

Ultrasound, Fluoroscopy, or Landmark Guidance? A Systematic Review of Accuracy and Patient Outcomes in Hip Osteoarthritis Injections

Waleed El-Hassan¹, Hamza Sidhu¹, Wahid Masood¹

¹Imperial College London, London

Waleed.elhassan20@imperial.ac.uk; waleedelhassan@hotmail.co.uk

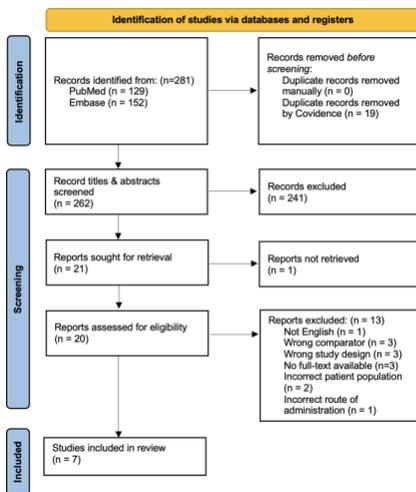
Disclosures: No Disclosures

Introduction & Aims

Intra-articular (IA) injections for the treatment of hip osteoarthritis (OA) has shown promise in symptomatic relief, however accuracy of needle placement can affect how beneficial the treatment is. This systematic narrative review aimed to compare accuracy and patient outcomes following ultrasound (US), fluoroscopic (FL) and landmark-guided hip injections.

Methods

MEDLINE and EMBASE records were reviewed from inception to August 2025. Our initial search yielded 262 records. The abstract and title review were done independently by two reviewers, with disputes resolved by discussion or a third reviewer. The population was patients with hip OA and receiving IA hip injection. Eligible studies must directly assess one or more methods of needle guidance. Outcomes assessed were: patient reported outcomes, procedural success or accuracy. We excluded studies with <20 patients and non-English language reports.



Results

7 studies were included in the review. FL-guided injections improved Oxford Hip Score by 7.3 at 6–8 weeks. US-guided injections had a high accuracy of 97%-100%; with a procedural success of 98% (n=202). US-guided injections resulted in less pain than FL-guided (3.0 vs 5.6/10) and 98% patient preference. FL-guided injections were found to have procedural success of 80-90%. Portable US-guided injections had lower post-injection pain ratings compared to landmark (1.95 vs 2.95, p=0.007). Landmark-guided injection found to have procedural success & accuracy of 87.2%/79.4% respectively.

Discussion

Image guidance provides improved accuracy and patient comfort. While US avoids radiation exposure, FL remains effective when contrast confirmation is needed. While image guidance can yield greater pain relief for patients, landmark-guidance still provides some relief, providing clinicians with a useful alternative when resources are limited. The literature synthesised has provided some promising comparisons, however, the included studies were relatively small single-centre studies, reducing the validity of our outcomes. Additionally, there is a relative lack of papers discussing these procedures in the context of just osteoarthritis, with only 7 papers included in the study. Further studies comparing each guidance type, while standardising the medication and dose given, can assess whether higher accuracies directly translate to improved patient outcomes.

SIGNIFICANCE/CLINICAL RELEVANCE: These results suggest ultrasound guidance may achieve high intra-articular accuracy with lower procedural pain and no radiation, potentially enabling more outpatient delivery and fewer repeat attempts. Fluoroscopy could be appropriate when contrast confirmation or complex anatomy is anticipated, whereas landmark-only techniques showed lower accuracy; how these differences should shape training, consent, and local pathways merits further evaluation.