

Addie Brooks

A 52-Year-Old Woman With Right Hip and Groin Pain

LEARNING OBJECTIVES

- Learn the common causes of hip pain.
 - Develop an understanding of the unique anatomy of the hip joint.
 - Develop an understanding of the causes of hip joint arthritis.
 - Learn the clinical presentation of osteoarthritis of the hip joint.
 - Learn how to use physical examination to identify pathology of the hip joint.
 - Develop an understanding of the treatment options for osteoarthritis of the hip joint.
 - Learn the appropriate testing options to help diagnose osteoarthritis of the hip joint.
 - Learn to identify red flags waving in patients who present with hip pain.
 - Develop an understanding of the role in interventional pain management in the treatment of hip pain.
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Addie Brooks



Addie Brooks is a 52-year-old rancher with the chief complaint of, “I’ve got a hitch in my git-along.” Addie went on to say that she wouldn’t have bothered coming in, but “it is coming up on calving season and those cows gotta eat.” I asked Addie if anything like this has happened before. She shook her head and said, “You can’t run cattle and not have something aching or paining. But this hitch is really wearing me out, and the old heating pad and aspirin just aren’t cutting the mustard. Doc, I wouldn’t complain, but I can barely get moving in the morning because my sleep is all jacked up. It hurts every time I roll over on that damn right hip. Hell, some mornings I just want to sit down and cry. Doc, can you just give me a quick shot or something to get me through calving season? You

know as well as anybody if I don’t get those calves to market, my kids and I don’t eat.”

I asked Addie about any antecedent trauma to the right hip. She thought about it for a minute and said that she got thrown from her horse onto her right hip when she was a teenager. She went on to say that Old Doc Jones “thought I just sprained my hip and I would be fine, and until the last few weeks when I was unloading bales of hay, he was right. He was a real crackerjack—Old Doc Jones. He delivered my mom and he delivered me. We put a lot of stock in whatever Doc Jones told us and always did what he said.”

I asked Addie to point with one finger to show me where it hurts the most. She pointed to the front of her right groin and said, “Doc, I got a hitch right here, especially when I first get up in the morning. The crazy thing is, sometimes I feel like the hip is popping or catching.” I asked if she had any fever or chills and she shook her head no. “What about steroids? Did you ever take any cortisone or drugs like that?” Addie again shook her head no and said, “Doc, you know me. I am healthy as a horse. I love working the ranch, but this hitch has really got me down for the count.” Addie denied any other gynecologic symptoms or blood in her urine.

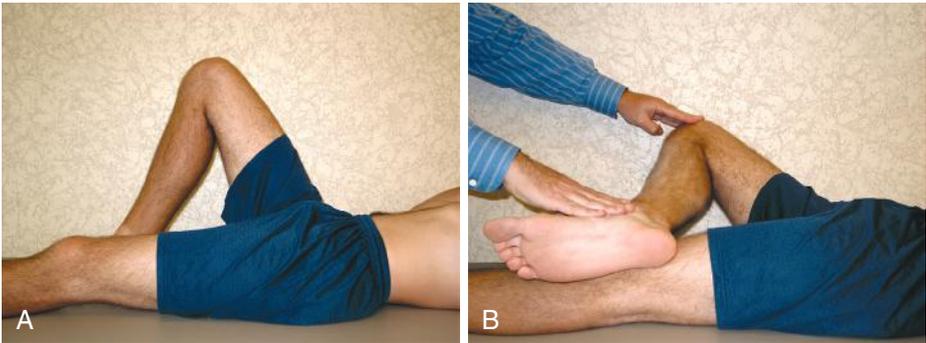


Fig. 1.1 Eliciting the Patrick (FABER) test. (From Waldman SD, *Physical Diagnosis of Pain: An Atlas of Signs and Symptoms*. 3rd ed. St Louis: Elsevier; 2016: Fig. 185-1.)

