



International Society of Knee Surgery, Arthroscopy & Sports Traumatology

ISKAST
CONGRESS
Feb 4 - 7, 2014



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3rd Biennial

International Congress of
Iranian Society of Knee
Surgery, Arthroscopy &
Sports Traumatology,
(ISKAST)

International Convention Center, Kish Island,
Persian Gulf, Iran Feb 4-7, 2014





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Sports Traumatology,
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Arthroscopy & Sports Traumatology, (ISKAST)

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Mohammad Razi, M.D.
ISKAST President



Hossein Behdad, M.D.
Congress President

Message From The Iskast President And Congress President

Dear friends and colleagues:

On behalf of the Iranian Society of Knee Surgery, Arthroscopy & Sports Traumatology (ISKAST), We are very pleased to announce that the 3rd biennial international congress of ISKAST will be held on February 4th -7th, 2014. The venue will be at the international convention center of Kish island located in Persian Gulf, Iran.

The 3rd biennial international congress of ISKAST will offer you excellent opportunities to interact, share, discuss and learn the recent practical and scientific developments in the area of Knee Surgery, Arthroscopy and Orthopedic Sports Medicine and Rehabilitation.

The ISKAST congress 2014 will include an excellent variety of educational opportunities such as keynote lectures, scientific paper presentations, lectures, debates, symposia, surgical demonstrations, instructional courses lectures and technical exhibits.

We will be glad to have you with us in the beautiful Kish Island and enjoy spring weather in winter!

Thank you in advance for participating in the international experience: ISKAST Congress!

We are looking forward to seeing you in February 2014 in Kish Island.

Congress organization
3rd Biennial International Congress of
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(ISKAST)

International Convention Center , Kish Island
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The background features several overlapping circles in shades of light blue and grey. A large white rectangle with rounded corners is centered on the page, containing the text.

Oral Presentation

**Paper 01:****Posterior first concept in soft tissue balancing during primary total knee arthroplasty****A. Moshirabadi**

NIOC Hospital, Tehran

Background:

Performing total knee replacement needs both bony & soft tissue consideration. Late John Insall advocating spacer blocks with concept of balanced & equal flexion – extension Gap. Although we usually excise both ACL & PCL, still it is possible to retain more soft tissue. Both PCL retaining & sacrificing Require intact collaterals for stability. Superficial MCL & LCL should be preserved, if possible.

after PCL removal the following advantages could obtain : More correction of fixed varus or valgus deformity , More surgical exposure . but there are no proved disadvantages like ; increasing in stress & loosening of bone-cement-prosthesis interface , specific clinical difference in ROM , forward lean during stepping up , proprioception inferiority . In other hand over tight PCL cause excessive rollback of tibia & knee hinges open, preventing flexion (booking), and Severe posteromedial poly wear in poor balance PCL might be happened.

Mid range laxity when Post.Capsule is tight ,even with correct tensioning in full extension & 90 degree flexion , may occur (and secondary collateral ligaments imbalance throughout ROM) . There is a major effect of capsular contracture in coronal mal alignment with flexion contracture. Full MCL releases not only correct fixed varus but also open the medial space in flexion. MCL & post. Capsule has combined valgus resistant effect in extension. PCL release increase flexion gap more, May be necessary to release something that affect extension gap as compensated balancing (Post.medial capsule) .Any flexion contracture need to posterior capsulotomy & post. Condyle osteophyte removal before femoral recut.

So it is possible to perform posteromedial capsulotomy prior to superficial MCL release.

Method:

From May 2009 to June 2013, 219 TKA (165 patient) (bilateral in 54 patients , simultaneous bilateral in 5 patients) with primary DJD and varus deformity of knees were operated by myself with joint replacement : Most patients had some degree of varus correction in flexion, passively. The varus angle was less than 25°, means mild to severe but not decompensate. 46 patients had some degree of patella baja . For soft tissue balancing during Total knee arthroplasty I consider the following steps;

Medial capsule & deep MCL release, PCL release, Posteromedial capsulotomy, semimembranous release, Superficial MCL release, Pes anserinus release. **Post.medial capsulotomy was done in all cases.**

The Average Age was 65.47 years, 131 patients (177 knees) were female (79.3%) and five of them had bilateral TKA simultaneously. Lt Knee was operated in 94 cases (42.9% of 219). pinal anesthesia was applied in 54.3% (119 patients) & epidural anesthesia in 5% (13 cases). 14 knees were operated with MIS technique and 205 knees with Standard medial parapatellar incision. **Semi membranous release was necessary** in 72 knees (33 pure=15%, without S.MCL release). **S.MCL release was mandatory** in 39 (17.8%) knees. for checking balanced medial and lateral subtle laxity (playing), I have used simple blade with 1 & 2 mm thickness in each ends for younger patients, and the other one with 3&4 mm thickness in elder cases.

Results:

Average follow up period is 2.07 years. Average Operating time was 1 : 38 (h:m) . Average Transfusion = 1.29 unit packed cell .

Average varus malalignment = 14.76* (2-25*) / Av. Valgus angle = 7.11* (5-10*) / Av. DLFA = 91.15* (85-102*) / Av. PMTA = 82.04* (68.5-90*) / Av. Ext. rotation cut = 5.7* (0-9)

Stage I + PCL + Post.Med. Capsular release was performed in all . pure stage I + P.M.capsular release in 147 cases (67.2%), plus semimembranous release in 33 cases (15%), S.MCL release in 39 cases (17.8%) / Av. Post op alignment: 1.01* varus (0 -6*) (worse in medial pivot knee) . so S.MCL release was prevented in 82.1% of cases .

Av. Polyethylen size : 12.26 (9 in oxynium -19 in plus) / Semi membranous release was necessary in 72 (32.8%) cases (preop varus 17.57*) . / S.MCL release was mandatory in 39 (17.8%) cases (preop varus 17.6* & No Flexibility in 30* flexion) .

pre operation knee society score : stage I = 26.6 , stage II = 38.7 increase to stage I = 86.45 , stage II = 77.63

Conclusion:

In society with more kneeling habitués , during performing total knee arthroplasty with less than 25* degree varus malalignment plus some degree flexibility of the deformity in flexion, it is wise to consider posteromedial capsular release prior to semi membranous & S.MCL release to obtain full correction of alignment. But the most important things is reaching to more align limb without instability , regardless of various technique.

**Paper 02:****Effectiveness Of Subacromial Steroid Injection In Frozen Shoulder****H. Dortaj.**

Orthopaedic surgeon

Shahid beheshti medical university

Background and aims:

Adhesive capsulitis, also known as frozen shoulder, is a common disorder presenting with restricted shoulder joint mobility due to decreased capsular elasticity which may be primary, secondary or tertiary. Current nonsurgical treatments include oral NSAIDs, oral steroids, intra-articular steroid injection, capsular distention and physical therapy. Because of reported side effects and difficulty of intra-articular injection, we decided to investigate effectiveness of subacromial steroid injection in frozen shoulder treatment.

Material and methods:

We selected 180 patients with frozen shoulder and divided them into 3 groups. Group 1 received subacromial injection of triamcinolone 80mg and Xylocaine 2% 5cc, accompanied with home exercise and oral NSAID. Group 2 was treated by physical therapy and home exercise. In group 3 oral NSAID was prescribed as well as home exercise. Pain severity and range of motion in the affected joint was assessed before treatment, just after injection and 1 month later. Statistical analysis was performed using ANOVA and p value < 0.05 was considered to be significant.

Results:

We observed that in the first group range of motion increased significantly just after injection as well as after 1 month. This increase was not observed in the other groups. Regarding the pain severity, it was ascertained that compared with groups 2 and 3, pain was significantly reduced in the first group both shortly after injection and 1 month later.

Conclusion:

Regarding these findings, we concluded that subacromial steroid injection can effectively reduce pain and increase range of motion in adhesive capsulitis; an effect not observed with NSAID, home exercise and physical therapy. Due to simplicity of this method, it can be considered as a valuable alternative for intra-articular steroid injection.

Paper 03:**Scapular dyskinesis in recurrent anterior shoulder dislocation and its relation with Instability shoulder index Score****O. R. Momenzadeh**

Assistant professor of orthopaedics, Department of orthopaedics, Shiraz University of Medical Sciences

**Introduction:**

Scapular dyskinesis or alteration in the normal static or dynamic position or motion of the scapula during scapulohumeral movements occurs in majority of patients with shoulder injuries. Because this phenomenon has not been studied specifically in patients with recurrent anterior shoulder dislocations, we evaluated scapular dyskinesis in anterior instability and its relation to Instability shoulder index Score (ISIS) in detail.

Materials and methods:

43 non-selected patients with recurrent anterior shoulder dislocations were evaluated with their age, gender, number and cause of dislocations, side and limb dominance, general physical exam of shoulder injuries, and radiologic findings of anterior instability. Type and severity of scapular dyskinesis with and without weight bearing was evaluated according to Kibler's classification and also Scapular assistance & Scapular Retraction tests and severity of instability by ISIS were documented. Exclusion criteria were previous fractures or surgeries around shoulder, bilateral dislocation, multidirectional or voluntary instability, impingement syndrome, cuff or SLAP tears and shoulder contractures.

Results:

Mean age was 28 and affected limb was the dominant one in 64% of them. 39 patients had scapular dyskinesis: 21 type I, 15 type II, and 3 type III. Mean ISIS was 5 and mean number of dislocations was 5. Regardless of small number of patients, there was no statistical meaningful relation between ISIS and Hill Sach's size and glenoid defect with type and severity of dyskinesis.

Discussion:

Scapular dyskinesis is present in majority of people with anterior shoulder instability. This scapular pathologic kinematic has no relationship with severity of pathologies of glenoid and head in recurrent dislocation. Exact identification of responsible muscle imbalance and its improvement with rehabilitation may reduce the apprehension.

**Paper 04:****Arthroscopic release of suprascapular nerve, technique and report of four cases****M. N. Naderi¹, H. K.shokouh²**

1-Presenter of article; Affiliation: shoulder surgeon, Kasra hospital , Tehran - Iran

2-Affiliation: Hand surgeon, Hamedan University of medical sciences, Hamedan - Iran

Suprascapular nerve (SSN) is formed by C5 and C6 nerve roots and derives from upper trunk, then courses through suprascapular notch (under transverse suprascapular ligament) and innervates supraspinatus and infraspinatus muscles. It can be entrapped in suprascapular or spinoglenoid notch of scapula.

The early symptoms of suprascapular nerve entrapment are pain and shoulder fatigue. In long term cases, atrophy of supraspinatus and infraspinatus muscles may be prominent. Diagnosis may be confirmed by EMG and NCV. Some authors believe that in patients with massive cuff tear, the suprascapular nerve can be entrapped during cuff repair. Surgical open release of nerve is indicated if conservative methods like physiotherapy fail.

Arthroscopic method for releasing of nerve is described by several authors. Laffosse described technique and guidelines for arthroscopic release of SSN in suprascapular notch. In this technique through subacromial space, the suprascapular ligament which is located just behind coracoclavicular ligament is identified and cut by arthroscopic scissor.

We have done four cases of suprascapular nerve release. Release of nerve in three cases was done in suprascapular notch by this method. In one case the nerve was entrapped by a cyst in spinoglenoid notch following a posterior labral tear of glenoid. The nerve was released by indirect method, and labral lesion was repaired by arthroscopic method. In all cases the symptoms were relieved.

Arthroscopic release has advantage to traditional open release if carried out by attention to guidelines and method.

Paper 05:**ACL reconstruction using bone-patella tendon-bone autograft: press-fit technique vs. interference screw fixation****M.M.Sarzaeem¹, M.Razi², GH.Kazemian³, A.R.Manafi¹, M.Emami¹**

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2-Assistant Professor of Orthopedics, Department of Orthopaedic and Sport Medicine, Rassole Akram Hospital, Iran University of Medical Sciences, Tehran, Iran. mrazi_md@yahoo.com

3-Associated Professor of Orthopedics, Department of Orthopedic Surgery, Imam Hossein Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

**Purpose:**

The gold standard in ACL reconstructions has been the bone-patellar tendon-bone autograft fixed with interference screws. This prospective, randomized clinical trial aimed to compare two method of fixation for BPTB grafts: press fit fixation vs. interference screw, over a 12 months follow-up interval.

