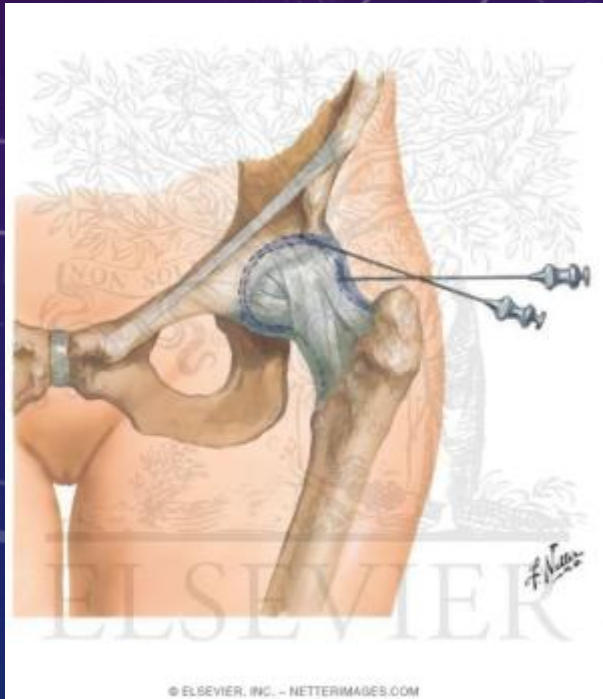


KNEE JOINT AND HIP JOINT PUNCTURES



ARTHROCENTESIS AS A TERM:

Arthrocentesis - (Greek: arthros, *a joint* + kentēsis, *puncture*) is the clinical procedure of using a syringe to collect synovial fluid from a joint capsule. It is also known as joint aspiration. Arthrocentesis is used in the diagnosis of gout(podagra), arthritis, and synovial infections such as septic arthritis.

KNEE JOINT ARTHROCENTESIS:

Arthrocentesis of the knee joint consists in putting a needle into the knee joint to evacuate or take joint fluid. In the first case, it is to relieve the patient of their "painful swollen knee" and in the second to find the cause of the pain in the knee.

The knee joint is the most common and the easiest joint for the physician to aspirate.

Arthrocentesis also may help distinguish the inflammatory arthropathies from the crystal arthritides or osteoarthritis. If a hemarthrosis is discovered after trauma, it can indicate the presence of a fracture or other anatomic disruption.



THE KNEE JOINT PUNCTURE PROCEDURE:

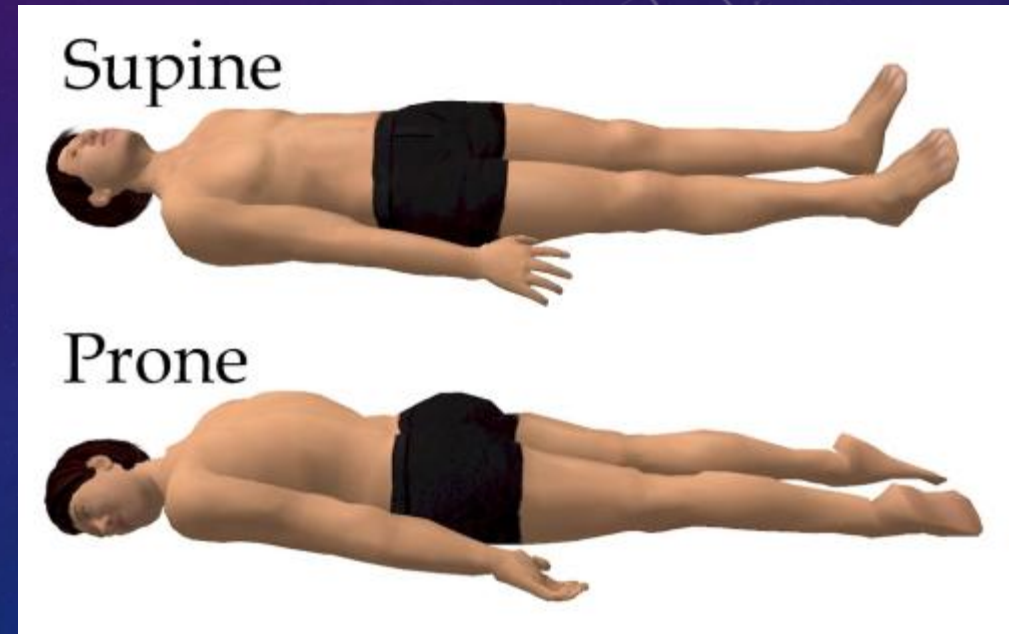
PATIENT PREPARATION:

Clothing is removed from over the affected joint. The patient is placed in the supine position, and the knee is extended (some physicians prefer to have the knee bent to 90 degrees). An absorbent pad is placed beneath the knee.

