



Knee Aspiration

Objectives:

- ❖ To be able to perform knee joint effusion aspiration properly with no or minimal risk of complication(s)
- ❖ To be able to differentiate between different appearance and consistencies of the synovial fluid

Done by: Saleh Alkhalifa.

Edited & Revised by: Fahad Alabdullatif & Adel Al Shihri.

References: Department handout, Notes(by moath baeshen), 433 OSCE Team.

| Principles of Aspiration | |
|---------------------------------------|-------------------|
| Consent | Cleaning |
| Position: Supine, semi flexed knee 30 | Entry point |
| Bony landmarks | Aspiration |
| Instruments | Aspirate analysis |
| Tubes | Dressing |

Indications

- **Diagnostic:**
 - Diagnosis of suspected septic arthritis. **Rule out infection** like septic arthritis, subacute or chronic arthritis.
 - **Rule out inflammatory** causes (Rheumatoid arthritis, Reactive synovitis).
 - **Identification of crystal arthropathy.**
 - Traumatic causes (intra-articular fracture bleed hemarthrosis)

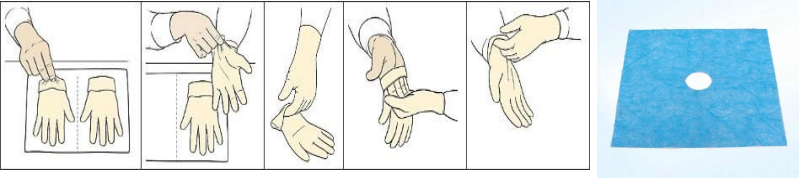








- **Therapeutic (Rare):**
 - **Relief of pain by aspirating effusion or blood.**
 - **Injection of medications.**

Contraindications

Relative contraindications include the following:

- Cellulitis overlying the joint.
- Uncontrolled coagulopathy.

Equipment

| | |
|---|--|
| <p>Sterile gloves and drapes</p> |  |
| <p>Gauze pads, 4 × 4 in</p> |  |
| <p>Skin preparatory solution (alcohol or chlorhexidine)</p> |  |
| <p>Lidocaine 1%.</p> |  |
| <p>Syringes: 60 mL.</p> |  |
| <p>Needles, 18 gauge.</p> |  |
| <p>Patients who are morbidly obese might require a 21-gauge spinal needle for arthrocentesis</p> |  |
| <p>Specimen tubes, blood culture tubes: specimen will be sent for (cell count, Gram stain, culture and sensitivity, histopathology, biochemistry, light microscopy, AFB, aerobic and non aerobic cultures, fungal, TB cultures, brucella, and crystals). Dr. Hamza told us that we should mention them all.</p> |  |
| <p>Bandage</p> |  |

Before The Procedure & Patient Preparation

★ WIPE

- **W**ash your hands.
- **I**ntroduce yourself.
- Take **P**ermission.
- Insure the Patient **P**rivacy.
- **P**osition:
 - **supine** in bed and a small cushion under **the knee to flex it (30°)**.
- **E**xposure:
 - **mid thigh to the foot, Adult** patient should be **relaxed**.
- For **pediatric patient**, it should be done in **operating room** or **under conscious**

- **A written consent** should be taken from **the patient** or **guardian**.
- **check your equipment** (sterile gloves and cleaning set, antiseptic solution, syringe, local anesthesia).
- **Identify the bony landmarks** of the knee joint. (Quadriceps tendon, patella, patellar tendon, tibial tuberosity, medial and lateral joint lines)
- **entry points: joint line** or **suprapatellar pouch**.

