

Incidence and Risk Factors for Reinjury 15 years after Anterior Cruciate Ligament Reconstruction with Patellar Tendon Autograft.

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INTRODUCTION

Prospective examination of the incidence and risk factors for repeat ACL injury after reconstruction are limited in the current knowledge. This study presents an analysis of those patients who sustained further injury over a 15 year period following ACL reconstruction with patellar tendon autograft. The aim of this study was to determine the incidence of ACL graft and contralateral ACL rupture after ACL reconstruction. We also sought to determine the influence on reinjury of the variables of gender, age and graft placement.

METHODOLOGY

90 patients enrolled in a prospective longitudinal study after ACL reconstruction with patellar tendon autograft and interference screw fixation. Patients were assessed at 2, 5, 7 and 10 and 15 years after surgery. Assessment included Full IKDC, Instrumented Ligament Testing, Lysholm knee score and radiographs.

Twenty-two patients (24%) had a contralateral ACL rupture. There was no significant difference ($p=0.71$) in the incidence of contralateral ACL rupture between genders. There were significantly more contralateral ACL ruptures than graft ruptures over the 15-year follow-up period ($p=0.009$). Regression analysis showed that patients <18 years had a 7x greater odds of contralateral ACL rupture than those over 18 years (95% CI 2.3-22.8, $p=0.001$). Gender was not a predictor of contralateral ACL rupture (OR 1.1, 95% CI 0.3-3.0, $p=0.92$).

CONCLUSION

The incidence of repeat ACL injury after ACL reconstruction with the patellar tendon graft was high, occurring in 30% over a 15 year period.

There was a 10x greater odds of ACL graft rupture in patients with a graft inclination angle <17 degrees. This suggests that ACL graft rupture is associated with vertical graft placement. Despite all graft ruptures occurring in

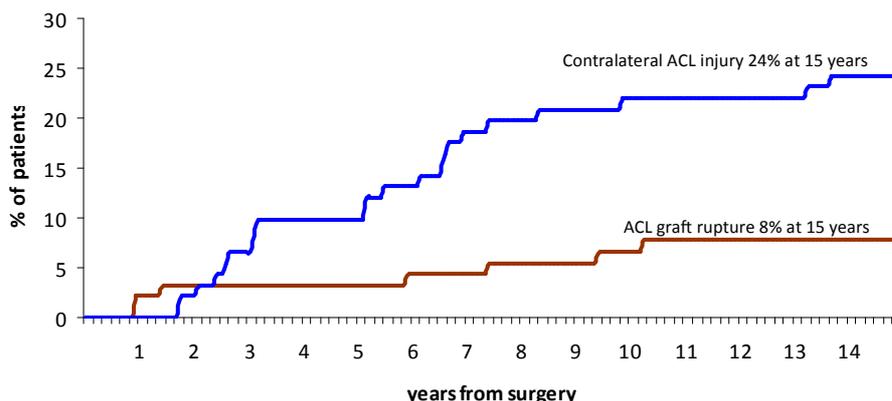


Figure 1: Cumulative incidence of contralateral ACL and ACL graft injury after reconstruction.

RESULTS

Overall, 30% of patients sustained a subsequent ACL injury at 15 years.

Seven patients (8%) ruptured the reconstructed ACL graft. All graft ruptures occurred in males, equating to an incidence 15% compared to 0% incidence in females ($p=0.007$). Regression analysis showed that patients with a coronal graft inclination angle of <17 degrees had a 10 x greater odds of ACL graft rupture (OR 95% CI 1.5-70.1, $p=0.02$). On regression analysis ACL graft rupture was not associated with gender (OR 0.1, $p=0.81$) or age <18 years (OR 1.4, $p=0.81$). The mean coronal graft angle of patients who sustained an ACL graft rupture was 15.6 degrees compared to 19.7 degrees for those with intact ACL grafts at 15 years ($p=0.04$).

males, gender was not found to be a predictor of graft rupture with regression analysis.

There were significantly more patients sustaining a native contralateral ACL rupture than an ACL graft rupture. This may be related to protection of the reconstructed knee, placing the contralateral ACL at greater risk. Alternatively, the contralateral ACL may be more susceptible to rupture due to genetic and/or biomechanical predisposition, or, the reconstructed knee is more resilient than the native ACL.

After ACL reconstruction 1 in 3 patients in this study suffered a further ACL injury. The odds of ACL graft rupture are increased with vertical graft placement and the odds of contralateral ACL rupture are increased in those under 18 years at primary surgery.

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