12. Title: The Evaluation of Staphylococcus Aureus Colonization in Patients Who are Candidates for Total Knee and Hip Arthroplasty

Authors: Hosseinali Hadi, Mahmood Jabalameli, Ablofazl Bagheri Fard, Amir Azimi, Mahdyeh Naziri

INTRODUCTION: Periprosthetic joint infection is one of devastating complications of this successful procedure that places a heavy burden on patient, physician and health service. It seems that skin, nose, throat and urine of the patients are important focuses of bacterial colonization. In our country, we did not have any information about our patients in this regard. The aim of this study is to determine the prevalencestaphylococcus aureus and other pathogenic bacteria colonization and antimicrobial susceptibility in an Iranian group of patients candidate for arthroplasty. It also evaluates the cost-effectiveness of decolonization program in order to reduce incidence of postoperative infection.

METHODS: In this cross-sectional study,226 patients who were candidate for total joint arthroplasty enrolled in the study. Before surgery, specimens were taken from groin skin, nose, throat and urine for culture and sensitivity to identify the presence of staphylococcus aureus and other pathogenic bacterial colonization. Resistance or sensitivity to methicillin was also assessed in cases that were colonized with staphylococcus aureus. To determine risk factors for colonization, patients medical and drug history, history of

hospitalization or living in institutions, place of living (urban or rural), style of living (alone or with family)were recorded.

RESULTS: In 47 (20.8%) patients, cultures were positive for staphylococcus aureus. Among these 43 patients (19%) were methiciline-sensitive and 4 patients (1.8%) were methiciline-resistant. In this study, in 36 patients (15.9%) nose, in 10 patients (4.4%) throat, in 7 patients (33.1%) groin and in 2 patients (0.9%) urine cultures were positive. Statistical analysis showed that decolonization program is very cost-effective in these patients.

CONCLUSION: Given the devastating morbidity and the high burden (more than 11 thousand dollars for each patient) of periprosthetic joint infection, we recommend decolonization program to be performed at least for high risk group of patients that are candidates for arthroplasty.

KEYWORDS: Arthroplasty, Colonization, Staphylococcus Aureus

13. Title: Biomechanical Evaluation of Interference Screws Materials in Anterior Cruciate Ligament Reconstruction on the Tibial Bone Using Finite Element Method: Understanding the Mechanical Properties of Current Materials under Standard ASTM F2502

Authors: Hossein Sami, Sepideh Ahmadi, Afsaneh Mohammadpour

BACKGROUND: Interference screw fixation in ACL reconstruction is a well-known surgery to return biomechanical behavior of knee. In this paper mechanical behavior of bio-resorbable and metallic materials of interference screws is studied.

METHODS: Interference screw is modeled and assembled with tibial bone medical image data obtained from a CT scan and examined with finite element method under standard ASTM F2502 to simulate physiological loading activity of gait cycle in initial contact when the knee in full extension.

RESULTS: Results show that deformation is related to stiffness of materials. The maximum and minimum total deformation in total polymeric and metallic materials respectively occurs in the interference screw with PLGA and stainless steel materials.

CONCLUSION: Results show that metallic materials with stress absorption, less strain, minimum total deformation have more tensile strength and resistance against insertion torque that these mechanical properties with decrease stress distribution to graft and bone cause to stability of fixation. Versus polymeric materials cause to undermine graft in contact with screw and bone.

KEYWORDS: ACL, Interference screw, FEM

14. Title: Correlation Between Prevalence of Generalized Ligamentous Laxity & Shoulder Injuries in Athletes in Hamadan Province of Iran

Authors: Hossein Saremi, Ali Gudarzi

OBJECTIVE: Generalized Ligamentous Laxity is a risk factor of musculoskeletal injuries .As most of the studies are about the lower extremity injuries .we performed this study to investigate relationship between GLL and acute and chronic shoulder injuries in athletes of Hamadan province of Iran.

METHODS: The experimental group composed of athletes aged from 17 to 37, who had at least 6 months of regular exercises in their discipline and had suffered from shoulder injuries during the past 3 years. They were interviewed and we checked the Generalized Ligamentous Laxity considering Beighton Score of more than 4 as positive. We also checked their returning to the daily life and sports and rated it, according to their Quick Dash Score. Control group: included athletes

whose age, sport and duration of their activity were in the same range as the experimental group. Then all the information mentioned above was collected for them as well. Altogether 118 persons participated in this project, 38 females and 80 males. 32 patients were in experimental group (with a shoulder injury) and 86 were in control group (without a shoulder injury). Using statistical data analysis SPSS20 within the experimental group injuries, GLL comparisons between the experimental group and the control group were carried out, in terms of the prevalence of the GLL.

RESULTS: This research showed that GLL found a risk factor for shoulder instability P=0.021. GLL found a risk factor for shoulder chronic pain P=0.031. GLL found a risk factor for chronic shoulder injuries P=0.030and finally GLL found a risk factor for weak results of treatments P=0.028.

CONCLUSION: According to a higher risk of shoulder injuries and considering the difficulty in the treatment of people with GLL, we must seriously take into account when selecting the type of sport and the kind of training for the people with GLL, or when we look for talents in professional sports. We can clearly identify a lack of education among the athletic trainers concerning injury prevention based on GLL.

15. Title: Medial Discoid Meniscus: Report of Seven Cases and Evaluation of Proximal Tibia Changes

Authors: Iman Qomashi, Mahmood Jabalameli, Mohammad Rahbar, Abolfazl Bagherifard

PURPOSE: To evaluate the proximal tibia anatomic changes in medial discoid meniscus.

METHODS: MRI and X-ray documents of seven patients with medial discoid meniscus reviewed and medial tibia platue depth and slope measured.

RESULTS: The average depth of medial tibia platue was 4.03mm (range; 3.1-5.0) which was 1mm greater than the average medial tibia platue depth but in the normal range (3.1+-0.99). The average medial tibial slope was 19.6 degrees (range; 8-30) which was greater than the normal medial tibial slope range (5.9 +- 3).

