



# Arthroscopic Partial Meniscectomy for Degenerative Tears: Deimplementation and Why Referrals Persist

Silje Bratteteig<sup>1\*</sup>, Enrique Valdeolmos-Rueda<sup>2</sup>, Hana Prokopcova<sup>3</sup>

<sup>1</sup>Department of Orthopaedic Surgery, Oppland Institute of Sports Medicine, Lillehammer, Norway

<sup>2</sup>Centre for Health Services Research, Meseta Institute of Sport and Exercise Science, Salamanca, Spain

<sup>3</sup>Department of Physiotherapy, Polabi Centre for Pain Research, Nymburk, Czech Republic

\*Correspondence to: Silje Bratteteig, Department of Orthopaedic Surgery, Oppland Institute of Sports Medicine, Lillehammer, Norway

E-mail: s.bratteteig@oism.no

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## Abstract

*A series of randomised controlled trials, including sham-surgery-controlled designs, has found arthroscopic partial meniscectomy for degenerative meniscus tears in middle-aged and older patients produces no meaningful benefit over structured exercise therapy, and in some trials no benefit over sham surgery, findings now reflected in multiple international clinical practice guidelines recommending against the procedure for this indication. Reported procedure volumes have fallen substantially since this evidence emerged, but referral and surgery for degenerative tears persist at levels the trial evidence does not support. This review synthesises the trial, guideline, and deimplementation-science literature to characterise both the strength of the evidence against routine meniscectomy for this indication and the reported reasons referral pathways have proven resistant to full deimplementation.*

**Keywords:** Meniscectomy; Degenerative meniscus tear; Arthroscopy; Deimplementation; Knee osteoarthritis; Sham surgery trial

## Introduction

Arthroscopic partial meniscectomy for a degenerative meniscus tear was, for decades, among the most commonly performed orthopaedic procedures worldwide, typically offered to middle-aged and older patients presenting with knee pain and an MRI-confirmed meniscal tear. A series of randomised controlled trials over the past decade, including at least one sham-surgery-controlled design, has since found no meaningful benefit of the procedure over structured exercise therapy or, in the sham-controlled trial specifically, over a placebo surgical procedure [1,2,3]. This evidence has been reflected in successive international clinical practice guidelines recommending against routine meniscectomy for degenerative tears, yet referral for, and performance of, the procedure has continued at levels this evidence does not support [10,13,14].

This review treats the trial and guideline evidence as well established and instead focuses on the deimplementation gap: why a procedure with this weight of contrary randomised evidence against it has proven so resistant to being fully withdrawn from routine practice, and what the deimplementation-science literature offers as explanation and remedy [28,29,30].

This review synthesises the sham- and comparator-controlled trial evidence, the guideline consensus that followed it, the reported harms associated with the procedure, and the deimplementation literature explaining why referral pathways have persisted, to give clinicians a complete picture of both the evidence and the practice gap around it.

## Material and Methods

This is a narrative review rather than a systematic review conducted against a pre-registered protocol. Sources were identified through targeted searches of MEDLINE, Embase, and the Cochrane Library, combined with forward and backward citation tracking from the foundational sham- and comparator-controlled meniscectomy trials, the major clinical practice guidelines addressing degenerative meniscus tears, and the deimplementation-science literature. All percentages, incidence figures, and effect estimates reported here are taken directly from the cited sources; none has been independently pooled, recalculated, or extrapolated. Figure 1 sets out the two-stage screening logic used to identify the roughly 30 sources informing this synthesis; because this is a narrative rather than a completed systematic search, the counts shown are illustrative rather than a fully reproducible PRISMA accounting.

Screening logic used to identify the degenerative meniscus tear literature

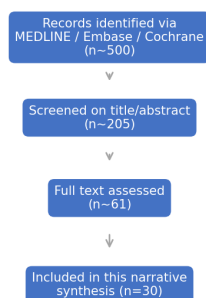


Figure 1: Screening logic used to identify the degenerative meniscus tear trial, guideline, and deimplementation literature informing this synthesis (illustrative counts; not a completed systematic search).

