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Editorial

Arthroscopy in the management of knee osteoarthritis

The recent FIDELITY randomised controlled trial, by Sihvonen et al. [1] from Finland on arthroscopic management of degenerative medial meniscal tears in the New England Journal of Medicine is the latest example. The trial question was; is arthroscopic partial medial meniscectomy superior to sham operation for degenerate medial meniscal tear in three primary outcome measures: Lysholm and WOMET scores and knee pain after exercise, at 2 and 6 months post-operation?

The inclusion criteria were:

- Age 35 to 65 years-old
- Persistent pain >3 months
- Pain provoked by palpation or compression (forced flexion) of the medial joint or positive McMurray's
- MRI showing signal characteristics of medial meniscal injury
- Arthroscopically-verified degenerative medial meniscal tear.

The exclusion criteria were:

- Obvious trauma-induced onset of symptoms
- Locked knee (cannot straighten)
- Previous surgical procedure on affected knee
- Clinical knee OA (ACR criteria)
- Radiographic criteria (Kellgren–Lawrence > grade 1)
- Fracture in the affected limb within 1 year
- Decreased range of knee movement
- Knee instability
- MRI shows other pathology requiring treatment other than an arthroscopic partial meniscectomy
- Arthroscopic examination shows other pathology requiring treatment other than an arthroscopic partial meniscectomy.

No differences between the two groups (partial meniscectomy n = 70, sham n = 76) were found for any outcome measure at any time period, although both groups had significant improvements in outcomes. The trial is a model on how to perform a surgical RCT and was adequately powered.

Previous trials have shown no benefit for arthroscopy for degenerate medial meniscus over exercise [2–4], or arthroscopy over sham operation for osteoarthritis [5], or for arthroscopy over physiotherapy for osteoarthritis [6]. As for many novel therapies, as the science of the studies improves, the actual benefits of the therapy diminish.

In the UK MRI scans requested from primary care physicians or physiotherapists have been used increasingly for investigating knee pain. The results of the scan often do not seem to be correlated with the history or examination of the patient in those sent on to secondary care. In the over 50 year-olds the finding of a degenerate medial meniscus has been the reason for referral with a clear expectation that an arthroscopy will be performed [7]. The FIDELITY trial [1] puts this age back to 35 years-old.

This poses the question, why does partial excision of a degenerate medial meniscal tear, where the medial tibiofemoral joint is tender, not diminish the pain symptoms and improve function? It is interesting to note that 35 years-old is when age-related changes occur in the musculoskeletal system. The degenerate medial meniscus (torn or otherwise) appears to be an age-related change, and not a pathological one.

Another question arising from the FIDELITY study was why did the sham operation work? The sham operation was a diagnostic arthroscopy. One can argue whether this is a true sham operation, but given that Kirkley et al. [6] have shown no benefit between arthroscopy and physiotherapy, then the conclusion must be that physiotherapy is the treatment of choice. The evidence now is strong enough to state that physiotherapy and exercise are the preferred therapies for medial knee pain in the ageing knee. The ageing knee is experiencing overload which the young healthy knee can cope with. Meniscectomy in the young knee does not have an adverse effect with respect to degeneration of articular cartilage till the patient is over 35 years-old [8]. Conversely, meniscectomy in the over 35 year-olds leads to degenerative changes within a few years.

What do we do for the patients who have an ageing knee with medial pain and failure of physiotherapy and exercise management? The problem here is understanding what is meant by osteoarthritis. The American College of Radiologists [9] define osteoarthritis by two methods:

Clinical

One month articular knee pain for most days plus three or more of the following:

- Crepitus on active motion
- Morning stiffness < 30 min
- Age > 38 years
- Bony enlargement on examination
- Bony tenderness on examination
- No palpable warmth.

Clinical plus radiographic

One month articular knee pain for most days plus radiographic evidence of osteophytes and one of the following:

- Crepitus on active motion
- Morning stiffness < 30 min
- Age > 38 years.

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Of particular note, joint space narrowing without osteophytes is not osteoarthritis. However medial joint space narrowing is associated with degeneration of the medial meniscus [10]. Given that arthroscopy, whether as a washout, or trimming the meniscus has no benefit over physiotherapy, then this radiological finding is of the ageing knee, not the pathological one. Although pain may be experienced the indications are that this is not from abnormalities within the structures of the knee. Dye [11] introduced the idea that there is an envelope of function. It can be considered that the patient with medial knee pain and an X-ray showing medial joint space narrowing without osteophytes is using their knee outside the envelope of function. The options in management then are:

- If overweight; they should be advised to diet.
- If over-exercising; to understand the effects of age and that athletic performance must diminish with time and change sport, surface, frequency or intensity.
- If they have genu varum; discuss the risks and benefits of an osteotomy [12].
- If they do not believe in taking painkillers; explain the illogicality of this approach when the alternative is a major operation.

The orthopaedic community should also consider joining in properly conducted clinical trials of new devices [13]. Since removing the degenerate meniscus is of no benefit, is replacing it a worthwhile alternative?

So when is an arthroscopy appropriate when managing an osteoarthritic knee? The answer is rarely. If the symptoms are severe and the plain X-rays show significant osteoarthritis (bone-on-bone articular loss with osteophytes), the management is joint arthroplasty. If the more common finding of an ageing knee, then only when there are mechanical symptoms, which almost always means true locking. There is also a role in assessing a patient for unicompartmental (including patellofemoral) versus total knee replacement, and in the management of isolated patellofemoral osteoarthritis [14].

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Simon Donell
Emeritus Editor
Norfolk & Norwich University Hospital, Colney Lane, Colney, Norwich NR4 7UY, UK