Follow us @BoneJointRes

Freely available online OPEN ACCESS

BJR

INFOGRAPHIC

# Infographic: Total hip arthroplasty in early osteoarthritis

PICKING YOUR WINNERS

Cite this article: *Bone Joint Res* 2023;12(5):309–310.

**Keywords:** Total hip arthroplasty, Early osteoarthritis, Subchondral cysts

**M. Sharrock, T. Board**

*From Wrightington Hospital, Wigan, UK*

The outcomes following total hip arthroplasty (THA) in patients with early osteoarthritis (OA) are less predictable than in severe disease.[1-4] We wanted to assess the factors that are associated with successful outcome.

We compared 70 patients with early OA (Kellgren and Lawrence (KL) grades 0 to 2) with 200 patients with advanced OA (KL grades 3 and 4). Oxford Hip Scores (OHS),[5,6] EuroQol five-dimension questionnaire (EQ-5D),[7] and EuroQol-visual analogue scale (EQ-VAS)[8] scores were analyzed preoperatively and one year postoperatively. A subgroup analysis was performed for those with early OA to identify factors (clinical and radiological) associated with a successful THA – defined as a postoperative OHS ≥ 42; the so-called 'patient-acceptable symptom state'.[9]

Patients undergoing THA with early OA were significantly younger (61 vs 66 years; p = 0.004), however no differences in BMI, American Society of Anesthesiologists (ASA),[10] or sex were noted. After confounders were adjusted for, there were no differences in preoperative OHS or EQ-5D scores between the two groups, however postoperative function scores were significantly lower in the early OA group. In the early OA group, EQ-VAS was significantly lower preoperatively and also postoperatively. No differences in complication, revision, or readmission rates were observed.

Only 16/70 (23%) patients with early OA had a successful THA (OHS ≥ 42). In the radiological analysis (n = 38 with preoperative CT or MRI scans), subchondral cysts were seen more commonly in the successful THA group compared with the unsuccessful group (92% vs 58%; p = 0.036). A narrower joint space width on CT or MRI was associated with a successful THA, as was the absence of a postoperative complication.

We recommend obtaining a preoperative CT or MRI scan in patients with early radiological OA, and if this fails to demonstrate subchondral cysts then a THA is unlikely to provide a satisfactory outcome.

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

doi: 10.1302/2046-3758.125.BJR-2023-0100

*Bone Joint Res* 2023;12(5): 309–310.

## References

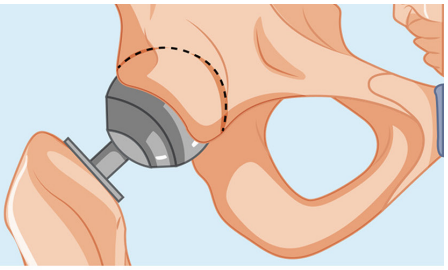
1. **Huynh C**, **Puyraimond-Zemmour D**, **Maillefert JF**, **et al**. Factors associated with the orthopaedic surgeon's decision to recommend total joint replacement in hip and knee osteoarthritis: an international cross-sectional study of 1905 patients. *Osteoarthritis Cartilage*. 2018;26(10):1311–1318.
2. **Tilbury C**, **Holtslag MJ**, **Tordoir RL**, **et al**. Outcome of total hip arthroplasty, but not of total knee arthroplasty, is related to the preoperative radiographic severity of osteoarthritis. A prospective cohort study of 573 patients. *Acta Orthop*. 2016;87(1):67–71.
3. **Keurentjes JC**, **Fiocco M**, **So-Osman C**, **et al**. Patients with severe radiographic osteoarthritis have a better prognosis in physical functioning after hip and knee replacement: a cohort-study. *PLoS One*. 2013;8(4):e59500.
4. **Nilsdotter AK**, **Aurell Y**, **Siösteen AK**, **Lohmander LS**, **Roos HP**. Radiographic stage of osteoarthritis or sex of the patient does not predict one year outcome after total hip arthroplasty. *Ann Rheum Dis*. 2001;60(3):228–232.
5. **Dawson J**, **Fitzpatrick R**, **Carr A**, **Murray D**. Questionnaire on the perceptions of patients about total hip replacement. *J Bone Joint Surg Br*. 1996;78-B(2):185–190.
6. **Murray DW**, **Fitzpatrick R**, **Rogers K**, **et al**. The use of the Oxford hip and knee scores. *J Bone Joint Surg Br*. 2007;89-B(8):1010–1014.
7. **Rabin R**, **de Charro F**. EQ-5D: a measure of health status from the EuroQol Group. *Ann Med*. 2001;33(5):337–343.
8. **Feng Y**, **Parkin D**, **Devlin NJ**. Assessing the performance of the EQ-VAS in the NHS PROMs programme. *Qual Life Res*. 2014;23(3):977–989.
9. **Keurentjes JC**, **Van Tol FR**, **Fiocco M**, **et al**. Patient acceptable symptom states after totalhip or knee replacement at mid-term follow-up: Thresholds of the Oxford hip and knee scores. *Bone Joint Res*. 2014;3(1):7–13.
10. **Saklad M**. Grading of patients for surgical procedures. *Anesthesiology*. 1941;2(3):281–284.