On physical examination, Addie was afebrile. Her respirations were 18 and her pulse was 74 and regular. Her blood pressure (BP) was normal at 122/74. Her head, eyes, ears, nose, throat (HEENT) exam was normal, as was her cardiopulmonary examination. Her thyroid was normal. Her abdominal examination revealed no abnormal mass or organomegaly. There was no costovertebral angle (CVA) tenderness. There was no peripheral edema. Her low back examination was unremarkable. I did a rectal exam and pelvic, which were both normal. Visual inspection of the right groin and hip revealed no cutaneous lesions or obvious hernia or other abnormal mass. The area overlying the right hip was cool to touch. Palpation of the right hip revealed mild diffuse tenderness, with no obvious effusion or point tenderness. There was mild crepitus, but I did not appreciate any popping or catching. Range of motion was decreased, with pain exacerbated with active and passive range of motion. When I performed the Patrick (FABER: flexion, abduction, external rotation) test on the right hip, Addie cried out in pain and said, “Doc, that’s the hitch in my git-along!” (Fig. 1.1). The left hip examination was normal, as was examination of her other major joints, other than some mild osteoarthritis in the right hand. A careful neurologic examination of the upper and lower extremities revealed that there was no evidence of peripheral or entrapment neuropathy and the deep tendon reflexes were normal.

Key Clinical Points—What’s Important and What’s Not

THE HISTORY

- A distant history of acute trauma to the right hip secondary to falling from a horse
- No history of previous significant hip pain other than the short-term pain secondary to the acute hip trauma
- No fever or chills

- Gradual onset of right groin and hip pain over the last several weeks with exacerbation of pain with hip use
- Popping sensation in the right hip
- Sleep disturbance
- Difficulty walking secondary to pain upon first arising from the supine or recumbent position

THE PHYSICAL EXAMINATION

- The patient is afebrile
- Normal visual inspection of hip
- Palpation of right hip reveals diffuse tenderness
- No point tenderness
- No increased temperature of right hip
- Crepitus to palpation
- Positive Patrick (FABER) test on the right (see [Fig. 1.1](#))

OTHER FINDINGS OF NOTE

- Normal BP
- Normal HEENT examination
- Normal cardiovascular examination
- Normal pulmonary examination
- Normal abdominal examination
- No peripheral edema
- No groin mass or inguinal hernia
- No CVA tenderness
- Normal pelvic exam
- Normal rectal exam
- Normal upper extremity neurologic examination, motor and sensory examination
- Examination of joints other than the right hip were normal



What Tests Would You Like to Order?

The following tests were ordered:

- Plain radiographs of the right hip

TEST RESULTS

The plain radiographs of the right hip revealed significant joint space narrowing and osteophyte formation consistent with severe osteoarthritis ([Fig. 1.2](#)).