Methods:

158 patients with an average age of 29.8 years, between 2011 and 2012, were treated for torn ACL. 82 patients underwent reconstruction with BPTB autograft with a press fit fixation technique, and in 76 cases an interference-screw was used. At the time of final follow-up, 71 patients in press-fit group and 65 patients in interference-screw group were evaluated in terms of return to pre-injury activity level, pain, knee stability, range of motion, IKDC score and complications.

Results:

At 12-month-follow-up, 59 (83%) and 55 (85%) in press-fit and screw group, respectively had good-to-excellent IKDC score ($p > 0.05$). The mean laxity assessed using a KT-1000 arthrometer improved to 2.7 mm and 2.5 mm in press-fit and screw group, respectively. Regarding Lachman and pivot shift test, there was a statistically significant improvement in the integrity of the ACL in both the groups, but no significant differences was noted between groups. There were no significant differences in terms of thigh circumference difference, effusion, knee range of motion, pain and complications.

Conclusions:

the press-fit technique is an efficient procedure. Its outcome was comparable with the interference screw group. Furthermore it has unlimited bone-to-bone healing, no need for removal of hardware, ease for revision and cost effectiveness.

Level of evidence:

II

Paper 06:**Short Term Results of ACL Augmentation In Professional Athletes****H.R. Yazdi¹, M. Ghahramani², A. Moradi³**

1- Corresponding Author, Assistant professor of orthopaedic surgery, department of knee surgery, Firoozgar Hospital, School of Medicine, Iran university of medical science, Tehran, Iran

2- Resident of orthopaedic surgery, department of knee surgery, Firoozgar Hospital, School of Medicine, Iran university of medical science, Tehran, Iran

3- Knee surgery fellowship, Department of knee surgery, Shafa Rehabilitation Hospital, Iran University of Medical Science, Tehran, Iran

Background:

ACL reconstruction is widely accepted, however controversies exist in ACL augmentation. The purpose of this study was to assess the clinical outcome of ACL augmentation in professional athletes with isolated single bundle ACL tears.

Methods:

A consecutive series of professional athletes with partial ACL tears who underwent selective bundle reconstruction were analyzed. Stability was assessed with the Lachman, anterior-drawer, and pivot-shift tests and KT-1000. Functional assessment was performed with the Lysholm questionnaire.

Results:

Thirty-one patients were included. The mean follow-up period was 19.3 months. All patients had Posterolateral bundle (PLB) tears and no anteromedial bundle (AMB) tear was detected. The Lysholm score improved from 78 preoperatively to 96 postoperatively. The pivot-shift, Lachman, and anterior-drawer test results were negative in all cases postoperatively. Anterior tibial translation measured with a KT-1000 arthrometer was 4.9 +/- 2.7 preoperatively and significantly decreased to 2.1 +/- 0.6 postoperatively (P-value < 0.05).

Conclusion:

Although ACL augmentation has good results in symptomatic professional athletes, further studies are needed to recommend this surgery to athletic and nonathletic patients.

Key words:

ACL augmentation, Posterolateral bundle, anteromedial bundle, ACL tear, Athletes

Paper 07:**Role of gracilis harvesting in four strand hamstring tendon anterior cruciate ligament reconstruction: A double blinded randomized clinical trial**

M. Mardani-Kivi, M. Karimi-Mobarakeh, S. Ahmad Mortazavi,
Kh. Saheb-Ekhtiari, K. Hashemi-Motlagh

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**Introduction:**

Weakness of the knee flexion following anterior cruciate ligament reconstruction (ACLR) is one of issues in the treatment of ACL tear. The purpose of the present study was to examine and compare clinical outcome measures of ACLR using semitendinosus autograft alone (ST) vs. using semitendinosus + gracilis (ST/G).

Methods:

In a double blind randomized clinical trial study, 119 patients with ACL tear underwent either ST (59) or ST/G (61) and were followed for one year. Both patients and final examiner were blinded to the type of graft. Subjective criteria, functional assessment tests, knee isometric torques, knee laxity and knee range of motion were evaluated.

Results:

The study included 21 (17.6%) female and 99 (82.4%) male patients with the mean age of 29.9 ± 7.8 in ST group and 32.4 ± 6.3 in ST/G group. There were no significant differences in surgical complications, IKDC, KOOS, Lysholm, knee laxity using KT-1000 and flexion and extension loss between the two groups. The strength of the Knee isometric flexors at 90° flexion in ST and ST/G groups were in order of 32% and 35% of the healthy limb ($p > 0.05$).

Conclusion:

We found no significant differences in clinical complications of surgical techniques of anterior cruciate ligament reconstruction using semitendinosus graft alone or semitendinosus and gracilis. Additional harvest of gracilis tendon had no effect on

Keywords:

Anterior Cruciate Ligament Reconstruction; Semitendinosus tendon; Gracilis tendon; Hamstring tendon; Functional outcome.

**Paper 08:**

Accuracy of sonography in meniscal and cruciate ligaments damage in compare with MRI and arthroscopy in patients refer to Alzahra hospital from 1386-1387

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Introduction :

Meniscal and ligaments damage are common injuries in knee trauma especially in athletes.

Diagnosis of the type and severity of injury in physical examination is difficult because pain and effusion limit accurate examination. Arthroscopy is the gold standard method for diagnosis of meniscal and ligamentus injury but it is invasive and expensive. MRI is a standard method for evaluation of intra articular structures of the knee including menisci, ligaments, Cartilage and periarticular soft tissue. It is a noninvasive method and has a high sensitivity and specificity comparing with arthroscopy, however it is expensive and less available, so we should find another method easily available and not expensive. Ultrasonography is another method in diagnosis of such injuries. It is less sensitive and specific comparing with MRI. It is available and nonexpensive and in whom MRI is contraindicated we can use sonography.

The aim of this study is determination of sensitivity and specificity and accuracy of sonography in diagnosis of meniscal and cruciate ligaments damage in comparison to MRI and arthroscopy in patients referring to Alzahra hospital complaining of knee pain.

Methods and materials :

This is a crosssectional , analytic study that was performed on the patients who referred to Alzahra hospital following traumatic knee pain at 1386-1387.

After physical examination by orthopaedic surgeon, 73 patients suspicious to meniscal and cruciate ligaments damage and had indication for arthroscopy came to our study with simple sampling. Before arthroscopy, sonography and MRI were done for all of them by two different groups. Patients who didn't undergo arthroscopy for any reason were excluded from the study.

The data were recorded and sensitivity, specificity, positive and negative predictive values of sonography and MRI based on arthroscopy as gold standard method was

determined with SPSS Statistical software version 15, all data were saved. To compare the accuracy of sonography with MRI, chi-square test and Roc curve in SPSS and SAS software were used.

Results :

73 patients (60 male and 13 female) came to our study. No one was excluded. Mean age of the cases was 33.02 ± 11.99 . According to the results of study sensitivity of sonography for diagnosis of lateral meniscus tearing is higher than MRI and for PCL tearing is equal to MRI. Also specificity of sonography for ACL tearing is higher than MRI.

ROC analysis showed that only diagnostic accuracy of MRI in medial meniscus tearing is significantly higher than sonography and in the other damages difference was not significant.

Discussion :

This study showed MRI had higher sensitivity, specificity positive and negative predictive value and accuracy than sonography in meniscal and cruciate ligaments injury except for diagnostic sensitivity in lateral meniscus and PCL tearing and specificity in ACL tearing.

According to these results we can summarize that sonography is an appropriate screening method for diagnosis of lateral meniscus and PCL tearing. Also sonography can be a more specific method for ACL injury. ROC analysis demonstrates that regardless of different diagnostic value between sonography and MRI, this difference is not statistically significant so we can use sonography in place of MRI (with the exception of medial meniscus that seems to need further studies).

We summarize that with respect to these results and cost effectiveness, availability, short waiting list and the ability of sonography specially in elderly and children in addition to insignificant difference of its diagnostic value comparing with MRI, we can use sonography as appropriate method of diagnosis of internal knee injuries, except for medial meniscus. We recommend sonography as screening tool if accurate physical examination is not performable or before referring the patient to MRI.

**Paper 09:****Results of Arthroscopic Fixation of Osteochondritis Dissecans Lesions of the Knee With Cylindrical Autogenous Osteochondral Plugs (case series)****S. Keyhani¹, A. sharafat vaziri²**

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Purpose:

Surgical techniques that have been described for the operative fixation of an unstable osteochondritis dissecans (OCD) lesion in the knee are various and with different outcomes and none of them were totally successful. We report the results of a new fixation technique for unstable OCD lesions using arthroscopic autogenous osteochondral grafting (mosaicplasty).

Methods:

Sixteen patients with OCD lesions (10 International Cartilage Repair Society [ICRS] OCD type II, 6 ICRS OCD type III, underwent autogenous osteochondral grafting after a course of unsuccessful conservative treatment.

The OCD lesions were assessed arthroscopically and then fixed in situ by using one or multiple osteochondral dowel grafts harvested from the non weight-bearing region of femoral condyle. And all the patients were followed at least for 24 months.

Results:

Preoperative International Knee Documentation Committee scores assessed 4 patients as nearly normal, 10 as abnormal, and 2 as severely abnormal. After the 24-month follow-up, 15 knees were scored as normal and 1 patients as abnormal. All the patients had MRI after 6 months post operative and all of them had bony union.

Conclusions:

Autogenous osteochondral grafting of unstable OCD lesions in the knee is a reliable technique for fixation of these lesions and in addition to have biologic enhancement of union with out any foreign body in the joint.

Paper 10:**Submeniscal horizontal sutures for meniscal repair (a review of 103 cases)****A.M. Navali**

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**Introduction:**

The menisci play several critical functions in the knee and have an important role in preventing osteoarthritic changes. It is essential to try to preserve the meniscus via repair whenever feasible. Although it is most critical to perform meniscal repair on young patients in an attempt to decrease the eventual articular cartilage wear, meniscal repair can also be successful in older patients. Numerous repair techniques are available, and suture repair seems to provide superior biomechanical stability. However, the clinical success rate does not correlate well with the mechanical strength of the repair technique. The sutures placed over the meniscus may abrade the cartilage of femoral condyles during weight bearing and range of motion.

Purpose:

The goal of this prospective study was to evaluate the long term results of arthroscopic meniscal repair using submeniscally placed out-in horizontal sutures.

Methods:

Between Jan 2009 and Feb 2012, 103 patients aged 16 to 45 years (mean: 27 years) underwent arthroscopic meniscal repair using submeniscal horizontal PDS sutures. Concurrent anterior cruciate ligament reconstruction was performed in 78 patients (76%). Our indications for meniscal repair were all longitudinal tear in red-red and red-white zone with acceptable tissue quality. Criteria for clinical success included absence of joint-line tenderness, locking, swelling, and a negative McMurray test. Clinical evaluation also included the Tegner and Lysholm knee scores. In addition, all patients were evaluated preoperatively with MRI and their age, gender and mechanism of injury were recorded.

Technique:

A cannula threaded with a free-end PDS suture is passed through the capsule and undersurface of meniscus until the end of the suture is seen within the joint. Anterior to that point, a second cannula threaded with a Nylon suture loop is passed through the undersurface of the meniscus without scratching the tibial cartilage. The free PDS suture end is grasped with a forceps through the suture loop. The cannulas are retracted, and the free suture end is pulled through the medial portal. Pulling on the suture loop

draws the free suture back into joint and out of the skin. The two free ends of the PDS suture are tied with five to six simple knots.

Results:

The average follow-up was 19 months (range, 14 to 40 months). Fourteen of 103 repaired menisci (13.5%) were considered failures according to our criteria. Therefore, the success rate was 86.5%. Time required for meniscal repair averaged 26 minutes. Postoperatively, the majority of the patients had no restrictions in sports activities. The mean

Lysholm significantly improved from 39.6 preoperatively to 84.5 postoperatively ($P < .001$).

Eighty five patients (82.5%) had an excellent or good result according to the Lysholm knee score. Four patients had a re-tear of meniscal lesion postoperatively, and an arthroscopic re-repair was performed in two of them. Analysis showed that age, simultaneous anterior cruciate ligament reconstruction, chronicity of injury did not affect the clinical outcome.

