

**Methods:** MACI operation was performed in a total of 24 patients (18 knees), with an average age of 34.9 years and average defect size of 3.69 cm<sup>2</sup> from 2012 to 2014. The procedure of MACI began with harvesting cartilage tissue which obtained from autologous nonweight-bearing region for proliferation in vitro. The cultivated chondrocytes were seeded onto type I/type III collagen bilayer membrane which was glued by fibrin sealant to cartilage defect area after suitable shaped. Knee injury and Osteoarthritis Outcome Score (KOOS) and Magnetic resonance imaging (MRI) were used to evaluate clinical rehabilitation in three, six, 12 and 24 months post-operatively. In addition, three arthroscopic look and two histological examinations were performed post-surgery.

**Results:** There were no postoperative complications in 10 patients and no adverse events related with MACI operation. Three months after operation, evaluation of KOOS in pain showed significant improving compared with baseline ( $P < 0.05$ ). Six months after surgery, KOOS results demonstrated significant improvement ( $P < 0.05$ ) in pain, symptoms, activities of daily life (ADL), sports and recreation functions, and other knee-related QOL (quality of life). MRI exhibited that new generated cartilage completely filled defect regions. Postoperative MRI in 12 and 24 months presented significant improving in defect filling, integration, signal intensity and subchondral bone. Postoperative histological evaluation of 15 and 24 months presented the predominate hyaline cartilage in new generated tissue. MACI operation time was controlled within two hours with less than 100 ml bleeding.

**Conclusions:** Our clinical results of two-year follow-up study affirmed that MACI technique was a safe, reliable and valid treatment for cartilage lesions with characteristics of noncomplicated technique, short operating time and small amount of surgical bleeding.

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### B0316

#### Return to sport and patient satisfaction after arthroscopic bankart repair. A single-institution experience

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**Background:** Arthroscopic Bankart repair produces good results, however not all patients return to playing sports after seemingly successful surgery. Revision surgery is a crude measure of failure as not all dissatisfied patients return for repeat surgery. The aim of this study is to study the functional outcomes of arthroscopic Bankart repair at our institution including return to sports and patient satisfaction and its associated factors.

**Material:** Institutional Board Review approval was obtained for this study. The operative records of 107 consecutive patients undergoing arthroscopic Bankart repair at our institution from 2008 to 2013 were reviewed. Patients who underwent arthroscopic Bankart repair were recurrent dislocators without large Hill-Sachs or bony Bankart lesions seen on MRI of the affected shoulder.

**Method:** Patients were contacted by an independent observer at least 2 years after surgery. 85 patients consented for an interview which consisted of self-reported scoring of patient satisfaction with surgery, willingness to undergo surgery again if given the chance and return to sports after surgery. 63 patients completed the interview and scoring, including the Oxford Instability Score (OIS) and Simple Shoulder Test. Analysis was performed with SPSS for Windows using the Chi-squared test for categorical values and the t-test for continuous variables.

**Results:** The mean age at first dislocation was  $19.5 \pm 3.3$  (13.0 to 28.0) years. Duration of follow-up was  $3.6 \pm 1.4$  (2.3 to 8.1) years.  $2.2 \pm 2.7$  (0.1 to 15.2) years elapsed from first dislocation to surgery. 34/63 (54.0%) played overhead or contact sports before injury. 35/63 (55.6%) played competitive sports before injury.

7/63 (11.1%) reported recurrence of dislocation after surgery. 4/63 (6.4%) underwent revision surgery. 19/63 (30.2%) report mild instability after surgery. 35/63 (55.6%) returned to playing sports after surgery. 57/63 (90.5%) are satisfied with their surgery. 61/63 (96.8%) will undergo the same surgery again if given a chance. 44/63 (69.8%) reported completing physiotherapy. Recurrence of dislocation is not associated with traumatic dislocation ( $p < 1.00$ ), Hill-Sachs lesion ( $p < 0.67$ ), ligamentous laxity ( $p < 0.41$ ), playing contact or overhead sports prior to injury ( $p < 0.44$ ), bony Bankart lesion seen on arthroscopy ( $p < 0.89$ ), SLAP lesion ( $p < 0.21$ ), number of dislocations before surgery ( $5.0 \pm 2.44$  vs.  $5.6 \pm 13.5$ ,  $p < 0.90$ ), age of dislocation ( $17.9 \pm 3.9$  vs.  $19.7 \pm 3.2$  years,  $p < 0.16$ ), completion of physiotherapy ( $p < 1.00$ ), return to sports ( $p < 0.45$ ), patient satisfaction ( $p < 1.07$ ). Recurrence of dislocation is associated with playing competitive sports prior to injury ( $p < 0.038$ ).

56/63 (88.9%) have a 2 year OIS score which is Good or Excellent. A Good or Excellent OIS Score is not significantly associated with number of dislocations before surgery ( $5.7 \pm 13.5$  vs.  $4.6 \pm 4.9$ ,  $p < 0.83$ ), return to sports ( $p < 0.23$ ), age of dislocation ( $19.6 \pm 3.4$  vs.  $19.1 \pm 2.5$  years,  $p < 0.75$ ), ligamentous laxity ( $p < 0.41$ ), operative time ( $65.9 \pm 32.2$  vs.  $55.7 \pm 15.1$  mins,  $p < 0.42$ ), absence of recurrence ( $p < 1.23$ ), completing physiotherapy ( $p < 1.00$ ), wanting to do surgery again if given a chance ( $p < 0.31$ ).