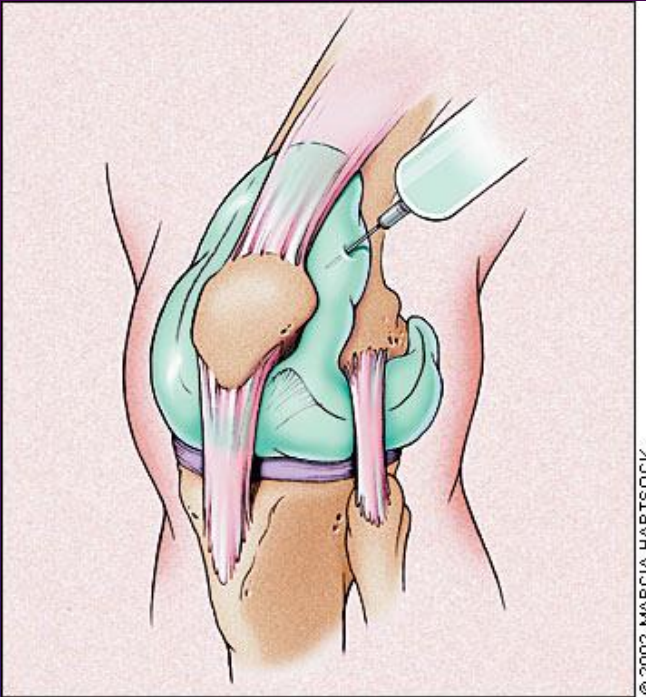


EQUIPMENT:

1. Sterile Tray for the Procedure
2. Place the following items on a sterile sheet covering a Mayo stand:
 - a) Sterile gloves
 - b) Sterile fenestrated drape
 - c) 2X10-mL syringes
 - d) 2X21-gauge, 1-inch needles
 - e) 1 inch of 4 × 4 gauze soaked with povidone-iodine solution (Betadine)
3. Hemostat (for stabilizing the needle when exchanging the medication syringe for the aspiration syringe)
4. Sterile bandage



PROCEDURE DESCRIPTION:



1. The patient is supine on the table with the knee extended (some physicians prefer that the knee be bent to 90 degrees). The knee is examined to determine the amount of joint fluid present and to check for overlying cellulitis or coexisting pathology in the joint or surrounding tissues.
2. The superior lateral aspect of the patella is palpated. The skin is marked with a pen, one fingerbreadth above and one fingerbreadth lateral to this site. This location provides the most direct access to the synovium.
3. The skin is washed with povidone-iodine solution. The physician should be gloved, although there is no consensus as to whether sterile gloves must be used. A 21-gauge, 1-inch needle is attached to a 5- to 20-mL syringe, depending on the anticipated amount of fluid present for removal.
4. The needle is inserted through stretched skin. Some physicians administer lidocaine (Xylocaine) into the skin, but stretching the pain fibers in the skin with the nondominant hand can also reduce needle-insertion discomfort. The needle is directed at a 45-degree angle distally and 45 degrees into the knee, tilted below the patella.
5. Once the needle has been inserted 1 to $\frac{1}{4}$ inches, aspiration is performed, and the syringe should fill with fluid. Using the nondominant hand to compress the opposite side of the joint or the patella may aid in arthrocentesis.

PROCEDURE DESCRIPTION:

6. Once the syringe has filled, a hemostat can be placed on the hub of the needle. With the needle stabilized with the hemostat, the syringe can be disconnected and the fluid sent for studies. Care should be taken not to touch the needle tip against the joint surfaces when removing the syringe. A syringe filled with corticosteroid medication can then be attached to the needle.
7. For injection, use betamethasone (Celestone, 6 mg per mL), 1 mL, mixed with 3 to 5 mL of 1 percent lidocaine. Alternately, methylprednisolone (Depo-Medrol, 40 mg per mL), 1 mL, mixed with 3 to 5 mL of 1 percent lidocaine can be used. After injection of the medication, the needle and syringe are withdrawn.
8. The skin is cleansed, and a bandage is applied over the needle-puncture site. The patient is warned to avoid forceful activity on the joint while it is anesthetized.



