malposition, rehabilitation too early, frictional heat of the drill, synovial fluid invasion in the bone tunnel and micromotion of the graft in the bone tunnel all cause bone tunnel enlargement. Of these, we prevented osteonecrosis attributable to drill heat by creating a rounded rectangular dilation, and micromotion in the bone tunnel of the graft and invasion of synovial fluid in the bone tunnel were inhibited by the fit-and-fill effect of the graft due to the bone tunnel shape. We think that we can expect early osteosclerosis with cancellous bone compression.
Conclusion: We created a larger rounded rectangular bone tunnel for ACL reconstruction using a rounded rectangular dilator. It was suggested that the rounded rectangular tunnel could be expected the compression effect of the cancellous bone and the fit and fill effect of the graft in the bone tunnel that may be reduced the bone tunnel enlargement.
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B0288
Short-term functional outcome of arthroscopic-assisted treatment of glenoid fractures

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Objective: to evaluate the early functional outcome of arthroscopic-assisted treatment of glenoid Fractures.
Method: We treated 15cases suffering glenoid fractures with arthroscopic-assisted approach from September 2011 to April 2014. 11 patients were male and 4 patients were female. The average age is 34.6y (18-46y). The etiology included 9 falls and 6 traffic accidents. The interval from injury to surgery is 9.2days (6-17d). According to the Ideberg classification: 7 cases were Type Ia; 1case was Type Ib; 2 case was type II; 3 cases type III and 2 case was type IV, 3 cases type Ia and all type Ib to type III fractures were treated with arthroscopic reduction and percutaneous cannulated screw fixation,4 cases type Ia fractures were treated with arthroscopic reduction and double pulley technique fixation, 2 case type IV fractures were first openly managed with posterior glenoid rim and neck fracture via posterior approach and then treated with arthroscopic reduction and double pulley technique or cannulated screw fixation. Constant—Murley shoulder score was used to assess the joint function.
Result: The average operation time was 95 minutes (80-135min) and average follow-up time was 10.6 months (9-18m). The step of articular surface was less than 1-2mm in the view of arthroscopy and postoperative CT scan. 3 months postoperatively CT scan showed the fractures had healed. The mean Constant-Murley score was 87.2 points (range,74 to 100 points). There were 10 excellent cases,4 good cases and 1 moderate case. The average forward flexion of the shoulder was 162°(range,130°to 180°);The average external rotation was 42.5°(range30°to 80°); The average internal rotation were lost 2.8 vertebra segments (range,0 to 6 vertebra segments)
Conclusion It is the new and effective method to treat the intraarticular glenoid fracture, It provides precise reduction and stable fixation through the arthroscopic-assisted approach and have the advantage of rapid recovery and less complication. But the technique is demanding and the surgeons need long learning curve.
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B0292
Prediction of hamstring tendon graft size for ACL reconstruction from preoperative MRI and patient height

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***Abbreviations**: GT – gracilus tendon, ST – semitendinosus tendon, CSA – cross sectional area*
Background: Small diameter hamstring tendon autograft size has been reported as a possible cause of failure of anterior cruciate ligament (ACL) reconstructions. The ability to accurately predict the diameter of an individual's hamstring pre-operatively using magnetic resonance imaging (MRI) and anthropometric patient height would enable surgeons to identify patients at risk of small hamstring graft size and consider alternative graft constructs. Hence, the purpose of this study was to comparatively examine the predictive relationship of 1) cross-sectional area (CSA) measurements of hamstring tendons on preoperative MRI and 2) patient height, with the intraoperative hamstring autograft diameter retrieved at the time of ACL reconstruction (ACLR) and to assess the accuracy and reliability of the MRI CSA measurement method.
Materials and Method: A series of 238 subjects who underwent quadrupled-strand hamstring tendon autograft ACLR with available preoperative MRI studies and heights, were identified from a prospective database of knee surgery over a four year span from 2011 to 2014. The total CSA of the semitendinosus and gracilus hamstring tendons (ST +GT) was measured using the OsiriX MD region-of-interest tool by two raters blinded to each other. MRI-estimated CSA and patient height was correlated with the intraoperative diameter of the hamstring autograft. This was a retrospective diagnostic study (Level II).
Results: Using a predictive model, in order to determine with greater than 90% confidence that the graft diameter will be greater than 7mm, the measured CSA needs to be greater than 18mm^2. In order to have greater than 90% confidence that the graft diameter will be greater than 7.5mm, the measured CSA needs to be greater than 23mm^2. The Pearson correlation coefficients for 1) MRI CSA of ST + GT and 2) patient height to the intraoperative hamstring autograft diameter was 0.64 (P <0.001) and 0.42 (P <0.001), respectively. In an ANOVA F Test, both predictors gave an F value of 93.585 (P < 0.001), with MRI CSA of ST + GT, giving a 17.2% (P<0.001) increase in predictability and patient height giving a 7.5% (P<0.001) increase in predictability, when compared to the null model. An intraclass correlation coefficient of 0.814 (P<0.001, 95% CI 0.760 to 0.856) was obtained for both raters.
Discussion: MRI CSA of ST+GT was found to be a stronger predictor of intraoperative hamstring tendon autograft diameter compared to patient height, whilst the MRI measurement method was found to be highly accurate and reliable. The use of preoperative MRI CSA measurements of hamstring tendons can enhance pre-surgical planning & identify patients at risk of diminutive autografts, allowing surgeons to consider alternative graft constructs and lower rates of ACLR failure.
Conclusions: There is a strong, positive correlation and a significant predictive relationship between using both MRI CSA ST + GT measurements and patient height in determining intraoperative hamstring autograft diameter. Our protocol has the future potential to be added as universally-applied routine aspect of preoperative planning for ACL reconstruction.
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B0294
Twenty-year comparison outcome data of a longitudinal prospective evaluation of isolated endoscopic anterior cruciate ligament reconstruction with either patellar tendon or hamstring autograft

