



**Karolinska
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**Institutionen för klinisk forskning och utbildning,
Södersjukhuset**

ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION
Studies on morbidity, function and health-related quality of life

AKADEMISK AVHANDLING

som för avläggande av medicine doktorexamen vid Karolinska
Institutet offentligen försvaras i Aulan på Södersjukhuset

Fredagen den nionde november 2012 09.00

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Stockholm 2012

ABSTRACT

The aim of this thesis was to investigate the effects of graft choice, time between injury and reconstruction and injuries to the menisci on knee function and the health-related quality of life after an anterior cruciate ligament (ACL) reconstruction.

In *Study I*, 153 patients were assessed at a mean 8 years after randomisation to an ACL reconstruction with a bone-patellar tendon-bone or four-strand semitendinosus tendon graft. The results for laxity, functional tests, functional scores and health-related quality of life were similar for the graft types. The bone-patellar tendon-bone graft was associated with more morbidity from kneeling, knee-walking and disturbed sensitivity. Patients having reconstructions before six months from injury had higher Tegner activity scores, and patients with a meniscus procedure before, or at the reconstruction, had worse outcomes.

In *Study II*, 135 patients from the same randomised controlled trial as in *Study I* were assessed for prevalence of radiological osteoarthritis after a mean of 14 years. The prevalence of osteoarthritis was higher after anterior cruciate ligament reconstruction compared to the healthy non-injured limb and medial compartment osteoarthritis was most common. No difference between graft types was found. Meniscus resection and overweight two years after the reconstruction increased the risk of osteoarthritis. Osteoarthritis affected the health-related quality of life and most patients with osteoarthritis were symptomatic.

In *Study III*, 10 patients with a four-strand semitendinosus tendon and 10 patients with a four-strand semitendinosus and gracilis tendon graft were assessed after a mean of 36 months following an ACL reconstruction. No difference in rotational range of motion between the graft types was found by gait analysis and no other differences in functional scores, laxity, return to sport activities or flexion strength.

In *Study IV*, increased time between injury and ACL reconstruction was found to increase the risk for a medial meniscus injury among 8584 patients from the Swedish National Knee Ligament Register. After two years an outcome assessment according to the Knee Osteoarthritis Outcome Score (KOOS) was available for 3556 patients. The results were stratified to a high KOOS defined as functional recovery and a low KOOS defined as treatment failure. The chance for a functional recovery was higher for males and for hamstring tendon grafts and lower for patients with a previous meniscus procedure or a notchplasty at reconstruction. The risk of treatment failure was higher for patients with a previous meniscus procedure or a medial meniscus procedure at the time of reconstruction and lower for the hamstring tendon grafts and individuals between 35 and 54 years old. For a subpopulation of 556 patients, a high pre-injury Tegner activity score increased the risk of treatment failure.

In conclusion, time between injury and reconstruction affect the results after ACL reconstruction as a result of the increasing frequency of additional injuries occurring with time. Graft-related morbidity affects the short- and long-term results. Meniscus injuries influence the short- and long-term results and the prevalence of osteoarthritis after ACL reconstruction, especially if a resection is needed.