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 = 0.1973) between groups. The HS group was significantly associated with larger knee valgus moments at initial contact as compared to the Q group (28 ± 10.2 N*m/kg vs -3.0 ± 10.2 N*m/kg, p = 0.0254) and significantly larger hip adduction moments compared to the QB group (30 ± 10.2 N*m/kg vs. 4.0 ± 10.2 N*m/kg, p = 0.0426). Both the QB (12 ± 10.2 N*m/kg vs. -3.0 ± 10.2 N*m/kg, p = 0.0265) and Q group (-13 ± 10.2 N*m/kg vs. -3.0 ± 10.2 N*m/kg, p = 0.459) demonstrated significantly decreased knee extension moment averages as compared to a hamstring autograft. Conclusions: The findings of this study suggest that the quadriceps autograft may confer improved knee coronal plane biomechanics with regard to ACL re-injury mechanics but decreased extensor mechanism function when compared to a hamstring autograft at six-months after ACLR in adolescent patients performing a drop vertical jump.

Category: Knee - ACL

Quadriceps Autograft Is A Viable Graft Choice For Both Primary and Revision ACL Reconstruction: A Matched Control Cohort Study

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Summary:
Primary and revision ACL reconstruction with QT autografts had acceptable functional outcomes.

Data:
Background: The incidence of ACL reconstruction is increasing and quadriceps tendon (QT) autograft is gaining popularity for both primary and revision ACL reconstruction. Better patient-reported functional outcomes and a lesser graft failure rate are seen in primary ACL surgery as compared to revision surgery with the hamstring graft. No study compared primary and revision ACL surgery using QT autograft. Purpose: The purpose of this study was to evaluate the differences in the patient-reported functional outcomes, concomitant injuries and graft failure in primary and revision ACL surgery using the autologous QT graft. The hypothesis was that better functional outcomes, lesser concurrent injuries and lesser graft failure would be associated with primary ACL reconstruction compared to revision reconstruction. Methods: 376 patients with primary ACL reconstruction and 138 patients with revision ACL reconstruction were retrospectively retrieved from a prospectively collected ACL registry. A minimally invasive technique was used for QT autograft harvesting. The surgical procedure and rehabilitation protocol were identical in both groups. To maintain a homogeneous cohort for the study, the groups were matched for age, gender, and pre-injury outcome scores (Lysholm knee score, Tegner activity level and visual analogue scale for pain). Initial baseline assessments of outcome scores were compared to scores collected at the 2-year postoperative mark. Results: The mean age of the primary group and revision group was 32.9 ± 10.2 (range, 18-55) and 32.3 ± 9.9 (range, 19-55) respectively. Significant improvements were noted in Lysholm (p = 0.007) and VAS (p = 0.001) scores in primary ACL reconstruction compared to revision construction. However, no significant difference was found in activity level (p = 0.05). Primary ACL injuries were associated with significantly higher MCL 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

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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 considered 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 KOOS scores was found between the three groups, with the exception of hamstring performing better than bone-patella-tendon-bone in the KOOS scores and recreation sub-score (2 mean score;