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Background: Long-term prospective follow-up studies of single-incision isolated endoscopic anterior cruciate ligament (ACL) reconstruction are limited and may include confounding factors. This longitudinal prospective study reports the compared outcomes of isolated ACL reconstruction using middle-third patellar tendon autograft (PT) and 4 -stand hamstring autograft (HT) in 180 patients over 20 years.
Methods: Between January 1993 and April 1994, a total of 180 patients met study inclusion criteria: evaluation at 1, 2, 3, 4, 5, 7, 10, 15, and 20 years after surgery. Assessment included the IKDC Knee ligament evaluation including radiographic evaluation, KT1000, Lysholm Knee Score, kneeling pain, and clinical outcomes. Exclusion criteria were associated ligamentous injuries requiring surgery, previous meniscectomy or meniscal injuries requiring more than one-third meniscectomy, chondral injuries, and an abnormal contralateral knee.
Results: At 20 years, 16 (18%) patients had sustained an ACL graft rupture in the HT group, and 9 (10%) patients in the PT group. ACL graft rupture was not associated with the parameters of family history of ACL injury, or the type graft construct. Males were more likely to rupture than females (p=0.007), and non-ideal tunnel position were more likely to re-rupture (p=0.019). Patients age 18 or less at time of surgery had an increased odds ratio of 4.6 times for risk of graft rupture (p=0.003). With regards to contralateral ACL rupture, those patients receiving the PT had a 2.2 times greater odds ratio for rupture compared to HT graft (p=0.02). If the age of reconstruction was 18 or less, the risk of rupturing the uninjured knee ACL was 3.4 times greater than over 18 years of age at time of reconstruction (p=0.001). The incidence of further ACL injury to either the reconstructed or contralateral did not show a significant difference, 37% in PT and 30% in HT. The mean International Knee Documentation Committee (IKDC) score was 86 for the PT and 89 for HT at 20 years. There was no difference in the Lysholm score between the groups. Of the PT patients, 53% participated in strenuous/very strenuous activities, and kneeling pain was present in 63% at 20 years. In the HT group 57% participated in strenuous/very strenuous activities, and kneeling pain was present in 20%. Radiographic degenerative change in the PT group was found in 61%, 20% had IKDC grade C, and 0% had grade D. The HT group found radiographic degenerative change 41%, 7% had grade C, 7% had grade D. The progression of osteoarthritic change over time was reviewed, and these changes occurred gradually, with the PT group being more rapid than the HT. If patients with an ACL graft rupture are assumed to have an abnormal IKDC clinical evaluation, then 74% of HT had a normal/nearly normal knee, compared to 76% PT at 20 years (p=*0.752*).
Conclusion: Subjects receiving the PT graft had significantly worse outcomes compared to those receiving HT, with regards to radiologically detectable osteoarthritis, kneeling pain and contralateral ACL injury. At 20 years both HT and PT autografts continue to provide good subjective outcomes and objective stability. However, ACL reconstruction using the PT graft is associated with persisting kneeling pain and radiological osteoarthritis, compared to the HT graft. Risk factors for ACL graft rupture include males, young age, and those with tunnel malposition. This information may help in the counseling of patients undergoing this procedure and stratifying their individual risk of reinjury.
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B0314
Postoperative 2 years follow-up of matrix induced autologous chondrocyte implantation in 24 cases

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Objective: To evaluate the safety and efficacy of matrix-induced autologous chondrocytes implantation treatment (MACI, Genzyme, America) for patients suffering from cartilage lesions of knee in a follow-up study for two years.