CONCLUSION: Medial discoid meniscus is a rare condition which is accompanied with increase in slope and concavity of medial platue of tibia.

16. Title: A Novel Technique for Double Bundle ACL Reconstruction with Rigid Fix Depuy System: Double Bundle Single Tunnel

Authors: Kaveh Bashti, Mohammadnaghi Tahmasebi

INTRODUCTION: In the majority of ACL surgery techniques, the knee is more stable in full extension than flexion. AM and PL bundle of ACL produce consistent stability in a native ACL, while in the conventional methods for ACL reconstruction knee is more stable in extension (PL bundle functioning) and if the position of tunnels are not correct there will be either a global laxity or range of motion deficit.

METHOD: In this retrospective study, 20 patients were operated with the presenting technique and 20 patients with the conventional single bundle method. In the presenting technique, we use hamstring autograft distally attached to tibia. The looped graft of hamstring will be pulled through the single tibial tunnel into the only femoral tunnel. The ascending bundle of ACL graft will be fixed with a trans-cancellous technique method in 70 degrees of flexion functioning more like AM bundle and stabilize the knee in flexion and the descending bundle of the graft will be fixed on tibia in full extension producing PL bundle function . Fixation technique was the same in both groups with rigid fix system trans-cancellous pins and biodegradable screws on tibial side.

RESULTS: The patients were tested after one year for stability.

Both groups had similar subjective scores. The groups with double bundle technique had less laxity in flexion on Physical examination comparing to the contralateral side.

CONCLUSION: We can propose this technique as a reproducible technique to reconstruct ACL in a more native method.

17. Title: Biomechanical Comparison Between Bashti Bone Plug Technique and Biodegradable Screw for Fixation of Grafts in Ligament Surgery

Authors: Kaveh Bashti, Mohammadnaghi Tahmasebi, Mohammad H Kaseb

BACKGROUND: Ligament reconstruction is a common procedure in orthopedic surgery. Although several popular techniques are current new methods are proposed for secure fixation of the tendon graft into the bone tunnel.

PURPOSES: We sought to introduce our new technique of Bashti bone plug for fixation of soft tissue graft in anterior cruciate ligament (ACL) reconstruction and to compare its biomechanical features with conventional screw technique in a bovine model.

METHODS: Twenty pairs of bovine knees were used and the Achilles tendon was harvested to be used as an ACL soft tissue graft. It was secured into the bone tunnel on the tibial side via two different methods: Bashti Bone Plug technique and conventional screw method. Biomechanical strength was measured using 200 N and 300 N cyclic loading on the graft. Pull out strength was also tested until the graft fails.

RESULTS: No graft failure was observed after 200 N and 300 N cyclic loading in either fixation methods. When testing for pull out failure, 21 tendons (53%) were torn and 19 tendons (48%) slipped out. No fixation failure occurred, which did not reveal a significant difference between the bone plug or interference screw group (P=0.11). The mean pull out force until failure of the graft was 496±66 N in the screw group and 503±67 N in the bone plug group (P=0.76).

CONCLUSIONS: Our suggested fixation technique of Bashti bone plug is a native, cheap, and feasible method that provides comparable biomechanical strength with interference screw in bovine model.

18. Title : Modified Laparade Technique for Reconstruction of Postrolateral Complex and Antrolateral Complex of Knee

Authors: Kaveh Bashti, Mohammadnaghi Tahmasebi

INTRODUCTION: Lateral structure of knee is one of the most complicated structures. Techniques for anatomic reconstruction of postro-lateral complex (PLC) have been suggested in the literature recently. Anatomic reconstruction of PLC is technically demanding but has excellent results and has the most possibility for return to play. Theoretically this technique doesn't reconstruct the anterolateral structure of knee. Anterolateral ligament (ALL) is a newly discovered ligament in the anterolateral structure.

METHOD: We modified the original Laparade technique to reconstruct a more anatomic lateral structure. In this technique like the original technique of Laparade et al. we reconstruct anatomic LCL, PLC and popliteus. After completing the anatomic PLC structure reconstruction with La parade et al method then we reconstruct ALL with the remnant graft out of tibia tunnel. The distal part of graft which is already fixed on tibial side for the final stage of anatomic PLC reconstruction is used to reconstruct the ALL graft by pulling up the remnant of graft and fixing it to lateral epicondyle to reconstruct ALL.

RESULTS: 20 patients have been operated with this technique. Their average 2 year follow up showed completely stable and functional lateral structure.

CONCLUSION: This technique can be suggested for MLI type KD3L injured knees. A well-designed clinical trial is required to compare this technique with the original Laparade technique. However we strongly recommend this anatomic technique for PLC (Postro-lateral complex) and ALC (antro-lateral complex) reconstruction.

19. Title: Evaluation of Patellar Position Before and After Medial Opening Wedge High Tibial Osteotomy: Radiographic and Computed Tomography Findings

Authors: Mehdi Moghtadaei, Hossein Farahini, Ali Yeganeh

INTRODUCTION: Genovarum is a common orthopedic problem. Its optimal prompt treatment is an issue of importance. This study was conducted to determine the radiographic changes in patella bone before and after open wedge high tibial osteotomy.

METHODS: In this quasi-experimental study, 43 patients were enrolled and underwent open wedge high tibial osteotomy and the radiographic and CT-scan indices including Q-Angle, Congruence Angle, Insull-Salvati index, and TTTG were measured and compared before and after surgery.

RESULTS: The result revealed that all indices including Q-Angle, Congruence Angle, Insull-Salvati index, and TTTG were not significantly differed across the study ($P > 0.05$). There was no difference between DLFA values before and after the operation ($P > 0.05$), while MPTA values were significantly different before and after operation ($p<0.001$).

CONCLUSIONS: Totally it may be concluded that imaging indices are not differed after open wedge high tibial osteotomy and monitoring for them is not necessary and they would have no prognostic role.

