

Science Education Collection

Hip Exam

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Overview

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The hip is a ball-and-socket joint that consists of the femoral head articulating with the acetabulum. When combined with the hip ligaments, the hip makes for a very strong and stable joint. But, despite this stability, the hip has considerable motion and is prone to degeneration with wear and tear over time and after injury. Hip pain can affect patients of all ages and can be associated with various intra- and extra-articular pathologies. Anatomic location of pain in the hip region can often provide initial diagnostic clues. Essential aspects of the hip exam include an inspection for asymmetry, swelling, and gait abnormalities; palpation for areas of tenderness; range of motion and strength testing; a neurological (sensory) exam; and additional special diagnostic maneuvers to narrow down the differential diagnosis.

Procedure

1. Inspection

When examining the hip, make sure the patient has removed enough clothing to expose and compare both hips.

1. Inspect both hips from the front, back, and sides. Note any asymmetry due to muscle wasting or swelling.
2. Instruct the patient to walk back and forth, and observe the gait, checking for a limp.

2. Palpation

The hip joint is relatively inaccessible by palpation; however, palpation allows access to other potential sources of pain in the area. Palpate the hip for tenderness using your index and middle fingers in the following areas:

1. Anterior hip joint: Palpate along the front of the hip, just lateral to the groin. Tenderness here may suggest osteoarthritis (OA), fracture, or avascular necrosis of the femoral head.
2. Anterior superior iliac spine (ASIS): Palpate at the anterior tip of the iliac crest. This is also the attachment site for the sartorius muscle, so tenderness here may suggest tendonitis or avulsion.
3. Anterior inferior iliac spine (AIIS): Palpate just below and medial to the ASIS. This is the attachment site for the rectus femoris, so tenderness here may suggest tendonitis or avulsion.
4. Greater trochanter: Palpate the bony prominence on the side of the hip, with its overlying trochanteric bursa.
5. Iliotibial (IT) band: Note that this can rub over the greater trochanter with hip flexion and extension of the hip, which may produce a popping sensation.
6. Posterior superior iliac spine (PSIS): Palpate at the posterior tip of the iliac bone.
7. Sacroiliac (SI) joint: Palpate just under the PSIS. Tenderness here suggests inflammation or OA at the joint.
8. Gluteus muscle: Palpate below the PSIS. This is the main extensor of the hip.
9. Ischial tuberosity: Palpate above the base of the buttocks. This is where the hamstring muscles attach.
10. Coccyx: Palpate at the very tip of the lower spine, which is often injured from trauma falls.

3. Range of Motion (ROM)

Hip ROM should be tested passively, looking for pain or limitation. Check the following motions with the patient in various positions:

1. Internal rotation (30°): Have the patient seated, and stabilize the knee at 90° flexion with one hand. Then, with your other hand, move the foot away from the midline (lost early with hip OA).
2. External rotation (60°): With the patient in the same position, move the foot toward the midline.
3. Abduction (45°): With the patient supine, hold the ankle and pull the leg away from the midline.
4. Adduction (30°): With the patient supine, pull the leg toward the midline (until the pelvis tilts).
5. Flexion (120°): With the patient supine, grasp the bent knee and pull it to the chest (stop when the back flattens).
6. Extension (15°): While the patient is prone, lift the leg up and off the table.

4. Strength Testing

Evaluate strength by resisting the ROM as follows:

1. Extension strength: While the patient is prone, ask the patient to raise the entire leg from the table while you push down at the mid shin (tests the gluteus maximus and hamstrings).
2. Abduction strength: While the patient is supine, ask the patient to push the feet together while you pull the ankles apart (tests gluteus medius and minimus).

3. Adduction strength: While the patient is supine, ask the patient to pull the feet apart while you push the ankles together (tests the adductor longus/brevis/magnus, and gracilis).
4. Flexion strength: While the patient is seated, ask the patient to flex the hip upward while you push down on the knee (tests the iliopsoas, rectus femoris, and sartorius).

5. Sensory Exam

Evaluate sensory discomfort around the hip using light touch in the following areas

1. Distal lateral thigh: Hypesthesia here may indicate meralgia paresthetica, caused by compression of the lateral femoral cutaneous nerve.
2. Obturator nerve: Innervates the hip, as well as the medial thigh and knee (may cause the hip pain to be felt in the knee).

6. Special Tests

Evaluate the hip using the following special tests:

1. Trendelenburg test: Instruct the patient to stand on both feet and slowly raise one foot. Observe for a pelvic tilt toward the raised foot. A positive test indicates weak hip abductor muscles.
2. Hop test: Instruct the patient to stand or hop unsupported on one leg, and look for reproduced pain at the groin area. This test is usually positive with a femoral neck stress fracture.
3. Leg length: Measure the leg length from the ASIS to the medial malleolus, and compare to the opposite side.
4. Log roll test: Place the patient in a supine position and passively rotate the pelvis in a gentle to-and-fro motion of the pelvis. Severe pain may indicate fracture, infection, or synovitis.
5. FABER (Flexion, ABduction, External Rotation) test: With the patient in supine position, instruct the patient to place the ankle on top of the opposite knee. Discomfort suggests SI joint pathology.
6. Ober test: Ask the patient to lie on the unaffected side with the upper knee flexed to 90°, and measure the distance of the flexed knee from the table. Inability to bring the knee down to the table suggests IT band tightness, which can predispose to IT band friction syndrome.

Summary

Examination of the hip is best done in the sitting and standing positions, following a stepwise approach. The exam should begin with inspection, looking for asymmetry between the involved and uninvolved hip. It is important to have the patient remove enough clothing, so the surface anatomy can be seen and compared to the uninvolved side. The patient should be observed for limp or pain while walking. Patients with intra-articular pathology can present with so-called antalgic gait, characterized by shortened standing time on the affected side. Another pathological gait, the Trendelenburg gait, a downward tilt of the contralateral side of the pelvis, suggests a weakening of the abductor muscles. This is followed by palpation of key structures around the hip, looking for tenderness, swelling, or deformity. Next, the ROM should be assessed, first actively and then against resistance to assess the strength. Decreased ROM in the hip joint can be seen in association with several conditions including osteoarthritis, osteonecrosis, loose bodies, and chondral lesions. Pain during testing active (but not passive) ROM allows distinguishing between muscle-related symptoms (such as flexor strain) and hip joint-related pain. Finally, the hip area should be assessed for sensory impairment, followed by a variety of special tests to evaluate for common hip problems.