Herrlin S, Hallander M, et al. Arthroscopic or conservative treatment of degenerative medial meniscal tears: a prospective randomised trial. Knee Surg Sports Traumatol Arthrosc 2007;15:393–401.

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
- 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
    - 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
    - Twice weekly for 8 weeks the participants had supervised exercise for improving muscle strength and endurance, flexibility, balance, and proprioception
    - Each participant also had a home exercise program for 8 weeks

Outcomes:

    - Three questionnaires were administered to all patients at baseline and again after 8 weeks and 6 months: the Knee injury and Osteoarthritis Outcome Score (KOOS), the Lysholm score, and the Tegner Activity Scale

        - 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
        - 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
        - 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
    - Both groups had substantial improvement in KOOS between baseline and 8 weeks (e.g., for the scale for activities of daily living, the median score for the AE group increased from 68 points to 93 points, as the median score for the E group improved from 79 points to 96 points)
        - However, the differences between groups for the KOOS scores were not significant at baseline or at followup
        - The E group median score on the sports/recreation scale declined from 70 points at 8 weeks to 65 points at 6 months
        - The AE group median score on the ADL scale declined from 93 points at 8 weeks to 84 points at 6 months
    - On the Lysholm score, both groups improved between baseline and 8 weeks, at which time a score of 91 or higher was reported for 34% of the AE group and 42% of the E group, indicating equal attainment of normal knee function
    - On the Tegner activity scale, 42% of the AE group and 51% of the E group had re-attained their pre-injury level of activity at 8 weeks; again, this shows equal success in response to treatment
    - VAS pain ratings underwent similar improvements in both groups, from a median of 5.5 to a median of 1.0 after 8 weeks and 6 months

Authors' conclusions:

- A combination of arthroscopic partial meniscectomy and supervised exercise does not necessarily lead to greater improvement in knee function compared to supervised exercise alone in middle-aged patients with degenerative non-traumatic meniscal tears
- Supervised exercise alone is a recommended initial treatment for these meniscal tears

Comments:

- One of the exclusion criteria is not defined; patients were excluded if they had "contraindications to physical training," but these contraindications are not specified

- Although loose bodies and ligament injuries were exclusion criteria, locking of the knee was not; it would be logical to exclude patients who cannot extend the knee, since these patients are expected to be referred for surgical intervention
- The authors comment in the text on some results but not on others of apparent equal importance
    - In the KOOS section, "there was a strong tendency that the E group score lower after 6 months compared to the 8 weeks follow-up in terms of sport and recreation (p=0.052)."
    - This was based upon a decline from 70 to 65 points, a 5 point decline
    - However, the AE group had a decline from 93 points to 84 points on the ADL scale, a 9 point decline which receives no comment in the text of the article
- The Tegner activity scale is appropriately designated as a secondary outcome, since it is designed for competitive sports and not for ordinary work-related injuries
- Lack of blinding sometimes introduces bias into a randomized trial; in this case, such bias would generally be expected to favor the surgery group; this means that the conclusion of equal benefit is not undermined by the lack of blinding
- Crossover from exercise to arthroscopy was uncommon; after entering the study, six patients discontinued because of reduced knee pain and only three wanted to be treated with arthroscopic surgery
    - This stands in contrast to other studies of exercise versus arthroscopy, in which 30% of the patients randomized to exercise later crossed over to get arthroscopy 6 months after randomization (Katz et al 2013)
    - A later 5-year followup study on the same patients (Herrlin 2013) did show more crossover to surgery after 6.5 months; one third of the exercise patients had arthroscopic surgery after continuing to have symptoms
- The description of the randomization appears to be inadequate, with no description of method of randomization nor of allocation concealment; however, the 2013 study does report adequately on these features, and their earlier omission was probably a matter of changing standards of reporting of randomized trials in the years between 2007 and 2013
    - Similarly, the 2007 study gives an inadequate description of how it arrived at an 80% power based on its sample size; this, too, is reported adequately in the 2013 followup study
    - The publication of the CONSORT 2010 (Schulz 2010) statement may have influenced the criteria the journal editors set for the newer study's reporting of findings

Assessment: Adequate for some evidence that for patients with nontraumatic degenerative tears of the medial meniscus, an exercise program alone provides benefits similar to those of arthroscopy plus an exercise program for the first six months after diagnosis of the meniscal tear

References:

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.

Katz JN, Brophy RH, et al. Surgery versus Physical Therapy for a Meniscal Tear and Osteoarthritis. N Engl J Med 2013;368:1675-84.

Schulz KF, Altman DC, Moher D. CONSORT 2010 Statement: Updated Guidelines for Reporting Parallel Group Randomized Trials. Ann Intern Med. 2010;152 (11): 1-8.