

Quadriceps Tendon Autograft versus Hamstring Tendon and Bone-Patellar Tendon-Bone Autografts for Revision Anterior Cruciate Ligament Reconstruction: A Systematic Review and Meta-Analysis

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INTRODUCTION:

Research regarding revision anterior cruciate ligament reconstruction (RACLR) with quadriceps tendon (QT) autografts is lacking. The purpose of this study was to perform a systematic review and meta-analysis of RACLR with QT and compare its subjective and objective patient outcomes to RACLR with hamstring tendon (HT) and bone-patellar tendon-bone (BTB) autografts.

METHODS:

A systematic review and meta-analysis of the literature searching for clinical studies using QT in RACLR was performed. Databases searched include PubMed, Scopus, and CINAHL from database date of inception through December 26, 2022. English language filters were applied. Primary outcomes sought included: failure rate, Lysholm scores, International Knee Documentation Committee (IKDC) scores, IKDC grades, arthrometric knee side-to-side differences (STSD), pivot shift grade, donor site morbidity, return to sport, visual analog scale (VAS) pain scores.

RESULTS:

Nine studies were identified with a total patient population of 606 RACLR included: 349 QT, 169 HT, and 88 BTB reconstructions. Overall failure rates were 7.6% QT, 13.3% HT, and 8.7% BTB. Mean weighted Lysholm scores were 85.8±3.8 QT, 82.5±3.8 HT, and 86.6±4.5 BTB. IKDC average scores were 82.3±1.6 QT, 80.1±1.7 HT, and 81.7±5.5 BTB. Combined rates of IKDC A/B grades were 88.4% and 80.0% for QT and HT respectively. Side-to-side difference was reported for QT and HT with average values of 1.7±0.6mm and 2.1±0.5mm respectively. Grade 0 or 1 pivot shifts were reported in 96.2% of QT patients and 91.3% of HT. Donor site morbidity, only reported for QT and HT, was 14.6±9.7% and 23.6±14.1% respectively. QT resulted in a mean Tegner score of 5.9±1.5 versus HT 5.7±1.5. Rate of return to pivoting sports was 38.0% QT, 48.6% HT, and 76.9% BTB. VAS average scores were 0.9±1.1 QT, 1.4±0.2 HT, and 0.7±0.8 for BTB. Across all outcomes, there was no significant difference when comparing QT to HT, QT to BTB, and QT compared to HT and BTB combined.

DISCUSSION AND CONCLUSION:

RACLR with QT yields satisfactory patient-reported outcomes, satisfactory improvement in knee laxity, expected return to sport rates, and has an overall 7.6% failure rate. Outcomes are comparative to those of HT and BTB making it an acceptable graft choice for RACLR.