

Paper #130

Predictors of Poor Outcome Following ACL Reconstruction with or without Lateral Extra-Articular Tenodesis: The Stability Experience

Dianne M. Bryant, PhD, CANADA

Alan Getgood, MD, FRCS(Tr&Orth), DipSEM, CANADA

Robert Litchfield, MD, FRCSC, CANADA

Robert G. McCormack, MD, CANADA

Mark A. Heard, MD, FRCS, CANADA

Peter B. Macdonald, MD, FRCS, Dip Sport Med, CANADA

Tim Spalding, FRCS(Orth), UNITED KINGDOM

Peter Verdonk, MD, PhD, BELGIUM

Devin Peterson, CANADA

Davide Bardana, MD, CANADA

Alex Rezansoff, MD, FRCSC, CANADA

Stability Study Group, MD, CANADA

Fowler Kennedy Sport Medicine Clinic, Western University
London, ON, CANADA

Summary:

We performed a logistic regression to determine variables that influence outcome within patients entered into a randomized clinical trial comparing ACL reconstruction with or without lateral extra-articular tenodesis (LET). The most important predictors of failure were ACLR without LET and younger age at the time of surgery.

Abstract:

Introduction

The results of our recent multicenter randomized clinical trial investigating anterior cruciate ligament reconstruction (ACLR) with or without lateral extra-articular tenodesis (LET) in patients at high risk of graft failure (Stability Study) suggest that LET reduces the rate of ACL failure at two years post-operative.

Purpose

The purpose of this study was to investigate what morphological and physical factors predict failure within the trial.

Methods

624 patients were randomized with a mean age of 18.9 (range: 14-25), 293 male. A regression analysis was performed to determine what factors would be most predictive of graft failure. Within the model, the primary outcome (combined graft failure + persistent rotatory laxity as measured by an asymmetric pivot shift) was the dependent variable and the following independent variables were investigated: 1) sex, 2) group, 3) age at surgery in years, 4) medial meniscus (no pathology, degenerative, excision, repair), 5) lateral meniscus (no pathology, degenerative, excision, repair), 6) Beighton score, 7) presence of knee hyper-extension, and 8) pivot shift under anesthesia

Results

Paper #130

At two years post-operative, 104/252 (41%) of ACLR alone patients suffered the primary outcome compared to 61/252 (25%) of the ACLR+LET patients. 39 patients had suffered graft rupture, 28/252 (11%) in the ACLR group compared to 11/242 (4.5%) in the ACL+LET group. The most significant predictor of failure was the group allocation i.e ACLR alone or ACLR + LET with ACLR alone having an odds of failure about two times greater than those who got the LET (OR=2.1 95%CI 1.4 to 3.0, p<0.001). After controlling for group, for every year of age, the odds of failure was reduced by just over 5% (OR=0.94, 95%CI 0.93 to 0.96, p<0.001).

Compared to having no medial meniscal pathology, the odds of failure if there is a partial excision is more than two times greater (OR=2.2, 95%CI 1.2 to 4.3, p=0.01). Sex, pivot shift under anesthesia, lateral meniscal status, Beighton score, and presence or absence of knee hyper-extension were not significant predictors of failure. When graft failure was used as the dependent variable, group and age remain significant predictors of outcome.

Conclusion

Not performing a LET at the time of ACLR and younger age at the time of surgery are significant predictors of poor outcome when performing a hamstring tendon autograft, single bundle ACLR in patients aged 15-25 years old.