Technique

The procedure is started with sterile preparation of the skin (Iodine).

- **For cervical level:** The patient is placed in supine position, with a cushion under the lower neck and the upper thoracic spine to hyperextend the neck. After preparation of the skin and local anesthesia of the skin, a 22.5-gauge needle is inserted anterolateraly. During the insertion, the trachea and esophagus should be pushed to remove them from the pathway. The carotid artery is detected by its pulsation and avoided.

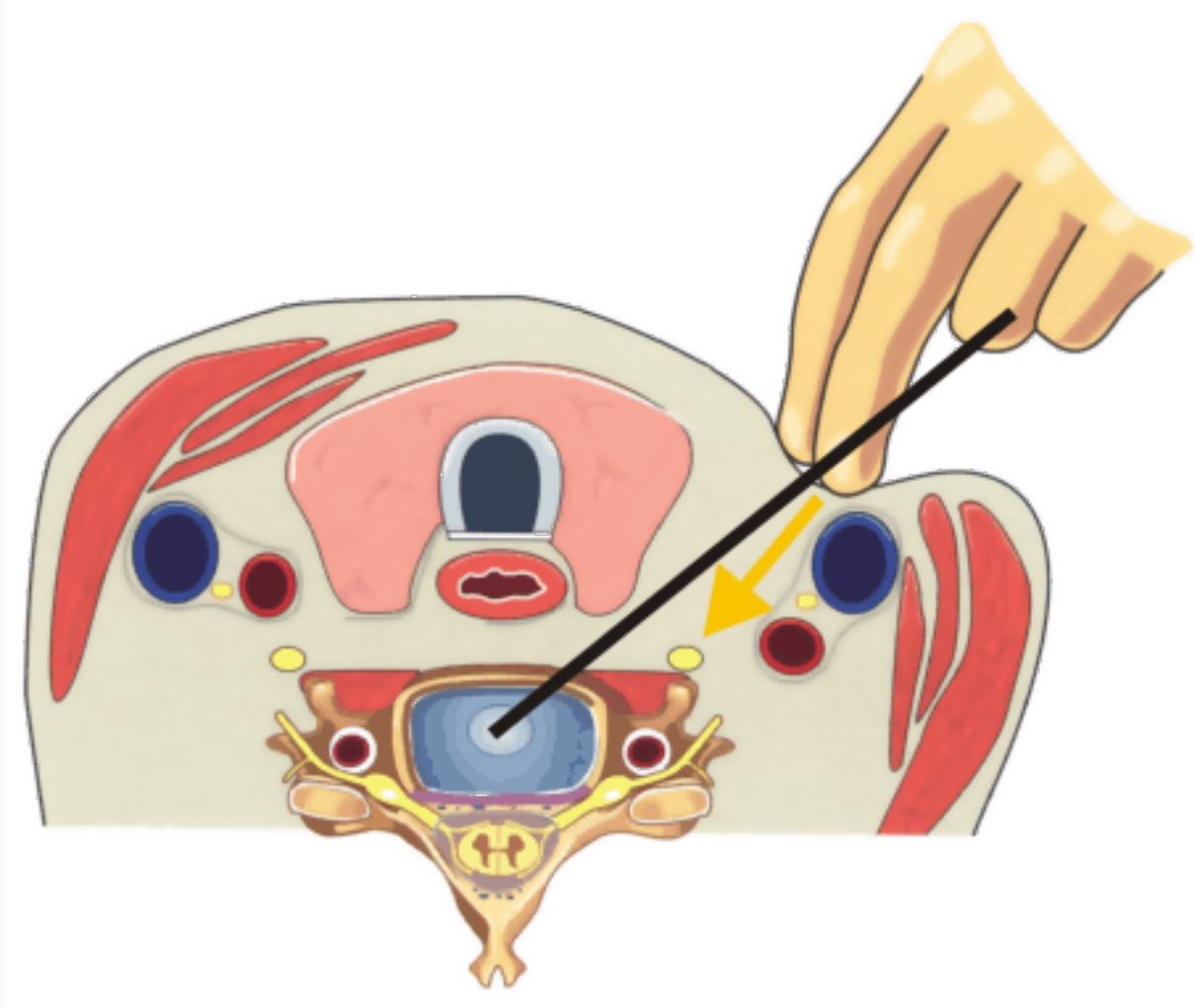


Fig. 1: Anterolateral pathway for cervical discography. A 22.5-gauge spinal needle is inserted anterolateraly. During the insertion, the trachea and esophagus should be pushed to remove them from the pathway. The carotid artery is detected by its pulsation and avoided.