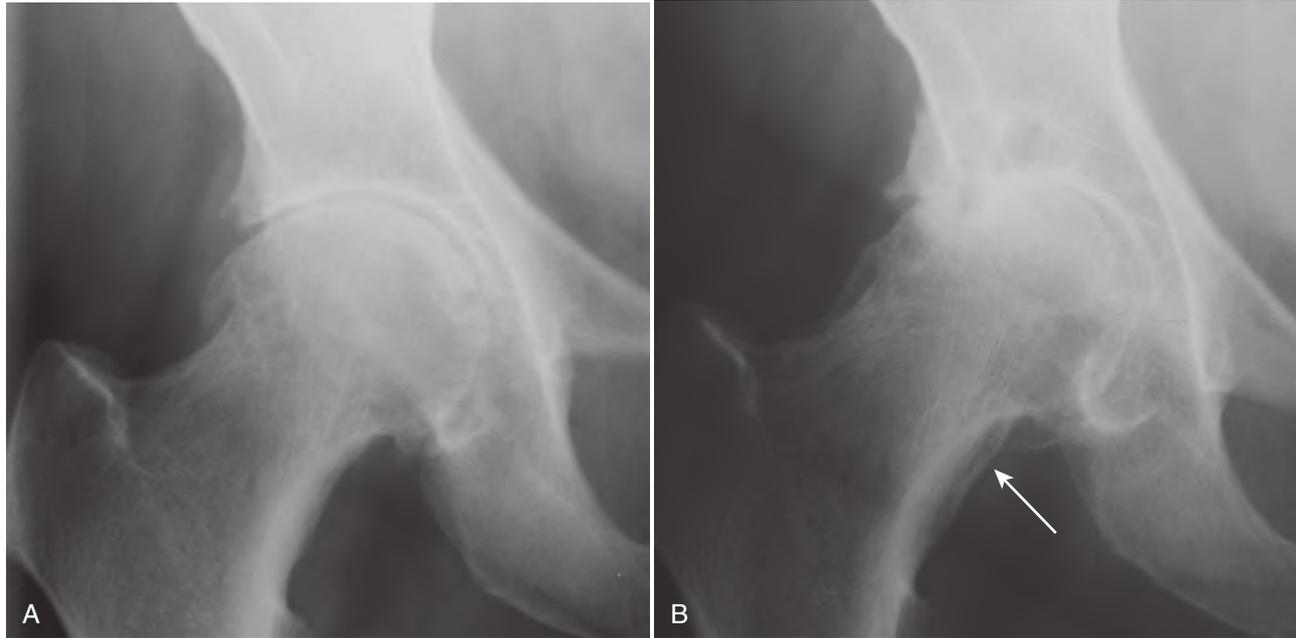


Fig. 1.2 (A) Anteroposterior (AP) radiograph of a patient with typical osteoarthritis (OA) of the hip with joint space narrowing and osteophyte formation. (B) A radiograph of the same patient acquired 18 months later shows rapid progression of the OA changes, with more marked superior joint space narrowing, supralateral migration of the femoral head, prominent subchondral cyst formation, and buttressing of the medial aspect of the femoral neck (*white arrow*). (From Waldman SD, Campbell RSD. *Imaging of Pain*. Philadelphia: Saunders; 2011: Fig. 138-1.)



Clinical Correlation—Putting It All Together

What is the diagnosis?

- Osteoarthritis of the right hip joint

The Science Behind the Diagnosis

ANATOMY OF THE JOINTS OF THE HIP

The rounded head of the femur articulates with the cup-shaped acetabulum of the hip (Fig. 1.3). The articular surface is covered with hyaline cartilage, which is susceptible to arthritis. The rim of the acetabulum is composed of a fibrocartilaginous layer called the *acetabular labrum*, which is susceptible to trauma should the femur be subluxed or dislocated. The joint is surrounded by a capsule that allows the wide range of motion of the hip joint. The joint capsule is lined with a synovial membrane that attaches to the articular cartilage. This membrane gives rise to synovial tendon sheaths and bursae that are subject to inflammation. The hip joint is innervated by the femoral, obturator, and sciatic nerves. The major ligaments of the hip joint include the iliofemoral, pubofemoral, ischiofemoral, and transverse acetabular ligaments, which provide strength to the hip joint. The muscles of the hip and their attaching tendons are susceptible to trauma and to wear and tear from overuse and misuse.

CLINICAL PRESENTATION OF ARTHRITIS OF THE HIP JOINT

Most patients presenting with hip pain secondary to arthritis complain of pain localized around the hip and upper leg (Fig. 1.4). Most patients with intrinsic hip disorders have a positive Patrick (FABER) test result (see Fig. 1.1). Patients may initially present with ill-defined pain in the groin; occasionally, the pain is localized to the buttock. Activity makes the pain worse, whereas rest and heat provide some relief. The pain is constant and is characterized as aching; it may interfere with sleep. Some patients complain of a grating or popping sensation with use of the joint, and crepitus may be noted on physical examination.

In addition to pain, patients often experience a gradual decrease in functional ability caused by reduced hip range of motion that makes simple everyday tasks such as walking, climbing stairs, and getting into and out of a car quite difficult. With continued disuse, muscle wasting may occur, and a frozen hip secondary to adhesive capsulitis may develop.