During The Procedure: (under aseptic conditions), (how to perform)

1. **Clean** the area **3 times (in out)** with alcohol and **put drape** on knee
2. **Inject** 3-5 cc **local anesthesia** in the **subcutaneous tissue**, **inject** it in **three directions** (in each direction you have to aspirate before if you do not see blood inject + while injecting withdraw the needle to anaesthetize the whole area)
3. **Wait** for **2-3 min (in the exam just mention it)**
4. **Approach: Lateral Suprapatellar approach.**
5. **Remember** that in 10% of the population, **the suprapatellar bursa does not communicate with the knee joint.**
6. For **large effusion**, **Insert the needle 1 cm above** and **1 cm lateral** to **the superior lateral aspect of the patella** at a **45° angle**.
7. While **inserting** the needle **aspirate** at the **same time** until you **see fluid** , **stop inserting** the needle and **keep aspirating**.
8. **Cover** and **bandage** the aspiration site.
9. **Send** the fluid for **culture and analysis**.

After The Procedure

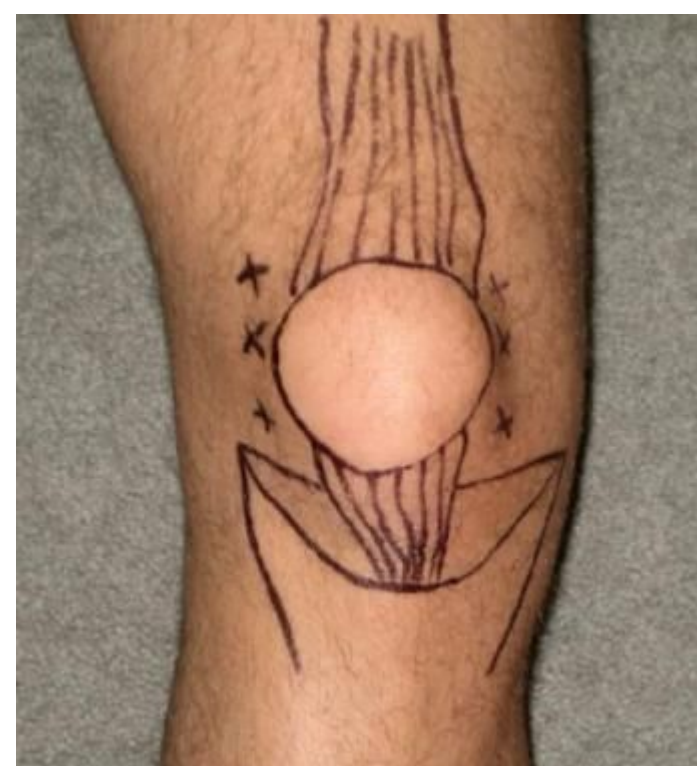
1. **Advise** the patient to **rest the joint** for 1-2 days and to avoid strenuous use for five days (rest the joint).
2. **Warn** the **patient** that the joint may be **painful** for a while and **advise** on **use of analgesics**.
3. **Following injection**, patients should be **warned** that they **might** experience **worsening symptoms** during the first 24-48 hours (related to a possible steroid flare) which can be treated with ice and NSAIDs. If pain is severe or **increasing after 48 hours, seek advice**.
4. **Warn** about possible other **side-effects**. **Advise** to seek help if **systemic** side effects develop **suggesting infection**.
5. **Arrange** appropriate follow-up.

Remember to comment on!!!!!!!!!!!!!!!!!!!!!!

| | | | | |
|----------------------------------|------------------------------------|--------------------|---------------------------------------|--------------------------|
| Amount (Large or small) | Color (clear, Straw color) | Consistency | Content (Blood or Fat droplet) | Viscosity (thick) |
|----------------------------------|------------------------------------|--------------------|---------------------------------------|--------------------------|

Possible scenarios for knee aspirates

- **Thick pus** (septic arthritis): patient must be admitted for emergency knee joint washout and Intravenous broad spectrum antibiotic therapy
- **Blood** (hemarthrosis): if no fracture, same advices as for therapeutic arthrocentesis.
- **Blood and fat droplet** (fracture is present): should be managed as fracture principles.
- **Straw color fluids** (crystal induced arthritis vs rheumatological cause): fluid must be sent for same cultures as mentioned before with stress on crystal under light microscopy.



please note that this picture for the location of entry point.
But handles (doctor) MUST have full field prepped and draped under full aseptic technique.

Check this [Viedo](#).

