Guest editorial

Derailment when clinical experience deceives

Bad habits in attempts to relieve certain patient groups of their knee pain are hard to break. Arthroscopic partial meniscectomy (APM) is a procedure that became highly popular with the breakthrough of the arthroscopic technique in the 1970s. The procedure is still commonly performed around the world to treat degenerative meniscal tears (DMT), with the intention to ease the patient's knee symptoms. DMTs occurs spontaneously or after low-energy trauma, typically in middle-aged or older patients, and they are highly prevalent in the general population (1).

Reito et al. (2) summarize the history of APM as well as the absence of high-quality evidence in support of its effect above contextual effects in patients with DMT. Further, the authors pose the important question of whether APM has ever worked in this patient category. They elegantly elaborate on the absence of a thoroughly thought-through framework to justify the intervention. In their careful explanation of two hypothetical models, the authors arrive at this conclusion: "From a disease-model perspective, the most plausible model and theory is that DMT is an early part of the degenerative process in OA in which APM plays no role." Importantly, there is no empirical evidence that DMT should even be considered as a standalone diagnosis in a clinical setting. It is purely a structural finding that is likely to be related to a complex condition of the joint, but for various reasons and misconceptions it usually gets the blame for any knee symptoms. Certainly, there are gaps in our understanding of the etiology of DMTs, especially at the molecular level, but the "joint degeneration/osteoarthritis" model for their development remains the most plausible theory.

Most recent evidence points firmly in one direction—that there is no or very limited effect of APM above contextual effects in patients with DMT. The perceived improvement of patients seen in the clinic is largely driven by regression to the mean (natural history of the fluctuating pain) and placebo response (3). Chronic pain conditions with a naturally fluctuating history are notoriously infamous for being prone to trick both clinicians and scientists (4). Thus, studies performed in observational settings often deceive us as to the effectiveness not only of surgical interventions, but also of non-surgical treatments where blinded studies with placebo arms are challenging to perform. One such example is exercise therapy, where investigators and clinicians are also at risk of being misled by the influence of regression to the mean (5,6) and placebo effects. Interestingly, the only trial so far directly comparing the two prevailing treatments for DMT—APM vs. exercise therapy—found similar outcomes for pain in both groups, suggesting they are equally "effective" or "ineffective" depending on your perspective (7).

Although the verdict "ineffective" in the case of APM for DMT stands firm (and rightly so), the world of clinical medicine and biology is rarely black and white. It remains biologically plausible that certain categories of DMTs may be valid targets for arthroscopic intervention(s), but these are likely to be rare within this large patient category. For instance, a DMT may cause true knee locking, e.g., if the torn piece of meniscus is large enough and dislocated, or there is a horizontal meniscal cleavage coupled with a connected parameniscal cyst, which may be associated with joint-line discomfort. It is plausible that these cases may both benefit from arthroscopic intervention. However, these patient categories, for natural reasons, have not been included in large enough numbers, or they have been systematically excluded from existing trials (8,9).

Nonetheless, it is not appropriate to consider absence of high-quality evidence against efficacy as evidence that the procedure works—a common misconception made by a substantial proportion of the orthopedic community. It is critical to remember the power of contextual effects, particularly in pain conditions with fluctuating natural history, and hence not to risk be misled by "clinical experience." The appropriate and ethical way forward to determine efficacy in subcategories of patients with DMT would be to do high-quality randomized controlled trial(s) (preferably using a sham-intervention control arm) and arrive at a conclusion based on this data. A current undertaking to evaluate the effect of APM vs. exercise therapy in younger patients with meniscal tears exemplifies an interesting initiative related to this topic, as it challenges the strong existing beliefs and current practice of APM in the younger patient category (10).

Martin Englund
Clinical Epidemiology Unit, Orthopedics
Department of Clinical Sciences, Lund
Lund University, Sweden
E-mail: Martin.englund@med.lu.se

DOI 10.1080/17453674.2021.1986984

1. **Englund M, Guermazi A, Gale D, Hunter D J, Aliabadi P, Clancy M, Felson D T.** Incidental meniscal findings on knee MRI in middle-aged and elderly persons. N Engl J Med 2008; 359(11): 1108-15. doi: 10.1056/NEJMoa0800777.
2. **Reito A, Harris I A, Karjalainen T.** Arthroscopic partial meniscectomy: did it ever work? Acta Orthop 2021; 1-10. Epub ahead of print. doi: 10.1080/17453674.2021.1979793
3. **Harris I A.** When the placebo effect is not an effect. Acta Orthop 2021; 92 (5): 501-2. doi: 10.1080/17453674.2021.1969155
4. **Barnett A G, van der Pols J C, Dobson A J.** Regression to the mean: what it is and how to deal with it. Int J Epidemiol 2005; 34(1): 215-20. doi: 10.1093/ije/dyh299.
5. **Englund M, Grønne D, Roos E, Skou S, Turkiewicz A.** Signs of regression to the mean in observational data from a nation-wide exercise and education intervention for osteoarthritis [abstract]. Arthritis Rheumatol 2021; 73 (Suppl. 10). https://acrabstracts.org/abstract/signs-of-regression-to-the-mean-in-observational-data-from-a-nation-wide-exercise-and-education-intervention-for-osteoarthritis/. Accessed September 17, 2021.
6. **Englund M, Turkiewicz A.** Size of regression to the mean in first-line interventions for osteoarthritis: an illusion of effectiveness [abstract]. Arthritis Rheumatol 2021; 73 (Suppl. 10). https://acrabstracts.org/abstract/size-of-regression-to-the-mean-in-first-line-interventions-for-osteoarthritis-an-illusion-of-effectiveness/. Accessed September 17, 2021.
7. **Kise N J, Risberg M A, Stensrud S, Ranstam J, Engebretsen L, Roos E M.** Exercise therapy versus arthroscopic partial meniscectomy for degenerative meniscal tear in middle aged patients: randomised controlled trial with two year follow-up. BMJ 2016; 354:i3740. doi: 10.1136/bmj.i3740.
8. **Sihvonen R, Paavola M, Malmivaara A, Itälä A, Joukainen A, Nurmi H, Kalske J, Järvinen T L; Finnish Degenerative Meniscal Lesion Study (FIDELITY) Group.** Arthroscopic partial meniscectomy versus sham surgery for a degenerative meniscal tear. N Engl J Med. 20136; 369(26): 2515-24. doi: 10.1056/NEJMoa1305189.
9. **Moseley J B, O'Malley K, Petersen N J, Menke T J, Brody B A, Kuykendall D H, Hollingsworth J C, Ashton C M, Wray N P.** A controlled trial of arthroscopic surgery for osteoarthritis of the knee. N Engl J Med 2002; 347(2): 81-8. doi: 10.1056/NEJMoa013259.
10. **Skou S T, Lind M, Hölmich P, Jensen H P, Jensen C, Afzal M, Jørgensen U, Thorlund J B.** Study protocol for a randomised controlled trial of meniscal surgery compared with exercise and patient education for treatment of meniscal tears in young adults. BMJ Open 2017; 7(8): e017436. doi: 10.1136/bmjopen-2017-017436.