

Osteoarthritis, Outcomes and Reinjury 20 years After ACL Reconstruction with Hamstring or Patellar Tendon Grafts

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Objective:

This prospective longitudinal study compares the results of ACL reconstruction using 4-strand hamstring tendon (HT) and patellar tendon (PT) autograft over a 20-year period

Method:

90 consecutive patients with isolated ACL rupture were reconstructed with a PT autograft and 90 patients received HT autograft, with an identical surgical technique. Patients were assessed at 2, 5, 7, 10, 15 and 20 years. Assessment included the IKDC Knee Ligament Evaluation including radiographic evaluation, KT1000, Lysholm Knee Score, kneeling pain, and clinical outcomes.

Results:

Subjects who received the PT graft had significantly worse outcomes compared to those who received the HT graft at 20 years for the variables osteoarthritis visible on xrays (61% v 41%, $p=0.01$), kneeling pain (38% v 20%, $p=0.02$), and incidence of ACL injury to the opposite knee (29% v 17%, $p=0.04$). There was no significant difference between the HT and PT groups in overall IKDC grade ($p=0.23$), or IKDC subjective score ($p=0.18$). At 20 years 53% and 57% of the PT and HT groups participated in strenuous or very strenuous activity ($p=0.55$).

Differences in outcome between males and females were identified. The female PT group reported significantly lower mean IKDC subjective scores ($p=0.05$), more pain ($p=0.02$) and swelling (0.03) with activity, and more difficulty with kneeling ($p=0.04$) compared to the other subgroups at 20 years.

ACL graft rupture occurred in 18% of HT group and 10% of the PT group ($p=0.13$). The significant predictors of ACL graft rupture were shown in Table 1. Graft type was not a predictor of ACL graft rupture ($p=0.11$). Contralateral ACL injury was associated with age less than 18 years ($HR=3.4$, $p=0.001$), and the patellar tendon graft ($HR=2.2$, $p=0.02$).

Conclusion:

Over 20 years, endoscopic ACL reconstruction using either an autologous HT or PT graft with is associated with excellent subjective outcomes and clinical ligamentous stability that are maintained, with high rates of continued participation in active sports. Regardless of graft type, ACL-reconstructed patients have a high incidence of further ACL injury (30%). Graft rupture is strongly associated with younger age, nonideal graft position, and male sex. Injury to the contralateral ACL is associated with younger age and PT graft choice. Patients who receive an HT graft have a lower incidence of kneeling difficulty and radiological OA than their PT-reconstructed counterparts. Given that the operative procedure and tunnel placement of the 2 graft choices are similar, any differences in outcome are attributable to graft choice. Although both the HT and PT grafts can be considered viable choices, the long-term results in this series favor the HT tendon graft, over the PT graft, for the lower incidence of radiological OA.

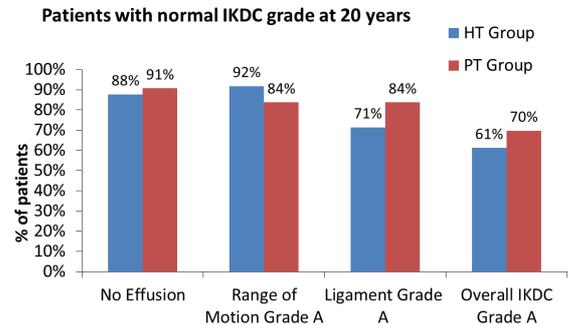


Table 1: Predictors of ACL Graft Reinjury

Factor & Category	% with intact ACL graft	Hazard Ratio	95% CI*	p
Age at surgery				
< 18 years	67	4.6	1.7-2.7	0.003
>18 Years	88			
Gender				
Male	78	3.9	1.5-10.6	0.007
Female	89			
Tunnel Placement				
Non ideal	82	3.6	1.2-10.3	0.02
Ideal	93			
*confidence interval				