Conclusions:

The rationale for using this technique is to avoid any direct contact and the resulting abrasion between suture materials and the condylar cartilage. Our results showed that arthroscopic meniscal repair with submeniscal out-in sutures provided a high rate of meniscus healing and appeared to be effective in this group of patients.

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**Paper 11:****Treatment of Combined Lateral Ankle Instability and Peroneus Brevis Tendon Injury****M. Movahedi Yeganeh**

Orthopedic Foot & Ankle Surgeon

Background:

Associated intra or extra articular lesions can impact the outcome of lateral ankle reconstruction. This study reports short-term result after treatment of combined lateral ankle instability and peroneus brevis tendon injury.

Methods:

18 patients who had surgical repair of the peroneus brevis tendon and modified Broström repair were reviewed and evaluated according to AOFAS score. All patients received ankle arthroscopy and exploration of peroneus brevis tendon before the repair. The mean duration of injury was 19 months, and the follow up was 14 months.

Results:

In ankle arthroscopy, 6 patients had some degree of talar chondral lesions, two required shaving and drilling. Preoperatively, all patients had poor scores <50. Postoperatively, 14 (79%) ankles obtained excellent and 4 (21%) good scores.

Conclusion:

Chronic lateral ankle instability is often associated with intra or extra articular injuries. Ankle arthroscopy and surgical exploration of P. brevis tendon prior to lateral ankle reconstruction can detect these lesions. It is essential to reconstruct both tendon tear and ligamentous laxity at the same time.

Paper 12:**Diagnosis and Treatment of Syndesmotic Sprain by Ankle Arthroscopy****M. Movahedi Yeganeh**

Orthopedic Foot & Ankle Surgeon

**Background**

Syndesmotic sprains account for 1% to 11% of all ankle injuries. Arthroscopy is an effective tool in assessment and management of syndesmotic sprains with a normal mortise relationship.

Methods

Eleven patients with average age of 26 years, who had syndesmotic sprain confirmed by ankle arthroscopy, were reviewed. The mean duration of injury was 9 months, and the follow up was 12 months.

Results

7 ankles obtained excellent and 4 good results according to AOFAS score. Syndesmotic impingement was the main cause of persistent pain. These cases had no diastasis on the X-ray and no obvious sign of instability during the ankle arthroscopy. Chondral softening at the medial ridge of the Talus was seen in three cases, which could be due to subtle instability and change in the ankle biomechanics.

Conclusions

Syndesmotic sprain could produce chronic pain. Arthroscopic debridement, in the absence of ankle instability could be an effective treatment.

**Paper 13:****Patellar Denervation versus Non-patellar Denervation Method in Total Knee Arthroplasty****M. Hatf Dehghan¹, H.R. Shemshaki², F. Mazoochian³**

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Background:

The impact of patellar denervation in total knee arthroplasty (TKA) on post-operative pain is controversial. This study was designed to compare post-operative pain results of two methods (Patellar denervation vs. non-patellar denervation) in total knee arthroplasty with a 2-year follow-up.

Methods and Materials:

This study was conducted from 2011 to 2013 at Sadi hospital in Isfahan, Iran. One hundred and thirty two patients with 207 knees with expected primary total knee arthroplasty underwent Patellar denervation (n =93) or non-patellar denervation (n = 114) method. Thirty patients with anterior knee pain with a same prosthesis were also separately collected. Visual analog scale (VAS) were used to assess pre- and postoperative anterior knee pain and were compared between the two groups at 6 weeks, 3, 6, 12 and 24 months post-operatively.

Results:

Both groups had similar baseline characteristics. Although there was significant improvement in both groups, there was no significant difference between the groups with regard to the means of Pain Scores, which were 3.38 (SD: 2.44) for the patellar denervated group and 5.25 (SD: 3.59) for the non-patellar denervated group (P=0.42) at the final follow-up point. There was no revision after 2 years.

Conclusions:

In term of pain for people who underwent TKA, the results of this study showed no clear advantage of patellar denervation over the non-patellar denervation at the two-year follow-up.

Paper 14:**Multiple needling for Medial release in TKA of severe varus deformities, Report of 15 cases****K. Ahadi**

Tehran



Correcting severe varus deformity during TKA needs extensive medial soft tissue release which can lead to some adverse consequences like over-release. In this study we introduce the results of a less invasive soft tissue release in which we focus on posterior capsular release and superficial MCL puncture needling. Other parts of this method is like classic technique. During first 9 months of 2012, 15 knees from 14 patients with mean age of 66 and mean varus angle of 29 degrees underwent TKA with this method and we could achieve acceptable soft tissue balancing and deformity correction. Advantages of this method include: 1- Gradual and under control release, 2- Prevention of flexion gap asymmetry, 3- Easier final repair, 4- Less soft tissue damage. We think this method is a less invasive and effective way in correction of severe varus deformity during TKA.

**Paper 15:****A comparison of semi-constrained prosthesis with posterior stabilized prosthesis in primary total knee arthroplasty in patients with severe varus deformity****R. Ganij, S. Ganji, S. Ziaei, N. Ghaboulian Zare.****Introduction:**

Given the paucity of literature on the final outcome achieved when conducting arthroplasty employing constrained prosthesis in primary total knee arthroplasty (TKA) in severe varus deformity cases, we intended to conduct a prospective study, comparing this relatively new approach with a more conventional semi-constrained prosthesis in terms of their final outcome in 107 cases with severe varus deformity undergoing TKA.

Methods:

of a total 345 TKAs performed throughout a one-year bracket, 86 patients (107 knees) with severe varus deformity (>20) were selected. The male to female ratio was 1:5 whereas the average age was reported to be 67.3 (57-78) yrs. The type of prosthesis was determined based on intraoperative knee stability. The unstable knees (42) received semi-constrained (including either the second generation modular constrained condylar knee or posterior stabilized plus type) prosthesis. The remaining 65 knees with no significant intraoperative instability were given posterior stabilized prosthesis. Clinical and radiological assessments were based on New Knee Society Score and standing anterior-posterior lower limb X-ray respectively. Follow-up was carried out at 3,6,12 and 24 months postoperatively. The obtained data were finally fed to SPSS (version 20) for analysis and comparison.

Results:

The average functional New Knee Society Score improved noticeably from 16 to 72 in semi-constrained group, compared to a rise of 18-68 in the counterpart group. Patients' satisfaction was rated 32 with semi-constrained prosthesis, as opposed to 29 with posterior stabilized. Semi-constrained prosthesis provides a better range of motion, with the average rise from 95 to 115 degrees, in comparison with posterior stabilized prosthesis which could increase the range from an average of 93 to 109 degrees. Mean Tibiofemoral angle of 24.3 degrees varus preoperatively was corrected to 5.3 valgus postoperatively in semi-constrained group, which was not significantly different from their counterpart. While LDFA (lateral distal femoral angle) and MPTA (medial proximal tibial angle) were measured 95.1 and 89 degrees in semi-constrained group respectively, these indices were reported to be 95.8 and 87 in the other group

postoperatively. There was no case of infection, mortality, or other major complications in either groups, neither were radiological signs of loosening in the last follow-up.

Conclusion:

According to our study, although semi-constrained prosthesis was used in knees with more stability, it yielded better results in terms of function, satisfaction and range of motion when used in treating severe varus deformity of the knee in comparison with posterior stabilized prosthesis. These results can provide evidence that even though posterior stabilized prosthesis is considered an appropriate treatment in knee arthroplastic operation, semi-constrained prosthesis can be of even greater value in the treatment of knee with severe varus deformity.

Keywords:

Total knee arthroplasty, semi-constrained prosthesis, posterior stabilized prosthesis

**Paper 16:****Effect of a Moderate Varus Deformity on the Knee Joint Contact Stresses- A Finite Element Study**

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Introduction:

The objective of this study was to investigate the extent at which the knee contact stresses are raised due to a moderate genu varum.

Method:

A finite element model of the knee joint was developed using the CT data of a male subject with moderate genu varum. At first, the effect of model parameters on the results was studied to validate the model. Then the contact stresses of the tibiofemoral joint were analyzed during standing, before and after a simulated correcting osteotomy, which realigned the knee to normal.

Results:

Results indicated that the predictions of the finite element model are greatly affected by the model parameters, particularly the boundary conditions and the mesh size. For the knee with a moderate genu varum, the peak contact stresses occurred at the medial condyle and were 70% higher than that of the normally aligned knee.

Conclusion:

Considering the results of this investigation, there is a need for more clinical studies on the possible long-term effects of moderate genu varum deformities

Paper 17:**Computer assisted Pre-op planning & Patient specific instrument usage for osteotomies Around the knee. (Primary Results)****S.Mehdipoor¹, F.Farahmand², M.Karimpoor³, F. Abbaszadeh⁴, Z. Saghayee⁵**

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Pre-op planning of osteotomies around the knee joint is routinely done through the physical examination and standard and 3-joint alignment x-rays and template these images for the surgery in one or two planes. Conventional X rays due to 2D viewing of lower limb ,do not have precise accuracy in assessing the deformity of 3-dimensional lower limb and can not give any precise information about rotational deformities. Due to the above reasons, we use the following method for analysis the deformity in 3 Dimension and simulating the corrective surgery in Virtual space and after that designing and producing the patient specific guide with rapid prototype manufacturing to achieve the most precise correction.

Material & method:

In this study 14 lower limbs with different deformities around the knee were included .The DICOM files of weight bearing digital alignment x-rays and CT scan series of lowerlimb (which the protocol was defined by radiologist) were processed by Mimics ,Catia ,Matlab and 2D-3D registration softwares to produce 3D weight bearing models. Once landmarks and reference points determined ,all angles were automatically calculated and the deformities were three dimensionally defined. Under surgeon's supervision ,virtual correction of the deformity were performed and based on which ,a patient specific guide was designed and produced by rapid prototype manufacturing(3D printer).

For all of the patients, above pre-op planning was carried out, although for seven of limbs, PSGuide has been produced and used for surgery.

In 4 lower limbs who underwent surgery, the deformity and deviation from standard angles and indices was in just frontal plane; in one limb it was in frontal and sagittal ; and two has the deformity in the 3 planes (ie; frontal, sagittal & axial).

Results:

The post operative results shows that this method is effective in achieving the precise correction of the deformity. In all of the patients who underwent surgery the correction was as the same as it was planned in frontal and sagittal plane, although for the assessing rotational correction we need to do post op CT scan. In patients who has just pre-op planning (without surgery) by this method, the decision of the surgeon has been improved or even changed for the type of the osteotomy that was planned.

Conclusion:

Primary results shows that Computer assisted Pre-op planning & Patient specific guide usage can highly optimized the results of the corrective osteotomies specially in difficult deformities around the knee.

Paper 18:**Comparison of the type of distal femoral varus osteotomy on genu valgum patients****M. Jabalameli¹, A. Bagherifard², A. Jahansouz³, Gh. Hassanzadeh⁴, T. Mokhtari⁵**

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**Background:**

Genu valgum deformity is defined as lateral displacement of lower extremity mechanical axis in knee joint. This can be corrected by medial or lateral distal femoral approach. In this study the effectiveness of distal femoral osteotomy in medial and lateral approach is evaluated by KSS score and alterations in mechanical axis in pre-op and post-op.

Method:

This is a descriptive cross-sectional study on 27 patients referred to Shafa-Yahyaiian hospital for corrective osteotomy by "medial close wedge" and "lateral open wedge" during 2005-2011. Data were collected from patient's file, questionnaire, radiograph and physical exam.

Result:

We evaluated 30 knee joints in 27 patients. Genu valgum was right-sided in 10 cases (37%), left-sided in 14 patients (52%) and bilateral in 3 cases (11%). The mean follow up was 30.7 ± 3.3 (range: 5-76) months. Patients were between 10-34 years. Osteotomy was Medial in 11 and Lateral in 19 cases. Tibiofemoral angle was significantly different post-op from pre-op value. Difference in tibiofemoral angle change was not significant between Medial and Lateral approaches. KSS score in two groups was also insignificant.

