

# COMPARATIVE STUDY BETWEEN FUNCTIONAL OUTCOMES OF PRIMARY ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION USING QUADRICEPS TENDON VERSUS HAMSTRING TENDON AUTOGRAFTS

Mohamed Mahmoud Abouheif, Mena Michael Moussa, Yehia Hamdy Bedeir, Mohamed Adel El Mallah  
Department of Orthopedic Surgery and Traumatology, Faculty of Medicine, Alexandria University.

## INTRODUCTION

Anterior cruciate ligament (ACL) reconstruction is a popular orthopedic operation that requires careful graft selection. Several graft options are available, including hamstring tendon (HT), bone-patellar tendon-bone (BPTB), peroneus longus tendon (PLT) and quadriceps tendon (QT). Traditionally, BPTB and HT autografts have been the most common choices. BPTB is regarded as the gold standard, however it may result in postoperative discomfort and an increased risk of OA. Hamstring tendons are less predictable and may reduce knee flexion. HT repair fails at a higher rate than BPTB, particularly among young athletes. Newer techniques with decreased soft tissue dissection yield a more robust and stable graft with comparable outcomes to BPTB and HT autografts. Consequently, the QT is emerging as an effective graft option, and recent studies highlight the increase in popularity of the QT autograft.

## AIM OF THE WORK

This study aimed to compare the functional results following primary ACL reconstruction using quadriceps tendon autograft and hamstring tendon autograft.

## PATIENTS AND METHODS

This was a prospective randomized clinical study. Forty patients were randomized to either the QT group (group 1: reconstruction was done for 20 patients with quadriceps tendon autograft) or the HT group (group 2: reconstruction was done for 20 patients with hamstring tendon autograft). Evaluation was done clinically using the 2000 subjective IKDC score and the objective IKDC grading system in the second week postoperatively, after 3 months, after 6 months, and at the end of the follow-up, which was minimally 12 months postoperatively.

## RESULTS

**Table 1:** The difference between the two groups in the graft harvesting time and graft circumference was statistically significant, with a larger circumference for Group A and longer harvesting time for Group B.

	Group A (QT), N = 20	Group B (HT), N = 20	p-value
<b>Harvest Time (Minutes)</b>			0.002*
Range	13 - 21	16 - 22	
Mean ± SD	16 ± 2	18 ± 2	
<b>GRAFTCircumference (mm)</b>			<0.001*
Range	9 - 11	7.5 – 9.5	
Mean ± SD	9.78 ± 0.64	8.72 ± 0.57	

**Table 2:** There was no statistical difference between the two groups according to IKDC subjective score at any point of the post-operative follow-up.

	Group A (QT), N = 20	Group B (HT), N = 20	p-value
<b>Pre-operative</b>			0.9
Range	37.00 - 47.00	37.50 - 47.00	
Mean ± SD	41.59 ± 2.93	41.59 ± 2.88	
<b>2 weeks post-operative</b>			0.13
Range	41.20 - 51.20	41.00 - 50.60	
Mean ± SD	46.92 ± 2.24	45.46 ± 2.54	
<b>3 months post-operative</b>			0.25
Range	63.00 - 72.00	62.80 - 71.00	
Mean ± SD	67.27 ± 2.20	66.31 ± 2.45	
<b>6 months post-operative</b>			0.42
Range	78.00 - 84.20	78.20 - 82.80	
Mean ± SD	81.32 ± 1.60	80.49 ± 1.47	
<b>12 months post-operative</b>			0.14
Range	87.50 - 95.40	88.40 - 95.40	
Mean ± SD	92.44 ± 2.21	90.41 ± 1.73	

**Table 3:** There was no statistical difference between the two groups according to IKDC post operative objective grading.

	Group A (QT), N = 20	Group B (HT), N = 20	p-value
<b>Pre-operative grade</b>			0.9
C	19 (95%)	18 (90%)	
D	1 (5.0%)	2 (10%)	
<b>Post-operative grade</b>			0.9
A	18 (90%)	19 (95%)	
B	2 (10%)	1 (5.0%)	

## CONCLUSION

In conclusion, our comparative study revealed that both quadriceps tendon and hamstring tendon autografts yield similar functional outcomes post-anterior cruciate ligament reconstruction, despite differences in graft characteristics like harvest time and circumference.