20. Title: Lateral Facetectomy of the Patella versus Osteophytes Removal in Patella Retaining Total Knee Arthroplasty

Authors: Mehdi Moghtadaei, Mohammad Reza Miniator Sajadi, Babak Otoukesh, Hossein Farahini, Bahram Bodduhi, Negin Hatami, Ali Yeganeh

BACKGROUND: Patellar resurfacing during total knee arthroplasty remains controversial. It candecrease the incidence of anterior knee pain and the rate of revision caused by patellofemoralproblems, while resulting in complications such as fracture, patellar component failure, osteonecrosis, instability, tendon rupture and patellar clunk syndrome too. Patellar partial lateral facetectomy and circumpatellar denervation were reported to achieve better therapeutic effects and reduce postoperative anterior knee pain in patients with isolated patellofemoralosteoarthritis.

OBJECTIVES: In the present study the results of the partial facetectomy of the patella including lateral and medial facets of the patella to better patellofemoral motion and congruence are compared with the results of the partial lateral facetectomy only in total knee arthroplasty.

MATERIAL AND METHODS: Data from 55 patients undergoing surgery of osteophytes removal of the patella and neurectomy only, and those undergoing surgery osteophytes removal of the patella and neurectomy and partial facetectomy of medial and lateral facets were reviewed retrospectively. Clinical outcomes were evaluated by knee society score and functional score of the knee. Clinical anterior knee pain Rating and knee range of motion and extension lag were assessed for each patient.

RESULTS: There was significant difference between two groups in anterior knee pain ($p<0.05$), the mean range of motion of the knee in group 1 and 2 were $117^{\circ} \pm 9^{\circ}$ and $116.6^{\circ} \pm 8.2^{\circ}$ respectively. 3(13%) Patients of the reshaped

patella group and 3(11%) patients of the non-reshaped patella group had extension lag <10° respectively. The mean knee society score and knee functional scores showed no statistical difference between groups (p<0.05).

CONCLUSION: Partial lateral facetectomy of the patella can decrease anterior knee pain and can be used routinely for every patient that surgeon doesn't decide to resurface the patella.

21. Title: Efficacy and Safety of Iliac Crest Allograft in Medial Opening-Wedge High Tibial Osteotomy Compared to Iliac Crest Autograft: A 5-Years Follow-up

Authors: Mohammad Hasan Kaseb, SM Javad Mortazavi, Babak Haghpanah

AIMS: Medial opening-wedge high tibial osteotomy (MOW-HTO) is one of the most common procedures done around the knee. This study is a long term follow-up report of the patient population of our previously reported short-term randomized controlled trial comparing allograft and autograft as void fillers in MOW-HTO.

METHODS: Forty-six patients with genovarum deformity with or without medial compartment osteoarthritis, were enrolled based on specific inclusion and exclusion criteria and were randomly assigned into two groups. MOW-HTO was done using iliac crest allograft (23 patients) or autograft (23 patients) as void filler. The follow-up plan was identical in both groups. All patients were followed-up to at least 5 years. Anatomical indices of proximal tibia, complications, and functional outcome scores were assessed for both groups.

RESULTS: The amount of correction (degrees), recurrence, complication rates, time to clinical or radiologic union, and knee scores was similar in both groups. Duration of operation was significantly less in allograft compared to autograft group (66.6±3.6 versus 52.9±5.3 minutes, p<0.001). We had one case of surgical site infection in graft harvest site. No nonunion or delayed union was encountered in either group. Some patients reported more intense postoperative pain in iliac graft harvest site than tibial osteotomy site.

CONCLUSIONS: According to our results, iliac crest allograft can be safely used in MOW-HTO with comparable efficacy and safety to iliac crest autograft. (ClinicalTrials.gov Identifier: NCT00595712)

22. Title: Modified Trans-Tibial versus Trans-Portal Femoral Tunnel Positioning in Anterior Cruciate Ligament Reconstruction: Comparison of Tunnel Properties, Complications and Outcome

Authors: Mohammad Javad Zehtab, Mohammad H-Kaseb, Babak Haghpanah, Arash Sharafat Vaziri, Parham Talebian

AIMS: Modified trans-tibial technique is an alternative method of femoral tunnel placement in anterior cruciate ligament reconstruction with several advantages over trans-portal technique. We conducted this study to investigate the properties of the tibial and femoral tunnel as well as the complications and outcome of this technique.

METHODS: Sixty-two patients with pure ACL tear without concomitant meniscal or other ligament injury were enrolled. In 28 patients the femoral tunnel was made using the modified trans-tibial method. Other patient had their femoral tunnel using usual trans-portal technique. The preoperative demographic data, as well as the intra-operative femoral and tibial tunnel properties were recorded. The patients were as least followed for 12 months. Pre-operative and 12 months follow-up KOOS scores and KSS scores were recorded.

RESULTS: The mean age, as well as the demographic data and the knee scores were not different between the two

groups, pre-operatively. At 12 months follow-up both groups had similar improvement in knee function as showed by the knee scores. The mean length of the femoral tunnel was 40.1±2.1mm and 42.3±1.8mm in modified trans-tibial and trans-portal groups respectively, which was not different significantly. The length of the tibial tunnel was shorter (40.8±3.7mm) in modified trans-tibial than in trans-femoral group (46.2±3.1mm, $p<0.05$). There was no difference in the rate of intraoperative complications between the two groups.

CONCLUSION: Modified trans-tibial femoral tunnel placement is a safe and reproducible method and has its own advantages over trans-portal technique while maintaining good results without increase in complication rate.

23. Title: Management of Old Unreduced Knee Dislocations by a Technique of Two-Stage Release and Reconstruction: A Case Series Report

Authors: Mohammadnaghi Tahmasebi, Babak Haghpanah, Arash Sherafatvaziri

AIMS: Old unreduced knee dislocations are rarely encountered. Not surprisingly, the optimal treatment strategy is not well defined and has been a matter of case-by-case decision. Reports about the outcome and treatment planning are scares in the literature. We present our technique of two-stage release and reconstruction and its outcomes.