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

**Author contributions:**
- M. Sharrock: Data curation, Formal analysis, Methodology, Writing – original draft.
- T. Board: Conceptualization, Methodology, Supervision, Writing – review & editing.

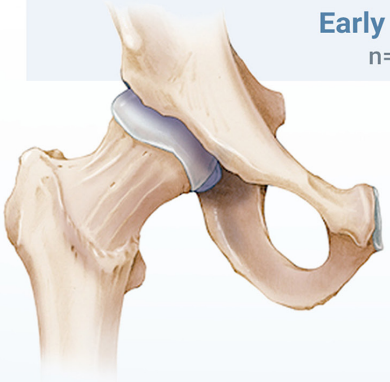
**Funding statement:**
- The authors did not receive any financial or material support for the research, authorship, and/or publication of this article.

# Total Hip Arthroplasty in Early Osteoarthritis



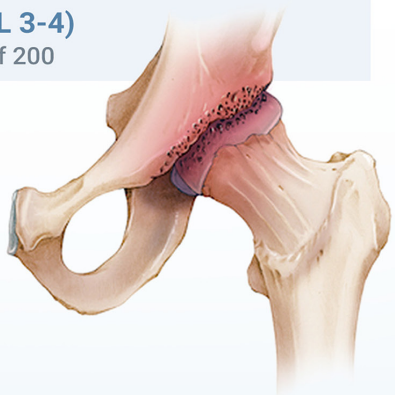
## Picking your winners

**1,935** underwent **THA** (Total Hip Arthroplasty)



**Early OA (KL 0-2)**
n=70 (3.6%)

**Advanced OA (KL 3-4)**
Random sample of 200



**Baseline characteristics**

| | | | |
|---|---|---|---|
| 60 | Mean age (years) | (P<0.0035) | 66 |
| 30 | BMI (kg/m²) | (P<0.5743) | 30 |
| 1.9 | ASA | (P<0.2755) | 2 |
| 39% | Gender (male) | (P<0.6158) | 42% |

## Early vs Advanced OA: Postoperative Outcomes

**Patients with early OA had:**

### Oxford Hip Score

Lower improvement in post-op score: **16 vs 23** (P<0.0001)
Lower percentage of possible change (PoPC): **50% vs 76%** (P<0.0001)

### EQ-5D

Lower improvement in post-op score: **0.002 vs 0.15** (P<0.0001)

### EQ-VAS

Lower post-op scores: **66 vs 79** (P<0.0001)

*" No difference in complication, revision or readmission rates "*

**Summary**

More favourable post op **PROMs** for patients with advanced OA

## Early OA Subgroup Analysis (n=70)

**23%** had Successful THA

**77%** had Unsuccessful THA

| | | | |
|---|---|---|---|
| 92% | Subchondral cysts | 58% | (P<0.0362) |
| 0.73mm | Joint space width | 1.14mm | (P<0.0257) |
| 0% | Presence of complication | 26% | (P<0.0468) |

### *Were subchondral cysts present on CT/MRI?*

| Cysts (n=26) | No cysts (n=12) | |
|---|---|---|
| Post-op OHS 36 | Post-op OHS 26 | (P<0.0194) |
| % improvement OHS 62% | % improvement OHS 38% | (P<0.0353) |

## Conclusion

Less favourable outcomes following **THA** in patients with **early OA.**

Obtain preoperative **CT/MRI.**

In the absence of **subchondral cysts/joint space narrowing** patients are unlikely to have a **successful** outcome.