

Long-Term Survival and Risk Factors for Anterior Cruciate Ligament (ACL) Graft and Contralateral ACL Injury: A 7-Year Follow-Up Study

Diego Alarcon, Jorge Luis Rojas¹, Segio González², German Carrillo³, Gamal Zayed⁴, Klaus W Mieth⁵

¹Mayo Clinic, ²Orthopedics Surgery, ³Fundacion Santa Fe de Bogota, ⁴Fundación Santafe De Bogota, ⁵Asociacion Medica De Bogotá

INTRODUCTION: This study aimed to assess the survival rate of the Anterior Cruciate Ligament (ACL) graft and contralateral ACL, as well as identify the factors influencing their survival, at a minimum of 7 years of follow up.

METHODS: A random sample of 502 patients was selected from a cohort of 1,006 individuals who underwent primary ACL reconstruction between 2009 and 2014 by three knee surgeons at our institution. Patients were contacted an average of 10 years and 7 months after reconstruction to complete a questionnaire regarding ACL graft survival, contralateral ACL injury, return to sports, and subjective knee evaluation.

RESULTS: The cumulative incidence of ACL graft injury and contralateral ACL injury was 13.3% (95% CI, 10.6%-16.7%) and 4.84% (95% CI, 3.2%-7.2%), respectively. The highest risk of ACL graft injury was observed within the first two years after reconstruction, while the risk for contralateral ACL injury was highest between the first and fourth year. The overall survival of the ACL graft was 95%, 90%, and 87% at 2, 5, and 10 years after reconstruction. The overall survival of the contralateral ACL was 98%, 97%, and 95%, respectively. Age ≤ 21 years at the time of reconstruction was identified as an independent risk factor for ACL graft injury (Hazard Ratio [HR] 3.28; 95% CI, 1.98 to 5.42; $p < 0.001$), and ACL graft injury in the index knee was associated with an increased risk of contralateral ACL injury (HR 2.96; 95% CI, 1.22 to 7.20; $p = 0.017$). Among the patients, 96% reported returning to sports activity, with 71% returning to their pre-injury level. The average score on the SANE scale at an average of 10 years after reconstruction was 87.3.

DISCUSSION AND CONCLUSION: At an average of 10 years after ACL reconstruction, the expected survival of the ACL graft and contralateral ACL is 87% and 95%, respectively. Age ≤ 21 years at the time of reconstruction was associated with a significant increase in ACL graft injury. In turn, ACL graft injury in the index knee increased the risk of subsequent contralateral ACL injury.