METHODS: We present 3 cases of unreduced knee dislocation referring more than 3 months from the initial incident. All patients had a fixed posterior subluxation and sever limitation of ROM. We did a two-stage approach consisting of a thorough arthroscopic release followed by heavy skeletal traction for up to 7 days and then bi-cruciate allograft reconstruction. One patient had a concomitant patellar tendon avulsion from tibial tubercle which was re-attached during reconstruction session.

RESULTS: The patients were followed up to 6 months. The range of motion of the knee, as well as the knee scores was significantly improved. No complications were seen. All patients reported a significant decrease in their pain experience.

CONCLUSION: The rarity of these conditions, make the literature inconsistent with a variety of treatment plans. Although we had only three patients undergoing this technique, we believe this can be a consistent treatment strategy with minimal complications. However, further study with more cases will show safety and efficacy of this technique.

24. Title: Results of Anterior Cruciate Ligament Reconstruction in Primary Varus Knees

Authors: Mohammadreza Minator Sajjadi, Toraj Shafaghi, Adel Ebrahimpour

INTRODUCTION: In many young athletes there is concomitant genovarum and anterior cruciate ligament rupture. In this study results of anterior cruciate ligament reconstruction was assessed in patients by moderate to severe primary varus deformity of the knee and compared with patients by normal knee or mild varus deformity of the knee prospectively.

METHOD: 37 patients with anterior cruciate ligament rupture underwent reconstruction of ACL ligament by arthroscopic method in two groups of patients. Group A included 22 patients with normal alignment of the limb or mild varus deformity of the knee and group B included 15 patients with moderate and severe varus deformity of the knee. Before the surgery and 18 months after the surgery, Patients were clinically evaluated through physical examination as well as the Lysholm score. Tibia anterior translation was measured using the KT-1000 in injured knee.

RESULTS: Anterior drawer test and pivot shift examination was not positive in any of the two groups of patients postoperatively. Lachman test results in 19 patients in group A

and 13 patients in group B was +1 (86.4% and 86.7% respectively). In other patients, it was +2. There was no statistically significant difference between two groups (P-value=0.979). According to the lysholm score and KT-1000 results there was no statistically significant difference between two groups (P-value <0.05).

CONCLUSION: According to the results of this study, existence of genovarum does not effect on short-term results of arthroscopic ACL reconstruction.

25. Title: The Comparison of Clinical Result of Patellar Resurfacing versus Non Resurfacing in TKA

Authors: Mohammad Reza Sobhan, Mohammad Hassan Kaseb, Mohammad Naghi Tahmasebi, S Mohammad Javad Mortazavi, Mohammad Hossein Nabian

Patient satisfaction is one of the most important factors following total knee arthroplasty. To decide whether or not the patella should be replaced during total knee arthroplasty is still debatable. Regarding the culture of Iranian population, a comprehensive study to compare these two surgical approaches is lacking in the literature; so we decided to conduct this investigation. Patients who referred to Imam Khomeini and Shariati hospitals due to severe osteoarthritis and were candidates for knee replacement randomly divided into two groups. The subjects were studied in two groups including 24 in the patellar resurfacing, and 26 in the patellar non-resurfacing group.

This study showed that knee replacement in both groups of patellar resurfacing and non-resurfacing improved KSKS and KSKS-F and Kujala scores and SF-36 mean, but there was not statistically significant difference between the two groups. In both groups, knee replacement resulted in a reduction in WOMAC and relieved pain, but again the difference was not statistically significant. This study revealed that minimum and maximum knee movements were improved almost equally and showed no significant difference in both groups. In the radiographic assessment all angles of •, β, γ and δ were calculated that were not significantly different in the two groups.

This prospective study showed that knee replacement considerably improved increased range of motion, improved knee function and reduced pain. It also suggests that patellar resurfacing during knee replacement has no effects on patients' function, and thus patellar resurfacing is still controversial in the knee replacement surgery.

26. Title: Arthroscopic Rotator Cuff Repair by Transosseous Technique, Clinical Results in 83 Cases

Authors: Mohammad Nasir Naderi, Hassan Keyhanshokooh, Masood Modaresi, Farid Satar

INTRODUCTION: Arthroscopic repair of rotator cuff tear with anchor sutures is a common technique, but the price and pull out of anchors is a problem. Fixation of cuff directly to bone is an ideal method especially if it is done by arthroscopic method. Arthroscopic transosseous repair by different devices explained by several authors in recent years. Dr. Krishnan described an interesting instrument (arthrotunneler), and Italian authors described a different method named Sharc-FT. In all techniques the sutures are passed from holes that are made in bone, and cuff is repaired. No anchor is used. We evaluated the result of our patients treated by this method.

MATERIAL & METHOD: We evaluated 83 patients with cuff tear who treated from 2010 to 2015. Forty-one patients were female. Most patients (76 cases) had large to massive tear. In 14 patients subscapularis was involved.

The mean age was 52.8 years (range 34 to 70). Mean operation time was 90 minutes and Mean follow up time was 12 month. In most patients ROM was started after 4-6 weeks.

RESULTS: Except in four cases that anchor suture used with transosseous repair, in remaining we didn't use anchor. In two patients with massive cuff tear we partially repaired the tear. We had no infection in our patients. The constant score of patients in preoperative examination was 48 increased continuously in follow-up exams. In final evaluation the constant score was 85. The shoulder strength was improved remarkably. Nine cases had some limitation in ROM. The cost of operation was much lower.

CONCLUSION: The price and pulling out of anchors is a problem in arthroscopic cuff repair. Arthroscopic transosseous technique is a new idea for solving this problem. The technique and devices for this method is evolving. Our study showed good result with this method. Although this technique has advantage to other methods, but the learning curve is longer. In summary this technique is new in rotator cuff repair and the primary results are promising.