Conclusion:

There is no significant difference in lower extremity mechanical axis change after genu valgum correction surgery between Medial or Lateral approach and both approaches are reliable.

Key words:

Genu-valgum, distal femoral osteotomy (medial close wedge, lateral open wedge), Knee Society Score(KSS)

**Paper 19:****Preserving versus sacrificing medial collateral ligament in open wedge high tibial osteotomy****M. Karimi-Mobarakeh, M. Mardani-Kivi², A.A. Keikha³**

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Introduction:

There are several techniques to correct genu varum deformity including open wedge high tibial osteotomy (HTO). Medial collateral ligament (MCL) is one of the most stabilizing factors of medial knee side. With regards to importance and several benefits of preserving MCL, this study seeks to compare the functional outcomes of preserving versus sacrificing medial collateral ligament in open wedge high tibial osteotomy.

Methods and materials:

In this prospective randomized clinical trial, patients with the ages between 16 to 60 years who had suffered from genu varum deformity and knee pain were included and those with lateral joint space narrowing, knee flexion-contraction, and rheumatoid arthritis were excluded. Open wedge HTO distal to MCL was performed in MCL preserving group and open wedge HTO proximal to MCL with release was done in MCL sacrificing group. Both groups were evaluated with regards to pain intensity, joint stability, quadriceps strength, knee ROM, alignment, patellar height and posterior SHIB plateau pre- and post-operatively.

Results:

There were 29 cases with the mean age of 24.8 (11 men, 18 women) and 60 patients with the mean age of 35 (27 men, 33 women) in preserving and sacrificing MCL group respectively. The mean of Modified Hospital for Special Surgery Knee Scoring system was improved from 56 to 79 (P-value=0.002) and from 75 to 96 (P-value=0.001) in preserving and sacrificing group respectively.

Conclusion:

This study illustrated the improvement of functional outcome in both preserving and sacrificing group.

Paper 20:**Repeated intra articular injection of bone marrow mesenchymal stem cell in knee osteoarthritis: double blind randomized clinical trial**

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**Background:**

Osteoarthritis (OA) is a degenerative joint disorder of articular cartilage and is a common condition elderly. Recent non-randomized studies have reported the safety of mesenchymal stem cells injection in the treatment of osteoarthritis.

Study Objects and design:

To investigate the effects of intra articular injection of bone marrow derived autologous mesenchymal stem cells on the symptoms of moderate to severe knee osteoarthritis we performed a double blind, placebo-controlled study in 46 patients.

Patients fulfilling the American College of Rheumatology criteria for knee OA were randomly assigned to two groups: one group received MSC (20 million cells, two time 0 and +12 weeks and the other group received carrier media as placebo. Eligible patients were 18 to 65 years of age and had a joint pain visual analog scale of >30 mm at rest.

The primary end point was the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) and a visual analogue score (VAS) for pain at baseline and at the end of weeks 12, and 24, 36. Secondary end points were pain free walking distance and WOMAC stiffness sub score, patient and physician global assessment, functional index of knee OA scores, and cartilage thickness, subchondral edema, tumor formation or neoplastic changes at 24 and 36 weeks.

Results:

The results indicate that the intra articular injection of autologous bone marrow derived MSC was very well tolerated from a safety perspective during the 9 months trial and also caused significant, positive clinical improvements superior to the placebo in all clinical endpoints tested. In particular, the WOMAC-Total score, WOMAC-Physical Function sub score, WOMAC-pain sub score and pain free walking distance for the

MSC, were superior compared to the placebo ($P = 0.03$, $p=0.02$, $p=0.03$ and $P = 0.01$, respectively). Other clinical endpoints including the WOMAC-Stiffness, and VAS scores improved in both. Groups as compared to the baseline; but no statistical significance was detectable between two groups. Primary radiologic data indicated that subchondral edema decreased in some patients also thickness of cartilage increased in MSC group. Evaluation of radiographic data is not complete yet.

Conclusion:

Repeated intra articular injection of bone marrow derived MSC is effective in reducing functional impairment and relieving pain over 9 months in patients with moderate to severe osteoarthritis of the knee as measured by the WOMAC Osteoarthritis Indices for stiffness, pain, physical function, and total knee osteoarthritis patients, without any safety concerns

Clinical trial registration:

NCT01504464.

Paper 21:**MPFL Reconstruction, Pearls and Principles**

A.Sh. Ariamanesh, M.H. Khabbaz , F. Hassani, K. Norouzi, M. Ameli,
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Investigation performed at Mashhad Medical University, Mashhad, Iran



Reconstruction of the MPFL will improve knee function and symptoms which have been studied and well proved . Although MPFL Reconstruction is not a very high demanding procedure but needs paying meticulous attention to some details but in indication point of view and surgical techniques. we will review in this instructional lecture the pathophysiology of recurrent instability of the patella and high light some pearls and pitfalls in this reconstruction and also emphasize on some keys on the tract of rehabilitation of these group of patients.

At the end we will review the clinical results of 17 patients in our service with at least 14 months follow up.

Keyword:

MPFL reconstruction, patella , instability

**Paper 22:****Reparative Effects Of Prp On Knee Joint Cartilage Defects In Rabbit****M. Raji¹, A. Tavasoly², R.Safail³, M. M. Dehgan⁴, S.F. Mohajeri⁵, M. Razi⁶**

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Introduction:

damaged adult articular cartilage has limited capacity to healing.

Material and methods:

A full thickness articular cartilage defect (5mm in diameter, 3 mm depth) was created on the patellar groove of right distal end of femur in 16 rabbits with Punch that penetrating the articular cartilage surface just up to subchondral bone. Rabbits divided in two equal groups. Control group received normal saline and treatment group were PRP. Rabbits were sacrificed after 2, 3 and 6 months. Pathological examination performed on Knee joint defects. PRP prepared with SELPHYL kit. It helps to use PRP without any scaffold, because PRP finally formed in PRFM. Both groups were compared with ICRS grading. Important criteria for macroscopic evaluation on the area of defect characterized with intact smooth surface (4 score), fibrillated surface (3), small (2) and large fissures (1). Histopathology points for grading were surface, Matrix, cell distribution, cell population viability, integration of border zone and etc.

Results:

Macroscopic finding revealed that there were not any significant differences between two groups.

Discussion:

PRP is a fraction of plasma that contains high level of different growth factors such as PDGF, TGF β VEGF and etc. Histologic finding is accurate in comparison with growth results. More investigation needs to improve the results.

Paper 23:**Clinical Indication for Wrist Transfour Portal, Our Preliminary Experience****R.Shahryar Kamrani****Introduction:**

Wrist arthroscopy has been developed in recent decade. This development includes operative techniques, instruments and portals. It seems this will be continued. In our practice we faced with problem in some procedures on the lunate bone and lunate fossa with traditional portals. So we looked for new portals and found transfour portal useful in some cases. To find the clinical indication of this portal, we reviewed our patients who underwent wrist arthroscopy in previous two years.

Material and method:

From October 2011 to September 2013 we reviewed our patients with wrist arthroscopy and found 17 cases that underwent wrist arthroscopy with a transfour portal. In these cases we looked for diagnosis, indication for using this portal, and the complications of this procedure.

Results:

We used transfour portal for 17 cases, including 11 cases with Kienbock disease, 2 cases with lunate fossa debridement, 2 case of lunate cyst, and 2 cases of TFCC repair. With a follow up of 2 to 19 months we didn't find any major complication (Tendon injury, Instrument breakage, cutaneous neuroma, etc.). We had minor cartilage injury of lunate fossa in 2 cases.

Discussion:

improvement of wrist arthroscopy needs to develop new techniques. Transfour portal is a new portal which is indicated in some procedures on the lunate; as lunate drilling or curettage. It gives us an additional ability without any major complication. We strongly suggest this portal for better manipulation on the lunate bone and lunate fossa.

**Paper 24:****New diagnostic test for differentiation of meniscal tear from meniscal degeneration****H.A. Hadi¹; M.Jabalameli Ahmoud²; M.Rahbar²; A. Bagherifard²;
M.R. Minatour Sajjadi³**

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Introduction:

A wide variety of clinical tests are used to diagnosis of meniscal pathology. But there is not any test to differentiate real meniscal tear from degenerative changes in the meniscus.

New test technique:

In supine position, the knee and the hip is flexed 90°. In internal rotation of the hip by varus force of the knee, compression force for medial menisc tear and distraction force for lateral menisc degeneration and in external rotation of the hip by valgus force, compression force for lateral menisc tear and distraction force for medial menisc degeneration is done.

Method:

74 patients who had knee pain in medial or lateral joint line were included in this study. Gold standard (reference) was MRI. New test in compression for diagnosis of grade 3 meniscal pathology, new test in distraction for diagnosis of grade 1,2 meniscal pathology and McMurray test were done for each patient. For all tests specificity, sensitivity, positive predictive value and negative predictive value were calculated and compared with MRI.

Results:

For new test in compression specificity was 90.47%, sensitivity: 75%, positive predictive value :85.71% and negative predictive value:82.60%. For new test in distraction specificity was 80.5%, sensitivity:86.84%, positive predictive value:83.5%, negative predictive value :85.29%. For mcmurray test, specificity was 33.33%, sensitivity:89%, positive predictive value:78.18%, negative predictive value:54.52% for grade 3 of meniscal tear.

Conclusion:

This new test can be used effectively as a clinical test for diagnosis of real meniscal tears from meniscal degenerative changes.

Paper 25:**Arthroscopic treatment of Tennis elbow****H. Saremi**

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**Background:**

Lateral epicondylitis (Tennis elbow) is a common, painful disorder of the elbow, affecting the extensor origin at the lateral humeral epicondyle.

non operative management methods such as medication, physiotherapy, bracing, corticosteroid injection, shock wave therapy, etc, are unsuccessful in some cases so it still impairs function of patients during work and sport in many cases. satisfactory results of Arthroscopic tennis elbow release has been documented. the purpose of this study is evaluation the results of Arthroscopic Tennis elbow release in our patients.

Materials and Methods:

All patients who failed to response to at least 6 months nonoperative therapy between January 2012 and May 2013 underwent arthroscopic release of ECRB origin. there was no any other disorder like RA or DJD. the patients were visited at 1th week, 3th week, 3 month, 6 month after operation and evaluated prospectively using VPS (visual pain scale) for evaluating pain and Quick DASH score for evaluating function. There was 10 patient (8 women 2 men) in the study, averaging 46 years old. 9 patients were followed for 6 months and 1 patient followed for 3 months.

Results:

At mean followup of 5.7 months, by use of VPS, pain improved from 6.5 to 0/3 and by use of Quick DASH score, function improved from 75 to 25. in all patients pain significantly improved even 3 weeks after operation, and there was no tenderness on lateral epicondyle after 3 months in any patient. there was no complication. average time of operation was 15 minutes.

Conclusion:

Also number of patients and short term follow up in this study may affect the results. Arthroscopic treatment of lateral epicondylitis is a safe and effective method for treatment of recalcitrant cases.

Poster Presentation

Poster 01:**Determination of Magnetic Resonance Imaging findings in patients with knee posteromedial chronic pain in Rasht, 2013****H. Ettehad****Introduction:**

Posteromedial complex (PMC) chronic pain of knee is a common problem. Magnetic Resonance Imaging (MRI) can show the anatomical components of this region. This study aimed to evaluate the MRI findings of the patients with PMC chronic pain and examine the prevalence of tendinopathy semimembranosus and pathologic findings.

Methods:

In this cross sectional study we assessed the people with chronic pain in posteromedial of knee referring to Poursina hospital in Rasht. MRI was done in all patients. Data was analyzed using spss 19.

Results:

103 patients with a mean age of 46.2 years were collected. The most common finding of MRI was joint effusion (50%) and tendinopathy semimembranosus (47.68%). Among of MRI findings MCL sprain, ACL tearing and DJD were significantly related to age and sex ($p < 0.05$)

Conclusion:

The prevalence of tendinopathy semimembranosus was high, and it should be considered in patients with pain in posteromedial of knee.