- **Cervical Discography (c6-c7 and c5-c6).**

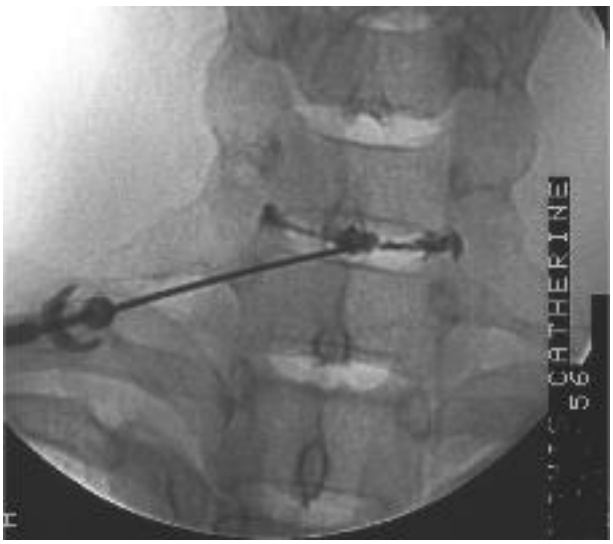


Fig. 2: Cervical discography: fluoroscopy control

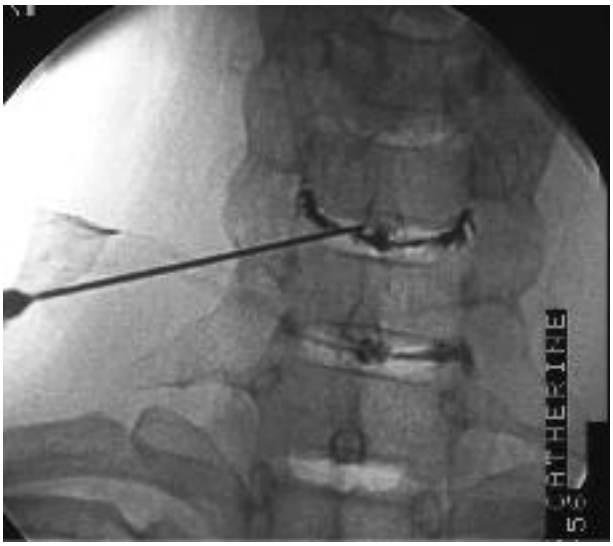


Fig. 3: Cervical discography: fluoroscopy control.

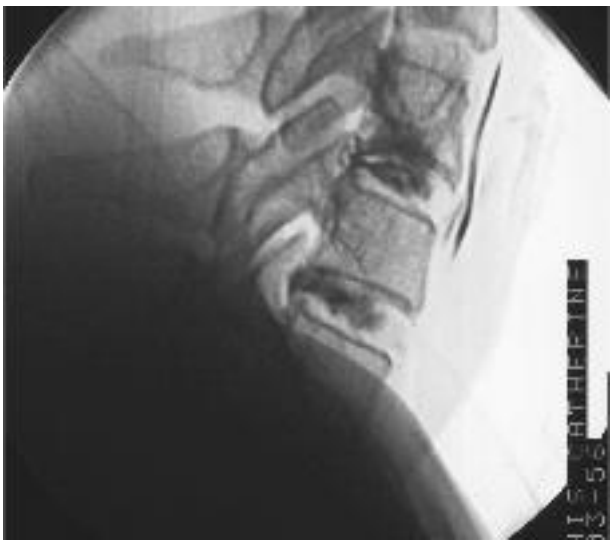


Fig. 4: Discography: fluoroscopy control anterior leak.

- **For thoracic approach** CT guidance is preferable to fluoroscopy, to reduce the incidence of complications. A standard extra-pedicular posterior-lateral approach is used.

For lumbar level: A standard extra-pedicular posterior-lateral approach is used.

- Under fluoroscopic guidance, the patient can be positioned in prone or lateral position. We prefer the prone technique because the patient is a in a more stable position. **Proper positioning is the key to an effective discography.** A C-arm is used for the guidance. The disk puncture should always be performed controlateral to the patient's more symptomatic side to minimize the chance of a false-positive pain response. A cushion is positioned under the abdomen to straighten the lumbar curve. The feet are rested on a pillow. Under Fluoroscopy, the desired disk levels are marked. A paramedian line 8 to 10 cm lateral and parallel to the midline is drawn depending to the patient corpulence.

