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Arthroscopic Treatment of Degenerative Meniscal Tears and Sham Surgery or Physical Therapy—an Update on the ESCAPE Trial

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The study by Noorduyn et al[1] reports on the 5-year follow-up of the patients in the ESCAPE trial, which compared physical therapy with arthroscopy for degenerative meniscal tears. The ESCAPE trial included patients older than 45 years who were randomized to physical therapy or arthroscopy in a noninferiority analysis. This trial was previously reported at 2 years of follow-up. The extension of the follow-up period is important because the durability of the result is relevant for this patient population as they enter the age group most appropriate for arthroplasty. Another strength of the present report, as compared with the 2-year results, is the addition of the as-treated analysis. Without this analysis, the reader would struggle with the 32% of patients who crossed over to the arthroscopy group (the delayed surgery group), which showed that those patients fared worse than the ones who did not initially receive surgery. The data on progression of the disease is also an important addition for patients and physicians involved in shared decision-making. Given these points, the issue really is why we are comparing arthroscopy with physical therapy for this patient population when the inefficacy of arthroscopy has been shown.

When Moseley et al[2] published their landmark study of arthroscopy vs sham surgery in 2002, they reported that arthroscopy was no better than placebo for knee osteoarthritis. Outcomes were assessed over a 2-year follow-up period with reported improvement in function at 12 months for both the arthroscopy and placebo groups, but with no statistically significant difference between the groups. Strengths of this study include limited loss to follow-up over a 2-year period and the identical design of the treatments (lavage and debridement) to their counterparts in practice. In addition, Brignardello-Petersen et al[3] published a systematic review of 13 randomized clinical trials and 12 observational studies, comparing the outcomes of knee arthroscopy vs conservative management, including physical therapy, in patients with degenerative knee disease. The analysis found very small reduction in pain or improvement in function in patients at 3 months and no important difference at 2 years compared with conservative treatment.

Sihvonen et al[4] reported on partial meniscectomy vs placebo surgery in the FIDELITY trial. These patients (age 35-65 years) had evidence of degenerative meniscal tears without knee osteoarthritis. The investigators reported that outcomes after arthroscopic partial meniscectomy were no better than those after a placebo surgical procedure, using Lysholm knee score, Western Ontario Meniscal Evaluation Tool, and a score for knee pain after exercise as primary outcomes. With this intention-to-treat analysis, outcomes were assessed and published at the 12-month, 2-year, and 5-year follow-up periods.[4,5] At no time during the follow-up did arthroscopic partial meniscectomy have more efficacious outcomes compared with placebo surgery. In the 5-year follow-up, the researchers also assessed the radiographic disease progression in the meniscectomy vs placebo group. The partial meniscectomy group had increased progression of osteoarthritis compared with the placebo surgery group.[5]

Although trials and reviews over the past 2 decades have addressed the lack of efficacy of arthroscopic surgery for knee osteoarthritis and degenerative meniscal tears vs sham surgery or conservative management, surgical practices have not responded. In contrast, a review by Adelani et al[6] showed a small increase in arthroscopy rates for osteoarthritic knees after the Moseley et al[2] trial. Moreover, a review using the State Ambulatory Surgery Database in the US by Amin et al[7] looked at rates of arthroscopy for osteoarthritis or meniscus tears before and after the Moseley et al

trial. During this time, some payers stopped reimbursing for arthroscopy when the diagnosis was osteoarthritis. This Amin et al[7] analysis showed an increase in absolute arthroscopy rates and patient age, with a shift in diagnosis codes from osteoarthritis to meniscus tear, which was still reimbursed.

Although there have been multiple randomized clinical trials showing no efficacy of knee arthroscopy for knee osteoarthritis or debridement of partial degenerative menisci, we are still studying these treatments, perhaps searching for a different outcome. Clinical practice has also been slow to reflect the evidence published over the past 2 decades. In the ESCAPE trial, if arthroscopy is no better than sham surgery, then what is being compared with physical therapy? It is clear these surgeries are not benign. Although the complication rate is low, the procedure may be associated with accelerated progression of knee osteoarthritis. Arthroscopy is also expensive and, when without benefit, the balance of the value equation is negative. Surgery has been described as the ultimate placebo.[8] Multiple studies, including several with sham surgeries as a control have shown repeatedly over the previous 2 decades that surgery is not superior to physical therapy, yet the issue and use of surgery persist. Noorduyn et al[1] show again that arthroscopy is not better than nonsurgical management of meniscal tears.

ARTICLE INFORMATION

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REFERENCES

1. Noorduyn JCA, van de Graaf VA, Willigenburg NW, et al; ESCAPE Research Group. Effect of physical therapy vs arthroscopic partial meniscectomy in people with degenerative meniscal tears: five-year follow-up of the ESCAPE randomized clinical trial. *JAMA Netw Open*. 2022;5(7):e2220394. doi:10.1001/jamanetworkopen.2022.20394

2. Moseley JB, O'Malley K, Petersen NJ, et al. A controlled trial of arthroscopic surgery for osteoarthritis of the knee. *N Engl J Med*. 2002;347(2):81-88. doi:10.1056/NEJMoa013259

3. Brignardello-Petersen R, Guyatt GH, Buchbinder R, et al. Knee arthroscopy versus conservative management in patients with degenerative knee disease: a systematic review. *BMJ Open*. 2017;7(5):e016114. doi:10.1136/bmjopen-2017-016114

4. Sihvonen R, Paavola M, Malmivaara A, et al; Finnish Degenerative Meniscal Lesion Study (FIDELITY) Group. Arthroscopic partial meniscectomy versus sham surgery for a degenerative meniscal tear. *N Engl J Med*. 2013;369(26):2515-2524. doi:10.1056/NEJMoa1305189

5. Sihvonen R, Paavola M, Malmivaara A, et al; FIDELITY (Finnish Degenerative Meniscus Lesion Study) Investigators. Arthroscopic partial meniscectomy for a degenerative meniscus tear: a 5 year follow-up of the placebo-surgery controlled FIDELITY (Finnish Degenerative Meniscus Lesion Study) trial. *Br J Sports Med*. 2020;54(22):1332-1339. doi:10.1136/bjsports-2020-102813

6. Adelani MA, Harris AHS, Bowe TR, Giori NJ. Arthroscopy for knee osteoarthritis has not decreased after a clinical trial. *Clin Orthop Relat Res*. 2016;474(2):489-494. doi:10.1007/s11999-015-4514-4

7. Amin NH, Hussain W, Ryan J, Morrison S, Miniaci A, Jones MH. Changes within clinical practice after a randomized controlled trial of knee arthroscopy for osteoarthritis. *Orthop J Sports Med*. 2017;5(4):2325967117698439. doi:10.1177/2325967117698439

8. Harris I. *Surgery, The Ultimate Placebo*. New South Publishing; 2016.