Hip Joint Injection Technique Using Anatomic Landmarks: Are We Accurate?: A Prospective Study
C Mauffrey, Pobbathy

Citation

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 then 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 then 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 nerve \(^5\). Leopold et Al \(^6\) 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 then 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 then 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 then 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, 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. 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 then 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.

CORRESPONDENCE TO
Mr. C MAUFFREY, cmauffrey@yahoo.com, 4 Loxley square, B927DW Solihull, England.

References
Author Information

C. Mauffrey, SpR Orthopaedics
Robert Jones and Agnes Hunt Hospital

Pobbathy
Consultant Orthopedic Surgeon, Birmingham Heartlands Hospital