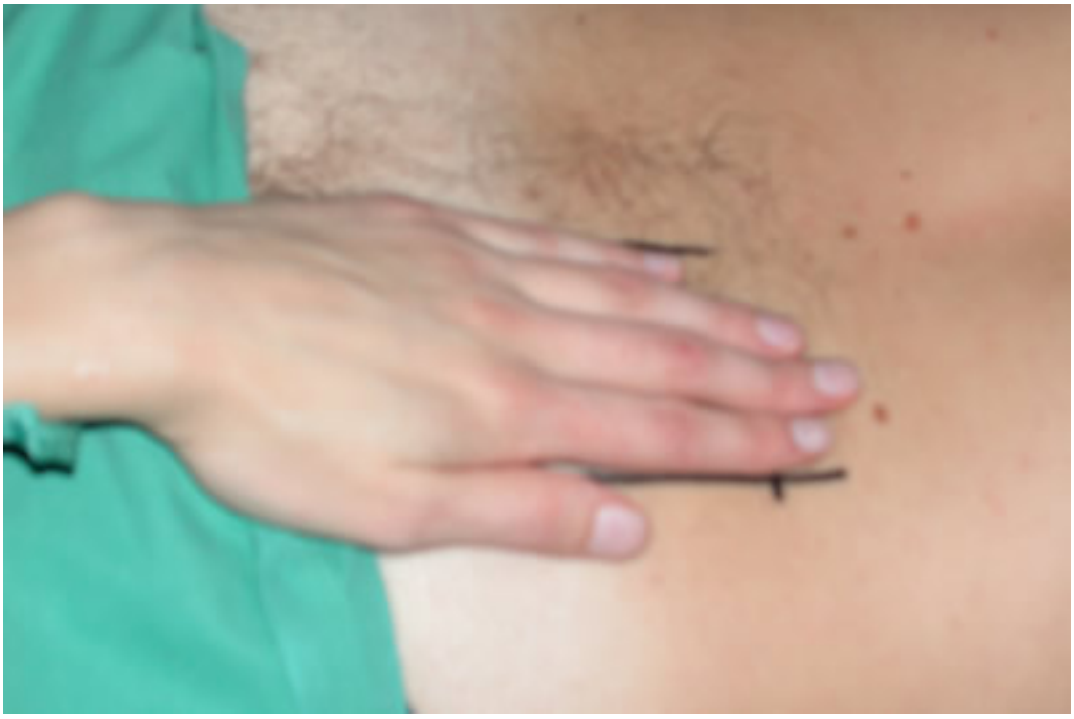


Fig. 5: The entry point is usually 8 cm from midline.

