including age, sex, time from injury-to-surgery, a history of previous knee surgery, graft type, concomitant meniscal injury and femoral tunnel drilling technique were analyzed as recorded in the New Zealand ACL Registry. The ACC database was used to identify patients who underwent a subsequent reoperation with review of operation notes to identify those who had a reoperation for “arthrofibrosis” or “stiffness”. The rates of arthrofibrosis were calculated for each patient and surgical factor and compared via Chi-Square test. A multivariate Cox regression survival analysis was performed to identify the risk factors for reoperation for arthrofibrosis. Hazard ratios (HR) with 95% confidence intervals (CI) were computed. Results: Of 9617 primary ACL reconstructions analyzed, 215 patients underwent a subsequent reoperation for arthrofibrosis (2.2%). A higher risk of arthrofibrosis was observed in female patients (adjusted HR = 1.67, 95% CI 1.22 – 2.27, p = 0.001), patients with a history of previous knee surgery (adjusted HR = 1.97, 95% CI 1.11 – 3.50, p = 0.021) and when a transtibial femoral tunnel drilling technique was used (adjusted HR = 1.55, 95% CI 1.06 – 2.28, p = 0.024). Patients who underwent early ACL reconstruction within 6 weeks of their injury did not have a higher risk of arthrofibrosis when compared to patients who underwent surgery more than 6 weeks after their injury (3.5% versus 2.1%, adjusted HR = 1.56, 95% CI 0.97 – 2.50, p = 0.07). Age, graft type and concomitant meniscal injury did not influence the rate of arthrofibrosis.

Discussion and Conclusion: Female sex, a history of previous knee surgery and a transtibial femoral tunnel drilling technique are risk factors for arthrofibrosis after primary ACL reconstruction. Undergoing early ACL reconstruction within 6 weeks of ACL rupture does not increase the risk of arthrofibrosis.

Category: Knee - ACL

The Impact of Posterior Tibial Slope on Meniscal Injury in Acute ACL Ruptures: A Large, Retrospective Registry Study

Abstract ID# 22759
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Summary:
This large registry illustrates that increased lateral posterior tibial slope is associated with higher rates of meniscus injury in acute ACL ruptures.

Data:
Background: Increased posterior tibial slope has previously been associated with an elevated risk of anterior cruciate ligament (ACL) rupture. Recent studies have suggested there may be a relationship between posterior slope and meniscal tears in ACL ruptures, however, these studies have either included chronic ACL injuries, revision ACL reconstructions or an overall low number of study participants. The goal of this study is to leverage a large ACL registry to assess the impact of posterior tibial slope on meniscal tears in acute ACL ruptures. Methods: Our institution’s ACL Registry was consulted to identify all patients between the age of 18 and 45 who underwent primary ACL reconstruction between Jan 2019 and July 2022 for acute, noncontact ACL rupture, defined as undergoing surgery within 90 days of injury. Patients with pre-existing meniscal pathology, chronic ACL reconstructions, revisions, multi-ligament knee injuries and nonoperatively managed ACL injuries were excluded. Preoperative MRIs were used to measure lateral and medial posterior tibial slope for all patients. Meniscal pathology seen arthroscopically was recorded based on operative reports. Demographics data, including age, sex, and body mass index, were also recorded. Independent cohorts were created for our three main analyses based on the presence or absence of, firstly, any meniscal tear, secondly, any lateral meniscal tear and, thirdly, any medial meniscal tear. Two-tailed student’s t-tests were used to compare average medial and lateral posterior tibial slopes between groups. Multiple regression was carried out to determine other risk factors for meniscal injury in this population. Results: 1058 patients ultimately met inclusion criteria. The average age was 29.5 and there were 532 (50%) women. There were 346 (33%) patients with lateral meniscus tears, 245 (23%) patients with medial meniscus tears and 498 (47%) patients with any meniscal tear. The average lateral and medial posterior tibial slopes were 5.54 (-4.2 to 13.4) and 5.67 (0 to 15.7), respectively. Increased lateral tibial slope was associated with a statistically significant increase in rate of any meniscal tear (p<.005) and lateral meniscal tear, specifically (p<.005). Multiple regression identified elevated BMI and male sex as independent risk factors for meniscal injury in this population. Conclusions: Increased lateral posterior tibial slope is associated with a higher rate of meniscus injury in acute ACL ruptures. This knowledge adds to the growing literature surrounding the impact of posterior tibial slope on ACL and meniscal injuries.

Category: Knee - ACL

Combined Anterior Cruciate and Anterolateral Ligament Reconstruction Decreases Passive Anterior Tibial Subluxation and Provides Better Rotational Stability Compared to Isolated Anterior Cruciate Ligament Reconstruction: A Propensity Score-Matched Analysis

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Summary:
Background: Passive anterior tibial subluxation (PATS) is encountered in patients with anterior cruciate ligament (ACL) injuries. Rotational instability of the knee following ACL reconstruction (ACLR) remains a concern post-surgery. An anatomic approach to the anterolateral ligament (ALL) has, therefore, garnered increased interest in orthopaedic sports medicine because of its potential role in knee stability. Purpose/Hypothesis: To compare the extent of PATS on magnetic resonance imaging and clinical outcomes between ACL + ALL reconstruction (ALLR) versus isolated ACLR. We hypothesized that patients who underwent combined procedures would show reduced PATS and superior knee stability compared to patients who underwent ACLR. Methods: We enrolled 252 patients who underwent primary ACLR between March 2014 and February 2020 at our center, with a minimum follow-up of 2 years (48.4 ± 16.6 months). Patients who underwent combined procedures (ACL + ALLR) were matched in a 1:1 propensity ratio to patients who underwent ACLR only. Anterior tibial subluxation was measured using magnetic resonance imaging (MRI). We evaluated PATS, knee stability (side-to-side laxity difference, pivot-shift test), and mobility after the procedure and documented complications. Thirty-four patients underwent second-look arthroscopy for evaluation of the graft status, with results compared between the groups. Results: Thirty-five matched pairs were included, with no significant differences in preoperative PATS values of the medial and lateral compartments between the groups (ACL + ALLR vs isolated ACLR: lateral compartmental, 5.6 ± 2.2 vs 5.8 ± 2.2 mm; medial compartment, 2.7 ± 1.5 vs 3.3 ± 1.5 mm; P > .05). However, postoperative average PATS values of the ACL + ALLR group showed significant improvement than in the isolated ACLR group (ACL + ALLR vs isolated ACLR: lateral compartmental, 0.5 ± 1.5 vs 2.1 ± 2.0 mm; medial compartment, -0.2 ± 1.3 vs 0.5 ± 1.3 mm; P < .05). The ACL + ALLR group showed significantly better knee stability results in pivot-shift grade (P = .037), although there were no significant differences between groups regarding clinically important measures, complications, and second-look arthroscopic findings (all P > .05). Conclusion: Patients who underwent combined ACL + ALLR demonstrated significantly reduced anterior tibial subluxation and better rotational stability than patients who underwent isolated ACLR, despite similar functional scores between the 2 groups, suggesting that ALLR could be a safe and effective procedure that leads to better outcomes with respect to knee stability.

Category: Knee - ACL

Increased Knee Valgus and Hip Adduction Moments After Hamstring Autograft Compared to Quadriceps Autograft in Adolescents 6 Months After Anterior Cruciate Ligament Reconstruction

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Summary:
Increased Knee Valgus and Hip Adduction Moments After Hamstring Autograft Compared to Quadriceps Autograft in Adolescents 6 Months After Anterior Cruciate Ligament Reconstruction

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Abstracts Journal of ISAKOS 8 (2023) S29–S44