Poster 02:**Evaluation of symptomatic patients with knee osteoarthritis which treated by PRP during one year of follow up****M.Raji****Introduction:**

Platelet-rich plasma (PRP) treatment is benefit and minimally invasive method that can able to use of autologous blood growth factors such as PDGF, VEGF and etc to enhance tissue regeneration. The main purpose of this research was to investigate the reparative effects of PRP in knee osteoarthritis (OA), contained 50 pateint, male/female (12/38) with (56.40±8.08) aged and right/left/both (12/5/33) affected knee.

Materials and methods:

150 patients were divided into three equal groups, Control group which had only conservative treatment. Hyaluronic group, contained 50 pateint with (56.98±7.83) aged that treated with Hyaluronic acid. Treatment group with (57.40±8) aged treated with PRP(SELPHYL KIT). Radiologic evidence were used as a inclusion criteria in articular damage (grade 1-4 of Kellgren-Lawrence scale). All patients were between 1 to 3 score. Patients in PRP group were treated with 2 intra-articular injection (one monthly) with autologous PRP. Clinical criteria which used for evaluation of all patients in (0, 3, 6, 12) months of follow up were KOOS, VAS, Tegner, IKDC.

Results:

All patients in PRP group present significant improvement in all scores ($P < 0.001$). Particularly in IKDC subjective evaluation increased from 49.64±6.33 to 55.7±7.72, 57.07±7.34, and 56.13±7.11 at 3, 6, and 12 months in the control groups, and from 50.59±6.18 to 61.34±7.39, 65.10±6.54, and 61.63±6.11 at 3, 6, and 12 months in the Hyaluronic groups, and from 50.42±6.18 to 66.03±8.73, 74.03±6.96, and 76.70±9.75 at 3, 6, and 12 months in the PRP group, respectively.

Discussion:

This study revealed that PRP can able to help treatment of OA in knee, decrease pain and improving symptom and quality of life.

Poster 03:**Femoral Condyle Fracture During Revision of Anterior Cruciate Ligament Reconstruction: Case Report and a Review of Literature****S. Keyhani, A. sharafat vaziri², H. Shafiei³**

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3-Orthopedic Surgeon, Mazandaran University of Medical Science

Purpose:

Anterior cruciate ligament (ACL) reconstruction is the sixth most commonly performed orthopedic procedure and reported revision rate is 5-25%. Complications occur in 1.8-24% of procedures. One of the rare and devastating complications following ACL reconstruction and revision reconstruction is femoral fracture. We present a case of femoral condyle fracture that has occurred intraoperative during revision of ACL reconstruction and to our best knowledge there is no case report in literature introducing a femoral condyle fracture during arthroscopic ACL reconstruction or revision reconstruction.

Case presentation:

A 35 year old male with history of ACL tear during soccer playing 1 year ago that underwent endoscopic ACL reconstruction with endobutton technique and functioned well till another twisting injury caused ACL re-rupture. Revision of ACL reconstruction was performed in another clinic using the same tunnels in both femur and tibia and after failing the graft tension during the pumping a fluoroscopic assessment shown a femoral condyle fracture. Patient referred to our knee clinic and we decide to operate him in two stages, first fixation of the fracture and after healing of fracture performing ACL re-revision.

Discussion:

Pre-operative planning with three-dimensional CT scans to assess Detailed information of tunnel position, will help the surgeon for placing the Tunnel in the best place. Not inserting multiple guide pins, keeping the safe distance from the posterior cortex and pay more attention during the graft tensioning specially in revision surgeries are all small points that will reduce the risk of fracture during the revision of ACL reconstruction.

Poster 04:**Effect of a custom-molded shell type functional knee brace on ACLD knee joint kinematics: a 2D-3D registration study**

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Background:

ACL injury is very common among athletes and has been shown to affect knee joint kinematics and be responsible for further knee injuries. In recent years 3D medical imaging methods like MRI and CT-scan have become very popular in in-vivo kinematics studies. But gaining 3D images in weight bearing and functional activities may not be possible or easily accessible. Because of this limitation, different 2D-3D registration techniques have been developed and reported. The present study tries to look into the effects of a custom-made functional knee brace on 3D ACLD knee kinematics during lunge exercise using fluoroscopy and CT-scan and a 2D-3D registration method.

Method:

Joint kinematic measurements of 10 ACL deficient males were done using a custom-developed fast and easy 2D-3D registration method, Implemented in The MATLAB software. In this method, registration was done based on the specific, well known landmarks on the femoral, tibial and fibular bony structures. From CT images, 3D models of the knee joints were developed using Mimics 10.01 software. The landmarks specified on the 3D images and on the 2D fluoroscopic images were used for bones registration. the 3D configuration of the landmarks were used for the calculation of the third dimensions of the points obtained from 2D images in different flexion angles. The

process was completed for braced and non-braced conditions. Custom-molded shell type functional knee braces were fabricated for all participants.

Results:

Brace wear had no significant effect on anterior-posterior translation and abduction-adduction of the knee joints. The knee joints showed less internal tibial rotation during lunge exercise in 45° flexion phase1 and also in 30° flexion phase2. The differences in other knee flexion angles were not statistically significant.

Conclusion:

It seems that the classic expected role of the functional knee brace, i.e. anterior tibial translation inhibition has not come true in this study. The derotational effect of brace is evident in most knee flexion angles but significant only in 30° and 45° flexion.

Key words:

functional knee brace, ACL deficiency, 2D-3D registration, kinematics, lunge

Poster 05:**The Effectiveness Of Proprioceptive Training In The ACL Reconstructed Knee****M. Akbarzadeh**

Ideally proprioception should be initiated immediately after injury (prior to surgery), as it is known that proprioceptive input and neuromuscular control are altered after ACL injury, by challenging the proprioceptive system through specific exercises other knee joint mechanoreceptors, are active that produce compensatory muscle activation patterns in the neuromuscular system that may assist with joint stability.

Post-operatively, proprioceptive training should commence early in the rehabilitation process in order to being neuromuscular integration and should continue as proprioceptive deficits have been found beyond 1 year post ACLR.

Proprioceptive exercises have been shown to enhance strength gains in the quadriceps and hamstring muscles post ACLR.

In the later stages of rehabilitation, anticipated and unanticipated perturbation training is effective in improving dynamic stability of the knee. A dynamically stable joint is the result of an optimally functioning proprioceptive and neuromuscular system and functional outcome has been proven to be highly correlated with balance in the reconstructed ACL

Poster 06:**Clavicular Stress Fracture In a Young Male Basketball Player****M. Rajai, M. Ansari, F. Madadi, R. Alizadeh****Introduction:**

Stress fracture of the clavicle is a rare entity and has been shown in other sports. To our knowledge, this is the first report of a clavicular stress occurring in a basketball player.

Case report:

A 20-year-old professional basketball player presented with activity related right shoulder pain. Radiographs and a computed tomography scan showed a stress fracture of the lateral end of the right clavicle. This healed with rest and rehabilitation allowing a full return to professional sport.

Conclusion:

Stress fracture of clavicle is treated with activity modification and technique adaptation. In athlete, we wish to raise awareness of this rare diagnosis to be recognized early so that return to play can be as quick as possible

Keywords:

Stress fracture, Clavicle, Shoulder pain

Poster 07:**Strength Of Vertical And Vertical Cruciate Double Mattress Suturing Techniques In Meniscus****M.H.Keyghobadi¹, H.Barzgar¹, J. Soleimanpour¹, A. Tabrizi¹.**¹.Orthopedic department, Shohada Educational Hospital, Tabriz University of Medical Sciences.**Background:**

The meniscus has an important role in weight bearing, energy absorption and joint stability and congruency. Treatment in cases with meniscus damage or meniscus tear including is open or arthroscopic repair and meniscectomy. The purpose of this study was to compare strength of vertical and vertical cruciate double mattress suturing techniques in meniscus repair.

Methods:

In an experimental study of 12 internal meniscus tear of bull that has long been divided into 6 equal groups, vertical and vertical cruciate double mattress suturing techniques was compared.

Results:

In this study, the vertical knot strength was 234.3 ± 12.5 N and in the group vertical cruciate double mattress was 245.7 ± 16.4 N. There was no significant difference between the two groups. Sustainability gap, in the vertical tensile force applied at knot has been 142.6 ± 11.7 N and in a vertical cruciate double mattress was 182.4 ± 8.7 N that there was significant difference ($P = 0.02$).

Conclusion:

The results of our study indicate vertical knot and vertical cruciate double mattress has similarly resistance. Sustainability gap repair of vertical cruciate double mattress is more than vertical knot techniques.

Keywords:

Arthroscopy, Meniscus, Suture

Poster 08:**Biomechanical Comparison Of Genu Valgus Among Futsal Players**

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The varus thrust of the knee is a dynamic increase of an often preexisting Valgus angle (Van De Pol J et al, 2009). The aim of this investigation was study about Comparison of Genu Valgus among Futsal players. This angle is evaluated among twenty healthy Futsal players (40 knees) who play in Futsal club Elm o Adab which is a club in a premier Futsal league of Iran. Digital X ray was done as standing position for them and the Valgus angle was measured with specific software (Marco). The International Knee Document Committee Subjective Knee Evaluation Form (IKDCSKEF) was used to score the self-assessment of each study participant. In order for data analysis, we performed descriptive statistics such as mean, standard deviation, frequency tables and in inferential statistics and t.test were used. The result showed that there was a significant difference between the Valgus angle and IKDCSKEF among the players. It seems that considering the Valgus angle as one of the normal landmarks can be an indicator of a healthy knee in athletes.

Keywords:

Valgus angle, Futsal players, IKDCSKEF

Poster 09:**Relationship between Q - angle and A - angle among Futsal players**

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The researchers have found evidence of expression that an increase in Q - angle and A - angle has long been looked separately as a pathological factor in PFPS. Presumably the larger angles of them, the larger the lateral pulling force on the patella. The aim of this investigation was study about Correlation between Q - angle and A - angle among Futsal players. These angles were evaluated among twenty men healthy Futsal players (40 knees) who play in Futsal club Elm o Adab which is a club in the premier Futsal league of Iran. Digital X ray was done as standing position for them and the Q - angle and the A - angle were measured with specific software (Marco). The International Knee Document Committee Subjective Knee Evaluation Form (IKDCSKEF) was used to score the self-assessment of each study participant. Although the result of IKDCSKEF showed that there is a significant difference among Futsal players, the result of Pearson coefficient correlation showed that there is not a significant relationship between the Q - angle and the A - angle. It seems that due to the lack of correlation between these two variables, separately studying about health and pathologic factor will be more effective.

Keywords:

Q - angle, A - angle, Futsal players, IKDCSKEF

Introduction

The quadriceps angle (Q - angle) is defined as an acute angle between two imaginary lines drawn from the ASIS to the center of the patella and from the center of the patella to the tibial tuberosity (Rahimi et al., 2009). The Q - angle is an important parameter to assess patellofemoral mechanics and is thus of great interest to clinicians (Raveendranath et al., 2009). It is a clinical measure of the alignment of the quadriceps femoris musculature relative to the alignment of the underlying skeletal structures of the pelvis, femur and tibia. The Q - angle has come to be accepted as an important factor in assessing knee joint function (Emami et al., 2007). A normal knee cap should move up and down within the groove with flexion and extension of the knee. When the Q - angle is excessive, the kneecap tends to track out of alignment and hence causes wear and tear

(degeneration) of the cartilage behind the kneecap (Clifford R et al., 2012). A normal Q – angle value in men is ranged between 10 to 14 degrees and in women it ranges between 14.5 to 17 (Belchior et al., 2006). The Q – angle is increased in patients with a lateralized tibial tuberosity, but it can be falsely normal when the patella is laterally displaced (Manadi et al, 2010). An increase in the Q – angle beyond the normal range is considered indicative of extensor mechanism misalignment, and has been associated with patellofemoral pain syndrome, knee joint hypermobility and patellar instability (Raveendranath et al., 2009). On the other, scientists nominate another angle in the knee that is A – angle. This angle measures the angle in the direction of the patella bone with tibia. This angle is made by a joint of a line which divided the patella bone in two parts in length, and the line that is drawn from tibia anterior tuberosity to the lower pole of the patella bone. Angles more than 35 degrees cause pain in patella bone – femur (Pour Ahmadi., 2013; Naseri., 2002; Canale et al., 2002). The A – angle, as described by Arno (1990), represents the relationship between the longitudinal axis of the patella and of the patellar tendon (Tomsich et al., 1996). Patellar orientation is defined as the tri-planar position of the patella within the femoral sulcus. Patellar tilt, glide, anteroposterior tilt and rotation are four components of patellar orientation. Deviation or slope of patella ratio to epicondyles can cause many pains in the knee. For example, patellofemoral syndromes are usually the result of biomechanical imbalances of the kinetic chain. Numerous authors have described the lateral displacement of the patella in patellofemoral pain patients (Herrington et al., 2004). Mediolateral tilt is defined as the amount of inclination of the patella within the transverse plane. The position of the patella between the medial and lateral epicondyles of the knee is termed mediolateral position. The amount of tilt or inclination of the patella when viewed in the sagittal plane is termed superoinferior tilt. Patellar rotation is the angle between the longitudinal axis of the femur and of the patella. Patellofemoral alignment measurements are used clinically to describe a patient's status, document progress, and determine the appropriate elements of a treatment program (Tomsich et al., 1996). But unfortunately within the research literature the relationship between patellofemoral pain and Q – angle is not that straight forward, with literature demonstrating and failing to demonstrate a link with equal measure (Herrington L., 2013). So the determination of the degree of patella displacement as A – angle can help with diagnosis of knee's health. Therefore measuring the Q – angle and A – angle that are common methods of assessing patellofemoral alignment can give a good criterion for evaluation of the situation of the knee among athletes especially in Futsal players. So the aim of this study is the correlation between the Q – angle and A – angle among Futsal players.

