zone (red-red zone only, involving red-white zone), number of stitches for repair, use of meniscal fixator device and concomitant ACL reconstruction. All cases underwent clinical follow-up at a minimum of one year (average follow-up: 32.42 months [range, 12–106.6]). The clinical results were evaluated based on the Tegner score, Lysholm knee score and Hospital for Special Surgery (HSS) scores by Wilcoxon signed-rank test. The radiologic analyses of arthroscopic repair were interpreted as complete, incomplete, and re-tear on postoperative magnetic resonance imaging (MRI) scans with 66 cases. Results: Of all 74 cases of bucket-handle tears undergoing arthroscopic repair, the failure rate was 16.2%, which was re-tear state on postoperative MRI or at second-look arthroscopy. BMI (Hazard Ratio, 4.69 [95% CI: 1.38–15.92]) and involving red-white zone (Hazard Ratio, 4.75 [95% CI: 1.03–21.92]) were significant factors associated with bucket-handle tears (P <0.05). Comparing between preoperative and postoperative states, the Tegner score (from 2.38 ± 1.22 to 4.11 ± 1.30), Lysholm knee score (from 69.01 ± 1.40 to 87.37 ± 6.35), HSS score (from 79.67 ± 9.64 to 93.63 ± 4.80) were statistically significantly different (P < 0.05). The laterality and concomitant ACL reconstruction did not clinically influence failure of repair. However, bucket-handle medial meniscus tears treated with arthroscopic repair showed statistically high predilection to incomplete healing on postoperative MRI (average: 10.36 months [range, 5.0–73.7]). Conclusion: The BMI and tear involving red-white zone affected failure of arthroscopic meniscus repair of bucket-handle tear. The ratio of complete healing state after arthroscopic repair of bucket-handle tear was statistically higher at the lateral meniscus than at the medial meniscus. However, there was no clinical difference in failure between laterality and concomitant ACL reconstruction.

Category: Knee - Meniscus

Levels of Synovial Fluid Cytokines Predict Midterm Patient Reported Outcomes Following Arthroscopic Partial Meniscectomy

Abstract ID# 23312
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Summary: Biomarker analysis was performed on patients undergoing arthroscopic partial meniscectomies and used to explore the relationship between them and improvement in Lysholm score, VAS score, and KOOS-PS

Data:
Purpose: To identify synovial fluid biomarkers associated with midterm post-operative outcomes in patients undergoing arthroscopic partial meniscectomy (APM). Methods: Subjects were prospectively enrolled in a cohort of patients who had synovial fluid aspirated from their knee on the day of surgery prior to undergoing APM. Biomarker analysis was performed. Preoperative patient-reported outcome (PRO) scores including VAS pain, Lysholm and Tegner activity score were collected preoperatively. At a minimum of 2 years of follow-up post-operative outcomes were collected. Using previously described values, patients who met the minimal clinically important difference (MCID) for Lysholm score were identified and groups were compared using parametric and non-parametric tests. Using preoperative and postoperative outcome scores, generalized linear models were used to explore the relationship between biomarkers and improvement in Lysholm Score, improvement in visual analog scale (VAS) pain score, and postoperative KOOS-PS. Results: Fifty patients were included in the study. 34 (68%) met the MCID for the Lysholm score and 16 (32%) did not. Mean age was 51 ± 9 years for the entire cohort, with no statically significant differences between the groups (p = 0.35). Both groups were majority male (p = 0.37) and there were no differences in BMI (0.74) or follow-up time (p = 0.20). On logistic regression, increased concentration of RANTES (β = –6.30, p = 0.04) and MMP-3 (β = –15.16, p = 0.001) were predictive of less improvement in VAS pain.

. For Lysholm score, higher SF levels of IL-1 RA were predictive of greater improvement (β = 12.57, p = 0.04) while higher levels of MMP-3 were predictive of reduced improvement (β = –10.34, p = 0.007). Conclusion: This study found that at the time of surgery, intraarticular levels of MMP-3 and RANTES are predictive of poorer midterm outcomes and higher pain levels following APM. Additionally, higher levels of IL-1RA at the time of surgery were associated with greater improvement in midterm Lysholm score.

Category: Knee - Meniscus

Load Distribution in Knee Articular Cartilage Compare Between the Suture Anchor and Transtibial Pullout Technique for Posterior Medial Meniscus Root Tear: A Cadaveric Study

Abstract ID# 23618
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Summary: The study compared the load distribution on the articular cartilage after medial meniscus root repair with transtibial pull out vs. suture anchor techniques.

Data:
Introduction: Posterior medial meniscus root tear can lead to early osteoarthritis (OA). Repairing the torn meniscus yields a better outcome and prevents further OA change. This study compares the load distributed to the medial tibial articular cartilage in difference knee flexion angle after refixing posterior medial meniscus root tears (PMMRT) between the suture anchor and transtibial pullout techniques. Methods: Twelve human cadaveric knees were used and divided into 3 groups (4 knees in each group); (1) Intact meniscus (IM), (2) Fixation with suture anchor technique (SA) and (3) Fixation with transtibial pullout technique (TP). An axial compression load up to 1500 N and Instron E 10000 was applied at two knee flexion angles (0° and 60°) in each group. Tekscan 4000 pressure sensor was used to record peak contact pressure and contact area for each testing condition. Results: The peak contact pressure and the contact area between the three conditions were not significantly different at 0° and 60° knee flexion angles. The peak contact pressure and contact area were 3734.8 ± 2642.2 kPa, 288.2 ± 115.0 mm2, 4510 ± 2930.5 kPa, 204.4 ± 36.8 mm2 and 5328.8 ± 2607.7 kPa, 219.2 ± 84.7 mm2 in IM, SA and TP, respectively. Conclusion: Both suture anchor and transtibial pullout refixation of PMMRT can restore peak contact pressure and contact area similar to the intact meniscus.

Category: Knee - Meniscus

The Effect of Saucerization on Knee Joint Morphology Associated with a Complete Discoid Lateral Meniscus

Abstract ID# 22018
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Summary: Saucerization for discoid lateral meniscus (DLM) can have the effect of preventing progression to the bone morphology characteristic of DLM.

Data:
Purpose: To determine the effect of saucerization of knee joint morphology associated with a complete discoid lateral meniscus (DLM). Methods: This retrospective study included cases performed saucerization between December 2007 and June 2022. All cases were divided by age group; under 12 (U12) and over 13 (O13). The following morphological parameters using magnetic resonance (MR) images were evaluated preoperatively and postoperatively in each group: anterior obliquity of the lateral tibial plateau (AOLPT), posterior obliquity of the lateral tibial plateau (POLPT) and the lowest point of the lateral femoral condyle (LPLFC). Results: A total of 77 cases were evaluated. 31 cases were in the U12 pre OP group and 46 in the O13 pre OP group. With minimal follow-up of 2 years, 27 cases in the U12 group and 36 in the O13 group were included. The mean age was 10 years in the U12 group and 19 years in the O13 group. The mean follow-up period was 4.6 years in the U12 group and 3.2 years in the O13 group. Preoperative case in the O13 group were matched with the age at the final follow-up of cases in the U12 group, resulting in 32 cases in the match group. The AOLPT was no significant difference between the U12 group and the match