

# Arthroscopic Surgery vs. Physical Therapy for Degenerative Meniscal Tears

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## CLINICAL QUESTION

Is arthroscopic surgery superior to physical therapy (PT) for degenerative meniscal tears?

## EVIDENCE-BASED ANSWER

Arthroscopic surgery, PT, and exercise can be offered to patients with degenerative meniscal tears; none of these is considered superior. Compared with PT, arthroscopic surgery does not result in any clinically significant differences in pain, symptoms, function, activities of daily living, knee-specific quality of life, or generic quality of life. (Strength of Recommendation [SOR]: A, multiple meta-analyses.) Arthroscopic surgery may worsen range of motion in the knee and cartilage surface area compared with PT. (SOR: C, randomized controlled trials [RCTs].)

## EVIDENCE SUMMARY

A 2022 Cochrane review compared arthroscopic surgery for degenerative knee disease with several nonsurgical treatments.<sup>1</sup> A subset of the review included five trials comparing arthroscopic surgery plus exercise with exercise alone and three trials comparing arthroscopic surgery with exercise. Seven of the trials included patients with degenerative meniscal tears and excluded patients with severe osteoarthritis (OA).

For pain, arthroscopic surgery showed little or no benefit at any point in time compared with exercise. A 0- to 100-point scale was used to assess pain, with a threshold for clinical significance of 15 points. Although there was statistical improvement in pain at the “up to 3 months” and “3 to 6 months” time points, these translated to clinically unimportant mean differences on the pain scale of  $-4.2$  points (95% CI,  $-6.6$  to  $-1.6$ ) at up to 3 months and  $-4.0$  points (95% CI,  $-6.6$  to  $-1.6$ ) between 3 and 6 months. Arthroscopic surgery minimally affected function, knee-specific quality of life, and generic quality of life compared with exercise.

A 2023 systematic review and meta-analysis of four RCTs (N = 713) compared the effectiveness of PT with arthroscopic partial meniscectomy in patients 18 years and older with degenerative meniscal tears.<sup>2</sup> All studies included a 5-year follow-up to assess pain or physical function as an outcome measure. The analysis found no significant differences on the Knee Injury and Osteoarthritis Outcome Score for pain, symptoms, activities of daily living, or quality of life.

A 2020 RCT (N = 286) compared arthroscopic partial meniscectomy with PT in patients with a degenerative meniscal tear, focusing on the patients' most significant functional limitations.<sup>3</sup> This study was part of the Cost-effectiveness of Early Surgery versus Conservative Treatment with Optional Delayed Meniscectomy for Patients over 45 years with non-obstructive meniscal tears (ESCAPE) trial. The Dutch-language equivalent of the Patient-Specific Functional Scale (PSFS) was the main outcome measure. Exclusion criteria included severe OA, body mass index greater than 35 kg per m<sup>2</sup>, and previous knee surgery.

In the RCT, 139 patients underwent arthroscopic partial meniscectomy, whereas 147 patients participated in 16 PT sessions over 8 weeks. After their respective interventions, patients completed the PSFS, which assesses subjective functional status by measuring perceived difficulty in performing activities valued most in daily life and at which patients would like to improve. At 24-month follow-up, the PSFS scores of the surgery group improved by a mean of  $4.8 \pm 2.6$  points (from  $6.8 \pm 1.9$  at baseline to  $2.0 \pm 2.2$  after intervention), and the scores of the PT group improved by a mean of  $4.0 \pm 3.1$  points (from  $6.7 \pm 2.0$  at baseline to  $2.7 \pm 2.5$  after intervention). The between-group difference was  $-0.6$  points (95% CI,  $-1.0$  to  $-0.2$ ;  $P = .004$ ) in favor of the surgery group, which was statistically

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significant but less than the clinically meaningful threshold (2.5 points on an 11-point scale).

Serious adverse events occurred in an approximately equal minority of each group. Limitations included differences in meniscal tears among patients; possible observer and participant bias because there was not comprehensive blinding; and the sample size was determined for a different primary outcome.