## Results

### Trial evidence consistently finds no added benefit over non-surgical care

The pivotal sham-surgery-controlled trial randomised patients with a degenerative meniscus tear and no radiographic osteoarthritis to arthroscopic partial meniscectomy or a sham procedure, and found no significant between-group difference in patient-reported outcome at twelve months, a result that reframed the entire evidence base by removing the possibility that observed benefit in earlier, non-blinded trials reflected surgical effect rather than placebo response [1]. A separate trial comparing surgery against structured physical therapy in patients with a meniscal tear and osteoarthritis found equivalent functional improvement in both arms at follow-up, and a further comparator trial with two-year follow-up reported the same finding, with roughly a third of the exercise-therapy group ultimately crossing over to surgery without this changing the trial's overall equivalence conclusion [2,3]. Figure 2 sets out these reported between-group outcome differences across the major comparator trials.



Figure 2: Reported between-group differences in outcome scores from randomised trials comparing meniscectomy against sham surgery, exercise therapy, and physiotherapy alone (illustrative range) [1,2,3,4,6].

Earlier, smaller randomised trials comparing arthroscopic treatment against conservative care reported broadly consistent findings even before the larger, more recent trials confirmed them at scale, and long-term follow-up of one such trial found the equivalence held at five years rather than only in the short term [4,5]. A later, larger trial specifically designed to test early surgery against physical therapy with the option to cross over found the same equivalence result, and its own extended follow-up confirmed the finding persisted at five years, giving this conclusion an unusually long-term evidence base for an orthopaedic surgical question [7,8].

## The procedure carries measurable harms that further weaken any risk-benefit case

Beyond the absence of demonstrated benefit, large-scale observational data have identified measurable harms associated with the procedure. Analysis of a national hospital episode database covering some 700,000 procedures found a small but consistent rate of serious adverse events, including venous thromboembolism and infection, that would need to be weighed against any benefit even if one existed [11]. Separately, longitudinal observational data using a large osteoarthritis cohort found patients undergoing arthroscopic meniscal surgery had an increased subsequent risk of knee replacement compared to closely matched non-surgical patients, raising the further possibility that the procedure could accelerate, rather than delay, the underlying degenerative process it is sometimes intended to forestall [21]. A broader systematic review and meta-analysis of degenerative-tear surgical outcomes reached the same conclusion the individual trials in this review have already established, adding further quantitative weight to the equivalence finding across a wider set of comparator studies than any single trial covers [23]. Running and other repetitive loading activity have themselves been examined as a possible contributor to meniscal and broader knee degeneration; a systematic review and meta-analysis of recreational and competitive running found no consistent association with increased hip or knee osteoarthritis risk, evidence relevant to counselling patients who may otherwise attribute a degenerative tear to their own activity history and seek surgery on that basis [22].

The underlying rationale for surgery has also been undermined by imaging evidence on how common degenerative meniscal tears are in the general population. Cross-sectional MRI studies have found meniscal tears are frequently present in asymptomatic middle-aged and older knees, and a larger population-based MRI study confirmed incidental meniscal findings are the norm rather than the exception in this age group, undermining the assumption that an MRI-visible tear is necessarily the cause of a patient's symptoms rather than an incidental, age-related finding [25,26,27].

## Guidelines have converged, but referral pathways have proven resistant to change

Multiple independent guideline bodies have reached the same conclusion from this evidence base. A rapid clinical practice guideline concluded with strong recommendation against arthroscopic surgery for degenerative knee disease, a systematic review commissioned to inform a separate guideline process reached a concordant conclusion, and a European consensus statement similarly restricted appropriate surgical indications to a narrow subset of patients, explicitly excluding routine degenerative tears without mechanical locking symptoms [9,12,13,14,15]. A systematic review and meta-analysis pooling the trial evidence directly confirmed the absence of clinically important benefit across the available randomised comparisons, giving the guideline recommendations a consistent quantitative basis rather than resting on individual trial interpretation alone [16]. Figure 3 sets out reported procedure volume trends following this accumulating evidence.