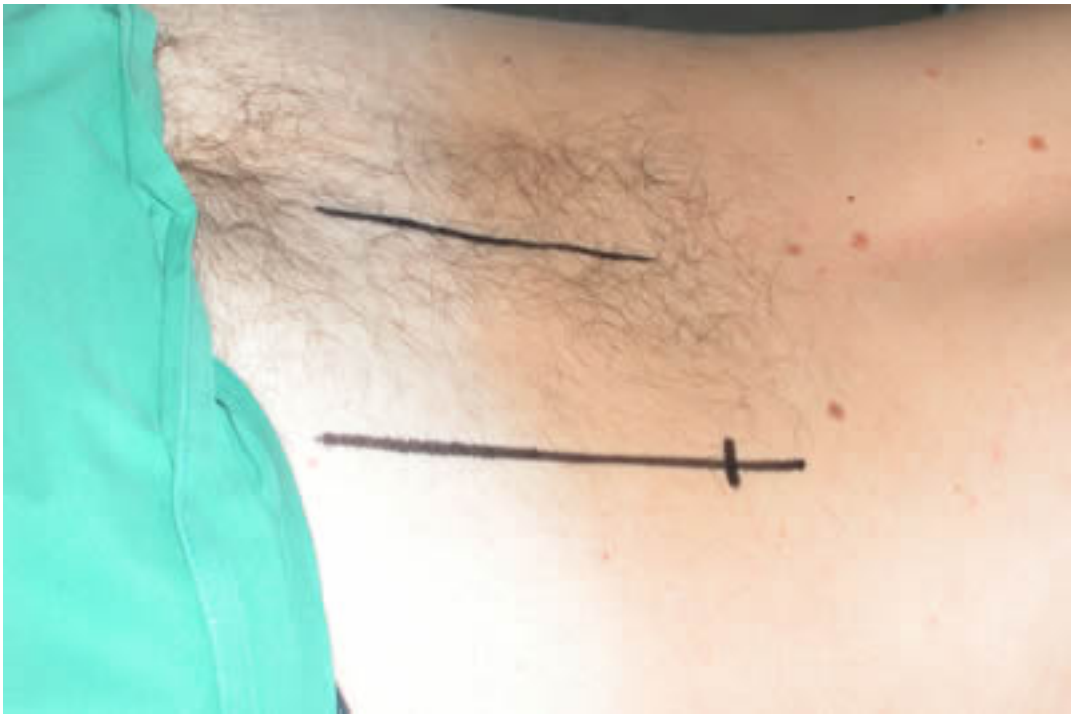


Fig. 6: The midline of the spine is marked. A paramedian line (8 cm) lateral and parallel to the midline is drawn.

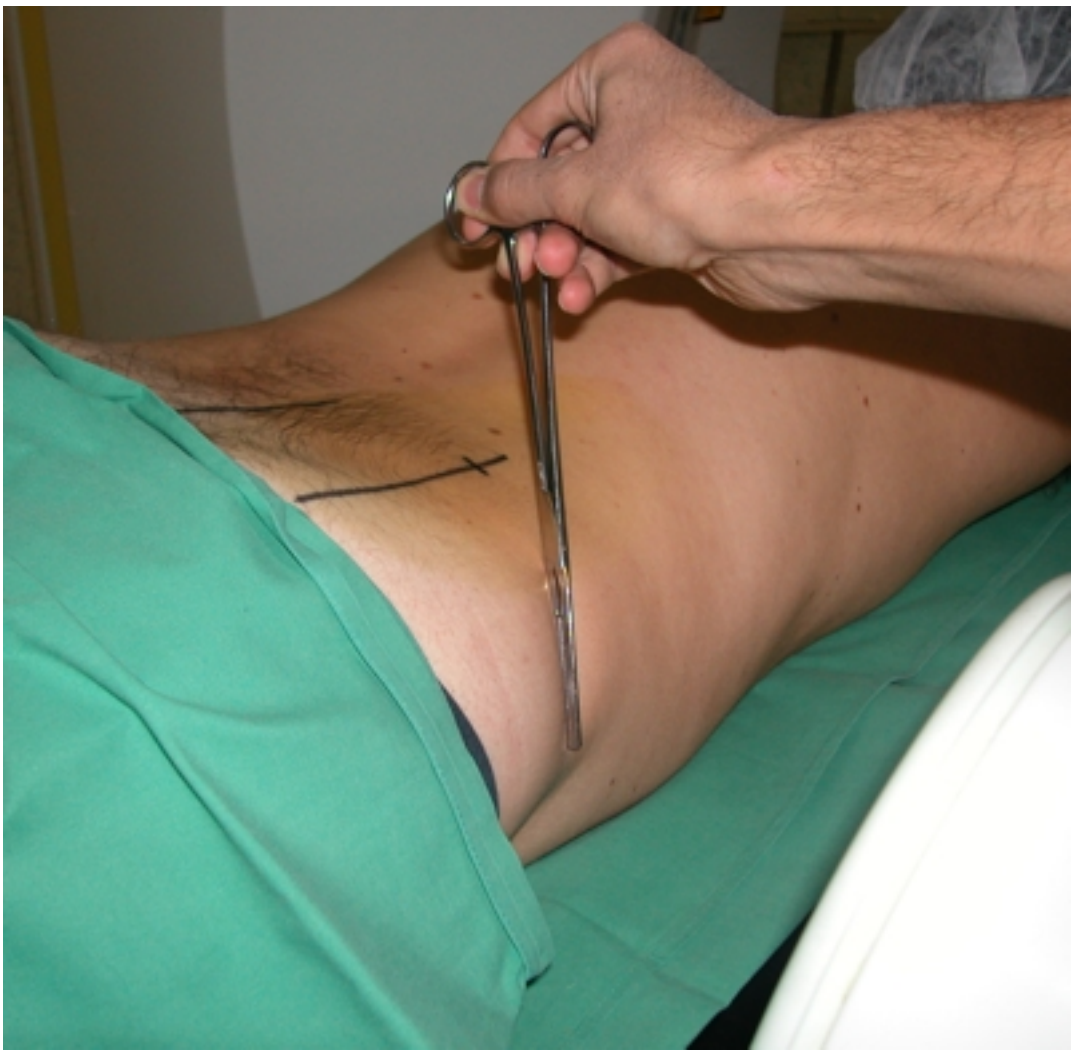


Fig. 6a: At the levels the point of crossing the paramedian line with the disk level line is the site of insertion of the needle. See Fig 3b.