PROCEDURE PITFALLS/COMPLICATIONS:

1. **The Patient Complains of Severe Pain During the Procedure.** Severe pain during the procedure usually **results from the needle coming into contact with the highly innervated cartilaginous surfaces.** The needle can be redirected or withdrawn when pain is encountered. Slow, steady movement of the needle during insertion can prevent damage to the cartilage surface from the needle bevel.
2. **The Patient's Effusion Was Sterile, But Became Infected After the Joint Injection.** Introduction of infection into a joint is a rare event, occurring in less than 0.01 percent of injections; however, infection can develop when the needle is introduced into the joint through an area of cellulitis. Severe dermatitis or soft tissue infection overlying a joint is a contraindication for arthrocentesis. Some physicians advocate that steroid injection should not be performed before excluding joint infection.
3. **The Patient Develops Joint Instability From Repeated Injections.** The most serious complication of repeated injections is joint instability from the development of osteonecrosis of juxta-articular bone and weakened capsular ligaments. Although this complication occurs in less than 1 percent of patients, it is recommended that injections be performed no more frequently than every six to eight weeks, and no more than three times per year in weight-bearing joints.

PROCEDURE PITFALLS/COMPLICATIONS:

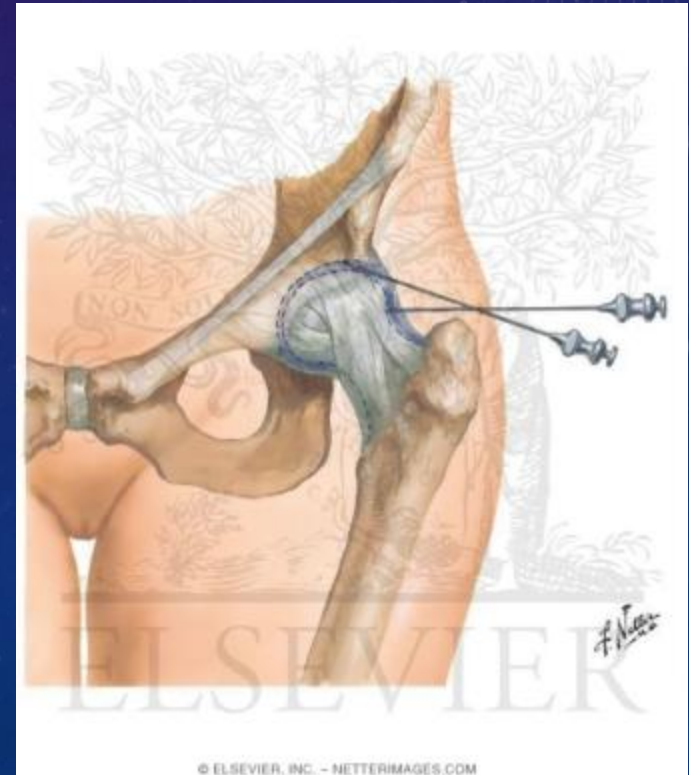
4. **A Large Knee Effusion Re-accumulated Right After Being Drained.** Large effusions from the knee can rapidly re-accumulate. Some physicians advocate placing an elastic wrap around the knee immediately after large effusion drainage.
5. **The Patient's Pain Returned Just a Few Weeks After the Injection.** A major disadvantage to intra-articular corticosteroid injections is the short duration of action. The average duration of benefit may be only two to three weeks; however, a small percentage of patients with osteoarthritis may have sustained relief after one or two injections.



HIP JOINT ATHROSENTESIS:

Hip joint athrocentesis is a procedure in which a physician extracts the synovial fluid or purulent mass out of the affected joint. The procedure is typically the same as a knee joint arthrocentesis but because of the muscular overlapping presence and the depth at which the joint is located (Caput femoris at Labrum acetabuli) a physician may need the aid of additional medical equipment as:

