considered “Complex” due to the addition of Meniscal Allograft Transplantation (8) or Meniscal Scaffold (3) or High Tibial Osteotomy (3). The remaining 14 cases (50%) were considered as “Isolate”. Mean WOMAC score was 84.6±11.4, Lysholm 81.7±12.3, subjective IKDC 77.2±12.1, median Tegner score was 6 (IQR 5–7) at pre-injury and at final follow-up. Statistically significant inferior values of WOMAC (p = 0.0079), Lysholm (p = 0.0185) and Subjective IKDC (p = 0.0193) was detected between “Complex” and “Isolate” revision groups. Higher average value of anterior translation at KT-1000 at both 125 N (p = 0.0346) and manual maximum displacement test (p = 0.0299) were reported in “Complex” respect to “Isolate” revisions. Four patients were considered as failures and occurred in patients with “Complex” revisions, none occurred in the “Isolate” (30/800 vs 0%; p = 0.0407). Conclusion: Good mid-term clinical results can be obtained after repeated ACL revision with allograft in patients that experienced multiple failures, however, who need additional procedure due to malalignment or post-meniscectomy syndrome reported lower objective and subjective results.

Category: Knee - ACL

Autograft Demonstrates Superior Outcomes For Revision Anterior Cruciate Ligament Reconstruction When Compared to Allograft: A Systematic Review

Abstract ID# 22405
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Summary:
Patients undergoing revision ACLR with autograft can be expected to experience lower rates of graft retear, higher rates of return to sport, and less postoperative anteroposterior knee laxity when compared to patients undergoing revision ACLR with allograft.

Data:
Background Multiple studies have compared outcomes between patients undergoing revision anterior cruciate ligament reconstruction (ACLR) with autograft versus allograft. Purpose To perform a systematic review of clinical outcomes following revision anterior cruciate ligament reconstruction (rACLR) with autograft versus allograft. Study Design: Systematic Review of Level I–IV comparative studies Methods A systematic review of the literature was performed by searching PubMed, the Cochrane Library, and Embase to identify studies that compared outcomes between patients undergoing rACLR with autograft versus allograft. The search phrase used was: autograft allograft revision anterior cruciate ligament reconstruction. Graft re-rupture rates, return to sport rates, anteroposterior laxity, and patient-reported outcome scores (PROs) (Subjective International Knee Documentation Score, Tegner Score, Lysholm Score, and Knee Injury and Osteoarthritis Outcome Score) were evaluated.

Results: Twelve studies met inclusion criteria, including 3,011 patients undergoing rACLR with autograft (mean age 28.9 years) and 1,238 patients undergoing rACLR with allograft (mean age 28.0 years). Mean follow-up was 57.3 months. The most common autograft and allograft types used were bone-patellar tendon-bone grafts. Overall, 6.2% of patients undergoing rACLR experienced graft retear, including 4.7% in the autograft group and 10.2% in the allograft group (p < 0.0001). Among studies that reported return to sport rates, 66.2% of autograft patients returned to sport compared to 47.3% of allograft patients (p = 0.01). Two studies found significantly greater postoperative knee laxity in allograft patients compared with autograft patients (p < 0.05). Among all PROs, only one study found one significant difference between groups, in which autograft patients had a significantly higher postoperative Lysholm score when compared to allograft patients. Conclusion Patients undergoing revision ACLR with autograft can be expected to experience lower rates of graft retear, higher rates of return to sport, and less postoperative anteroposterior knee laxity when compared to patients undergoing revision ACLR with allograft.

Category: Knee - ACL

Higher Risk of Medial Meniscal Repair Failure Following Concurrent Anterior Cruciate Ligament Reconstruction with a Hamstring Tendon Autograft: Results from the New Zealand ACL Registry

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Summary:
The use of a hamstring tendon autograft increases the risk of medial meniscal repair failure following concurrent ACL reconstruction.

Data:
Introduction: Anterior cruciate ligament (ACL) reconstruction with concomitant meniscal injury occurs in up to 80% of cases. Meniscal repair is associated with improved long-term outcomes compared to resection, but is also associated with a higher reoperation rate. Knowledge of the risk factors for repair failure may be important in optimizing patient outcomes. The aim of this study was to identify the patient and surgical risk factors for meniscal repair failure following concurrent primary ACL reconstruction. Methods: Prospective data recorded by the New Zealand ACL Registry were reviewed. Primary ACL reconstructions with a concurrent repair of either a medial or lateral meniscal tear recorded between April 2014 and December 2018 were analyzed, allowing for a minimum follow-up of two years. Meniscal repair failure was defined as a patient who underwent subsequent meniscectomy, and was identified after cross-referencing data from the ACL Registry with the national database of the Accident Compensation Corporation (ACC), which is the New Zealand Government’s sole funder of ACL reconstructions and any subsequent surgery. The predictor variables of interest included age, gender, time from injury-to-surgery, graft type, femoral tunnel drilling technique, surgeon case volume and concomitant cartilage injury as recorded in the New Zealand ACL Registry. Failure rates were compared via Chi-square test. Multivariate Cox regression was performed to produce hazard ratios (HR) with 95% confidence intervals (CI) to identify the risk factors for meniscal repair failure. Results: A total of 2041 meniscal repairs were performed during concurrent primary ACL reconstruction (medial repair = 1235 and lateral repair = 806). The overall failure rate was 9.4% (n = 192). Failure occurred in 11.1% of medial (137/1235) and 6.8% of lateral (55/806) meniscal repairs. The risk of medial failure was higher with hamstring tendon autografts (adjusted HR = 2.00, 95% CI 1.56 – 2.56, p = 0.006) and in those with cartilage injury in the medial compartment (adjusted HR = 1.56, 95% CI 1.09 – 2.23, p = 0.015). The risk of lateral failure was higher when the procedure was performed by a surgeon with an annual case volume of less than 30 ACL reconstructions (adjusted HR = 1.92, 95% CI 1.10 – 3.33, p = 0.021). Age, gender, time from injury-to-surgery and femoral tunnel drilling technique did not influence the risk of meniscal repair failure. Discussion and Conclusion: When repairing a meniscal tear during primary ACL reconstruction, the use of a hamstring tendon autograft and the presence of cartilage injury in the medial compartment are factors that increase the risk of medial meniscal repair failure. Lower surgeon case volume was associated with an increased risk of lateral meniscal repair failure.

Category: Knee - ACL

Clinical Application of Machine Learning Models on Risk Analysis for Ramp Lesions in Anterior Cruciate Ligament Injuries

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Summary:
The prediction model of this study showed the feasibility of using machine learning models as a supplementary diagnostic tool for ramp lesions in ACL-injured knees.

Data:
Background: Peripheral tears of the posterior horn medial meniscus, known as “ramp lesions,” are commonly found in anterior cruciate ligament (ACL)-deficient knees, but frequently missed on routine evaluation. Purpose: To predict the presence of ramp lesions in ACL-deficient knees using machine learning methods.

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Category: Knee - ACL

Abstracts