



Is Anesthetic Hip Joint Injection Useful in Diagnosing Hip Osteoarthritis? A Meta-Analysis of Case Series



Desiree M.J. Dorleijn, MD^a, Pim A.J. Luijsterburg, PhD^a, Sita M.A. Bierma-Zeinstra, PhD^{a,b}, Pieter K. Bos, PhD, MD^b

^a Department of General Practice, Erasmus MC, University Medical Center Rotterdam, The Netherlands

^b Department of Orthopaedics, Erasmus MC, University Medical Center Rotterdam, The Netherlands

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ABSTRACT

To assess the diagnostic value of intra-articular anesthetic hip injection in patients with hip pain atypical for osteoarthritis (OA), literature was searched. Included were studies assessing the diagnostic value of anesthetic hip injections in differentiating between pain caused by OA or another source. Pooled estimates of sensitivity and specificity with 95% confidence intervals (CI) were calculated. Of the 1387 potentially eligible articles, nine case series with high risk of bias could be included. The pooled sensitivity was 0.97 (95% CI 0.87, 0.99). Specificity was 0.91 (95% CI 0.83, 0.95). For clinical practice, no recommendation can be made regarding the use of hip injections for diagnosing hip OA. High quality, accurately reported studies are needed to provide better evidence on the diagnostic role of hip injection.

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Pain in the hip region can arise from different sources, including intra-articular hip joint pathologies such as osteoarthritis (OA), synovitis, femoroacetabular impingement and labral pathology, as well as extra-articular causes such as greater trochanter pain syndrome, inguinal hernia, and referred pain or radicular pain from the lumbosacral spine and sacroiliac joints.

Although careful history taking and physical examination can often differentiate between hip OA and other sources, signs and symptoms are sometimes atypical, causing a diagnostic dilemma. Previous research provided evidence for an association between hip pain and disk space narrowing at disk level L1/L2 and L2/L3 [1]. Moreover, the severity of radiographic hip OA does not always correlate with the symptoms [2,3].

Because therapy considered for end-stage hip OA includes total hip arthroplasty (THA) surgery, it is essential to correctly evaluate the signs and symptoms.

Intra-articular anesthetic hip injection is an additional diagnostic tool to exclude or confirm an intra-articular source of hip pain [4–8]. Although this test is widely used in orthopedic practice, the diagnostic

value of this injection is not well established and most studies included small numbers of participants.

The objective of this meta-analysis is to assess the diagnostic value of intra-articular anesthetic hip injection when differentiating between hip pain caused by hip OA or an alternative source in patients with hip pain atypical for OA.

Methods

Search Strategy

A search was performed (1966 until end December 2011) in PubMed, Embase, PEDro, and the Cochrane Library (Cochrane database of systematic reviews, database of abstracts of reviews of effects, and Cochrane central register of controlled trials) to identify studies evaluating the diagnostic value of an anesthetic hip joint injection when differentiating between hip pain caused by OA, or a spinal source or another source, in patients with atypical hip pain. The databases were searched using a combination of different terms for the following items: “OA”, “hip”, “spine”, “diagnostic” and “intra-articular”. A detailed description of the full electronic search strategies is provided in Appendix A (available online at www.arthroplastyjournal.org).

Eligibility Criteria

We included all cohort studies, including randomized controlled trials and case series about adults with hip pain that was possibly caused by degenerative hip disease, and who had been given an anesthetic diagnostic injection in the hip joint. The study had to report

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Reprint requests: Desiree M.J. Dorleijn, MD, Erasmus MC, University Medical Center Rotterdam, Department of General Practice, PO Box 2040, 3000 CA Rotterdam, The Netherlands.

original data on a function score or pain score after the diagnostic injection, as well as a function score or pain score after further therapy, e.g. THA, spinal treatment.

Study Selection

To identify potentially relevant studies, two authors (DD and PKB) independently evaluated the title and abstract on the basis of the eligibility criteria. Full-text articles were screened for eligibility and the reference lists of these articles were searched for additional articles. Disagreement was solved by discussion.

Data Extraction

One author (DD) extracted the data using a standardized form. Extracted data were checked by a second author (PL). The following data were collected: demographic and clinical characteristics (design, age and participant characteristics), how the anesthetic hip injection was given, the reference tests used, outcomes after consecutive therapy, and the duration of follow-up.

