Hamstring Autografts are significantly associated with larger knee valgus moments at initial contact and hip adduction moments compared to Quadriceps Autografts whereas Quadriceps Autografts with and without bone block have significantly decreased knee extension moment averages compared to Hamstring Autografts during DVJ.

Data: Objective: There is limited evidence related to the effects of autograft type on functional performance after anterior cruciate ligament (ACL) reconstruction. This study compared biomechanical outcomes during the drop vertical jump test (DVJ) between patients with a hamstring autograft (HS), quadriceps autograft with bone block (QB), quadriceps autograft without bone block (Q), and bone-patellar tendon-bone autograft (BTB) six-months postoperatively in an adolescent population. The authors hypothesized that there would be differences in biomechanical profiles between athletes depending on autograft type used. Methods: Patients aged 8 to 18 years who underwent primary ACLR were included for analysis. Kinematic and kinetic data collected during a DVJ using a 3D computerized marker system (Motion Analysis Corp. CORTEX software) was assessed six-months after ACLR and compared to the uninjured contralateral limb. Outcomes evaluated included hip internal rotation, hip adduction, knee valgus, and knee extensor moments between the graft types. Results: One hundred-fifty-five subjects were included for review. There were no significant differences in terms of age, sex, or affected leg (p = 0.459) demonstrated significantly higher cartilage injuries (p = 0.019), while, the revision group was associated with significantly higher cartilage (p = 0.001) and meniscal injuries (p = 0.003). A significantly higher graft failure rate was noted in the revision group compared to the primary ACL reconstruction group (p = 0.005). Conclusions: Both primary and revision ACL reconstruction with QT autografts had acceptable functional outcomes. The primary group had better outcomes than the revision group. The lower prevalence of meniscal and cartilage injuries in the primary group compared to the revision group may be responsible for better outcomes. The revision group was associated with higher graft failure than the primary group. QT autograft is a viable graft choice for both primary and revision ACL reconstruction. Level of evidence: Level III Cohort Study

Category: Knee - ACL

Patient Reported Outcomes And Revision Rates After Primary Anterior Cruciate Ligament Reconstruction Without Concomitant Knee Injury: A Comparison Of Quadriceps, Hamstring, And Bone-Patella-Tendon-Bone Autografts With Minimum 2 Year Follow-Up

Abstract ID# 21506
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Summary: This study compares patient reported outcome measures and revision rates for different autograft options in patients with primary anterior cruciate ligament reconstruction without concomitant knee injury. Data: Background: The quadriceps tendon is emerging as a popular autograft option for primary anterior cruciate ligament reconstruction. Limited studies have investigated the functional outcomes and survivorship of quadriceps tendon with variable results. Furthermore, most previous studies are confounded with the inclusion of patients with concomitant knee injuries alongside anterior cruciate ligament reconstruction. This study aims to investigate the differences in patient reported outcome measure scores and revision rates for quadriceps tendon in comparison with hamstring tendon and bone-patella-tendon-bone autografts. We use a cohort of patients who have had primary anterior cruciate ligament reconstruction without concomitant knee injuries. Methods: Prospectively collected data linked to the New Zealand Anterior Cruciate Ligament Registry was used for the study. All patients who underwent a primary arthroscopic anterior cruciate ligament reconstruction with a valid 2 year patient reported outcome measure score were included for the study. Patients who had associated knee injuries, previous knee surgery, or open procedures were excluded. The primary outcome was Knee Injury and Osteoarthritis Outcome Score (KOOS) and MARX scores at 2 years post-surgery. Secondary outcomes were all-cause revision and time to revision with a follow-up period of 8 years (time since inception of the Registry). Results: 2581 patients were included in the study; 1917 hamstring tendon, 557 bone-patella-tendon-bone, and 107 quadriceps tendon. All groups had comparable baseline characteristics. At 2 years, no significant difference in MARX score was found between the three groups (2y mean score; 7.36 hamstring, 7.85 bone-patella-tendon-bone, 8.05 quadriceps, P = 0.195). Further, no significant difference in KOOS scores were found between the three groups, with the exception of hamstring performing better than bone-patella-tendon-bone in the KOOS sports and recreation sub-score (2y mean score;
Category: Knee - ACL

**Reduction in re-rupture rates following implementation of return to sport testing after ACL reconstruction; 313 patients with a median follow-up of 50 months**

Abstract ID# 21880
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Summary:
Passing a RTS-test battery following ACLR reduces ACL re-rupture by 36.21% and contralateral ACL injury by 19.15% at mid-term follow-up.

