

Lumbar Puncture Surgical Plan

Patient Details

Name: John Doe

Age: 45

Medical ID: 123456789

Surgical Steps

1. Verify Patient Information: Use AR spectacles to scan the QR code on the patient's ID wristband. Confirm name, medical history, and procedure details.
2. Scan Medical Equipment: Use AR spectacles to scan all medical equipment. The Object Detection model will create a real-time inventory of all required tools.
3. Patient Positioning: Position the patient in the lateral decubitus (fetal) or sitting position, with the back arched to widen the space between vertebrae.
4. Site Identification: Identify the puncture site at the L3-L4 or L4-L5 interspace, located by palpating the iliac crests.
5. Sterilization: Sterilize the puncture site with antiseptic solution, applying in concentric circles outward from the center.
6. Local Anesthetic: Administer 1-3 mL of 1% Lidocaine subcutaneously at the puncture site, allowing it to take effect.
7. Needle Insertion: Insert a 20 or 22-gauge spinal needle with stylet, bevel-up, into the chosen interspace. Angle the needle slightly toward the patient's navel.
8. CSF Collection: Once in the subarachnoid space (confirmed by CSF flow), collect 1-2 mL of cerebrospinal fluid in sterile tubes.
9. Needle Removal: Remove the needle, replacing the stylet first to minimize tissue drag. Apply pressure and sterile dressing to the site.

10. Re-check Equipment: Use AR spectacles to scan all medical equipment again. The Object Detection model verifies if all tools have been accounted for.