Objective of research :

The aim of this investigation was studying the relationship between A – angle and Q – angle among Futsal players. So twenty healthy Futsal players who played in Futsal club Elm o Adab which is a club in the Futsal first league of Iran were selected. A – Angle and Q – angle were obtained and evaluated among them.

Methodology :

Knee injuries may be caused by anatomical abnormalities or malalignments. For better detection knee condition, we need for the instruments that would be able to determine the condition of the alignment of the knee bones and evaluate knee angles (Amel et al, 2013). Careful evaluation of the A – angle and the Q – angle can be a great help to attract or reject players and the instructor has had the freedom to act in order to select the exercise. So the method of this research was selected quasi experimental research. Statistical population of present research includes all of the adult Futsal players in the premier league of Iran in season of 2012 - 13. According to aim of research, Futsal players of Mashhad Elm o Adab Futsal club were voluntary selected after primary visiting by a physiotherapist, orthopedic surge and radiologist. This study was performed in Mehregan research clinic center. Then 20 healthy Futsal players were chosen. Regarding to the hypothesis of the research, tools of the present study were:

1-The direct digital X-Ray machine model symphony GMI (630MA, flat panel, 17*14 inch & telescopic tube) made from Italy were used. After taking x-rays, results are analyzed by a group of specialists and were sent to the researchers.

2-International Knee Documentation Committee Orthopedics Scores (IKDCSKEF) questionnaire was used. A common terminology and an evaluation form were created. This form is the standard form for use in all publications of results of treatment of knee ligament injuries. The most recent revision is freely available at the AOSSM web site as part of the IKDC Knee Forms (Collins et al., 2011).

3-Marco PACS software; Marco (Medicine And Revolutions) founded at early 21th century, with the vision of market leadership in PACS and medical computer aided network design field. Marco's objective is to provide digital imaging solutions for medicine in PACS and radiography criteria to facilitate communication way of specialist with their respective medical centers. This objective ultimately provides benefit to the patients through high speed and exact of communicating information, while considerably saves costs of diagnostic services.

Procedure of the study:

Elm o Adab Futsal players were visited by proficient physiotherapist. After approving health of them, he introduced to orthopedic surge in order to send them to the digital X ray clinic. Futsal players who accepted to contribute to present research filled of three forms or questionnaires and signed them. They were sent to the digital radiology center.

Standing X-rays were taken then and analyzed by proficient radiologist. Then the results were sent to the researchers. To have a more precise evaluation, qualitative questionnaire already prepared by IKDCSKEF was filled with Futsal players in a class with 22 Celsius degree and silence condition. After collecting information and data by the above method, they were analyzed by SPSS version 19. In order to analysis the data, the different statistical method was used to make appropriate conclusions from the data. In the descriptive way used statistics such as average, Standard Deviation, variance and frequency table and in the deductive Klmograph Smirnoph, t. test and Pearson coefficient correlation exams were used.



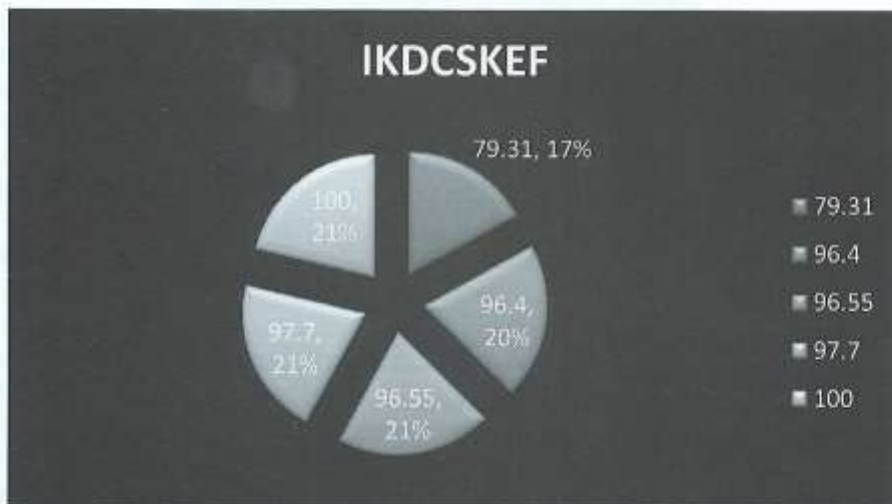
Picture 1. Drawing Q - angle on the X ray picture through the Marco software



Picture2. Drawing A – angle on the X ray picture through the Marco software

Result

The mean of the Q – angle, A – angle, IKDCSKEF and age for men was 6.23 ± 0.78 , 2.76 ± 0.72 degrees, 97.6 ± 4.48 and 26.4 ± 3.01 years respectively. According to the aims and hypotheses there is a significant difference in IKDCSKEF among Futsal players, while a significant relationship between Q-angle and A- angle was not observed ($P < 0.001$).



Picture 3. IKDCSKEF scores and in percentage.

Summary of the statistic results has shown in tables 1to 3.

	A – angle	Q – angle	IKDCSKEF	Age
Mean	2.76	6.23	97.06	26.4
SD	0.72	0.78	4.48	3.01

Table1. The summary of statistics.

One-Sample Test	t	df	Sig. (2-tailed)
IKDCSKEF	96.841	19	.000

Table2. the result of t, test of IKDCSKEF of Futsal players.

Pearson Correlations	Q – angle	A – angle
Q angle)Sig. (2-tailed)	1	-0.185 0.253
A – angle Sig. (2-tailed)	-0.185 0.253	1

Table 3. The result of Pearson coefficient correlation.

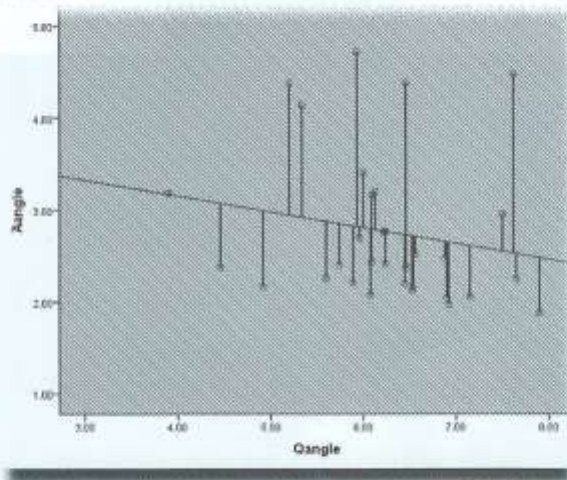


Diagram 1. Correlation between Q – angle and A – angle.

Discussion

The aim of this study is a correlation between the Q – angle and A – angle among Futsal players. Twenty men healthy Futsal players (40 knees) of the Elm o Adab club

contributed voluntarily in this investigation and standing X ray were taken of them. The mean of the age of them was 26.4 ± 3.01 . Orthopedic surgeon approved them as healthy without knee pain problem. Based on the results of this study, the average Q – angle and A – angle values in the subjects were 6.23 ± 0.78 and 2.76 ± 0.72 degrees, respectively. In the Q – angle, our mean differs 5.78 degrees from the normal values reported by Emami et al (2007), 9.55 degrees from the averages stated by Rahimi et al (2012) and 2.87 degrees from that reported by Ellapen et al (2013). In A – angle, our mean differs 52.24 degrees from the normal values reported by Arno S (1990), 9.04 to 20.74 degrees from the averages stated by Ehrat M et al (1994) and 9.54 degrees from that reported by Diveta et al (1992). Manadi et al (2010) reported that Supine Q – angle were strongly correlated with standing Q – angles and moderately with sitting Q – angle but we assumed that in the supine position quadriceps and other muscles are at rest, then the Q and A – angles were measured better in standing position so we evaluated our subjects in this position. Sheehan et al (2010), Rahimi et al (2012), Ellapen et al (2013) was measured Q – angle in a supine position while Roush et al (2008), Caylor et al (1993) were reported that they obtained it from the same position of our study. Manadi et al (2010) reported Q – angle in supine, sitting and standing position. Our results of A – angle and Q – angle were easy and precisely obtained by Marco software but other researchers (Arno S., 1990; Diveta JA et al., 1992; Ehrat M et al., 1994; Selfe J et al., 1996) studied with a goniometer about A – angle by ink marks. Of course some researchers such as Emami et al., 2007; Rahimi et al., 2012; Manadi et al., 2010; Sheehan et al., 2010 and Ellapen et al (2013) used different tools like CT scan, MRI, CT scan and goniometer respectively to obtaining Q – angle. We believe that using Marco software is suitable and precise tool for measurement of angles and different of (Q and A) angle in our investigation with others is caused by Marco software. There were not significant changes in patella (lateral patellar glides and patellar internal external rotation) in our subjects so A – angle was obtained low.

Biedert and Warnke (2001) could not find a significant correlation between the Q – angle values and the patellofemoral indices in all patients. Emami et al (2007) found a significant correlation between anterior knee pain and larger Q – angle among patients and they believed that patients with anterior knee pain have larger Q – angles than healthy individuals (Emami et al., 2007). So it seems that an increase in Q – angle could influence biomechanics of the knee joint and especially patellofemoral articulation by creating an abnormally high valgus angle but we did not observe increasing in our subjects. Herrington (2013) found that in normal people, the Q – angle decreases when standing on two than one leg measured and in patients with patella-femoral pain this relationship was significantly greater. Sarkar et al (2009) reported that there was a significant decrease ($4.65 \pm 2.74^\circ$) in the Q – angle values for subjects with Isometric

quadriceps activation (IQA) as compared to subjects with measurements in relaxed standing. Significance levels were set. The Q – angle decreases with IQA which was highly significant. So selection of appropriate program training such as IQA is useful for decrease criteria of diagnosis knee pains. Then athletes especially Futsal players should have had Q – angle and A – angle less than in patients with different knee pains. Our results agreed with this supposition. Tomsich et al (1996) obtained intratester and intertester intraclass correlation coefficients of measurements with the pluri-cal caliper and goniometer ranged from .52 to .86 and .003 to .61, respectively. Their results suggested that both clinical estimation and instrumented measurement of patellofemoral alignment may be unreliable. Hon Lin D et al (2012) reported that Q – angle was significantly correlated to the measure of patellar displacement and there was no correlation between the Q – angle and lateral patella shift of Sasaki. Nevertheless we obtained that there was not a significant correlation between the Q – angle and A – angle among Futsal players.

