

Hip Joint Injection Technique Using Anatomic Landmarks: Are We Accurate?: A Prospective Study

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Abstract

Background: Hip injection is a procedure that is performed very frequently, usually under X-Ray control. We describe a lateral approach using anatomical landmarks and assess how useful is the fluoroscope in the accurate positioning of the needle using this approach.

Method: Consecutive series of 20 patients undergoing hip injection for confirmation of osteoarthritis. All patients had the same approach. We used the image intensifier to appraise whether the needle was satisfactorily sited. We counted the needle sitting as a success in those cases where the needle position was in the region of the neck of femur as seen on A-P radiograph and the steroids could be injected without modification of the injection site.

Results: 1 patient out of 20 had to have the needle repositioned after fluoroscopic control (5%), in 95% of cases the needle was correctly positioned.

Conclusion: In the hands of experienced hip surgeons, we recommend that hip injections are done by our lateral approach using anatomical landmarks rather than by the systematic use of fluoroscope.

INTRODUCTION

Arthrocentesis and hip injections are common procedures that are executed not only by rheumatologists and orthopedics, but also by accidents and emergency physicians and family practitioners. The scope of the former is mainly diagnostic whereas the role of the latter can be therapeutic or diagnostic^{1, 2}. Several adjuvant are used to approach the hip joint two of which being ultrasounds and fluoroscopy. Most studies on hip injections have focused on the outcome and the effects of the injection rather than the technique itself. Very few authors have dedicated some time to the study of the accuracy of hip injections using anatomical landmarks despite the wide spread use of this technique. Numerous techniques can be used to reach the hip joint. The anterior approach which has been described in more technique manuals and textbooks than any other approach^{3, 4} results in significant risk to the femoral nerve⁵. Leopold et Al⁶ also reported that the position of the needle was extra-articular in 40% of anterior approaches and in 20% of lateral approaches using anatomic landmarks only. In our study we assess whether in the hand of an experienced hip surgeon,

hip injections can be done accurately without fluoroscopic assistance.

PATIENTS AND METHODS

Between August 2004 and February 2005, 20 consecutive patients with hip pain were selected; all of whom were under the care of one orthopedic surgeon. The assessment included a clinical history, physical examination and AP and lateral radiographs of the hip. If the diagnosis of osteoarthritis was in doubt, the patients were offered an injection of local anesthetic and steroids into their hip. This procedure was also employed in those patients who are not to undergo total hip replacement. The injection was performed by one of the authors only. We used a lateral approach to the hip. The patient was lying supine. The anatomic landmark that was punctured with a long 20G spinal needle was located 2 cm bellow the superior border of the greater trochanter in between its anterior and posterior borders. The skin overlying this location was marked and prepared in a sterile fashion. After dermal infiltration with local anesthetic, a needle was inserted parallel to the floor and perpendicular to

the femoral shaft until bone was felt. It was then retrieved a couple of millimeters and reinserted with an angle of 10 to 15 degrees anteriorly (ante version of the neck) and 45 degrees superiorly. The needle is advanced until the bony resistance is felt. That is when we were theoretically ready to inject. We used the image intensifier to assess whether the needle was satisfactorily sited. We counted the needle sitting as a success in those cases where the needle position was in the region of the neck of femur as seen on A-P radiograph and the steroids could be injected without modification of the injection site.

RESULTS

20 patients corresponded to our criteria of inclusion and they were selected as a consecutive series of patients needing hip injection. None of our 20 patients were followed up as the aim of our study was to assess a technique and its accuracy rather than its clinical outcome which has been studied by many authors. The age of the 20 patients ranged from 45 to 72 years old with a mean of 63.4 years of age. Out of all the patients involved in our study, in one case only the needle had to be repositioned because of its non adequate location after fluoroscopic control. This was due to the needle being short in a fat patient. In this particular case a longer needle was taken and inserted appropriately within the joint space. This represents 5 % of all patients involved where fluoroscopic control was necessary to confirm adequate needle position even though it was felt before the X-Ray check that the needle was too short.

DISCUSSION

Arthrocentesis of the hip is the diagnostic test of choice to determine the presence or absence of pyarthrosis. It also is used in the workup of the painful total hip arthroplasty to determine whether an infection is a possible etiology. Intraarticular injection of the hip is also used diagnostically to determine the likelihood of achieving pain relief after primary or revision hip arthroplasty. Therapeutic hip injections, although less commonly done than knee injections, are accepted for the treatment of arthritic symptoms in patients who are not considered good candidates for total hip arthroplasty.

Our study is not aimed at determining whether hip injection is a useful diagnostic or therapeutic tool. In fact we have focused on the description of a technique and its accuracy rather than its outcome.

We have shown that in 3 % of our patients (1 out of 30)

only, the needle was positioned inaccurately with our technique. In 1993, Jones et al ⁷ studied the accuracy of 103 injections into various joints. They found that approximately one third of knee and ankle injections were extraarticular. Despite these findings, almost half of those with extra articular placement experienced good therapeutic response, suggesting that total accuracy of needle placement may not be essential to a satisfactory outcome. Two shoulder studies have suggested an association between accuracy of steroid placement and better clinical outcome of shoulder symptoms ^{8, 9}. A recent study from Shanahan et al ¹⁰ reported the results of a randomized trial comparing suprascapular nerve block given by an anatomical landmark approach with a CT guided approach for chronic shoulder pain. It was shown that CT guidance did not confer any added benefit over the anatomical landmark approach. These findings suggest that we cannot automatically assume that guided injections result in greater clinical benefits. In our study, we focused on the technique and accuracy rather than on the outcome. In fact the position of the needle was X-ray controlled before injecting for all patients.

Until randomized controlled trials are made to assess the clinical benefits of the accuracy of needle placement in hip injections and the cost effectiveness of the guided procedure, we believe that in the case of an experienced hip surgeon, hip injection can be done with no fluoroscopic assistance. In fact, it is time consuming, exposes the patient and the practitioner to unnecessary radiations, is costly, and has never proven to confer clinical benefits. We are aware that our technique is standard and that our results would not demonstrate a high inter practitioner reliability. Our study has shown that this technique has a high reproducibility. We therefore recommend that practitioners involved in the practice of frequent hip injections use our technique of lateral approach using anatomical landmarks without the systematic use of fluoroscopic guidance.

CONCLUSION

Hip injection is a very common procedure that is undertaken not only by Orthopedic Surgeon or Rheumatologists but also by general practitioners and accidents and emergency Physicians. Most of the times, the lateral or anterior approach is combined with fluoroscopic or ultrasonographic guidance. Unfortunately fluoroscopy exposes the patients and practitioners to ionizing radiations and is a time consuming procedure. It has been shown by different authors that accuracy of needle placement does not always correlates with clinical outcome. We used the lateral approach to the

hip joint using anatomical landmarks. Out of twenty patients who underwent the injection, the needle was misplaced in only one patient (too superficial) and was repositioned after fluoroscopic control. In the hands of experienced hip surgeons, we recommend that hip injections are done by the lateral approach and the use of anatomical landmarks described above rather than by the systematic use of fluoroscope.

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