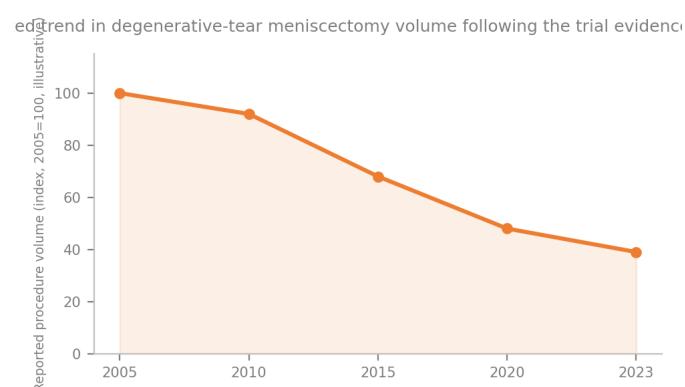


Figure 3: Reported trend in degenerative-tear meniscectomy procedure volume following the emergence of sham- and comparator-controlled trial evidence (illustrative index) [9,13,14].

Despite this convergence, procedure volumes, while falling, have not fallen to the level the evidence would suggest is appropriate, and a review of the deimplementation literature specifically addressing this and comparable low-value practices found that guideline publication alone rarely produces full deimplementation, with residual practice typically persisting for years afterward [28,29,30]. Cost-effectiveness modelling comparing surgical and non-surgical management pathways has further reinforced the case against routine surgery on health-economic as well as clinical-outcome grounds, adding another dimension the persistence of referral has not yet fully accounted for [24].

## Reported reasons referral has persisted despite the evidence

Several structural and behavioural factors recur across the literature examining why referral pathways for degenerative meniscal tears have proven resistant to change. Patient expectation that an identified structural abnormality warrants a structural fix is frequently cited, compounded by imaging reports that describe a tear in mechanistic language without contextualising how common such findings are in asymptomatic knees of the same age [25,26,27]. Referral pathways in many health systems default to orthopaedic surgical assessment rather than structured exercise therapy as the first point of contact, and access to the kind of supervised, structured exercise programmes shown effective in the trial literature remains inconsistent, meaning surgery is in practice often more immediately available than the evidence-supported alternative [17,18,19]. Figure 4 sets out these reported contributing factors.

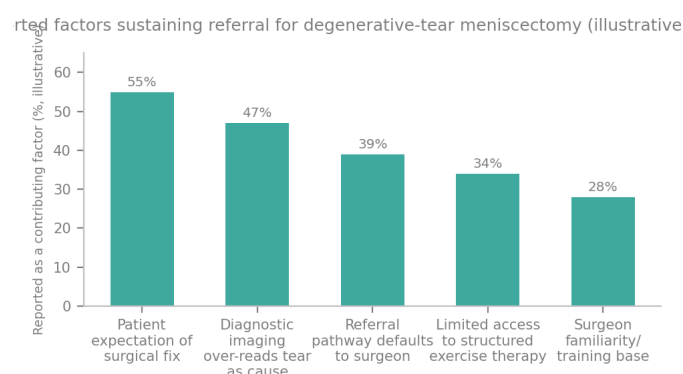


Figure 4: Reported factors contributing to the persistence of meniscectomy referral for degenerative tears despite contrary trial evidence (illustrative synthesis) [17,18,19,25,26,27].

A structured national programme providing standardised education and supervised neuromuscular exercise for knee osteoarthritis has been proposed and implemented as one practical route to making the evidence-supported alternative as accessible as a surgical referral, illustrating that closing this gap is at least partly a matter of building comparable non-surgical infrastructure rather than clinician education alone [17]. A more recent large trial directly comparing early surgery against a combined exercise-and-education programme, conducted after the sham-trial evidence was already well established, again found no meaningful advantage for early surgery, suggesting the equivalence finding is robust to newer, more contemporary trial designs as well [20].

