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The Anterior Approach for Non-Image Guided Intra-Articular Hip Injection

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Summary:
Hip injections using the anterior approach, as described, are safe, reproducible and reliable without significant risk of complications noted in this study.

Abstract:
Background:
Intra-articular hip injection is used by orthopaedic surgeons for a variety of diagnostic and therapeutic reasons. Hip injections are routinely performed with the aid of image guidance to ensure accuracy but can be inconvenient, expensive and can delay management. Early studies found the rate of successful intra-articular injection of the hip to be unsatisfactorily low. The purpose of this study is to assess the accuracy and safety of a technique utilizing an anterior approach for non-image guided intra-articular injection of the hip using anatomical landmarks. Our hypothesis is that the anterior approach, using the described technique, is an accurate, reproducible and safe way to access the hip for intra-articular puncture, aspiration and delivery of substances.

Methods:
The 55 patients enrolled in this study were a group of patients previously consented for hip arthroscopy for treatment of a variety of intra articular pathologies. They agreed to participate in and consented for the injection study. Patients were positioned supine on a fracture-traction table with the hip in neutral position (0 degrees flexion/abduction/adduction) and the foot in neutral position (not a relaxed position which is usually slight ER of the foot). A point was marked by the respective crossing lines coming, distally from ASIS and horizontally (lateral to medial) from the tip of greater trochanter. A 19G spinal needle was inserted vertically down towards the femoral neck from this point. Once bony resistance was felt, the inner needle was removed and air was injected with a 10cc syringe to produce an air arthrogram. If bony resistance was not felt on the first attempt, the needle was angled slightly medially for the second attempt. The position of needle and presence of air inside the joint were confirmed with fluoroscopy in both AP and lateral views. Needle position was re-confirmed by back-flow of fluid from the joint, after portals were established and irrigation was introduced.
Accuracy and difficulty in achieving correct needle placement were correlated with age, weight, height, BMI, body type (muscular, fat, skinny etc'), gender, femur and pelvis morphology and alignment. Location of needle in the joint was also documented by dividing the femoral head/neck into zones (upper neck, mid neck, lower neck, lateral to zona orbicularis, medial to head neck junction). In addition, in order to document possible side effects of the described injection technique (e.g. LFCN irritation) a separate group of subjects treated with intra articular hip injection (HA, PRP, Steroids) using the same technique, was followed.

Results:
55 subjects enrolled in the study. There were 36 males and 19 females. Three of the subjects had an artificial joint (BHR resurfacing). Mean age was 34y (ranged 16-66). Mean weight was 76kg (ranged 57-106), and mean height was 175cm (ranged 155-190). There were 51 correct placements of the needle and 4 misplacements (needle not in the hip joint) yielding 93% success rate. Of the 51 correct needle placements, 47 placements were defined as easy (1-2

'attempts' before hitting the bone) and 4 as difficult (3-4 'attempts'). The most common location for needle placement was upper-medial head neck junction. Reasons for misplacements of the needle were: high riding trochanter (short ATD), increased femoral version, thick adipose tissue over anatomical landmarks, and lateral variant of ASIS position (ilium morphology).
Of 45 injected subjects, only 3 reported LFCN irritation and symptoms resolved within one day. No other side effects were reported.

Conclusions:
This study has demonstrated that the anterior non-guided intra-articular hip injection is a safe, reproducible and easy to learn technique, with 93% accurate needle positioning success rate. Pitfalls, tips and pearls in order to achieve correct placement can be learned and executed. The technique can be performed bedside or in the outpatient clinic negating the need for US, fluoroscopy or CT guidance, avoiding radiation exposure and reducing health care costs.