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Paper #76

Increased Risk of Osteoarthritis After ACL Reconstruction – A 14-year Follow-up Study of a Randomized Controlled Trial

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Summary:
In a follow up of a randomized controlled trial between bone-patella-tendon-bone or semitendinosus-tendon graft, 135(82%) patients were assessed at a mean 14-year after the ACL reconstruction with radiographs of both limbs, Knee osteoarthritis outcome score (KOOS) and Tegner activity level. An increased risk of osteoarthritis (OA) after the ACL reconstruction was found.

Abstract:
Background:
The reported prevalence of radiological osteoarthritis (OA) after anterior cruciate ligament (ACL) reconstruction varies from 10-90%. Few of the reports are randomized controlled trials (RCT). Some of the variance in OA prevalence can be explained by different study designs and the use of different radiological classification systems, but the true prevalence of OA after an ACL reconstruction is not clear.

Purpose:
To compare long term prevalence of OA after ACL reconstruction with a quadrupled semitendinosus-tendon (ST) or bone-patella-tendon-bone graft (BPTB). The hypothesis was; no difference in OA prevalence between the graft types. A secondary purpose was to assess predictors for OA after an ACL reconstruction.

Study design:
RCT with long term follow up; Level of evidence, 1.
Methods: Examination with radiology, Tegner Activity level and Knee osteoarthritis outcome score (KOOS) was performed on 135 (82%) of 164 patients at a mean of 14 years after an ACL reconstruction, randomized between a ST and a BPTB graft. The Kellgren & Lawrence classification system was used to grade radiological OA. Three independent radiologists assessed all the radiographs. OA was defined as a consensus of at least 2 out of 3 radiologists of Kellgren & Lawrence grade 2 or more. Graft type, gender, age, overweight, time between injury and reconstruction, additional meniscus injury and a number of other variables were assessed for their predictive value on OA 14 years after ACL reconstruction with regression analysis.

Results:
Higher prevalence of OA was found in the ACL reconstructed limb, with no difference between the graft types. Medial compartment OA was most frequent. Meniscus resection was a strong predictor for OA, for medial compartment OA, OR=3.6 (95% CI 1.4-9.3) and for lateral compartment OA, OR= 4.5 (95% CI 1.8 – 11.5), in the multivariable regression analysis. KOOS was lower for patients with OA indicating that the OA was symptomatic. No difference between the graft types was found for KOOS.

Conclusion:

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No difference in OA prevalence between the ST and the BPTB was found. ACL injury and reconstruction increased the risk for OA. Additional meniscus injury requiring surgery increased the risk for OA. Increased time between injury and reconstruction increased the frequency of meniscus injuries.

Clinical Relevance:
The clinical implication of the study is that a reconstruction does not protect the knee from OA after an ACL injury. A theoretical implication is that an ACL reconstruction might decrease the risk of OA after an ACL injury, if clinically instable patients can be reconstructed before an additional medial meniscus injury has occurred.