

# **Long-term studies after primary and revision Anterior Cruciate Ligament reconstruction using different types of autograft– with special emphasis on the clinical, radiographic, histological and ultrastructural results**

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The aim of this study was to evaluate the long-term outcome after primary ACL reconstruction surgery using either BPTB or HT autografts and, in addition, ACL revision surgery using re-harvested patellar tendon autografts. Clinical and standard radiographic assessments were made of both the primary ACL-reconstructed knees and the patients who underwent ACL revision surgery using re-harvested patellar tendon autografts. Furthermore, in the revised knees, the patellar tendon underwent radiographic evaluations using MRI two and ten years after the index operation and histological and ultrastructural evaluations using a light and transmission electron microscope at ten years.

In 14 patients, who were examined two and ten years after the re-harvesting procedure for revision ACL surgery, the clinical results were poor and the patellar tendon at the donor site had not normalised, as seen on MRI at both two and ten years. No differences in terms of the MRI assessments were registered between the two- and ten-year assessments.

In a prospective, randomised seven-year follow-up study, 71 patients underwent primary ACL reconstruction using either BPTB or HT autografts. The objective and subjective outcomes were similar between the groups and a significant improvement compared with the pre-operative values was seen in most clinical assessments. No difference in terms of donor-site morbidity was found.

One hundred and twenty-four patients who underwent an ACL reconstruction using either BPTB or HT autografts were included in a retrospective study comparing the radiographic OA findings seven years after ACL reconstruction. No significant differences between the graft types in terms of OA findings classified according to the Ahlbäck and Fairbank rating systems were found between the study groups. Associated meniscal injuries increased the prevalence of OA.

Specimens from the patellar tendon of 12 patients were obtained using an ultrasonography-guided biopsy procedure ten years after re-harvesting the central third of the patellar tendon at revision ACL surgery. The histological evaluation using the light microscope revealed a deterioration in fibre structure with increased cellularity and increased vascularity in both the central and peripheral parts of the index patellar tendon specimens compared with normal control tendon. The ultrastructural evaluation using the electron microscope revealed pathological cell morphology and a change in fibril size class distribution compared with the normal control tendon.

Key words:

anterior cruciate ligament, surgery, radiology, biopsy, osteoarthritis, histology, ultrastructure

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Av

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Leg. Läkare

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Professor Jack Lysholm, Universitetssjukhuset, Umeå

**Avhandlingen baseras på följande delarbeten:**

I. The course of the patellar tendon after reharvesting its central third for ACL revision surgery. A long-term clinical and radiographic study.

Lidén M, Ejerhed L, Sernert N, Bovaller Å, Karlsson J, Kartus J.  
Knee Surgery Sports Traumatology Arthroscopy 2006;14:1130-1138

II. Patellar tendon or semitendinosus tendon autografts for Anterior Cruciate Ligament reconstruction. A prospective randomised study with a 7-year follow-up.

Lidén M, Ejerhed L, Sernert N, Laxdal G, Kartus J.  
American Journal of Sports Medicine 2007;35:740-748

III. Osteoarthritic changes after Anterior Cruciate Ligament reconstruction using bone-patellar tendon-bone or hamstring tendon autografts. A retrospective 7 year follow-up study.

Lidén M, Kartus C, Sernert N, Rostgård-Christensen L, Ejerhed L.  
Accepted Arthroscopy 2008

IV. A histological and ultrastructural evaluation of the patellar tendon ten years after reharvesting its central third.

Lidén M, Movin T, Ejerhed L, Papadogiannakis N, Blomén E, Hultenby K, Kartus J.  
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