

**Herrlin SV, Wange PO, et al. Is arthroscopic surgery beneficial in treating non-traumatic, degenerative medial meniscal tears? A five year follow-up. Knee Surg Sports Traumatol Arthrosc 2013;21:358-364.**

Design: randomized clinical trial

Study question: For patients with degenerative tears of the medial meniscus, are the outcomes different with arthroscopic partial meniscectomy than with physical therapy?

Population/sample size/setting:

- 90 patients (55 men, 35 women, mean age 45) treated for degenerative tears of the medial meniscus at the Karolinska Hospital in Sweden
  - o 99 patients were originally randomized but data was reported on only 90
- Eligible if they were 45-64 years old and had persistent nontraumatic knee pain for the past 2-6 months, no or mild osteoarthritis, a medial meniscal tear on MRI, and command of the Swedish language
- Exclusion criteria were traumatic meniscal injury, neurological and rheumatic inflammatory diseases, loose bodies, osteochondral defects, ligamentous injuries, earlier knee surgery, hip or knee prostheses, lower extremity fractures less than one year old, and contraindications to physical training

Interventions and comparisons:

- Randomization was to arthroscopy plus exercise (AE, n=47) or exercise alone (E, n=43)
- AE group had arthroscopy under a standard protocol which documented findings of cartilage, ligaments, synovium, and menisci using the Outerbridge classification, followed by the exercise program used by the E group
  - o All meniscal tears were treated with partial resection, and degenerative chondral lesions were debrided with a motorized shaver
- E group did not have arthroscopy, but did have an 8 week program of a standardized exercise program
  - o Twice weekly for 8 weeks the participants had supervised exercise for improving muscle strength and endurance, flexibility, balance, and proprioception
  - o Each participant also had a home exercise program for 8 weeks

Outcomes:

- This 2013 study is a five-year followup of the patients enrolled in the Herrlin 2007 randomized trial of arthroscopy plus exercise versus exercise alone for middle-aged patients with degenerative tears of the medial meniscus, followed for 6 months
- Three questionnaires were administered to all patients at baseline and again after 8 weeks and 6 months in the 2007 study, and these were repeated at 24 and 60 months for the 2013 study: the Knee injury and Osteoarthritis Outcome Score (KOOS), the Lysholm score, and the Tegner Activity Scale
  - o The KOOS assesses pain and function (pain, sports, knee symptoms, activities of daily living) on several 100 point scales, for which the authors set a minimal perceptible difference between groups as 10 points
  - o The Lysholm score, also on a 100 point scale, emphasizes functions such as locking, limping, stair-climbing, pain, swelling, and instability, with a score of 91 or greater indicating excellent knee function
  - o The Tegner scale emphasizes competitive and recreational sports on a 10 point scale, with a score of 0 indicating knee disability and a score of 10 indicating competitive sports at a national elite level
- Followup examinations for this 2013 study were done at 24 and at 60 months
  - o 24 month data was reported for 46 AE patients and for 46 E patients
  - o 60 month data was reported for 45 AE patients and for 47 E patients
  - o 13 E patients who crossed over to arthroscopy after 6 months had outcome data reported separately at 24 and 60 months
- For all three outcome measures, the KOOS, the Lysholm, and the Tegner scale, there were no differences between the AE and the E group at 24 or at 60 months; both groups had equal benefit from treatment at these later followup times
- However, 13 patients in the E group had not had significant benefit from exercise 6.5 months after having been randomized in the 2007 study, and underwent arthroscopic surgery at this point
  - o These 13 patients had improvements in outcome scores after having had surgery, such that when these scores were again measured at 24 and 60 months, they had reached levels of improvement similar to the AE patients and the E patients who had benefited from exercise alone in the earlier study
- Radiographic assessment at 60 months showed progression of osteoarthritic changes in four patients, two from each of the original treatment groups

Authors' conclusions:

- The most important finding was that both groups improved equally
- One third of the E group had enough complaints after the original published study to warrant crossing over to arthroscopic surgery, and the patients who did cross over to surgery had KOOS and Lysholm scores equal to those of the other patients

- Progression of osteoarthritis did not appear to be affected by arthroscopic surgery at the five year followup point
- There was no control group to monitor the natural history of degenerative meniscal tear, nor is there information on the patients who were eligible for trial participation but who declined to be randomized

Comments:

- The long-term followup complements the outcome data presented in the 2007 study, and suggests that at five years from randomization, the groups originally planned for surgery and originally planned for exercise therapy had equal outcomes
- The fact that one third of the patients in the originally randomized exercise group had persistent complaints, which improved after undergoing arthroscopic partial meniscectomy, is best interpreted as suggesting that an initial nonoperative treatment plan has an equal chance of success as an initial operative treatment plan, provided that the plan is flexible enough to change when knee-related function remains limited after several months of exercise
- The CONSORT diagram in Figure 1 shows excellent retention of participants in the study for analysis
  - o In the exercise group, there is one more participant at five years (n=47) than there were at 2 years (n=46)
  - o This probably indicates that some of the patients who did not contribute data at two years were not entirely lost to followup, and were available for data analysis at 5 years
- A small to moderate sized randomized trial may not have enough observations to show an effect of surgery on progression to osteoarthritis

Assessment: Adequate for evidence that in the setting of nontraumatic meniscal tears, a treatment plan focusing on supervised exercise followed by home exercise has an equal probability of success as a treatment plan involving early arthroscopic partial meniscectomy, provided that a surgical option is offered to patients who have persistent knee limitations after several months of exercise therapy