

Young Patients are at Increased Risk for Graft Failure and Contralateral Rupture Following Anterior Cruciate Ligament Reconstruction Surgery

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Summary:

Patients that have ACL reconstruction who are under 20 year of age are at significantly increased risk for both graft rupture and contralateral ACL injury.

Abstract:

Background:

Graft rupture or injury to the anterior cruciate ligament (ACL) in the contralateral knee is a devastating outcome following ACL reconstruction surgery. While a number of factors have been identified as potentially increasing the risk of subsequent ACL injury, the literature is far from definitive. The aim of this study was to determine the rates of graft rupture and contralateral ACL injury and investigate patient characteristics that may be associated with these.

Methods:

A consecutive cohort of 750 patients who had undergone primary ACL reconstruction surgery with a minimum 3 year follow-up was identified. Information regarding the incidence of ACL graft rupture, contralateral ACL rupture, family history of ACL injury and current activity level was sought via questionnaires and telephone interviews. Further information obtained from patient databases included demographic information (age, gender), original injury mechanism and meniscus or articular surface injury. Binary logistic regression was used to assess the association between the measured variables and the risk of ACL graft rupture and contralateral ACL injury.

Results:

Responses were received from 561 patients (75%) at a mean follow up time of 4.8(1.1) years. ACL graft ruptures occurred in 25 patients (4.5%) and contralateral ACL injuries occurred in 41 patients (8%), noting that 44 patients with prior contralateral ACL injury were excluded from this analysis. The highest incidence of further ACL injury occurred in patients who were under 20 years of age at the time of surgery. Twenty nine percent of patients (1 in every 3.5) in this group sustained a subsequent ACL injury to either knee. Statistically, the odds for sustaining an ACL graft rupture or contralateral injury increased five-fold and three-fold respectively for patients that were under 20 year of age. A contact mechanism of initial injury increased the risk of graft rupture by a factor of three and contralateral rupture by a factor of five. A positive family history doubled the risk for both ACL graft rupture and contralateral ACL injury.

Conclusion:

Patients that have ACL reconstruction who are under 20 year of age are at significantly increased risk for both graft rupture and contralateral ACL injury. Whether it is age per se that is a risk factor, or age represents a proxy for other factors, such as activity level or incomplete neuromuscular maturation, remains to be determined. Similarly, the association of a positive family history of ACL injury with further injury may reflect a true familial tendency, but may also reflect an active and sports orientated lifestyle. The current findings have implications for the preoperative

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advice that is given to these younger patients regarding the risk of further injury following ACL reconstruction and may also influence the timing of their return to sport.