A Good or Excellent OIS Score is significantly associated with self-reported stability after surgery ( $p < 0.022$ ), satisfaction with surgery ( $p < 0.024$ ) and playing competitive sports before surgery ( $p < 0.014$ ).

**Discussion:** Despite the low revision rate in our series of patients and Good or Excellent functional scores at 2 years after surgery, 30% of patients report mild instability in the operated shoulder. Even with this self-reported instability, patient satisfaction remains high as seen by the willingness to undergo the same surgery again. More than half of our patients returned to playing sports after surgery.

Although recurrence of dislocation was associated with a history of playing competitive sports prior to injury, a Good or Excellent functional score was also associated with a history of competitive sports. A more sensitive indicator of outcome from surgery could be self-reported instability and return to playing sports.

**Conclusion:** Good functional scores after arthroscopic Bankart repair do not necessarily translate to a return to sports for most patients. Even with perceived instability in the operated shoulder after surgery, patients' satisfaction remains high.

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### B0321

#### Graft length changes in medial patellofemoral ligament reconstruction with a fluoroscopic-guidance method

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**Background:** Medial patellofemoral ligament (MPFL) reconstruction has been widely performed to treat patellar dislocation. It has been reported that femoral tunnel position is one of the most important factors affecting clinical outcomes after MPFL reconstructions. To determine femoral tunnel position, a fluoroscopic-guidance method has been reported. However the graft length change pattern at the femoral tunnel position determined by the fluoroscopic-guidance has remain unclear. The purpose of this study is to examine the graft length change pattern at the femoral tunnel position determined under the fluoroscopic-guidance.

**Material and methods:** Twenty-Nine patients who underwent MPFL reconstructions for the treatment of recurrent patellar dislocations were examined. During the surgery, suture anchors were inserted into the patella. Femoral tunnel position was determined according to the method as previously described by Schöttle et al. A pilot pin was inserted into the determined position using true lateral view of the knee under fluoroscopic control. Sutures attached to the anchors were then twined around the pin. The graft length change pattern was examined throughout the knee range motion. The favorable length change patterns were defined as nearly isometric or slightly long in extension based on previously reported physiological length changes of MPFL. The unfavorable length change pattern was defined as long in flexion. If the length change pattern was unfavorable, the pilot-pin was moved to different positions until the graft length change pattern showed the favorable pattern.

**Results:** Eighteen patients (62%) out of 29 patients showed the acceptable patterns. However 11 patients (38%) showed the unacceptable pattern and the position was changed. The mean distance from the original position to the final position was  $6.0 \pm 1.0$  mm distal in 5 patients and  $7.2 \pm 0.4$  mm posterodistal in 6 patients.

**Discussion:** More than half of the patients showed the favorable length change patterns at the position determined by the fluoroscopic-guidance method, showing a usefulness of the method. However, not a few patients showed the unfavorable length change pattern at the position determined under the fluoroscopic-guidance, suggesting that at least length change pattern needs to be checked before fixing the graft at the position. If the length change pattern was unfavorable, it can be advised to move approximately 5 to 7 mm distally or posterodistally from the first position for the next position.

**Conclusion:** Surgeons may need a caution when determining the femoral tunnel position using the fluoroscopic-guidance method and at least, length change pattern should be checked.

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### B0327

#### Repair of anterior cruciate ligament with internal brace technique – Early results

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**Background:** Concept of the ACL repair is not new, however it was abandoned for years due to unsatisfying results. The main problem was that sutured ligament wasn't strong enough to carry regular loads and therefore elongated. This problem was solved with new generation of synthetic tapes, providing mechanical support and protecting healing ligament.

**Material:** We present group of 35 patients, (16 female, 19 male), medium age 35.2 y.o. (19 to 52). Medium follow up - 8.6 months (3 to 21). All patients had ACL tear confirmed on MRI. Only patients with well preserved ligament stump were qualified for the procedure. As a matching group we are presenting cohort of 25 patients (9 female, 16 male), medium age 37.4 (14 to 45) in which we performed double bundle ACL reconstruction using ST tendon.

**Method:** In all studied group we performed the same procedure of suturing the ACL stump to femoral insertion. The stump was sutured with FiberWire, and reinforced with FiberTape stabilized with endobuttons on Tibia and Femur. We also repaired all others damages found in operated knees.

**Results:** We assessed results with clinical examination, MRI three to six months post surgery, and clinical scales (Lysholm, IKDC and KOOS). Clinical results according to stability and function were generally similar to double bundle ACL group, but patients after Internal Brace needed shorter rehabilitation and presented less postoperative swelling, comparing to DB group.

**Discussion:** Internal bracing is a new approach to ACL repair, so there are no publications containing its results. However our observations are promising, we just don't know how the ligaments rebuild over time and how the body will react at FiberTape in long term. Therefore we will continue our research for mid and long time results.

**Conclusions:** It seems that Internal Bracing repair of the torn ACL is promising and safe method to repair ligament in selected cases. Results show that it may be better tolerated by patients than classic reconstruction.

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