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EVIDENCE-BASED ORTHOPAEDICS

Arthroscopic Partial Meniscectomy Was Not More Effective Than Physical Therapy for Meniscal Tear and Knee Osteoarthritis

Katz JN, Brophy RH, Chaisson CE, de Chaves L, Cole BJ, Dahm DL, Donnell-Fink LA, Guermazi A, Haas AK, Jones MH, Levy BA, Mandl LA, Martin SD, Marx RG, Miniaci A, Matava MJ, Palmisano J, Reinke EK, Richardson BE, Rome BN, Safran-Norton CE, Skoniecki DJ, Solomon DH, Smith MV, Spindler KP, Stuart MJ, Wright J, Wright RW, Losina E. Surgery Versus Physical Therapy for a Meniscal Tear and Osteoarthritis. N Engl J Med. 2013 May 2;368(18):1675-84.

Question: In patients with a meniscal tear and mild-to-moderate osteoarthritis, does arthroscopic partial meniscectomy improve physical and functional outcomes more than physical therapy does?

Design: Randomized (allocation concealed), unblinded, controlled trial with 12 months of follow-up (Meniscal Tear in Osteoarthritis Research [METEOR] trial).

Setting: 7 tertiary referral centers in the United States.

Patients: 351 patients who were ≥45 years of age and had a meniscal tear as well as osteoarthritis confirmed by magnetic resonance imaging or radiography. Meniscal tear symptoms had persisted for ≥1 month despite pharmacological treatment, physical therapy, or limitation of activity. Exclusion criteria included a chronically locked knee, Kellgren-Lawrence grade-4 osteoarthritis, inflammatory arthritis or clinically symptomatic chondrocalcinosis, viscosupplementation injection in the past 4 weeks, bilateral symptomatic meniscal tears, and previous surgery on the same knee. 320 patients (91%) (mean age, 58 years; 57% women) completed the study.

Intervention: Patients were allocated to partial meniscectomy and postoperative physical therapy (n = 174), or to physical therapy alone (n = 177). During the meniscectomy, surgeons trimmed the damaged meniscus back to a stable rim and removed loose fragments of cartilage and bone but did not disturb the subchondral bone. Following surgery, patients could bear weight as able and began the standardized physical therapy program. The physical therapy program involved 3 stages; the criteria for advancing from one stage to the next included pain, strength, range of motion, knee effusion, and functional mobility. Patients attended physical therapy sessions once or twice weekly for 6 weeks and performed exercises at home.

Main outcome measures: The primary outcome measure was change on the physical-function scale of the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) (range, 0 to 100; higher scores indicate worse physical function) during the 6 months after randomization. A 12-month assessment was added to determine the stability of the result. Secondary outcomes were the pain score on the Knee Injury and Osteoarthritis Outcome Score (KOOS) (0 to 100; higher scores indicate more severe pain) and the physical activity scale score of the Medical Outcomes Study 36-item Short-Form Health Survey (SF-36) (0 to 100; higher scores indicate greater physical activity). Patients were also compared with regard to an improvement in the WOMAC physical-function score of ≥8 points without crossover to the other group.

Main results: Analysis was by intention to treat. The study had 80% power to detect a 10-point difference between groups in WOMAC physical-function score. At 6 months, the 2 groups did not differ in mean improvement in the WOMAC physical-function score, in decreases on the KOOS pain score, or in mean change in the SF-36 physical activity score (see Table E-1 in Appendix). The results were similar at 12 months (see Appendix). More patients in the meniscectomy group than the physical therapy group had an improvement in WOMAC score of at least 8 points and did not cross over to the other regimen (67% vs. 44%, p = 0.001).

Conclusion: In patients with a meniscal tear and mild-to-moderate osteoarthritis, intention-to-treat analysis showed similar outcomes between arthroscopic meniscectomy and physical therapy; however, the physical therapy group had a higher rate of crossover to surgery.

Appendix: A table showing the mean change in the WOMAC, KOOS, and SF-36 physical activity score is available with the online version of this article as a data supplement at jbjs.org.

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Commentary

Katz and colleagues performed a well-designed multicenter randomized trial to compare physical therapy with arthroscopy.

This is an important issue from the point of view not only of patient care, but of economic impact to the health-care system. Two previous randomized trials have failed to show a benefit from arthroscopy for the treatment of advanced knee osteoarthritis[1,2]. However, many surgeons feel that there is a role for arthroscopy in a specific subset of patients with meniscal tear and mild-to-moderate osteoarthritis.

The positive aspects of this study are its adequate sample size and its clearly defined question and protocol. There are five primary concerns with the study:

(1) It is unclear whether the authors were able to track how well the patients complied with the physical therapy regimen.

(2) There was a 35% crossover from the physical therapy group to the surgery group, and 5.6% of the surgery group did not have surgery. Defining which factors were present in those patients who crossed over as compared with those who did not would also have added strength to this study.

(3) A downside of the study is that 74% of the patients who were eligible were not randomized, and therefore the generalizability of the results is somewhat questionable.

(4) Some practicing surgeons would only consider patients for surgery after failure of three months of physical therapy and nonoperative treatment.

(5) A two-year follow-up would benefit the study to see if the treatment effect in either group tends to drop off preferentially.

Despite the limitations, this study clarifies the indications for arthroscopic intervention in the osteoarthritic knee.

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