Moderately Increased Anterior and Rotational Knee Laxity Does Not Impact Patient-Reported Knee Function Two Years Following ACL Reconstruction

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Introduction

- Knee laxity in the setting of ACL injury is frequently evaluated through physical examination - Lachman, pivot-shift, and anterior drawer tests
- Previous work has generally noted poor correlation between residual anterior laxity following ACLR and patient-reported outcomes,\(^1\), \(^2\), \(^3\), \(^4\), \(^5\)
  - Many of these studies are small and do not control for other factors known to influence outcomes\(^6\)
- The relationship between residual rotational knee laxity and patient-reported outcomes is less clear\(^3\)

- Key Question
  - What is the relationship between residual laxity following ACL reconstruction and patient-reported outcomes?
Hypotheses

• Residual mild anterior laxity (2-6 mm side to side difference) is not associated with poorer patient outcomes following ACL reconstruction

• Residual rotational laxity (pivot glide) is associated with poorer patient-reported outcomes following ACL reconstruction
Methods – MOON ONSITE Nested cohort study

• 433 patients from the MOON cohort evaluated onsite at 2 years post-op
  – All under age 35
  – All with intact grafts and no contralateral ACL injury

• Laxity measured with KT-1000 as well as manually
  – Lachman
  – Pivot-shift
Methods

- Proportional odds logistic regression model was used to predict each 2-year PRO score and identify any correlation between measures of knee laxity and patient-reported outcomes
  - Controlling for preop score, age, sex, BMI, smoking, Marx activity score, education, subsequent surgery, meniscus and cartilage status, graft type, and range of motion asymmetry
  - Clinically relevant differences in patient-reported outcome scores were identified by transforming linear predictors of from the proportional odds model back into the scale of the patient-reported outcome measures.
Results - Post-operative Laxity

• Lachman
  – IKDC A (< 2mm): 246 patients (57%)
  – IKDC B (2-6mm): 183 patients (42%)

• Pivot-shift
  – IKDC A (None): 209 patients (48%)
  – IKDC B (Glide): 183 patients (42%)

• Mean side to side KT-1000 difference
  – 2.0 +/- 2.6 mm
Results – Correlation between laxity and outcomes

• No statistically significant correlations between residual post-operative knee laxity and patient-reported outcomes of ACL reconstruction were noted at 2 years post-operative
Results - Outcome Scores by Lachman
Results - Outcome Scores by Pivot-Shift
Conclusion

• In those who do not fail, the presence of moderate residual post-operative knee laxity is not associated with poorer patient-reported outcomes
  – Side to side anterior translation difference 0 – 6 mm
  – Pivot shift up to IKDC grade 1 (Glide)

• More work is needed to assess
  – The effect of residual laxity on long term risk of osteoarthritis following ACLR
  – The effect of residual laxity of graft failure risk
References


