

## Prognostic Factors for Ultra Long Term Outcomes After ACL Reconstruction

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### Summary:

Partial meniscectomy is not the only predicting factor in long term outcomes following ACL reconstruction. A tibial slope > 11.7 degrees and a valgus > 2.8 degrees are causes for graft failure and lower functional scores. SF-12 PCS, BMI, length of follow up and the remain of a pivot shift are other determinants.

### Abstract:

Background: Several studies have analyzed long term outcomes following ACL reconstruction (ACLR) and reported concomitant partial meniscectomy as a risk factor for osteoarthritis and poor functional outcome.

Purpose: to identify factors predicting graft failure, functional scores, sports ability and osteoarthritis (OA) severity more than 20 years after ACL reconstruction.

Study design: Retrospective case series study;

Material and methods: We retrospectively reviewed operative reports and clinical charts from all patients receiving primary ACLR with bone tendon bone between 1984 and 1999 at our institution. Patients were then called back for updated history, clinical exam and x-rays. Those with current drug addiction, alcoholism, BMI>35, or SF-12 PCS < 35 were excluded. Recorded outcomes were graft failure, KOOS/IKDC/SF-12 scores, most frequent sport practiced, and osteoarthritis severity. Sports were classified according the 4 IKDC classes. Hypothesized factors influencing outcome were gender, age and tobacco consumption at surgery, BMI, length of follow up, delay before surgery, medial and lateral meniscectomy, postoperative pivot shift with intact graft, SF-12, tunnel malposition, HKA angle, tibial slope and patellar height. To determine the strength of the association between the hypothesized risk factors and the occurrence of an outcome, we performed univariate and then multivariate logistic regression analyses. A stepwise backward elimination procedure was used to sequentially remove factors that showed a lack of statistical significance.

Results: 228 ACLRs were eligible, 91 lost to follow up, 5 deceased, 10 excluded. 122 operated knees were included (110 patients). Mean FU was 23.0±4.2 yrs. Tibial slope > 11.7 degrees (p=0.037) was identified as risk factor for graft failure. Valgus > 2.8 degrees (p=0.009) and lower SF-12 PCS (p<0.001) predicted poor IKDC scores. Partial meniscectomy (p<0.001), Valgus > 2.8 degrees (p=0.014) and low SF-12 PCS (p<0.001) were associated with poor total KOOS score. Absence of a pivot shift (p=0.010) was associated with ability to practice sports of IKDC class 2 or higher. Increased BMI (p=0.002), partial meniscectomy (p=0.0006), and length of follow up (p=0.002) were associated with OA (Kellgren Lawrence grade 2 or above).

Conclusion: Partial meniscectomy is not the only predicting factor in long term outcomes following ACL reconstruction. A tibial slope > 11.7 degrees and a valgus > 2.8 degrees are associated with graft failure and lower functional score respectively. SF-12 PCS, BMI, length of follow up and the presence of a postoperative pivot shift despite an intact graft are other predictors.