TESTING

Plain radiography is indicated in all patients who present with hip pain. Based on the patient's clinical presentation, additional testing may be warranted,

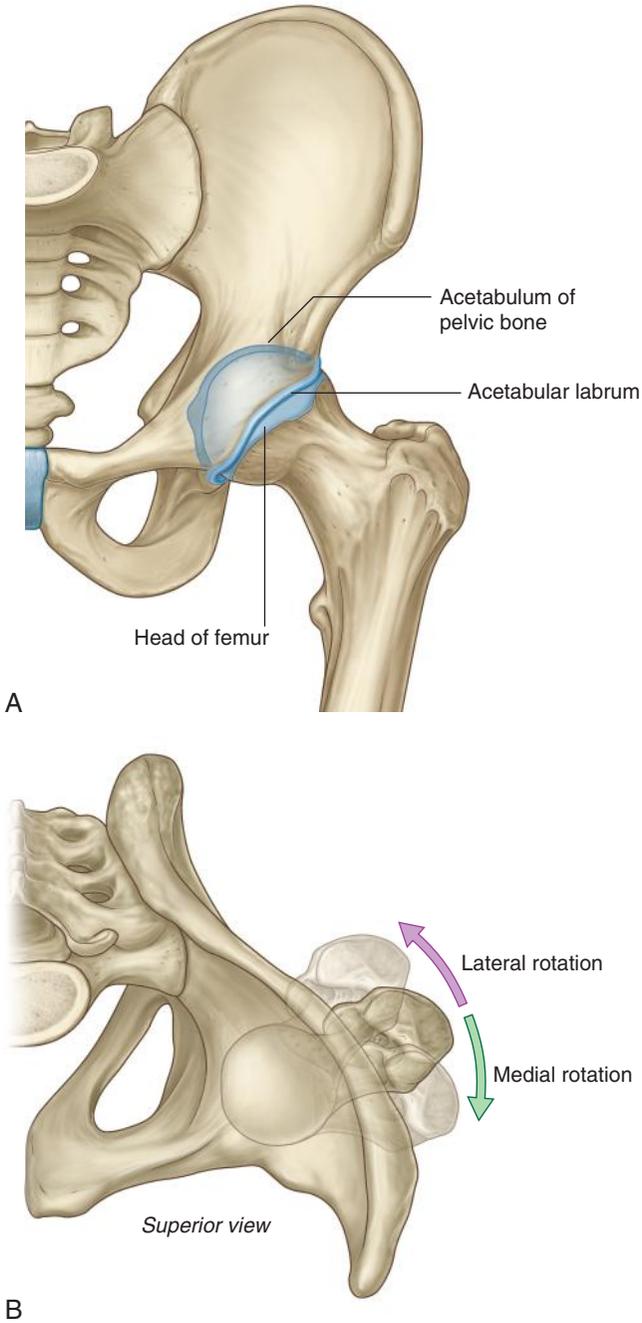


Fig. 1.3 The anatomy of the hip joint. (A) Articular surfaces. (B) Movement of the femur during rotation. (From Drake R, Vogl AW: *Gray's Anatomy for Students*. 4th ed. Philadelphia: Elsevier; 2020: Fig. 6-30.)

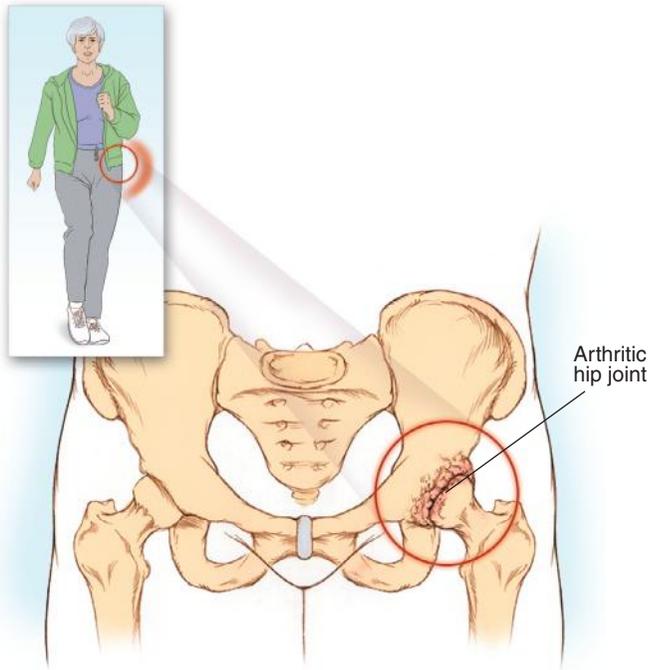


Fig. 1.4 Patients presenting with hip pain secondary to arthritis complain of pain localized around the hip and upper leg. (From Waldman SD. *Atlas of Common Pain Syndromes*. 4th ed. Philadelphia: Elsevier; 2019: Fig. 98-1.)