27. Title: Winging Scapula Diagnosis, Approach & Treatment

Authors: Mohammad Nasir Naderi, Hassan Keyhanshokooh

INTRODUCTION AND AIM: Winging scapula is an uncommon condition which may cause severe discomfort for the patient. The common causes of winging scapula are long thoracic nerve injury and accessory nerve injury. A rare cause of it is fasioscapular dystrophy. This problem can be missed sometimes if the physician doesn't exam the patient carefully. Treatment of this problem is conservative initially. In patients who don't respond to nonoperative treatment, surgery may be indicated, based on the cause of winging. The operation procedures includes pectoralis major transfer, Eden lange operation and scapulothoracic fusion. The aim of study was to review this problem, and notice the approach and treatment of it.

METHOD & RESULT: We operated 6 patients for winging scapula. In 4 cases we did pectoralis major transfer, in which three patients had long thoracic nerve injury and one had muscular dystrophy. In one case we did Eden lange operation for accessory nerve palsy. In one patient with muscular dystrophy we did bilateral fasioscapulothoracic fusion in two sessions. The result in all patents was good to excellent.

CONCLUSION: In this difficult problem, we think that the result of operation is good if we choose the patient carefully, notice the details for surgery and paying good attention to follow up.

28. Title: A Randomized Prospective Comparative Study of 4 Methods of Biceps Tendinitis Treatment: Ultrasound, Low Level Laser + Ultrasound, Intra-Sheath & Extra-Sheath Corticosteroid Guided Injection

Author: Mohsen Mardani Kivi

AIM: The aim of the present study was to compare the therapeutic effects between four methods of ultrasound (US) alone or in combination with low level laser therapy (LLLT) (L-US), intra (InCI) and extra (ExCI) sheath US guided corticosteroid injection in the treatment of long head of biceps (LHB) tendonitis.

METHOD: Patients with confirmed LHB tendonitis were enrolled in a 4-groups (US, L-US, InCI, and ExCI) parallel randomized clinical trial. Pain intensity using Visual Analogue Scale (VAS) and shoulder performance according to Constant-Murley score (CMS) were evaluated at all five visits before, 1 week, 1 and 3 months and 1 years after treatment.

RESULTS: At the end of one year 142 cases were followed up. VAS and CMS scores were improved after treatment in all 4 groups and in all visit in comparison to before treatment. VAS score of InCI group in 1 week's visit was lower than all other groups, but became similar to ExCI groups after this visit and

was significantly lower than US group 1 year after treatment. CMS was similar in all visits between InCI and ExCI. In 1 week and 1 month visits, significant differences were seen between injection groups and two other non-injection groups, but in the last visit, CMS of InCI was only significant in comparison to US group.

CONCLUSION: Although intra sheath corticosteroid injection under US guidance is an effective method for LHB tendonitis especially in the 1st week after treatment, but extra sheath injection also has acceptable results. Using L-US as a less invasive treatment could be as effective as corticosteroid injection in long term.

29. Title: Rotator Cuff Tear with Concomitant Long Head of Biceps Tendon (LHBT) Degeneration: What is the Preferred Choice? Open Subpectoral vs. Arthroscopic Intraarticular Tenodesis

Author: Mohsen Mardani Kivi

BACKGROUND AND AIMS: Lesions associated with the biceps tendon are commonly detected during arthroscopic repair of rotator cuff tears. Acquiring a preferable technique to repair both cuff and LHBT lesions was the aim of several recent studies. This study was aimed to compare clinical and functional outcomes of open subpectoral vs. arthroscopic intraarticular tenodesis in patients with repairable rotator cuff tear associated with LHBT degeneration.

MATERIALS AND METHODS: In this randomized clinical trial, 60 eligible candidates for arthroscopic rotator cuff repair (mean age: 55.7±6.9) were allocated in control group (open subpectoral: SP) or intervention group (intraarticular: IA). In IA group, anchor suture was used for both rotator cuff repair and LHBT tenodesis. In SP group, after arthroscopic repair of rotator cuff, subpectoral tenodesis of LHBT was performed using interference screw. Patients were evaluated for pain intensity (visual analogue scale) and shoulder function (constant score and simple shoulder test).

RESULTS: Both groups were similar with regards to demographic characteristics and preoperative evaluations (all P>0.05). The functional status of both groups was improved, however, it was not significant between the two groups (P=0.1 and P=0.4, respectively). Pain intensity had decreased in 2-year follow-up, and the value in pain reduction was similar between the two groups. The patient's satisfaction also was similar in both groups.

CONCLUSION: It seems that rotator cuff tear associated with LHBT pathologies benefitted from intraarticular or sub pectoral tenodesis similarly and there are no differences in short and mid-term results of these two techniques.

30. Title: Triple Tendon Transfer for Correction of Foot Deformity in Common Peroneal Nerve Palsy

Author: Mohsen Movahedi Yeganeh

INTRODUCTION: Anterior transfer of posterior tibial tendon (PTT) is the most common technique to correct foot drop in patients with common peroneal nerve palsy. It does not address the loss of toe extension "toe drop". This may affect the gait pattern and most patients may not tolerate it. Described here is a technique that addresses toe drop associated with common peroneal nerve palsy.

METHOD: A new technique of tendon transfer using PTT, flexor hallucis longus (FHL) tendon and flexor digitorum longus (FDL) tendon was performed on fifteen patients (13 males and 2 females) with complete common peroneal nerve palsy from 2009 to 2013. Minimum follow up was 12 months (range, 12 - 50 months). The mean age was 37 years (range, 20 - 52 years).

RESULTS: Based on the evaluation criteria of Carayon et al.,

the postoperative results for foot drop correction were excellent in 9 (60%), good in 5 (33%) and moderate in 1 (7%) and the mean active range of motion of the ankle was 46 degrees. Postoperative extension evaluation of the toes was excellent in 7 (47%), good in 5 (33%) and moderate in 3 (20%).

CONCLUSION: Releasing and transferring of FDL and FHL to the toe extensors along with the anterior transfer of the PTT neutralized the deforming forces and allowed for active toe extension while strengthening ankle dorsiflexion. Movahedi Tendon Transfer was a reliable method to achieve a balanced foot and toe dorsiflexion in complete common peroneal nerve palsy.

