Excellent quadriceps strength with one and two grafts harvested from the extensor mechanism in revision anterior cruciate ligament reconstruction

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INTRODUCTION: There has been limited analysis of clinical outcomes following revision anterior cruciate ligament (ACL) reconstruction with either quadriceps tendon (QT) or bone-tendon-bone (BTB) autograft in patients with a primary ACL reconstruction which utilized a graft from the extensor mechanism. The purpose of this study was to evaluate whether harvesting a second graft from the ipsilateral extensor mechanism adversely affects clinical outcomes in revision ACL reconstruction.

METHODS: A retrospective review of 34 patients undergoing revision ACL reconstruction with either QT autograft or BTB autograft was conducted. Patients with two grafts (BTB+QT) from the extensor mechanism were matched based on age, laterality, and sex to patients who had primary reconstruction with hamstring (HS) autograft followed by revision with either BTB or QT autograft (HS+QT/BTB). Demographic data, injury, and treatment variables were recorded. The primary outcome of interest, time to return to jogging or to regain 80% quadriceps strength, and secondary outcomes including International Knee Documentation Committee (IKDC) and Marx scores at 12-month follow-up and return to sport, were recorded, and compared.

RESULTS: There were no significant differences in return to jogging or 80% quadriceps strength (HS: 143.9 ± 39.1 days, BTB+QT: 136.3 ± 39.9 days, p=0.474), number able to return to sport (RTS) (HS: 63%, BTB+QT: 87%, p=0.483), time to RTS (HS: 10.6±1.4 months, BTB+QT: 10.5±2.3 months, p=0.916), return to pre-injury level of competition (HS: 63%, BTB+QT: 73%, p=0.250), or IKDC (HS: 77.2 ± 16.4, BTB+QT: 74.8 ± 23.9, p=0.820) and Marx scores (HS: 9.2±5.3, BTB+QT: 7.9 ± 3.9, p=0.446) at one year follow-up.

DISCUSSION AND CONCLUSION: The main finding of this study is that outcomes for patients who undergo revision ACL reconstruction with a second extensor mechanism autograft are comparable to those for patients who undergo revision ACL reconstruction with extensor mechanism autograft after primary ACL reconstruction with HS autograft. This suggests that harvest of a second autograft from the ipsilateral extensor tendon is a viable option following primary BTB or QT autograft.