including a complete blood count, erythrocyte sedimentation rate, and antinuclear antibody testing. Magnetic resonance and ultrasound imaging of the hip are indicated if aseptic necrosis or an occult mass or tumor is suspected or if the diagnosis is in question (Figs. 1.5, 1.6, and 1.7).

DIFFERENTIAL DIAGNOSIS

Many diseases can cause hip pain (Table 1.1). Lumbar radiculopathy may mimic the pain and disability associated with arthritis of the hip; however, in such patients, hip examination results should be negative. Entrapment neuropathies, such as meralgia paresthetica, and trochanteric bursitis may confuse the diagnosis; both of these conditions can coexist with arthritis of the hip. Primary and metastatic tumors of the hip and spine may also manifest similarly to arthritis of the hip.

TREATMENT

Initial treatment of the pain and functional disability of arthritis of the hip includes a combination of nonsteroidal antiinflammatory drugs or

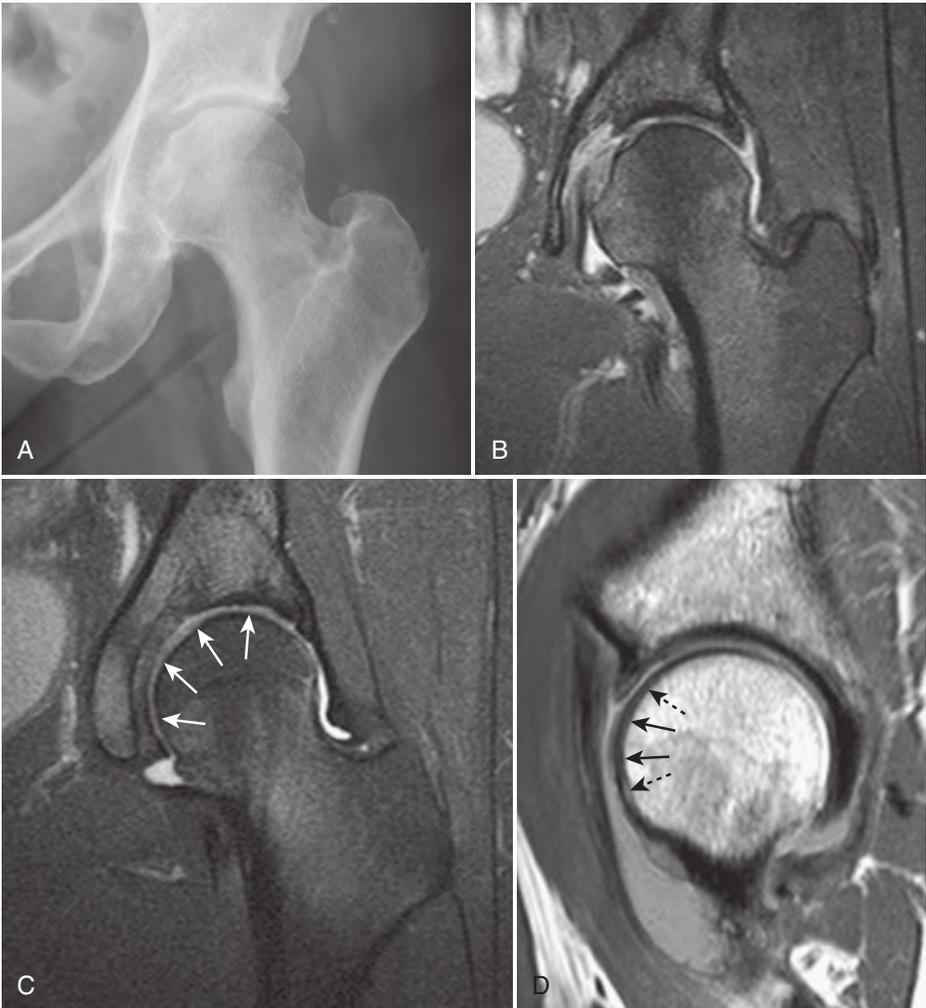


