



Do we need radiological guidance for hip joint injections ?

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Intra-articular injections are widely used in treatment of early hip osteoarthritis and may help to offset the need for a joint replacement. Most orthopaedic surgeons do this under radiological guidance while some rheumatologists and pain specialists do it without. Our study was aimed at assessing accuracy of blind intra-articular injections to the hip joint. Forty-three hips in 40 consecutive patients who had hip injections were included in the study. The anatomical landmarks were marked and the needle was placed from an antero-lateral approach. Radio-opaque dye was then injected and the position of the needle was checked under image intensifier. The success rate of blind injections was 65.1%. Obese patients, patients with severe grade 4 arthritis with no joint space and those with flexion deformity were the majority of failed cases. We propose that hip injections should be carried out by trained specialists under radiological guidance.

Keywords : hip ; intra-articular ; injection.

INTRODUCTION

Osteoarthritis is a common cause of disability and its management in early stages is challenging. Intra-articular injections are widely used in treatment of early osteoarthritis of the hip and may help to offset the need for a joint replacement. These are used for both diagnostic (1) and therapeutic purposes (4). Many specialists perform this injection including orthopaedic surgeons, radiologists, rheumatologists and pain specialists. Most

orthopaedic surgeons and radiologists do this under radiological guidance whereas the latter two tend to perform injections blindly. In our experience, accurate needle placement inside the hip joint capsule has not been very easy. Hence we have always used image intensifier to check needle placement by injecting radio-opaque dye. Previous studies in literature have suggested that blind hip injections can be inaccurate and may pose danger to the nearby neurovascular structures (5).

Our study was aimed at assessing accuracy of blind intra-articular injections to the hip joint.

METHODS

Patients listed for hip steroid injections were included in this study. Informed consent was obtained from all patients. The procedure was performed identical to our existing practice with one change in the sequence. Instead of the usual practice of checking the position of the needle before injecting the dye, we did it after

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Fig. 1. — Image intensifier picture of hip after blind injection

injecting the dye for the purpose of the study. The detailed procedure is described below.

The patient was positioned on radiolucent operating table. The procedure was performed under local anaesthetic or general anaesthetic as agreed beforehand. The area around the hip was prepared sterile. After appropriate anaesthetic, a 22 gauge spinal needle was inserted via the antero-lateral approach. The anterior-superior iliac spine and the pubic symphysis were palpated and the mid-inguinal point was determined, overlying the femoral head. The tip of the greater trochanter was felt and a point 5 cm distal to this was selected anterior to the trochanter and lateral to the line of the anterior-superior iliac spine. This ensured the path of the needle was away from major neurovascular structures. From the entry point the needle was directed along the line connecting the entry point to the mid-inguinal point at 45 degrees angle to the skin. Resistance was felt at appropriate depth when the tip of the needle made contact with the femoral neck. At this point 1 ml of Omnipaque® dye (Iohexol) was injected through the spinal needle and an antero-posterior radiograph was obtained with the image intensifier. A successful attempt was indicated by visualisation of the outline of the capsule in the radiograph (fig 1). If the position of needle was unsatisfactory it was then

adjusted. Once satisfactory placement was confirmed, the procedure continued as planned.

The results were assessed against radiological grade of arthritis using the Kellgren-Lawrence scale (3), Body Mass Index and presence of flexion deformity.

RESULTS

Forty consecutive patients were included in the study. All injections were carried out by a trained, accredited orthopaedic surgeon with adequate prior experience in the procedure. Three patients had bilateral injections bringing it to a total of 43 hips.

Twenty-eight of the 43 hips (65.1%) were injected successfully with the blind technique without need for repositioning. This also meant a failure rate of 1 in 3. We compared the failure rate of blind injections to the grade of arthritis (table I) and found a higher failure rate in grade 4 arthritis (61.5%), but this was not statistically significant. Nineteen patients (21 hips) were obese (Body Mass Index > 30) and 13 out of these had failed blind injection (failure rate 61.9%) (table II); however this also was not statistically significant (p value 0.08). Four patients had a hip flexion deformity and the blind technique failed in all 4 (table III), this was statistically significant (p value 0.04).

DISCUSSION

Intra-articular hip injections have been accepted as a valuable option in treatment of hip osteoarthritis. An increasing number of specialists perform this, some under image guidance and some without. It can be done under either fluoroscopic control or ultrasound guidance (7). The aim of the study was to find out the accuracy of blind intra-articular hip injections.

The blind technique failed in 1 in 3 cases. This is higher than quoted by Mauffrey *et al* (2) but they did not inject a radio-opaque dye to confirm position. Injection of dye into the hip joint improves the accuracy of the technique and is very useful especially in obese patients (2). We could not find any other article in English literature where a radio-opaque dye has been used to confirm accuracy of hip joint injections.

Table I. — Accuracy of blind hip injections and grade of arthritis

Grade of arthritis	Accuracy of blind injection	
	In	Out
1	2	2
2	1	2
3	14	9
4	5	8
Fisher exact test, p value 0.53		

Table II. — Accuracy of blind hip injections and Body mass index

Body Mass Index	Accuracy of blind injection	
	In	Out
< 29	14	8
> 30	8	13
Fisher exact test, p value 0.08		

Table III. — Accuracy of blind hip injections and hip flexion deformity

Hip flexion deformity	Accuracy of blind injection	
	In	Out
Present	0	4
Absent	22	17
Fisher exact test, p value 0.04		

We found that obesity and presence of hip flexion deformity increased the risk of failure very significantly. In presence of hip flexion deformity, none of the blind injections were successful. In obese patients, 2 out of 3 blind injections failed to reach the joint, in spite of using long spinal needles. Grade 4 arthritis had a higher risk of failure (2 out of 3) with the blind injection technique. In obese

patients, it is difficult to find the anatomical landmarks, making blind injection difficult. Hip flexion deformity when moderate to severe also makes assessment of landmarks difficult. In grade 4 arthritis there is no joint space, the capsule is thick and adherent and the joint is usually dry, making accurate needle placement very difficult. However except for hip flexion deformity, none of these differences observed were statistically significant with the numbers of patients available. We still would suggest use of image guidance in these circumstances.

We conclude that intra-articular hip injections need to be performed under appropriate image guidance especially in patients with high body mass index, severe arthritis or flexion deformity.

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