1. Ultrasound guidance.
2. Sonophonic guidance.
3. Fluoroscopic guidance.

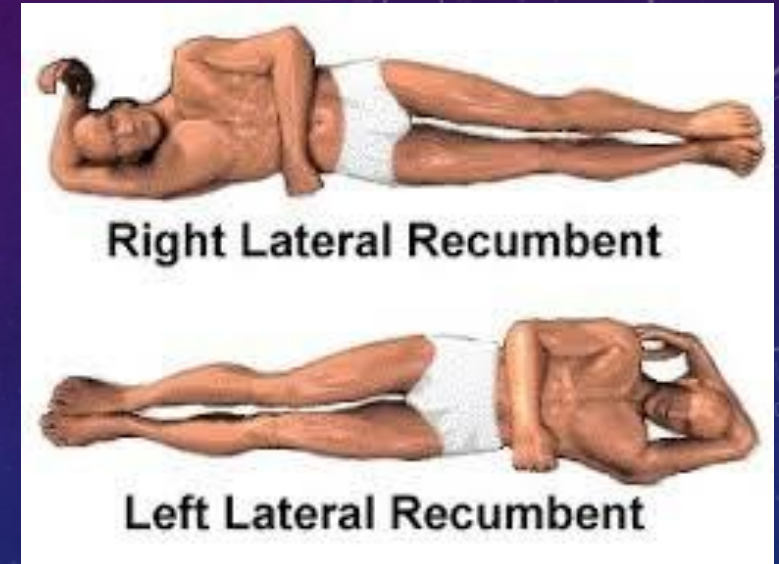


PATIENT PREPARATION:

The patient should be positioned in lateral recumbency with the pelvis parallel to table. The hip should be slightly abducted and the femur rotated medially. The greater trochanter of the femur serves as landmark.

EQUIPMENT:

1. Sterile Tray for the Procedure
2. Place the following items on a sterile sheet covering a Mayo stand:
 - a) Sterile gloves
 - b) Sterile fenestrated drape
 - c) Syringes
 - d) Needles
 - e) 1 inch of 4 × 4 gauze soaked with povidone-iodine solution (Betadine).
3. Hemostat (for stabilizing the needle when exchanging the medication syringe for the aspiration syringe)
4. Sterile bandage



PROCEDURE DESCRIPTION:

To reach the synovial capsule we have Anterior, Lateral and medial approach:

1. Anterior approach:

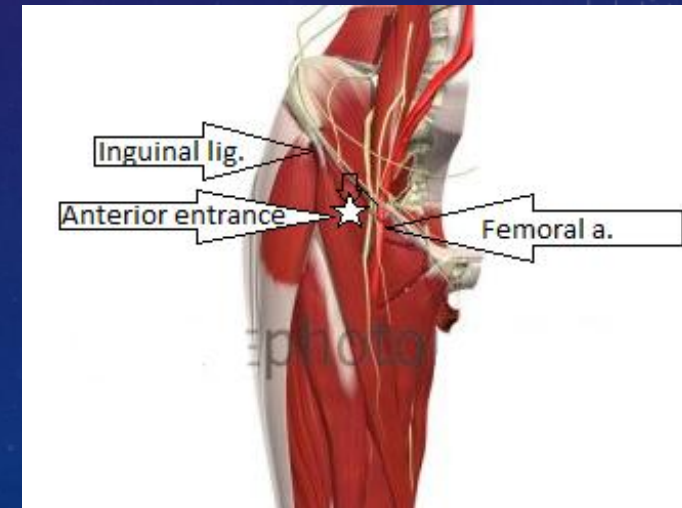
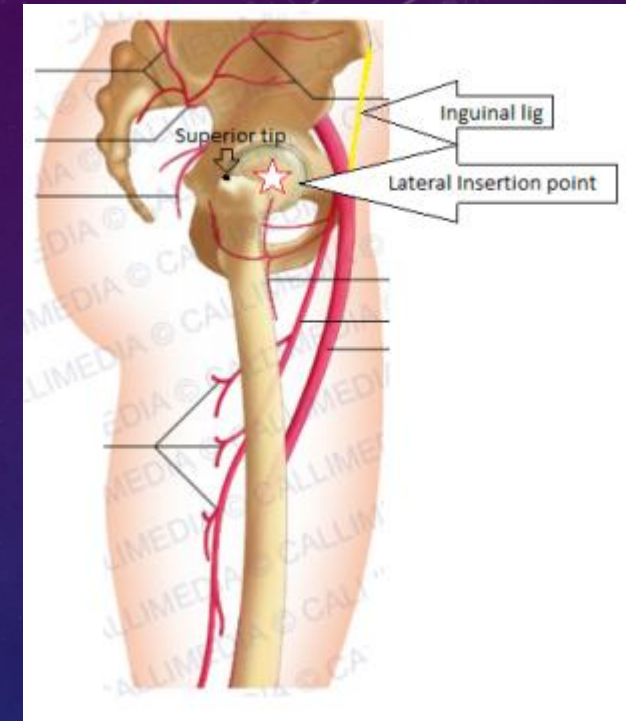
- Femoral artery may be palpated in femoral triangle, & may be used as a guide in aspirating the hip joint;
- palpate the femoral pulse just as it exits the inguinal ligament;
- entry point is one inch lateral to the artery (at the inguinal ligament) and one inch below the inguinal ligament;
- going laterally 1 inch will also make entry site approximately 1 inch below ligament;
- needle entry is then straight down into the lateral half of the joint cavity;