Fig. 1.5 (A) Anteroposterior (AP) radiograph of a 60-year-old patient with hip pain, which shows no significant osteoarthritis (OA) changes. (B) However, the coronal T2-weighted with fat suppression (FST2W) magnetic resonance (MR) image clearly demonstrates a high-signal intensity (SI) hip joint effusion with diffuse areas of cartilage loss across the femoral head due to early OA. (C) Compare with the FST2W MR image of a normal hip with intermediate-SI cartilage overlying the low-SI subchondral bone plate (*white arrows*). (D) The cartilage loss is also seen on the sagittal proton density image (*broken black arrows*) but with some areas of cartilage preservation (*black arrows*). (From Waldman SD, Campbell RSD. *Imaging of Pain*. Philadelphia: Saunders; 2011: Fig. 138-2.)

cyclooxygenase-2 inhibitors and physical therapy. The local application of heat and cold may also be beneficial. For patients who do not respond to these treatment modalities, intraarticular injection of local anesthetic and steroid is a reasonable next step.

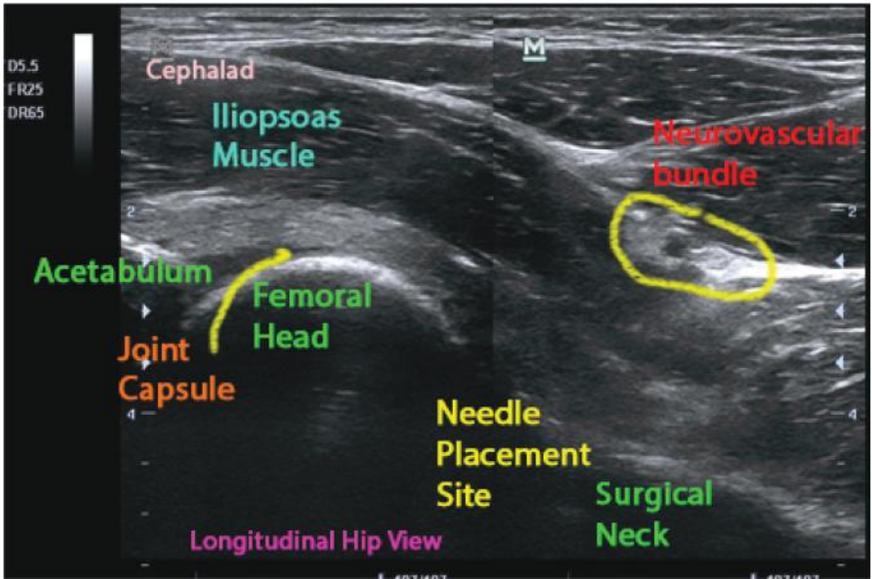


Fig. 1.6 Ultrasound image of the hip demonstrating the relationship of the acetabulum to the femoral head and joint capsule. (Courtesy Steven D. Waldman, MD.)

