All-Soft Tissue Quadriceps Tendon Autograft is a Reliable Option in Revision ACL Reconstruction: Comparison to Bone-Patellar Tendon Bone Autograft with at least 2-years Follow Up

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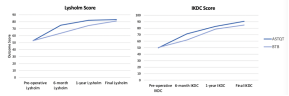
INTRODUCTION:
Revision anterior cruciate ligament (ACL) reconstruction is being performed at an increasing rate. Previous studies have shown that autograft ACL reconstruction is a better option than allograft in revision surgery although the optimal autograft choice remains unknown. The all-soft tissue quadriceps tendon (ASTQT) autograft has been found to be an effective option for primary ACL reconstruction. However, few studies have evaluated ASTQT autograft in revision ACL reconstruction. The purpose of this study was to evaluate the ASTQT autograft in revision ACL reconstruction in athletes compared to bone-patellar tendon-bone (BTB) autograft.
METHODS:
A retrospective study was performed on all athletes undergoing revision ACL reconstruction between August 2013 and December 2019. Patients participating in high-school or college athletics undergoing first-time revision with either ASTQT or BTB autograft with 2 or more years of follow up were included. Demographic variables, complications, return to sport, and outcome scores including the IKDC and Lysholm were collected and compared between the two cohorts.
RESULTS: A total of 58 revision ACL reconstructions were included. Return to sport at the same level occurred in 62.5% of the ASTQT and 53.8% of the BTB group The ASTQT group returned to sport significantly faster than the BTB group (8.9 months vs. 10.3 months, p = 0.020). There was no difference in re-tear rates or other complications between the two groups. Both the IKDC and Lysholm scores were significantly higher at the 6- and 12-month follow-up for the ASTQT autograft group compared to the BTB group. However, IKDC and Lysholm scores were similar between both groups at final follow-up.
DISCUSSION AND CONCLUSION: ASTQT autograft for revision ACL in athletes has similar outcomes, return to sport, and rates of complications at the 2-year follow-up compared to BTB autograft. However, in this series athletes revised with ASTQT autograft returned to play in a significantly shorter time compared to BTB autografts. The soft tissue quadriceps autograft should be considered as a viable graft option in revision ACL reconstruction.



Group characteristics

	ASTQT (n = 32)	BTB (n =26)	P
Mean follow up	31.2 ± 8.1	33.8 ± 10.4	0.292
Age	18.3 ± 2.7	18.2 ± 2.8	0.937
BMI	24.3 ± 3.5	25.2 ± 3.1	0.343
Sex (% Female)	62.5	53.8	0.514
Laterality (% Right)	65.4	59.4	0.646
Graft size (mm)	9.8 ± 0.7	9.6 ± 0.6	0.392
Meniscectomy (%)	12.5	11.5	0.913
Meniscal repair (%)	43.8	42.3	0.914

Data presented as means ± SD. Follow up reported in months. Comparison performed using the Student's t-test.
BMI: body mass index

Return to Sport Outcomes

	ASTQT (n = 32)	BTB (n=26)	P
Return to sport			
Overall return (%)	81.3	69.2	0.296
Return to same level (%)	62.5	53.8	0.514
Time to return	8.9 ± 1.6	10.3 ± 2.5	**0.020**

Data presented as percentages and means ± SD. Time to return reported in months. Comparison performed using the Student's t-test

Postoperative outcome scores

	ASTQT (n = 32)	BTB (n =26)	P
IKDC			
Pre-operative	49.8 ± 9.3	50.3 ± 9.1	0.828
6-month post-operative	71.3 ± 11.9	61.7 ± 9.4	**0.001**
1-year post-operative	82.7 ± 6.0	78.6 ± 7.0	**0.021**
Final	82.9 ± 4.5	81.7 ± 5.5	0.344
Lysholm			
Pre-operative	52.7 ± 8.9	52. 8 ± 9.9	0.939
6-month post-operative	75.1 ± 6.2	63.6 ± 8.8	**<0.001**
1-year post-operative	82.0 ± 5.7	74.5 ± 4.9	**<0.001**
Final	83.0 ± 4.4	81.0 ± 4.7	0.104

Data presented as means ± SD. Comparison performed using the Student's t-test. Final outcome as per last follow up. Bold denotes statistical significance