31. Title: The Study of the Changing in the Knee Artificial Cartilage Mechanical Properties Effects on the Miniscus and the Adjacent Tissues by Using Sticky Area Model

Authors: Navid Soltani, Elahe Ziaei, Hadi Khoramishad, Milad Salimi Bani, Hossein Bahreinizad, Ali Kazemi

Knee Cartilage lesions are among the most common factors of changing this joint. To confront these lesions, replacement of the Implanted Cartilage is one of the under development methods. The mentionable effective factors for a successful replacement are based on different parameters, such as, the mechanical properties of the materials used for the implant process and the size and the type of it. As well as, the strength of the adhesives used in the injured part, which is among the other important factors, effects this surgery. Due to the different materials used in replacement process, the amount of the stress differs based on the adhesive used between the two areas. In this article, by the use of the replacing Cartilage joint simulation of three most applicable artificial Cartilages, the amount of the applied stress on the implant and the adjacent tissues such as Tibial Cartilage and Miniscus has been studied.

32. Title: Novel Screw for Graft Fixation in ACL Surgery

Authors: Saman Tavana, Soheil Mehdipour, Morad Karimpour

BACKGROUND AND OBJECTIVE: Methods of reconstruction of the anterior cruciate ligament (ACL) have developed considerably over the last 30 years. Reconstruction should aim to recreate the exact mechanical properties of the injured ligament and restore normal function to the knee. Currently, this cannot be achieved.
Fixation of the graft during anterior cruciate ligament reconstruction surgery has been the subject of numerous technical innovations but still remains a challenge. This study presents the design, prototype version and results of in vivo and biomechanical testing of novel screw for fixation the graft.

METHODS: Seven fresh young bovine cadaveric tibialis (8-14 mounts of age) were tested. Tendon test specimens were prepared by hamstring graft of cadaver. Grafts were then trimmed to 8 mm in diameter using a sizing block. Using a materials-testing machine, loads can be applied either to the free tendon end of the reconstruction.

RESULT: The presented method allows for exact determination of the graft tension, as well as easy revision. Additional advantages of this method include elimination of the risk of breakage during insertion, reduced risk of fixation loss during postoperative period, and reproducible results.

CONCLUSION: Using the fixation technique presented in this paper as the primary method of fixation may result in minor longitudinal motion (bungee cord effect). However it is suggested to use this method in conjunction with other methods such as interference screw, to achieve a superior fixation.

33. Title: Sagittal Femoral Bowing and its Pattern in Iranian Population

Authors: Seyyed Morteza Kazemi, Ali Akbar Esmailiejah, Reza Minaei, Ehsan Zahir Mirdamadi, Farshad Safdari

BACKGROUND: Sagittal femoral bowing (SFB) is one of the characteristics of the femoral bone affecting the fixation of the femoral fractures and positioning of the femoral component. To our knowledge, there is no data about the amount of this anatomic parameter and its pattern in Iranian population. In current study, we measured the SFB in proximal, middle and distal portions of the femoral bone in a sample of Iranian normal population.

MATERIALS AND METHODS: We measured the SFB on one hundred true lateral femoral x-rays in total and in proximal, middle and distal portions of the bone. The x-rays were taken in supine position while the knee was fully extended and hip laterally extended 90 degrees. The measures were compared between 58 males and 42 females. Furthermore, the correlation between SFB and weight, height and BMI was evaluated.

RESULTS: The total, proximal, middle and distal SFB was 9.8±3.3, 3.7±1.6, 2.5±1.3 and 5.1±2.3 degrees, respectively. SFB was the same in males and females. Total SFB was correlated positively with weight (r=0.219) and BMI (r=0.392) and negatively with height (r=-0.232). Middle SFB had positive correlation with weight (r=0.204) and BMI (r=0.289). Distal SFB was correlated positively with BMI (r=0.287) and negatively with height (r=-0.202).

CONCLUSION: In Iranian population, the greater SFB was found in distal portion followed by proximal one. The findings of the current study indicate that the design of the implants used for femoral fracture fixation and the femoral components should be revised to make them more specific for femoral anatomy and pattern of Iranian population.

34. Title: The Effect of Sagittal Femoral Bowing on the Femoral Component Position in Total Knee Arthroplasty

Authors: Seyyed Morteza Kazemi, Reza Minaei, Reza Osanloo, Hashem Abrishamkarzadeh, Farshad Safdari

PURPOSE: In current study, we investigated that how sagittal femoral bowing can affect the sagittal alignment of the femoral component in total knee arthroplasy.

MATERIALS AND METHODS: There were 25 patients underwent TKA. long leg radiogaraphy in lateral view was performed. The sagittal femoral bowing (SFB) and component alignment in relation to the sagittal mechanical axis and distal anterior cortical line (DACL) were measured. Finally, the correlation of component alignment and SFB was examined.

RESULTS: Mean SFB was 7±2.7 degrees. The component was in flexion position in relation to mechanical axis and DACL as 8.4±2.9 degrees and 1.7±0.9 degrees, respectively. The flexion alignment of the component was significantly correlated with SFB (r=0.798, P<0.001).

CONCLUSION: Mechanical alignment of the limb in both coronal and sagittal axes should be preserved in TKA. SFB can significantly increase the flexion alignment of the femoral component.

35. Title: Drain After Total Knee Arthroplasty in Patients with Hemophilia: A Necessary Practice?

Authors: SM Javad Mortazavi, Babak Haghpanah, Mohammad Hasan Kaseb, Mohammad Ayati Firouzabadi, Mohammad Mehdi Ebrahiminasab

AIMS: There is controversy around using drain in total knee arthroplasty (TKA) especially in patients with hemophilia. Use of drain is proclaimed to reduce the rate of hematoma (which will impede rehabilitation), wound problem, limitation in

range of motion and infection. We conceived this study to see if no-drain-protocol has any effect on the outcome of TKA in hemophilia.

METHODS: In a prospective study, we compared the results of drain-protocol (42 TKAs in 39 patients, mean age 35.5 years) with no-drain-protocol (38 TKAs in 27 patients, mean age 35.7 years). Peri-operative variables (the level of reported pain, rate of complications, estimated blood loss, ...) was observed in the two groups. The time (days) to regain a 90 degree of range of motion was also registered. Patients were followed for at least 12 months.

