

ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

RANDOMIZED TRIALS, REGISTER
STUDIES AND EXPERIMENTAL
ANALYSIS OF KNEE LAXITY

Akademisk avhandling

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AVHANDLINGEN BASERAS PÅ FÖLJANDE DELARBETEN:

- I. **The Swedish National Anterior Cruciate Ligament Register, a report on baseline variables and outcomes of surgery for almost 18,000 patients.**
Ahldén M, Samuelsson K, Sernert N, Forssblad M, Karlsson J, Kartus J.
Am J Sports Med 2012; 40:2230-2235.
- II. **Knee laxity measurements after anterior cruciate ligament reconstruction, using either bone-patellar-tendon-bone or hamstring tendon autograft, with special emphasis on comparison over time.**
Ahldén M, Kartus J, Ejerhed L, Karlsson J, Sernert N.
Knee Surg Sports Traumatol Arthrosc 2009; 17:1117-1124.
- III. **Outcome of anterior cruciate ligament reconstruction, with emphasis on sex-related differences.**
Ahldén M, Sernert N, Karlsson J, Kartus J.
Scand J Med Sci Sports 2012; 22:618-626.
- IV. **A prospective randomized study comparing double- and single-bundle techniques for ACL reconstruction.**
Ahldén M, Sernert N, Karlsson J, Kartus J.
Submitted to Am J Sports Med
- V. **Clinical grading of the pivot shift test correlates best with tibial acceleration.**
Ahldén M, Araujo P, Hoshino Y, Samuelsson K, Middleton K, Nagamune K, Karlsson J, Musahl V.
Knee Surg Sports Traumatol Arthrosc 2012; 20:708-712.

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ABSTRACT

The aim of this thesis was to evaluate the short- and mid-term outcome of Anterior Cruciate Ligament (ACL) reconstruction, with special emphasis on surgical techniques, type of autograft and the influence of gender, using data from registers and randomized, controlled trials. A further aim was to evaluate and quantitate the pivot-shift test and correlate it to the clinical grading. In Study I, 17,794 registrations in the Swedish National ACL Register were included and analyzed. Primary ACL reconstruction significantly improves all subscales of the KOOS, while patients undergoing revision ACL reconstructions do less well than those undergoing primary reconstructions. Moreover, young female soccer players re-injure their ACL or the contralateral ACL within 5 years more frequently than young males. In Study II, a randomized, controlled trial (RCT) with a 7-year follow-up, the change in knee laxity over time after ACL reconstruction, using either bone-patellar-tendon-bone (BPTB) or hamstring tendon (HS) autografts was analyzed and knee laxity was compared between the study groups on multiple follow-up occasions. Furthermore, the radiographic findings in terms of degenerative changes were compared. There were no significant differences in the mean side-to-side antero-posterior (AP) knee laxity or radiographic assessment between the BPTB and the HS group, preoperatively or at follow-up. There was a tendency towards a decrease in side-to-side knee laxity over time in both groups, as measured with the KT-1000 arthrometer. In Study III, a retrospective study of 244 patients, the results after ACL reconstruction using HS autografts were compared in male versus female patients. At the 2-year follow-up, there were no significant differences between male and female patients in terms of clinical outcome or functional scores. In Study IV, an RCT with 103 patients, the results after ACL reconstruction using either the double-bundle (DB) or single-bundle (SB) technique with HS autografts were compared. At the 2-year follow-up, the subjective and objective outcomes revealed no statistically significant differences between the DB group and the SB group. In Study V, an experimental cadaver study, objective quantitative measurements of the pivot-shift test using three different measurement devices were performed. The pivot-shift tests were performed by twelve blinded expert surgeons on a cadaver knee prepared to display a high-grade pivot-shift test. The best correlation to the clinical grading was found using tibial acceleration parameters.

Keywords: Anterior Cruciate Ligament, Reconstruction, Double-Bundle, Laxity, Pivot-Shift, Register, Outcome

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