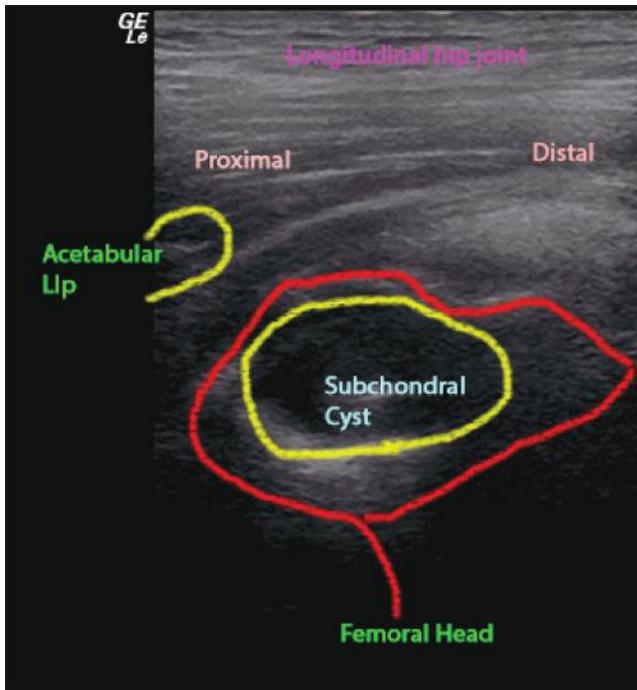


Fig. 1.7 Ultrasound image demonstrating avascular necrosis of the hip. (Courtesy Steven D. Waldman, MD.)

TABLE 1.1 ■ Causes of Hip Pain and Dysfunction

Localized Bony or Joint Space Pathology	Periarticular Pathology	Systemic Disease	Sympathetically Mediated Pain	Referred From Other Body Areas	Vascular Disease
Fracture	Bursitis	Rheumatoid arthritis	Causalgia	Lumbar plexopathy	Aortoiliac atherosclerosis
Primary bone tumor	Tendinitis	Collagen vascular disease	Reflex sympathetic dystrophy	Lumbar radiculopathy	Internal iliac artery occlusion
Primary synovial tissue tumor	Adhesive capsulitis	Reiter syndrome	Lumbar spondylosis	Entrapment neuropathies	
Joint instability	Joint instability	Gout	Fibromyalgia		
Localized arthritis	Muscle strain	Other crystal arthropathies	Myofascial pain syndromes		
Osteophyte formation	Muscle sprain	Charcot neuropathic arthritis	Inguinal hernia		
Osteonecrosis of femoral head	Periarticular infection not involving joint space				
Joint space infection					
Hemarthrosis					
Villonodular synovitis					
Intraarticular foreign body					
Slipped capital femoral epiphysis (Legg disease)					
Chronic hip dislocation					

From Waldman SD. *Atlas of Common Pain Syndromes*. 4th ed. Philadelphia: Elsevier; 2019: Table 98-1.

Intraarticular injection of the hip is performed by placing the patient in the supine position. The skin overlying the hip, subacromial region, and joint space is prepared with antiseptic solution. A sterile syringe containing 4 mL of 0.25% preservative-free bupivacaine and 40 mg methylprednisolone is attached to a 2-inch, 25-gauge needle by using strict aseptic technique. The femoral artery is identified; then, at a point approximately 2 inches lateral to the femoral artery, just below the inguinal ligament, the hip joint space is identified. The needle is carefully advanced through the skin and subcutaneous tissues through the joint capsule into the joint. If bone is encountered, the needle is withdrawn into the subcutaneous tissues and is redirected superiorly and slightly more medially. After the joint space is entered, the contents of the syringe are gently injected. Little resistance to injection should be felt. If resistance is encountered, the needle is probably in a ligament or tendon and should be advanced slightly into the joint space until the injection can proceed without significant resistance. The needle is removed, and a sterile pressure dressing and ice pack are applied to the injection site. Ultrasound needle guidance will simplify this procedure, improve the accuracy of needle placement, and decrease the incidence of needle-related complications (see Fig. 1.6). Recent clinical experience suggests that the intra-articular injection of platelet-rich plasma and/or stem cells may provide improvement of the pain and functional disability of patients suffering from osteoarthritis of the hip.

HIGH-YIELD TAKEAWAYS

- The patient is afebrile, making an acute infectious etiology (e.g., septic arthritis) unlikely.
- The patient's symptomatology is not the result of acute trauma but more likely the result of repetitive microtrauma that has damaged the joint over time.
- The patient's pain is diffuse rather than highly localized, as would be the case with a pathologic process like trochanteric bursitis.
- The patient's symptoms are unilateral and only involve one joint, which is more suggestive of a local process than a systemic polyarthropathy.
- Sleep disturbance is common and must be addressed concurrently with the patient's pain symptomatology.
- Plain radiographs will provide high-yield information regarding the bony contents of the joint, but ultrasound imaging and magnetic resonance imaging will be more useful in identifying soft tissue pathology.

Suggested Readings

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