RESULTS: There was no statistical difference between two groups in terms of knee scores, blood loss, postoperative pain, fever, time to regain the range of motion and infection. Two patients in drain group and one patient in no drain group were re-operated because of peri-prosthetic joint infection. No patients needed blood transfusion in each group.

CONCLUSION: Our study suggests that "no drain" protocol is safe after TKA in hemophilia. It decreases the cost of surgery and facilitates ambulation. Further prospective randomized study is necessary to determine the exact role of drain in TKA in hemophilia.

36. Title: Total Knee Arthroplasty in Hemophilic Stiff Knees: Complications and Outcome

Authors: SM Javad Mortazavi, Babak Haghpanah, Mohammad Hasan Kaseb, Mohammad Mehdi Ebrahiminasab

AIMS: The latest stages of hemophilic knee arthropathy (HA) is usually accompanied by sever deformities and limitation of range of motion (ROM). Total Knee Arthroplasty (TKA) as a preferred treatment has its own challenges in this group of patients. We report the complications and outcome of TKA in our subgroup of hemophilic patients with stiff knee.

METHODS: Twenty-eight patients with HA and sever limitation of knee ROM (<20) was retrospectively reviewed from of prospectively recorded database. All patients underwent TKA with usual anteromedial arthrotomy. To improve exposure, a quadriceps snip or a tibial tubercle osteotomy was used. Preoperative and follow-up status of range of motion, knee society score, WOMAC and SF36 quality of life scores was recorded. At least 12 months of follow-up was available during which any complications were recorded.

RESULTS: In twenty-seven patients, a quadriceps snip was enough to give enough exposure. In one patient with sever lateralization of tibial tubercle and patellar maltracking a decision was made to do a tubercle osteotomy instead. The mean pre-operative ROM (12.35) was significantly improved at latest follow-up (85.310, $p<0.005$). Five of the patients had a valgus deformity. In one patient, a bony avulsion of femoral origin of medial collateral ligament occurred which was managed with screw fixation.

CONCLUSION: TKA in hemophilic stiff knee has a good impact on patient function. A quadriceps snip along with meticulous tissue handling will give a good exposure and has minimal complications.

37. Title: Arthroscopic Suture Anchor Repair of Medial Meniscus Posterior Root Avulsion (MMPRA): Minimum 2-Year Follow-up

Authors: Sohrab Keyhani, Mohammadreza Abbasian

PURPOSE: The aim of this study was to determine the Clinical and Radiologic results of refixation of Medial Meniscus Posterior Root avulsion using suture anchor.

METHODS: In a case series study, between 2012 and 2013, 14 patients with MMPRAs repaired using suture anchor. The mean follow-up duration was 26.5 months. Clinical

assessments, including the International Knee Documentation Committee (IKDC) Subjective Knee Form and Lysholm score, and radiographic assessments, including the Kellgren-Lawrence grade, were evaluated preoperatively and at final follow-up.

RESULTS: The mean patient age was 48.4 years (28-55 yr.), and 85.7% of patients were female. The Lysholm and subjective IKDC scores increased from 51.3 and 54.5 preoperatively to 87.2 and 91.3 postoperatively. On conventional radiographs, 13 of 14 patients (93%) showed no progression of Kellgren-Lawrence grading. Subsequent magnetic resonance imaging and/or arthroscopy that indicated the healing status was rated as complete in 11 (78.6%), partial in 3(21-4%), and no failure.

CONCLUSIONS: This study showed that arthroscopic refixation of MMPRAs, using suture anchor significantly improves functional outcome scores and seems to prevent the progression of osteoarthritis in most patients, at least during a short-term follow-up.

LEVEL OF EVIDENCE: Level IV, therapeutic case series.

38. Title: Result of Arthroscopic Anchor – Suture Fixation for Lateral Meniscus Root Avulsion in Patient Undergoing Concomitant Anterior Cruciate Ligament Reconstruction

Authors: Sohrab Keyhani, Mehran Soleymanhe

PURPOSE: To evaluate the effectiveness of arthroscopic anchor suture fixation of posterior lateral meniscus root avulsion.

METHODS: From April 2010 to September 2013, 42 (28 male and 14 female, mean age 24.5 years) of consecutive series of 872 anterior cruciate ligament reconstruction had a concomitant posterior lateral meniscus root avulsion. In these patients the posterior root avulsion were fixed with anchor – suture from high antero medial accessory portal in association with anterior cruciate ligament reconstruction. 37patients were followed up for minimum 1 year (mean follow up was 19.4 months). Pre-op and post-op lysholm score were 54 and 87 respectively and Pre-op and post-op IKDC score were 51 and 83 respectively. 2 patients had a second look arthroscopic evaluation that showed healing happened.

CONCLUSION: Arthroscopic fixation of posterior lateral meniscus root avulsion is amenable with anchor – suture. Short and midterm follow up showed good functional result.

POSTERS

1. Title: The Effect of Knee Realignment Procedures on Ankle Disorders and Vice Versa

Authors: Amirshahriar Ariamanesh, Alireza Moosavian

AIM: To investigate the literature about this less clarified matter.

METHOD: We used four motor engine of Pub med, Scopus, Medline and google scholar by combined related keyword.

RESULT: Except of few case reports and brief studies we did not find any integrated study that clarify the matter. 3250 articles (abstract) with some indirect relationship reviewed and 53 articles were probed by full text finally.

CONCLUSION: Also there are unexpectedly few articles about this matter but the consensus is that the patients with simultaneous ankle problems will take benefit from knee realignment procedures (both osteotomies around the knee and joint replacement) unless a fixed, structural deformity be present. We advise a physical exam before the realignment procedures of knee to justify bout the correctibility of deformity and do an ankle and foot service consultation in need.