Assessment Risk of Bias

The included studies were assessed for their methodological quality by two authors (PL and SB), independently of each other, using the QUADAS2 [9]. The QUADAS2 is a recently introduced improvement of the QUADAS [10] which was developed for quality assessment of diagnostic studies. The QUADAS2 consists of four domains covering the following items: patient selection, index test, reference standard, and flow and timing. Each item was scored for risk of bias (risk of bias indicated as low, high or unclear). If the answers to all signalling questions for a domain are “yes,” then risk of bias was judged as low. In

the domain ‘patient selection’ the risk of bias was also judged as low if the first question was answered with “unclear” and the second and third questions with “yes”. If any signalling question was answered with “no,” the risk of bias was judged as high. Any other combination of answers to the signalling questions for a domain was judged as unclear. The items patient selection, index test, and reference standard were also scored for concerns regarding applicability (low, high or unclear concern) [9]. Disagreement was solved by discussion (Appendix B; available online at www.arthroplastyjournal.org).

Outcomes and Meta-Analyses

Pain relief after THA was used as the main outcome measurement. Pain relief after other therapy (e.g. spinal treatment) was used as a secondary outcome. Diagnostic two-by-two tables were extracted or reconstructed using relevant data of the included studies. For each study, results are presented as sensitivity, specificity, positive predictive value and negative predictive value of the index test (intra-articular anesthetic hip injection).

Depending on clinical homogeneity of the included studies, we calculated pooled estimates of sensitivity, specificity, positive likelihood ratio and negative likelihood ratio with the 95% confidence intervals (CI) of the diagnostic test (intra-articular anesthetic hip injection) for predicting pain relief after subsequent therapy including THA and for predicting pain relief after THA only.

Additionally, we performed a best-case and worst-case scenario analysis. In the best-case scenario, patients who reported pain relief after the diagnostic injection with no THA were considered true positive; and those who did not have pain relief after the diagnostic injection with unknown diagnosis were considered true negative. In the worst-case scenario, patients reporting pain relief after the diagnostic injection and no THA were considered false

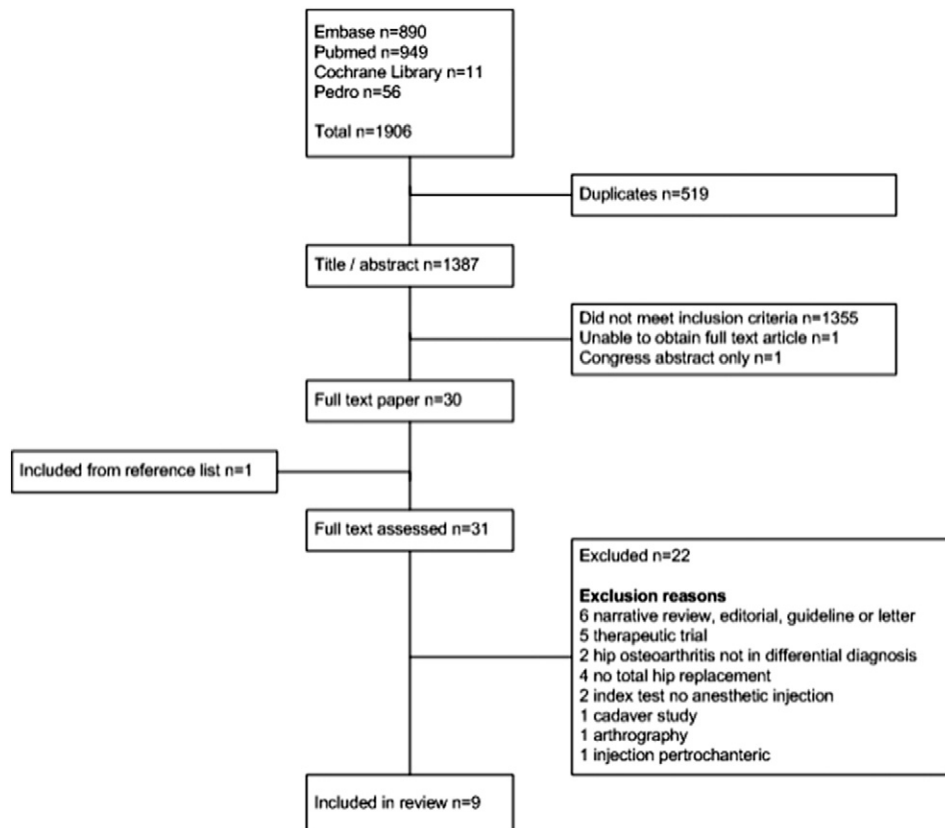


Fig. 1. Flowchart of the selection of included studies.

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