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The long-term clinical and radiological outcomes in patients who suffer recurrent injuries to the anterior cruciate ligament after reconstruction.

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36/200 = 18%

Author information

Abstract

AIMS: The aim of this study was to investigate the long-term clinical and radiological outcome of patients who suffer recurrent injuries to the **anterior cruciate ligament** (**ACL**) after reconstruction and require **revision** surgery.

PATIENTS AND METHODS: From a consecutive series of 200 patients who underwent primary reconstruction following rupture of the **ACL**, we identified 36 who sustained a further rupture, 29 of whom underwent **revision** surgery. Patients were reviewed prospectively at one, two, seven, 15 and about 20 years after their original surgery. Primary outcome measures were the number of further ruptures, the posterior tibial slope (PTS), and functional and radiological outcomes. These were compared with a gender and age matched cohort of patients who underwent primary **ACL** reconstruction only.

RESULTS: At a mean follow-up of 18.3 years (14.3 to 20.2), 29 patients had undergone **revision** surgery and within this **revision** group 11 had sustained more than three ruptures of the **ACL** (3 to 6). The mean age at the time of **revision** reconstruction was 26.4 years (14 to 54). The mean PTS was significantly higher in those patients who suffered a further injury to the **ACL** (11°) compared with the control group (9°) ($p < 0.001$). The mean PTS in those patients who sustained more than three ruptures was 12°.

CONCLUSION: Patients who suffer recurrent injuries to the **ACL** after reconstruction have poorer functional and radiological outcomes than those who suffer a single injury. The causes of further injury are likely to be multifactorial but an increased PTS appears to have a significant association with recurrent **ACL** injuries. Cite this article: Bone Joint J 2017;99-B:337-43.

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Hamstring Autograft versus Patellar Tendon Autograft for ACL Reconstruction: Is There a Difference in Graft Failure Rate? A Meta-analysis of 47,613 Patients.

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Abstract

BACKGROUND: Bone-patellar tendon-bone (bone-tendon-bone) and four-strand hamstring tendon grafts (hamstring) are the most commonly utilized autografts for primary **anterior cruciate ligament** (**ACL**) reconstruction. Existing clinical trials, registry studies, and meta-analyses offer conflicting opinions regarding the most favorable graft choice.

QUESTIONS/PURPOSES: Which graft type for **ACL** reconstruction (bone-tendon-bone or hamstring) has a higher risk of (1) graft rupture and/or (2) graft laxity?

METHODS: We performed a meta-analysis of randomized controlled trials (RCTs), prospective cohort studies, and high-quality national registry studies to compare the outcomes of primary **ACL** reconstruction with bone-tendon-bone autograft or hamstring autograft. Studies that compared these graft types were identified through a comprehensive search of electronic databases (PubMed, MEDLINE, EMBASE, and the Cochrane Library). Two independent reviewers utilized the Jadad scale for RCT study quality and the Modified Coleman Methodology Score for prospective comparative and registry study quality. The included studies were analyzed for the primary outcome measure of graft rupture with or without **revision ACL** surgery. In surviving grafts, secondary outcomes of graft laxity were quantified by KT1000/2000™ testing, a positive pivot shift test, and a positive Lachman test. Meta-analysis was performed with Review Manager. A total of 47,613 **ACL** reconstructions (39,768 bone-tendon-bone and 7845 hamstring) from 14 RCTs, 10 prospective comparative studies, and one high-quality national registry study were included in this meta-analysis. Mean age was 28 years in both groups. Sixty-three percent of patients in the bone-tendon-bone cohort were men versus 57% of patients in the hamstring cohort. Mean followup was 68 ± 55 months. 5 anni

RESULTS: Two hundred twelve of 7560 (2.80%) bone-tendon-bone grafts ruptured compared with 1123 of 39,510 (2.84%) in the hamstring group (odds ratio = 0.83, 95% confidence interval, 0.72-0.96; p = 0.01). The number needed to treat analysis found that

235 patients would need to be treated with a bone-tendon-bone graft over a hamstring tendon graft to prevent one graft rupture. Instrumented laxity analysis showed that 22% (318 of 1433) of patients in the bone-tendon-bone group had laxity compared with 18% (869 of 4783) in the hamstring tendon group (odds ratio = 0.86; p = 0.16). Pivot shift analysis showed a positive pivot shift in 19% (291 of 1508) of the bone-tendon-bone group compared with 17% (844 of 5062) in the hamstring group (odds ratio = 0.89; p = 0.51). Lachman testing showed a positive Lachman in 25% (71 of 280) of patients receiving bone-tendon-bone grafts compared with 25% (73 of 288) in the hamstring group (odds ratio = 0.96; p = 0.84).

CONCLUSIONS: In this meta-analysis of short- to mid-term followup after primary **ACL** reconstruction, hamstring autografts failed at a higher rate than bone-tendon-bone autografts. However, failure rates were low in each group, the difference observed was small, and we observed few differences between graft types in terms of laxity. Both graft types remain viable options for primary **ACL** reconstruction, and the difference in failure rate should be one part of a larger conversation with each individual patient about graft selection that should also include potential differences in donor site morbidity, complication rates, and patient-reported outcome measures. Continued prospective collection of patient data will be important going forward as we attempt to further characterize the potential differences in outcomes attributable to graft selection.

LEVEL OF EVIDENCE: Level III, therapeutic study.

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