2. Title: Bashti Twisting Technique to Increase the Hamstring Graft Diameter

Author: Kaveh Bashti

Autograft is the Gold standard for ligament reconstruction. Hamstring autograft is considered to be one of the most favorable grafts in most countries for ligament surgery including ACL reconstruction. However autografts has limitations in the clinical practice including the size and length.in the majority of cases if the hamstring autograft size is less than 7 mm there will be more risk of re-injury.

METHOD: In this experimental study, we used Semitendinosus and Gracilis tendon and twist both bundles together and then quadrupled the graft. We studied 30 hamstring graft before and after twisting technique.

RESULT: There was a significant increase in the graft diameter and bulk. The average increase in the graft size was 1.5 mm with p value <0.05. Other benefit of this technique is its easier passage in the bone tunnels due to its twisting effect. We are not aware of any similar technique or study in the literature.

CONCLUSION: This unique technique is very easy and reproducible and recommended for all the patients with smaller hamstring autografts diameters and proper length.

3. Title: Cross-Education Effect After Unilateral Training on the Quadriceps Muscle Strength and Knee Proprioception After Anterior Cruciate Ligament Reconstruction

Authors: Kazem Norouzi, Sayed Ali Akbar Hashemi Javaheri, Amirshahriyar Ariamanesh, Nahid Khoshraftar Yazdi

AIM: The aim of this study was to evaluate Cross-education effect after unilateral training on the quadriceps muscle Strength and Knee proprioception after anterior cruciate ligament reconstruction.

METHOD: Twenty patients with ACL tear were randomly assigned into experimental (mean age: 22/02 ±1/55 years, BMI: 22/75±1/42 kg/m) and control (mean age: 23/8± 1/68 years, BMI: 21/64±1/68 kg/m) groups. quadriceps muscle strength was evaluated with an isometric test, at 60 degrees of knee flexion of both limbs and Knee proprioception at 30,45,60 degrees of active and passive knee movement (Isokinetic BIODEX system) 3 days before and 9 days after ACL reconstruction. The experimental group in addition to

physiotherapy, performed 24 sessions unilateral training with uninjured leg and control group just received physiotherapy. Data were analyzed using analysis of variance of repeated measures test at a significance level of P<0.05.

RESULTS: The quadriceps muscles strength in uninjured leg in the experimental group was significantly increased (P=0.002), the amount of reduction in quadriceps muscles in the experimental group also was significantly lower compared with the control group at the 9-week after ACL reconstruction (P=0.001). Additionally, knee proprioception showed significant differences in active angles 60o (P= 0.013), 45o (P=0.014), and passive angles 60o (P= 0.039), and 30o (P= 0.011), whereas the control group did not yield any statistically significant differences (P>0.05).

CONCLUSION: The use of unilateral training in rehabilitation programs can prevent loss of quadriceps muscle strength and also help to improved proprioception of the knee after ACL reconstruction.

KEYWORDS: Anterior cruciate ligament, Cross-education, Unilateral training

4. Title: Is Ozone Therapy Superior to Hyaluronic Acid Intra-Articular Injection in Patients with Knee Osteoarthritis?: A 6-Month Clinical Trial

Authors: Seyed Ahmad Raeissadat, Seyed Mansoor Rayegani, Mahsa Moridnia, Shahram Rahimi

AIM: Knee osteoarthritis (OA) is a common disease with great burden through pain and decreased function. Recent studies showed promising results of ozone application in osteoarthritis. The aim of this study was to compare the effects of ozone therapy versus hyaluronic acid (HA) intra articular injection in patients with knee OA.

METHODS: Through a randomized clinical trial 174 patients were enrolled and randomly allocated to 2 groups: ozone and HA group. In this study we use 3 weekly injections of HA in a 20mg/2ml solution versus 10ml of a 30 g/ml solution of ozone. Our inclusion criteria were chronic pain or swelling at least for 3 months and imaging findings (Kellgren-Lawrence grade 2-3). Patients were evaluated at baseline and 6 months after the last injection for pain, stiffness and function using the Visual Analog Scale (VAS) and the Western Ontario and McMaster Universities Arthritis Index (WOMAC).

RESULTS: No major adverse events were noted in the study. Total WOMAC score decreased in the ozone group from 40.8 ± 9.8 to 20.4 ± 4.9 (P < 0.05) and in the HA group from 38.5 ± 7.9 to 17.1 ± 4.2 (P < 0.05). A similar trend was observed in pain improvement according to VAS (Table-1). Pain, stiffness and function significantly improved in both groups but no differences were found between groups.

CONCLUSION: Both ozone and HA can be effectively used for selected patients with knee OA but ozone showed no superiority to HA intra articular injection.

KEYWORD: Osteoarthritis, ozone, Hyaluronic acid

5. Title: Total Knee Arthroplasty in Patients with Valgus Deformity: What Constraint is Necessary?

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AIM: Less the 10% of the cases of knee osteoarthritis refer with a valgus deformity. Performing surgery on these cases has its own challenges because valgus knees have pathoanatomic characteristics, different from varus knee and need special considerations. We present the results of our populations of valgus knees.

METHODS: Between January 2010 and January 2014, we

performed 756 total knee arthroplasties (TKA) at our institution, only 19 of them presented with valgus deformity. All patients underwent operation through medial parapatellar approach irrespective to severity of the deformity. The main technique for soft tissue balancing was pie crusting. All patients were followed-up prospectively at 3, 6, 12 and 24 weeks postoperatively and then annually.

RESULTS: The mean age of the patients was 57.6 year. All patients received Posterior Stabilized knees, In 5 patients we had to use wedge and stem. The mean preoperative valgus of mechanical axis was 21.5 degrees (10 to 30 degrees). The mean postoperative degree of mechanical axis was 3.5 degrees that has been improved significantly ($p<0.005$). All scores including Knee Society Score, WOMAC and SF-36 have been improved significantly.

CONCLUSIONS: The incidence of valgus knee in our patient population is low. We believe that the majority of valgus knees can be treated successfully with posterior stabilized prostheses through medial parapatellar approach. Careful soft tissue balancing is crucial to improve results and maintain constraint to a lower level. Pie crusting seems a reliable method even in severe cases.

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