The mean score of IKDCSKEF was 97.06 ± 4.48 . Scores on the International Knee Documentation Committee Subjective Knee Evaluation Form vary by age, gender, and history of knee problems (Anderson and et al, 2006). They reported that "Mean scores were determined for men aged 18 to 24 years (89 ± 18), 25 to 34 years (89 ± 16), 35 to 50 years (85 ± 19), and 51 to 55 years (77 ± 23); mean scores were also determined for women aged 18 to 24 years (86 ± 19), 25 to 34 years (86 ± 19), 35 to 50 years (80 ± 23), and 51 to 65 years (71 ± 26). Scores were higher for the subset of respondents with no history of current or prior knee problems." Anderson and et al sent an E mail to 600 people and received their response but these forms were filled in by 20 Futsal players in this investigation. Our subjects were visited and checked by knee surge but Anderson and et al were studied the forms without knee healthy or problem checking. Scores our subjects (age, 26 ± 3.01) were higher than all groups aged in Anderson's research.

Hambly K et al (2008) reported that the International Knee Documentation Committee Subjective Knee Form was the highest scoring instrument in all categories while it is similar to the results of our research. Hambly K et al (2010) also reported that Seventy-eight percent of the items from the IKDC were experienced by more than half of the patients. For patients 12 months or more after anterior cruciate ligament reconstruction, 94% of the IKDC items had a frequency-importance. Oliaei et al (2008) was obtained scores IKDCSKEF, 94.3 for healthy people and 78.5 for patients. IKDCSKEF results were significantly lower in patients than control subjects. Their result was closer to our achievements among healthy people.

Our results indicate that healthy individuals (Futsal players) had less A – angle, less Q – angle and high IKDCSKEF score. We could use with precise tools study A – angle and Q – angle among Futsal players and Our results can be used as a reference for other

researchers. Nevertheless we don't study this angle among women players due to some limitations. Other researchers can do it.

Conclusion

Larger Q – angle increase the compressive forces applied to the lateral facet of the patella, and increase the tensile forces on the medial patellar restraint while increasing in A – angle due to for example lateral shifting in patella can cause decrease the knee extensor torque output and subsequently reducing the power of tibia extension in shooting. Our results indicate that healthy individuals (Futsal players) had less Q – angle, A – angle and high IKDCSKEF score. It seems that the Q – angle and A – angle of the knee can be a good measure separately of the healthy or unhealthy of the athlete's knee. Although we did not obtain a significant correlation between the Q – angle and the A – angle, considering the appropriate Q – angle and A – angle as one of the biomechanically landmarks or index, club's medical team, can provide better advice to attract or reject the new players to the club administrators. Then after filling IKDCSKEF questionnaire and checking the Q – angle and A – angle can realize of the health of knee's athletes.

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Poster 10:**Injuries In Iran Futsal National Teams:
A Comparative Study Of Incidence And Characteristics****H. Angoorani****Purpose:**

The aim of this study is to record and analyze the incidence and characteristics of injuries in Iran futsal national teams from March 2011 to September 2012.

Methods:

55 Iranian national futsal players participated in this prospective cohort study. Before entering the study, all players took part in Pre-participation Evaluation (PPE) based on FIFA PCMA protocol. Team physicians recorded the injuries in a special form which was designed for this purpose throughout the match and training sessions. Finally, data analysis was done with the SPSS software.

Findings:

This prospective cohort study is comprised of 55 Iranian national futsal players. The total exposure time of all players was 24326 hours (21138 hours during training and 3188 hours during matches). According to the incidence rate of injury in relation to exposure time, female players incurred significantly more injuries than male players ($p=0.001$). In all teams, the majority of injuries were due to non-contact trauma. Forty-six injuries (85.2%) were located on the lower extremities. The ankle was the most frequent injury site (40.7%) and sprain was the most frequent type of injury. The total incidence rate of sprains was 1.15 injuries per 1000 player-hours of exposure.

Conclusion: Injuries are relatively common among futsal players and female players are more prone to injuries than male players. The ankle is the most frequent site and sprain is the most frequent type of injury among futsal players.

Key words:

Incidence, Sport's injuries, Futsal, Indoor soccer

Poster 11:**The Immediate Effect Of Lateral Wedge Insoles, With And Without A Subtalar Strap, On External Knee Adduction Moment In Patients with knee osteoarthritis**

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5-Biomedical engineering School, Amir kabir University of technology, Tehran, Iran.

Background and purpose:

The immediate effects of lateral wedge insoles with and without subtalar strap on external knee adduction moment in knee osteoarthritis were compared.

Method and materials:

Seventeen patients aged over 40 years with grades I or II of medial compartment knee osteoarthritis based on Kellgren and Lawrence grading system were participated in this study. They were tested in 3 conditions while walking in a 8-meter walkway: bare foot, lateral wedge insole and lateral wedge insole with subtalar strap. Three successful trials were recorded in each condition. Gait analysis was performed to compare the immediate effect of lateral wedge insole with and without subtalar strap on external knee adduction moment.

Results:

There was no significant effect of lateral wedge insole with and without subtalar strap on first and second peak of external knee adduction moment during stance phase of gait and also on external knee adduction moment at 50% of stance and walking speed.

Conclusion:

The results of this study showed no significant immediate effect of lateral wedge insole with and without subtalar strap on external knee adduction. It seems that there is a need for adaptation time to record changes in gait patterns of patients.

Key words:

Knee, Osteoarthritis, Orthotic, Gait

Poster 12:**Cross-cultural adaption and validation of the Persian version of the Oxford Knee Score****E. H. brahimzadeh Mohamamd, H. Makhmalbaf, A. Birjandinejad, F. Golhasani-keshtan****Background:**

Oxford Knee Score is a short patient-reported outcome instrument that measures pain and physical activity related to knee osteoarthritis. The purpose of this study was to evaluate construct validity and consistent reliability of the Persian version of the Oxford Knee Score (OKS).

Methods:

The case series consisted of 80 patients who were clinically diagnosed with having knee osteoarthritis. Our team translated the original English version the OKS to Persian and finally developed the Persian Oxford Knee Score. All of them were asked to fill out the Persian Oxford Knee Score and the Persian SF-36 Health Survey. Correlation analysis between the Persian versions of these two instruments was then carried out. The scores of the Persian SF-36 were used to evaluate convergent and divergent validity of the 12-item Persian Oxford Knee Score. We also examined reliability of the measure by test-retest method, the Intraclass correlation coefficient, and Cronbach's alpha was calculated for reliability and reproducibility of the score.

Results:

Sixty-three patients were female (78%) and the remaining 17 were male (21%) with a mean age of 52.2 years. In the present study, high Cronbach's alpha of 0.95 confirms the excellent internal consistency of the Persian version of the Oxford Knee Score scale similar to previous investigations. ICC (the interclass correlation coefficient) with a 95% confidence interval was 0.95. In terms of validity, the results confirm that the Persian version of this instrument is valid, similar to its English index and its consequent translations in different languages.

Conclusion:

The Persian Oxford Knee Score is a valid and reliable instrument to evaluate knee function in patients with knee osteoarthritis and is a suitable tool for outcome measurement in clinical research of the knee.

Keyword:

Validity, Reliability, Oxford Knee Score, Osteoarthritis, Iran

Poster 13:**ACL Reconstruction: A Comparison of Transportal and Transtibial Femoral Tunnel Placement****A.M. Navali¹, M.R.Hatami², R.Sohrabi³**

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2-Ortopeadic Surgeon, Tabriz University of Medical Sciences

3-Tabriz University of Medical Sciences

Introduction:

One of the most common sports injuries of the knee is anterior cruciate ligament tearing. The arthroscopic Ligament reconstruction is choice of treatment. The aim of this study was to compare treatment results in two arthroscopic procedure is Transportal and Trans-tibial.

Methods:

In a cohort study, 120 patients divided into two groups of 60 patients were treated by two methods arthroscopic repair; Transportal and Transtibial. They were compared with each other in terms of performance and ligament stability.

Results:

In patients under study, there was not difference in lysholm score (Transtibial 96.2 and Transportal 97.2), tegner score (Transtibial 6.3 and Transportal 6.6) and knee range of motion; however, comparison of knee ligament stability were clear and significantly shows better results in the Trans-portals($p < 0.001$)

Conclusion:

Trans-portal technique is increased clearly the ligamentous stability versus of the Trans-tibial technique.

Key words:

ACL reconstruction, Femoral tunnel drilling, Anteromedial portal, Transtibial

Poster 14:**Hamstring Tendon Autograft Versus Fresh-Frozen Tibialis Posterior Allograft In Primary Arthroscopic Anterior Cruciate Ligament (Acl) Reconstruction: A Prospective Comparative Study with 3-6 years follow up****M. Karimi-Mobarakeh¹, M. Mardani-Kivi², A. A. Keikha³**

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Background:

The aim of the present study is to compare clinical and functional outcomes of Anterior Cruciate Ligament Reconstruction (ACLR) using 4-strand autologous hamstrings tendons (HT-Au) versus doubled allogeneous posterior tibialis tendon (TP-AI).

Material and Methods:

In this prospective cohort study, 104 patients (88 men and 16 women) in HT-Au group and 118 cases (99 men and 19 women) in TP-AI group were followed up for 3-6 years. Maximum passive range of motion (ROM) and previous activities resumption were assessed during the first 6 months. Side-to-side difference (SSD) using KT-1000, IKDS and Lysholm knee scores were evaluated pre and post operatively.

Results:

The mean ages of HT-Au and TP-AI groups were 36.9 (95%CI 27.6-30.7) and 34.4 (95%CI 26.8-30), respectively. Median and range of follow up duration were 56 (36-72) and 55 (37-71), respectively (both $p > 0.05$). SSD of 99 cases (84%) of HT-Au group and 85 cases (82%) of TP-AI group were less than 3 mm ($p > 0.05$). Return to activities, ROM, subjective IKDC and Lysholm scores were similar between two groups ($p > 0.05$). Eight cases in HT-Au group were suffered from saphenous nerve injuries till 2 months visit, of whom, one of them had lasted until final visit. No such symptom was observed in any TP-AI patients ($P < 0.001$).

Conclusion:

In arthroscopic ACL reconstruction, using fresh frozen doubled tibialis allograft compared to hamstring tendons autograft, could favorably restore function and stability of knee and allow patients to return to previous activities.

Keywords:

Anterior Cruciate Ligament Reconstruction; autologous hamstrings tendons; allogeneous posterior tibialis tendon; arthroscopy

Poster 15:**Evaluation of Sensitivity, Specificity and Accuracy of High Resolution CT Scan in Meniscal Injuries****R. Farzam, P. Heshemizadeh, K. Azarkhish****Backgrounds:**

From diagnostic methods of meniscal tear, Arthroscopy, MRI, and HRCT can be mentioned some studies has reported the accuracy of HRCT more than that of MRI. Regarding to high prevalence of meniscal tearing in active ages and need for surgery in arthroscopic method, high price and lack of availability in some areas of country, the importance of recruitment of efficient, non invasive, cost benefit and available method is appearing.

Methods:

the patients who had history of meniscal injury or referred from legal medicine centers to outpatient clinics of Ayatollah Mosavi hospital of Zanjan since 2011 till 2012 were clinically examined; and those were suspected, were evaluated by MRI, HRCT, and arthroscopy. the results of MRI and HRCT reported by radiologist, were compared with results of arthroscopy as a gold standard method and the datas were analysed by SPSS 19. Accuracy, sensitivity and specificity of each method was evaluated.

Results:

sensitivity of HRCT was 66.66%, specificity 59.37%, accuracy 62.26% ; and sensitivity of MRI was 95/4%, specificity 56/25% and accuracy 69/8%.

Conclusion:

the results were in opposition to previous studies which has reported the accuracy of HRCT more than MRI in meniscal injuries.

Key words:

meniscus, HRCT, MRI, arthroscopy.

