

The complexity of decision-making for total hip arthroplasty in early osteoarthritis



**M. Sharrock,
T. Board**

From Wrightington
Hospital, Wigan, UK

Cite this article: *Bone Joint Res* 2023;12(5):306–308.

Keywords: Total hip arthroplasty, Early osteoarthritis

Total hip arthroplasty (THA) is a tried-and-tested treatment for patients with severe hip osteoarthritis (OA) refractory to nonoperative treatments. Most orthopaedic surgeons would agree that radiological severity, physical examination findings, and symptom severity are major determining factors of whether to proceed with THA.¹ Nevertheless, there is a body of contradictory evidence on the role of radiological OA severity in predicting outcomes following surgery, and a select group of patients with apparently severe hip symptoms but relatively normal radiographs undergo THA with mixed outcomes.

Tilbury et al² assessed patients with Kellgren and Lawrence (KL)³ grades 0 to 2 (no OA, doubtful OA, and mild OA) and compared them with patients with KL grades 3 and 4 (moderate OA, severe OA), finding that the latter group had higher Hip Osteoarthritis Outcome Scores⁴ postoperatively with regard to ‘activities of daily living’, ‘pain’, and ‘symptoms’, and also the physical component of the 36-Item Short-Form Health Survey questionnaire (SF-36).⁵ These findings were mirrored by Keurentjes et al⁶ in that patients with KL grades 3 and 4 had greater improvements in the ‘physical functioning’ subscale of the SF-36. In contrast to this, Nilsson et al⁷ identified that preoperative radiological severity did not correlate with postoperative Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC)⁸ or SF-36 scores, highlighting that regardless of OA severity all patients had statistically significant improvements in postoperative scores. By way of a large, international multicentre study, Dieppe et al⁹ further supported these findings in that preoperative clinical severity assessed by WOMAC scores did not correlate with radiological severity. Instead, Dieppe

et al⁹ pointed out that preoperative clinical severity was more closely associated with increasing age, female sex, obesity, worse general health, and lower education. van Berkel et al¹⁰ looked at the natural progression over a ten-year period of patients presenting for the first time with early hip OA. During the ten-year follow-up period 12% of patients underwent THA, however the number of patients with KL grades 2 or more increased from 19% to 49%, suggesting a non-linear relationship between increasing radiological severity and need for THA.

There are clearly more factors at play than simply grading the radiological severity, particularly in those with early OA. Sometimes symptoms and examination findings are vague, and may be confounded by, for example, pathology of the lumbar spine, trochanteric bursa, or knee; hence a holistic approach to assessment of this hip is critical. Dieppe et al⁹ drew attention to other aspects that need consideration such as patient motivation and expectations, psychological status, societal roles, and social situations. Factors that have been negatively associated with recovery from THA include mental health conditions such as anxiety and depression, higher preoperative pain scores, and also a previous history of a joint arthroplasty.¹¹ When discussing treatment options with patients with early OA refractory to nonoperative treatment, it is vital that orthopaedic surgeons appreciate the complexity of the factors associated with a positive outcome following surgery.

Given the variable outcomes following THA in patients with early OA, we must think about alternative treatment strategies before committing patients to surgery. The role of physical therapy to help weight loss, strengthen hip muscles, lower joint reactive

Correspondence should be sent to Martin Sharrock; email: martin.sharrock@doctors.org.uk

doi: 10.1302/2046-3758.125.BJR-2023-0099

Bone Joint Res 2023;12(5):306–308.

forces, and restore hip biomechanics cannot be understated. Patients with mild-to-moderate hip OA have been shown to have wasting and reduction in strength of the muscles surrounding the hips and knees, which suggests a role for targeted physiotherapy in this cohort.¹² Nevertheless, a randomized controlled trial studying the effects of physiotherapy compared with sham treatment (inactive ultrasound and inert gel) showed no difference in pain or function between the two groups.¹³ It must be pointed out that this study pooled results for KL grades 2 to 4 and although the authors conclude a limited role for physiotherapy in hip arthritis, questions still remain unanswered regarding its use in patients with early OA in particular.¹³

It is vital that surgeons look towards confirming the diagnosis of OA in patients with minimal changes on plain radiographs. Compared with an anteroposterior (AP) view alone, Damen et al¹⁴ showed that including a false profile view increased the diagnosis of OA by an additional 22.9% in patients with early hip OA. OA frequently starts in the anterosuperior aspect of the hip joint and as this is not tangential to either the AP or lateral plain radiograph views, it is understandable that subtle early changes can be underappreciated. If diagnostic uncertainty persists, additional imaging in the form of CT or MRI can help to inform the clinician. CT is of use in detecting osteophytes and joint space narrowing, MRI can detect soft-tissue pathologies such as labral tears, and both can identify subchondral cysts that would not otherwise be visible on plain radiographs.^{15,16} The identification of these additional radiological OA features may reassure surgeons when deciding appropriateness to proceed with THA, however there is a paucity of information at present on how such radiological findings correlate with outcomes following surgery.

Another useful tool in patients with atypical hip pain or minimal radiological changes is the diagnostic hip injection. Deshmukh et al¹⁷ showed that if an injection of steroid and local anaesthetic into the hip capsule alleviated symptoms, it is closely associated with successful outcome following THA (sensitivity 91.5%, specificity 100%, positive predictive value 100%, and negative predictive value 84.5%). In this study of 204 patients, they identified no false-positive results that led to an unnecessary THA and therefore recommended a diagnostic hip injection to confirm the source of the pain.¹⁷ It is generally advisable that surgeons wait a number of months following an injection before performing THA for fear of increasing the infection risk; the optimal timing is debated in the literature with a recent systematic review suggesting to wait at least three months.¹⁸ Diagnostic injections may also be of benefit when faced with other closely related pathologies such as back pain, and hip surgeons and spinal surgeons should have pathways in place that allow for rapid assessments from each surgical speciality to reduce morbidity while awaiting confirmation of a diagnosis and a subsequent management plan. Back pain and hip arthritis are two separate entities,

however they often coexist and either may be causative or a result of the other; in some situations a THA can actually alleviate back pain.^{19,20}

To summarize, decision-making in patients with early hip OA is challenging. Judging severity and suitability for THA based on radiographs alone is ironically not black and white. Obtaining additional preoperative cross-sectional imaging and performing diagnostic injections may help decision-making in patients with early OA. However, multiple factors are associated with the outcome following THA in this cohort, and it is pertinent that hip surgeons understand these complexities and discuss them with patients when deciding treatment strategies within a shared decision-making framework.

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Author information:

- M. Sharrock, MBChB, BSc, MSc, PGCert, MRCS, Speciality Trainee, Trauma and Orthopaedics
- T. Board, MBChB, BSc, MSc(OrthEng), FRCS(Tr&Orth), MD, Consultant Hip and Knee Surgeon
Wrightington Hospital, Wigan, UK.

Author contributions:

- M. Sharrock: Conceptualization, Writing – original draft.
- T. Board: Conceptualization, Supervision, Writing – review & editing.

Funding statement:

- The authors received no funding for the research, authorship, and/or publication of this article.

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