A 2021 prospective, randomized, single-blind study compared the effectiveness of arthroscopic partial meniscectomy with PT in patients with degenerative meniscal tears with and without hyaluronic acid injection.<sup>4</sup> The study randomly divided 192 patients with symptomatic tears into four groups of 48 patients each: surgery alone, surgery with hyaluronic acid injection, PT alone, and PT with hyaluronic acid injection. The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), visual analog scale (VAS) pain scores, and range-of-motion (ROM) values were used for evaluation.

There were 146 patients who completed the study through 6 months of follow-up. At 2 and 6 months, there were no differences among the groups in terms of WOMAC and VAS scores. In the PT groups, ROM values were better than those at baseline ( $102.3 \pm 6.3$  and  $106.5 \pm 7.9$ ), 2 months ( $113.9 \pm 6.4$  and  $115.0 \pm 6.9$ ;  $P < .0001$ ), and 6 months ( $115.6 \pm 6.1$  and  $117.2 \pm 6.3$ ;  $P < .0001$ ). In the surgery groups, ROM values were worse than those at baseline at 2 months ( $90.6 \pm 7.2$  and  $90.5 \pm 6.9$ ;  $P < .0001$ ) and 6 months ( $92.0 \pm 7.5$  and  $93.2 \pm 6.1$ ;  $P < .0001$ ).

In a 2022 RCT, early arthroscopic partial meniscectomy was compared with early PT in patients with degenerative meniscal tears and OA.<sup>5</sup> Patients were randomized to arthroscopic partial meniscectomy ( $n = 154$ ) or PT ( $n = 148$ ). Fourteen patients opted to cross over to the surgery arm more than 6 months after randomization and were excluded from the analysis. Forty-seven patients crossed over to the surgery arm before 6 months

after the randomization. Eight patients who were randomized to the surgery arm crossed over to the PT arm. Outcomes were assessed at 18 and 60 months using magnetic resonance imaging (MRI) and the MRI OA Knee Score, which describes key pathoanatomic features on MRI, including cartilage surface area damage, cartilage thickness damage, and bone marrow lesions.

In the surgery arm, cartilage surface area damage scores were worse at 18 months (relative risk = 1.35; 95% CI, 1.14 to 1.61), but not significantly different at 60 months (relative risk = 1.02; 95% CI, 0.74 to 1.40). No differences at any point in time were found in cartilage thickness or bone marrow lesions.

## REFERENCES

1. O'Connor D, Johnston RV, Brignardello-Petersen R, et al. Arthroscopic surgery for degenerative knee disease (osteoarthritis including degenerative meniscal tears). *Cochrane Database Syst Rev.* 2022;(3): CD014328.
2. Fernández-Matías R, García-Pérez F, Gavín-González C, et al. Effectiveness of exercise versus arthroscopic partial meniscectomy plus exercise in the management of degenerative meniscal tears at 5-year follow-up: a systematic review and meta-analysis. *Arch Orthop Trauma Surg.* 2023;143(5):2609-2620.
3. Noorduyt JCA, Glastra van Loon T, van de Graaf VA, et al.; ESCAPE Research Group. Functional outcomes of arthroscopic partial meniscectomy versus physical therapy for degenerative meniscal tears using a patient-specific score: a randomized controlled trial. *Orthop J Sports Med.* 2020;8(10):2325967120954392.
4. Başar B, Başar G, Büyükkuşçu MÖ, et al. Comparison of physical therapy and arthroscopic partial meniscectomy treatments in degenerative meniscus tears and the effect of combined hyaluronic acid injection with these treatments: a randomized clinical trial. *J Back Musculoskelet Rehabil.* 2021;34(5):767-774.
5. Collins JE, Shrestha S, Losina E, et al.; METEOR Investigator Group. Five-year structural changes in the knee among patients with meniscal tear and osteoarthritis: data from a randomized controlled trial of arthroscopic partial meniscectomy versus physical therapy. *Arthritis Rheumatol.* 2022;74(8):1333-1342. ■

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