Data:
Objectives To assess mid-term effectiveness of a return to sport (RTS) test battery in relation to preventing ACL re-rupture following reconstruction. Secondary purposes to assess timing of passing a RTS-test battery post-surgery, age in relation to RTS outcomes and contralateral ACL injuries. Methods Patients undergoing ACLR between August 2014 - December 2018 performed a RTS-test battery following rehabilitation. The RTS-test battery consisted of the ACL-RSI, single leg hop, triple hop, and triple cross-over hop, box drop vertical jump down, single leg 4 rep max incline leg press and a T-test. Pass criteria was = 90% LSI in addition to symmetrical, controlled takeoff and landing patterns. Results 352 patients underwent RTS-testing following ACLR with 313 (89%) contactable at a median of 50 months (SD11.41, range28-76) post-surgery. The re-rupture rate was 6.60% after passing the RTS-test battery and 10.34% following failure (p = 0.24). Contralateral ACL injury rate during the study follow-up period was 6.07%. Median age of patients passing their first RTS-test battery was significantly older than those who failed (p = 0.0003). Re-ruptures in those who passed the RTS-test battery first time all occurred late (~34 months) compared to those who failed first time which all occurred early (~33 months) (P = 0.044). Median age of re-rupture was significantly younger compared to those who didn’t sustain a re-rupture (p = 0.025). Conclusion Passing a RTS-test battery following ACLR reduces ACL re-rupture by 36.21% and contralateral ACL injury by 19.15% at mid-term follow-up. Younger patients are more likely to fail a RTS-test battery and are at higher risk of contralateral ACL rupture.

Category: Knee - ACL

**Choose Your Poison: Bone-Tendon-Bone Or Hamstring Grafts In Professional Athletes For ACLR: Reduced Hamstring Strength or Worse Jump Metrics**

Abstract ID# 21920
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**The Cut-Off Point To Discriminate A Higher Chance Of Re-Tear Is 6.5 Degrees Of Hyperextension In Isolated Anterior Cruciate Ligament Reconstruction With Hamstring Autograft**

Abstract ID# 21923
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Summary:
The cut-off point established to discriminate an ACL re-tear was 6.5 degrees of hyperextension.

Data:
Background: The outcome of an ACL reconstruction surgery depends on many factors. The degree of knee hyperextension in isolation has not been studied in detail as a risk factor that may lead to graft failure after an ACL reconstruction. The aim of this study is to create a cut-off point for hyperextension that best discriminates re-tear and to verify whether this cut-off point can predict re-tear regardless of other characteristics after primary ACL reconstructions with hamstring autografts. Methods: A cohort of patients submitted to primary isolated ACL reconstruction with hamstrings autografts was retrospectively evaluated. Patients were stratified according to the degree of passive knee hyperextension measured in the normal contralateral knee at surgery time. The following data were collected: patient demographic data (age and gender), time from injury to surgery, passive knee hyperextension, KT-1000 and pivot-shift, associated meniscus injury and treatment, intra-articular graft size, follow-up time, occurrence of graft failure and postoperative Lysholm and IKDC subjective form. A ROC curve was constructed to identify the cut-off point of the hyperextension that best discriminates re-tear. Unadjusted odds ratios (OR) were estimated with the respective 95% confidence intervals of each characteristic with re-tear using bivariate logistic regressions to quantify the association of characteristics with re-tear. Results: Data from 457 patients were evaluated. Thirty-two presented a re-tear. There was a significant difference in hyperextension between patients with and without re-tear (p < 0.001), with the cut-off point established by the ROC curve from 6.5 degrees, with sensitivity of 78.1% and specificity of 76.7%. Patients with greater hyperextension had a statistically higher frequency of women, longer injury time, greater intra-articular graft size, greater post-op KT-1000 and higher frequency of re-tear, whereas...