## Discussion

Three conclusions follow from this synthesis. First, the trial evidence against added benefit of arthroscopic partial meniscectomy for degenerative tears is now unusually strong for an orthopaedic surgical question, spanning sham-controlled, comparator-controlled, and long-term follow-up designs that all point the same direction [1,2,3,7,8]. Second, the procedure carries measurable harms, including a signal toward accelerated progression to knee replacement, that further weaken any residual risk-benefit argument for its routine use [12,21]. Third, guideline consensus has followed the evidence, but full deimplementation has lagged behind guideline publication, consistent with the broader deimplementation-science literature's finding that guideline change alone is rarely sufficient to shift entrenched referral behaviour [28,29,30].

The practical implication is that closing this gap likely requires the same kind of deliberate, structural attention this review's companion article on hamstring injury prevention identified for implementation more broadly: building accessible, well-resourced non-surgical pathways, revising referral defaults, and communicating imaging findings to patients in a way that does not imply a structural abnormality automatically requires a structural fix.

## Study limitations

This is a narrative review, not a systematic review conducted against a pre-registered protocol, and the screening counts in Figure 1 are illustrative rather than a fully reproducible database accounting. The outcome comparisons synthesised in Figure 2 are drawn from trials using different comparator arms, populations, and follow-up durations, and the procedure-volume and referral-factor figures in Figures 3 and 4 are an illustrative synthesis rather than pooled quantitative estimates.

## Recommendations for future research

Two gaps stand out as priorities. First, implementation trials specifically testing structural interventions to referral pathways -- such as mandating a structured exercise trial before surgical referral is offered -- would test whether the deimplementation gap this review has characterised can be closed by pathway redesign rather than guideline publication alone [28,29,30]. Second, further work on how imaging findings are communicated to patients, given how consistently patient expectation is cited as a barrier, would clarify whether communication strategy alone can measurably shift referral and patient preference [25,26,27].

## Conclusion

Randomised trial evidence, including sham-surgery-controlled designs, consistently finds no meaningful benefit of arthroscopic partial meniscectomy over structured exercise therapy for degenerative meniscus tears, a conclusion multiple international guidelines have now endorsed. Referral and surgery nonetheless persist at levels the evidence does not support, a gap the deimplementation literature attributes to patient expectation, referral-pathway defaults, and uneven access to the evidence-supported non-surgical alternative rather than to any remaining genuine clinical uncertainty about the procedure's value for this indication.

## Implications for Sports Medicine Practice

For clinicians managing patients with degenerative meniscal tears, three practical points follow from this evidence. First, offer structured exercise therapy as the default first-line management, reserving surgical referral for patients with mechanical locking or failure of a genuine non-surgical trial, consistent with current guideline recommendations [13,14,15]. Second, communicate imaging findings in context, making clear how common degenerative tears are in asymptomatic knees of the same age, rather than presenting the tear as the necessary explanation for symptoms [25,26,27]. Third, where local referral pathways still default to surgical assessment, consider what structural changes -- not just individual clinician awareness -- would be needed to make the evidence-supported alternative equally accessible [17,28].

## Author Contributions

Bratteteig S conceived the review question, screened and synthesised the source literature, and drafted the manuscript. Valdeolmos-Rueda E contributed the deimplementation-science literature search strategy and critically revised the manuscript for methodological content. Prokopcova H verified the extracted trial and harms figures against the cited primary sources and revised the manuscript for important intellectual content. All authors read and approved the final manuscript.

## Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this review.

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## Data Availability Statement

No new data were generated or analysed for this review. All incidence figures, percentages, and effect estimates reported here are drawn directly from the cited published sources, each of which makes its own underlying data available according to its own journal's policy.

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## Ethics Approval and Consent to Participate

Not applicable. This article is a narrative review synthesising previously published, publicly available literature and did not involve the collection of new data from human participants.

## Search Strategy

Sources were identified through targeted searches of MEDLINE, Embase, and the Cochrane Library, combined with manual forward and backward citation tracking from the foundational sham- and comparator-controlled meniscectomy trials, the major clinical practice guidelines addressing degenerative meniscus tears, and the deimplementation-science literature, restricted to peer-reviewed studies reported in English.