Poster 16:**Three-Dimensional Finite Element Modeling For Biomechanical Response Analysis of Knee Replacement****R. Keshavarz**

Physiotherapist

Knee implants are designed to replace biological members that have been damaged. Fundamentally In vitro testing of total knee replacement devices is a necessary work in evaluation of new implant designs. Efficient computer models present an effective way of evaluating these behaviors. Finite element model (FEM) has been used to analyze the knee and knee replacement. The numerical results of FEMs can be used as a guideline to distinguish whether kinetic or kinematic mechanical responses from FEMs of implants are reasonable. The computational FEM represented all joints and actuators in the experimental setup. The model was developed in explicit environment of ANSYS from CAD models of MR images. Contact constraints were defined using an augmented Lagrange-based method with weight factors. This system includes contact to capture the effects of soft-tissue wrapping on implant and bone. Nonlinear elastic material behaviors for the soft-tissue systems were also adopted from available literature. Results from the tibio-femoral evaluations showed very good agreement between the predicted numerical model and experimental kinematic data. CPU time for the analyses was approximately 5 (h) for full deformable computations. Peak contact stresses were found at approximately 54 % of the gait cycle, and were approximately 18.7 MPa. The second peak resulted from the internal-external rotation creating contact more near the edge of insert.

Keywords:

Knee Replacement; finite element analysis; biomechanical modeling;

Poster 17:**Fatigue Life Prediction Analysis of Knee Implant By Means of Finite Element Simulation****R. Keshavarz**

Physiotherapist

Knee implants are designed to replace biological members that have been damaged. Almost cartilage and bone are removed from articulating surfaces of the joint and then synthetic materials are utilized. Efficient computer models present an effective way of evaluating these behaviors. Finite element model (FEM) has been used to analyze the knee and knee implants. The results of FEMs can be used as a guideline to distinguish whether kinetic or kinematic mechanical responses from implant FEMs are reasonable. The evaluation of contact areas and pressures in total knee prosthesis is a way to prevent early failure. This work is based on the patterns of contact pressures on the tibial insert of knee prosthesis at different stages of the gait cycle that is an indicator of the wear performances of knee prosthesis. Contact stress distributions were calculated for mobile bearing knee prosthesis by means of FEM. Polyethylene insert of implant was treated as a nonlinear deformable body with a high Poisson's ratio. The material characteristics of the implant alloy were modeled by a kinematic hardening plasticity model. Afterwards the long-term structural integrity of metal tibial components in terms of fatigue life was presented by means of both experimental and numerical simulations. The fatigue risk was predicated with a standard fatigue criterion on the basis of the results obtained from the FEM calculations.

Keywords:

knee prosthesis; finite element modeling; fatigue life prediction analysis

Poster 18:**Calcifying Tendinitis****A. Ch.Khavari**

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Introduction:

Calcifying tendinitis of the rotator cuff, is a common disorder of unknown etiology multifocal, cell-mediated calcification of a living tendon is usually followed by spontaneous phagocytic resorption. After resorption or surgical removal of the deposit, the tendon reconstitutes itself. In this article, an up-to-date review of the published papers evaluating presentations, radiologic evaluation and each treatment modality is presented.

Material and methods:

In library of SMC in South Korea, we searched the database sites such as DATABASE and Cochran and PubMed .Also, we studied, retrospectively, 1500 patient's file with shoulder pain in SMC hospital which 276 of them had calcifying tendinitis.

Results:

It accounts for approximately 10% of all consultations for painful shoulder. It affects women more often than men; its peak incidence is in the fifth decade. The prevalence among asymptomatic individuals was reported to be 2.7% by Bosworth. Sex and age of patients with calcifying tendinitis are different in South Korea.

There are three distinctive stages through which the disease process progresses. The first stage is the precalcific stage, characterized by metaplasia of the tendinous tissue into fibrocartilage. This is followed by the calcific stage, which consists of a phase of formation and a phase of resorption. In the post-calcific stage, following resorption of the calcium deposit, tendon reconstitution occurs. The disease becomes acutely painful only when the calcium undergoes resorption.

According to French arthroscopy society classification, There are four types of patients radiologically. Type A: Homogeneous calcification with well defined limits, Type B: Heterogeneous and fragmented calcification with well defined limits, Type C: Heterogeneous calcification with poorly define limits and sometimes with a punctuate appearance Type D : Dystrophic calcification of the tendon insertion

Conclusion:

About 90% of patients can be treated non-operatively but some are resistant to conservative treatment and surgery is indicated. Non-operative treatments include non-steroidal anti-inflammatory drugs, subacromial injection of steroid, physiotherapy, extracorporeal shockwave therapy and needle aspiration irrigation. When conservative

treatment fails, arthroscopic excision of calcium, sometimes combined with an acromioplasty and/or rotator cuff repair, reliably produces excellent results with high patient satisfaction.

Purpose:

The purpose of this study was to analyze the outcome of arthroscopic removal of calcifying tendinitis of the rotator cuff, to document the postoperative pain evolution, and to analyze structural changes of the supraspinatus tendon by use of ultrasonography.

Methods:

Fifty-four of 58 patients with a mean age of 45.4 years (± 8 years) enrolled in the study were available for follow-up. The calcific deposits were exclusively located in the supraspinatus tendon. Shoulder function was evaluated by using the Constant score. Radiographs were obtained preoperatively, immediately postoperatively, and at 3, 6, 12, and 24 months. The integrity of the rotator cuff was assessed by using ultrasonography.

Results:

Shoulder function according to the Constant score improved from 32.8 points (± 19.8) preoperatively to 90.9 (± 13.0) at 24 months ($P < 0.001$). The evolution of postoperative pain was very irregular; 31% of the patients were pain free or reached their minimum pain level after 3 months, 17% after 6 months, 20% after 9 months, and 28% after 12 months; 78% of the patients returned to work within 6 weeks, irrespective of their profession. At the final follow-up 92% of the patients were very satisfied with the outcome. Ultrasonography revealed minor structural changes of the supraspinatus tendon in 66% of the patients.

Conclusions:

The study confirmed previously reported successful results of arthroscopic treatment of calcifying tendinitis of the rotator cuff. Complete intraoperative removal of the deposit did not appear to be essential. Even if most of the patients were able to return to work within 6 weeks, postoperative recovery was prolonged over several months in most of the patients. The clinical relevance of the ultrasonographic changes of the supraspinatus tendon has not yet been determined.

Level of Evidence:

Level IV, therapeutic case series.

Key Words:

Shoulder arthroscopy—Calcifying tendinitis—Rotator cuff—Supraspinatus tendon.

Calcifying tendinitis is a common disorder of the rotator cuff. Bosworth¹ reported an incidence rate of 2.7%. Calcific tendinopathy, or calcifying tendinitis, is a disease characterized by multifocal, cell-mediated calcification of living tissue. After spontaneous disappearance of the calcific deposits or, less frequently, surgical removal,

the tendon reconstitutes itself. Attention to the clinical presentation and the radiologic, morphologic, and gross characteristics of the calcium deposit will facilitate differentiation between the formative phase and the resorptive phase, which is of paramount importance in the management of this disease. Should conservative treatment fail, surgical removal may be indicated during the formative phase, but only under exceptional circumstances during the resorptive phase. Aspiration and lavage of the deposit should be performed only during the latter phase.

Poster 19:**Treatment of Musculotendinous Ruptures of the Distal Biceps Brachii in Athletes: New Surgical Approach****M. Yousefian¹, M. Dehghani², H.R. Shemshaki**

1-Orthopedic Surgeon, Amin Hospital, Esfahan

2-Orthopedic Surgeon, Kashani Hospital, Esfahan

Background:

Musculotendinous ruptures of the distal biceps brachii are extremely rare injuries whose clinical presentation is similar to distal biceps avulsion. This study was designed to evaluate the clinical results of new surgical approach in treatment of this rupture.

Methods and Materials:

This study was conducted from 2010 to 2013 in Department of Orthopaedic Surgery, Isfahan, Iran. Four athletes with musculotendinous ruptures of the distal biceps brachii were surgically repaired with the same hand Palmaris longus. Clinical outcomes including range of motion and Muscle force were evaluated during follow-ups.

Results:

Four athletes with the mean age of 29.04 ± 9.23 were enrolled to study. The mechanisms of ruptures were bodybuilding for three patients and lifting for on patient. The mean passive range of motion after one year follow-up were as followed: Flexion: 145.1 ± 2.3 , Extension: 2.5 ± 0.01 , supination: 80.02 ± 2.45 and Pronation: 85.0 ± 0.09 . Three patients reached the normal range of motion and one had only 10° lag of extension. The forces of supination and elbow flexion were the same to other hand in a year follow-up.

Conclusion:

In terms of clinical outcomes including range of motion and force of muscle, the results of this study showed good results for repairing musculotendinous ruptures of the distal biceps brachii by Palmaris Longus. More future studies are warranted.

Poster 20:**Does the higher Body Mass Index aggravate the results of ACL reconstruction?**

A.Sh. Ariamanesh, M.H. Khabbaz, F. Hassani, K. Norouzi, M. Ameli, M. Mahjur, A. Hosele, M. Amel Khabbazan.

Investigation performed at Mashhad Medical University, Mashhad, Iran

Background:

We hypothesized that patients with higher BMI has the same functional outcome in comparing with the ones by lower BMI.

Methods:

We measured functional outcome after allograft ACL reconstruction using the Osteoarthritis Outcome Score (KOOS), Lysholm score and knee injury score. ACL of the patients has been reconstructed by senior author (A.Sh) between 2008-2011. The patients were divided into two groups of normal BMI (18.5-24.9) and a high-BMI group (BMI>25), with at least 2.5 years follow up.

RESULTS:

60 patients of normal BMI and 21 patients with high BMI (totally 81) were studied. No significant differences between the groups were found in pre and post operative Scores and amount of laxity. Although the short and mid term functional outcome were nearly similar but in the rate of perioperative complication it was noticeably higher in patients with higher BMI (two cases of chronic sciatalgia, one case of post operative infection, One case of deep vein thrombosis).

CONCLUSIONS:

High BMI does not aggravate the functional outcome of ACL Reconstruction up to 2.5 years follow up (the least amount of follow up in our study). And the surgeons should not hesitate to reconstruct the ACL of patient with higher BMI but should pay attention to some details to avoid perioperative complication.

LEVEL OF EVIDENCE:

Level III, retrospective study

Keyword:

ACL Reconstruction; Body Mass Index.

Poster 21:**Preliminary Clinical outcome of total knee replacement with drain versus without drains****M.H. Ebrahimzadeh, H.Makhmalbaf, H.Norouzi**

Orthopedic Research Center, Mashahd University of Medical Sciences, Mashhad, Iran

In order to find any difference in the clinical outcome and complications of TKA with using drain and not using a drain, we have done a cohort prospective study.

A total of 100 patients who underwent TKA recruited randomly in the study from November 2011 to November 2013 in our teaching Ghaem Hospital, at Mashhad university of Medical Sciences, Mashhad, Iran.

Patients were assessed before and postoperatively in terms of HCT, Hb, VAS, Oxford Knee Score and early postoperative wound complications.

We will present of details results in this paper.

Our preliminary findings confirms that total knee replacement surgery without using a drain hemovac is as safe as using a drain.

Poster 22:**Persian Version of the International Knee Documentation Committee (IKDC) Subjective Short Form:
a validity and reliability study****M. H. Ebrahimzadeh, H. Makhmalbaf, F. Golhasani-Keshtan, A. Birjandinejad****Introduction:**

The purpose of the present research was to translate the original English version of IKDC Subjective Short Form to Persian and to assess validity and reliability of the Persian version among Persian-speaking patients.

Method:

We administered the Persian Version of The IKDC Subjective Short Form to 145 patients including 111 men (76%) and 34 women (24%) with the clinical diagnosis of knee ACL or PCL tear that referred to our Knee and Shoulder Center in Iran. The Persian IKDC questionnaire, along with Persian SF-36 questionnaire, was given to the patients after informing them about the study in the clinic before commencing any treatment intervention. We used test-retest method to calculate of reliability.

Results:

The average age of the subjects was 30.9 ± 10.4 years. The calculated ICC with 95% Confidence Interval is 0.845. In this study, Cronbach's alpha was 0.845. There are significant correlation between IKDC and all items of SF36 ($p < 0.05$) except MCS ($p = 0.055$).

Conclusion:

Cronbach's alpha and correlation of IKDC and SF-36 demonstrated that Persian version of IKDC has well reliability and validity, respectively. The Iranian version of IKDC has favorable validity and reliability and therefore can be used to assess Persian-speaking patients with cruciate ligament injuries.

Keywords:

IKDC, validity, reliability, Persian Version, Iran, ACL, PCL, Persian



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