2. Lateral approach:

- greater trochanter is palpated & needle inserted just anterior to its superior tip;
- needle is directed 45 degree cephalad*, & parallel to table (patient is supine);
- femoral neck will usually be met & needle can then be directed slightly cephalad* and proximal to enter the hip joint;
- greater trochanter is palpated, & needle is inserted from side, in front of its upper margin and approximately parallel to femoral neck, so that needle enters capsule obliquely after passing through attachments of gluteus medius & minimus;

3. Medial approach:

- needle is inserted just posterior to the insertion of the adductor longus muscle, and anterior to the gracilis;
- flouroscopy is then used to direct the needle into the hip joint.



Cephalad - In a direction toward the head...

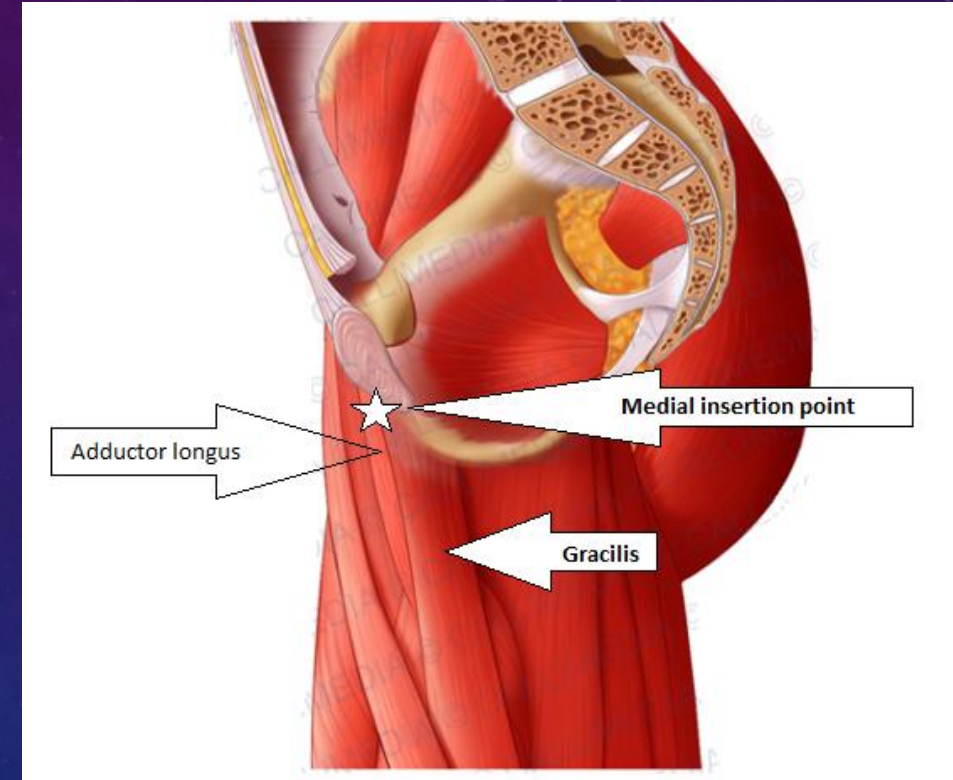
PROCEDURE PITFALLS/COMPLICATIONS:

1. Anterior approach:

If the surgeon is not in the capsule when the contrast dye is injected, then contrast material will collect and will obstruct needle visualization.

2. Lateral approach:

in patients with large thighs, the needle may not be long enough to reach the joint.



IMPORTANT!!!!

Care should be taken not to injure the sciatic nerve, which passes from the medial to the lateral ischium at the greater ischiatic notch and runs medial to the greater trochanter and caudal to the femur distally.



The End