



# Hip Intra-articular Injection

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## Abstract

Osteoarthritis is a common, debilitating progressive disease that commonly affects the hips (Choueiri M, Chevalier X, Eymard F. Intraarticular Corticosteroids for Hip Osteoarthritis: A Review. *Cartilage*. 2021 Dec;13(1\_suppl):122S-131S). Progression of osteoarthritis often results in the need for total arthroplasty of the hip. First-line treatments include oral acetaminophen and nonsteroidal anti-inflammatory drugs. Intra-articular corticosteroid injections are routinely performed for patients with refractory pain or dysfunction, or for those with contraindications to long-term systemic treatment with acetaminophen or nonsteroidal anti-inflammatories. The goal in managing osteoarthritis with intra-articular corticosteroid injections is to provide pain relief, improvement in function, and to delay the need for arthroplasty. This is thought to be achieved via decreasing the inflammation in the joint by the corticosteroids (Choueiri M, Chevalier X, Eymard F. Intraarticular Corticosteroids for Hip Osteoarthritis: A Review. *Cartilage*. 2021 Dec;13(1\_suppl):122S-131S).

Evidence suggests that intra-articular injections can be helpful to relieve pain and improve function in the short term, however the long-term safety and effects on the progression of osteoarthritis are unclear (Choueiri M, Chevalier X, Eymard F. Intraarticular Corticosteroids for Hip Osteoarthritis: A Review. *Cartilage*. 2021 Dec;13(1\_suppl):122S-131S). A growing body of evidence has suggested accelerated rates of osteoarthritis progression, whereas other studies find no significant difference in progression of joint destruction (Zeng et al.,

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Osteoarthritis Cartilage 27(6):855–62, 2019). Intra-articular corticosteroid injections remain one of the most common treatments for osteoarthritis of the hip, and it is important for the treating pain physician to weigh the risks and benefits with each patient.

### Keys to Procedure

- Understand the relevant hip anatomy on AP view.
- Understand the complications and corrective steps if encountered.

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### Anatomy Pearls

- The femoral nerve, femoral artery, and femoral vein (lateral to medial) lie anterior to the medial aspect of the hip joint.
  - The femoral artery branches posterolaterally to give rise to the deep femoral artery, which then gives rise to both the medial femoral circumflex artery (MFCA) and lateral femoral circumflex artery (LFCA) [1].
- The MFCA provides most of the blood supply to the femoral neck and courses medially to the hip joint.
- The LFCA gives off multiple branches, including an ascending branch that courses along the anterior intertrochanteric line and femoral neck before anastomosing with the MFCA to contribute to the blood supply of the femoral neck [1].
- Slightly below the inguinal ligament (~4 cm), the femoral nerve divides into anterior and posterior divisions, which gives rise to several terminal branches that serve motor and sensory functions [2].

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### What You Will Need

- Sterile towels
- Chlorhexidine-based soap
- 22 G 5" spinal needle
- Lidocaine 1% for skin: 3 ml
- Isovue 300: 3 ml (if fluoroscopy is used)
- Bupivacaine 0.25%: 4 ml
- Dexamethasone 10 mg: 1 ml
- 25 G 1.5" needle for skin local
- 18 G 1.5" needle to draw up medications
- Extension tubing (3") for contrast (if fluoroscopy is used)
- 3 ml syringe with 25 G 1.5" needle for skin local
- 3 ml syringe with tubing for contrast
- 5 ml syringe for injectate (4 ml Bupivacaine 0.25% + Dexamethasone 10 mg)

## Patient Positioning

- Supine with the hip in a neutral position and groin exposed.

## How to Perform the Procedure

1. Place the patient in a supine position
2. Sterilely prep the hip and groin and drape with sterile towels
3. Set-up the trajectory view by placing the C-arm over the target hip joint and tilt the C-arm both caudally and oblique medially (or laterally). If ultrasound is used, use a curvilinear probe to identify the neck of the femur in a longitudinal (long-axis) view
4. The target of the needle tip is the midline of the anterior femoral head-neck junction

5. After identifying the initial target, anesthetize the skin with Lidocaine 1% and insert a 22 G spinal needle
6. Penetrate the joint capsule by advancing the needle from lateral to medial toward the junction between the femoral head and femoral neck (in-plane approach if ultrasound is used), until the needle tip contacts bone (Image 32.1)

**Image 32.1** Ultrasound view of femoral neck and shaft of femur



7. Slightly withdraw the needle to avoid injection into the posterior aspect of the capsule
8. Administer 1 ml of contrast to ensure appropriate contrast spread (if using fluoroscopy) within the joint space and note the contrast flowing around the femoral neck
9. Aspirate and administer injectate (4 ml Bupivacaine 0.25% + Dexamethasone 10 mg)
10. Remove needle, clean site, and place adhesive dressing

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## Checkpoints to Mastery

### Beginner

- Understand the anatomy of the hip joint, particularly its relationship to the nearby neurovascular structures.
- Be able to identify the location of appropriate needle placement to target the anterior femoral head–neck junction.

### Intermediate

- Insert and advance the needle until bone is hit, taking extra caution to avoid any nearby neurovascular structures.

### Advanced

- Confirm correct needle placement with contrast, ensuring that there is no vascular flow.

### Pitt Pain Pearls and Pitfalls

- Take extra caution to avoid the medial aspect of the joint, where the neurovascular structures lie.
- Care should be taken to insert the needle inferior to the inguinal crease to ensure correct entry into the proximal thigh and to avoid incorrect entry into the abdomen [3].
- Encountering resistance when attempting to inject contrast after touching bone with the needle tip may indicate that the bevel is in the periosteum or the hip capsule. This can be corrected by withdrawing the needle slightly and reattempting to inject contrast [3].

## References

1. Choueiri M, Chevalier X, Eymard F. Intraarticular Corticosteroids for Hip Osteoarthritis: A Review. *Cartilage*. 2021;13(1\_suppl):122S–131S. <https://doi.org/10.1177/1947603520951634>.
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5. Zeng C, Lane NE, Hunter DJ, Wei J, Choi HK, McAlindon TE, Li H, Lu N, Lei G, Zhang Y. Intra-articular corticosteroids and the risk of knee osteoarthritis progression: results from the Osteoarthritis Initiative. *Osteoarthritis Cartilage*. 2019;27(6):855–62. <https://doi.org/10.1016/j.joca.2019.01.007>.

## Further Reading

Atlas of image-guided spinal procedures. Second Edition. Furman.