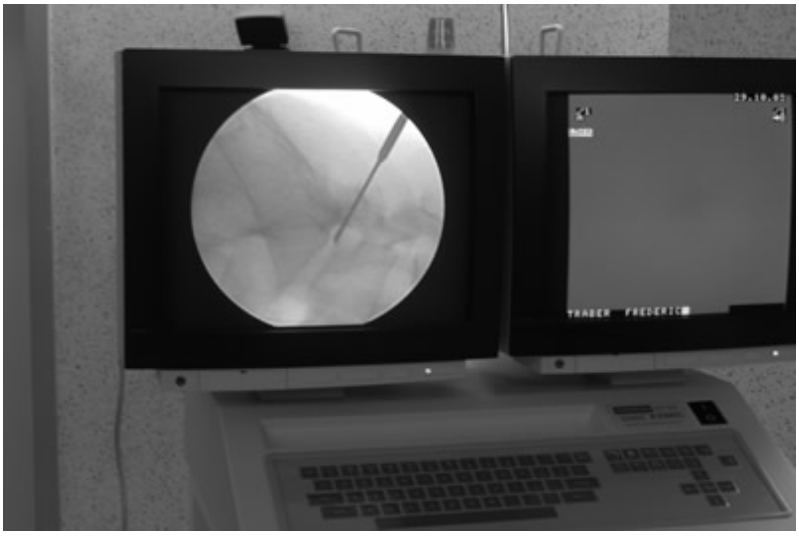


Fig. 6b: Level of the disk.

- The site of insertion of the needle is the point of crossing the paramedian line with the level of the disk (lateral fluoroscopy). However, the site of insertion is higher for L5-S1 level. After the skin is washed and then antiseptic solution is applied three times, a 22-gauge spinal needle is used for local anesthesia. The pathway of the needle is anesthetized and the tip of the needle should touch the articular process.

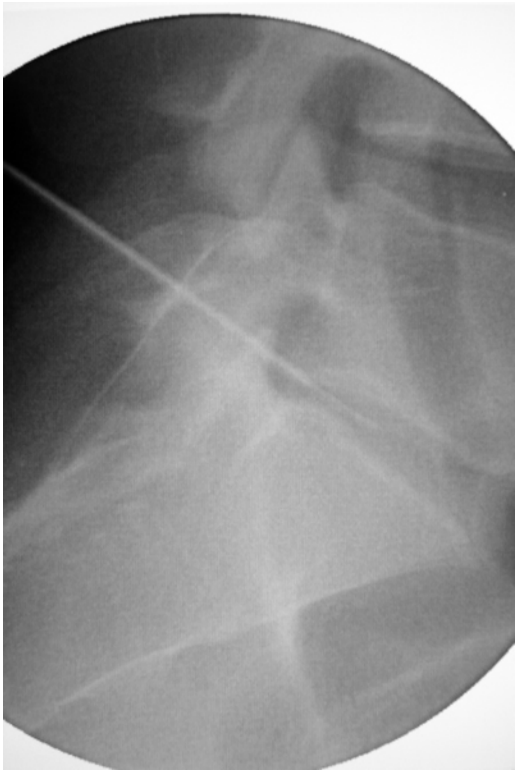


Fig. 7: Discography, disk puncture, fluoroscopy control.

- After local anesthesia, a direct or coaxial technique is used to reach the disk. Under lateral fluoroscopy, the needle is positioned in the disk. The needle is positioned close to the articular process avoiding in this way the nerve root and to approach the disc. The needle must remain parallel to and midway between the two end plates on fluoroscopic control.
- The **"Scotty dog" technique** requires an oblique projection. The C-arm (or the patient) is rotated until the superior articulating process (ear of the "Scotty dog") is centered midway between the anterior and posterior aspects of the vertebral body. The superior en plates of the same vertebral body should superimpose. For L5-S1 level, significant caudal angulation is required for optimal visualization.

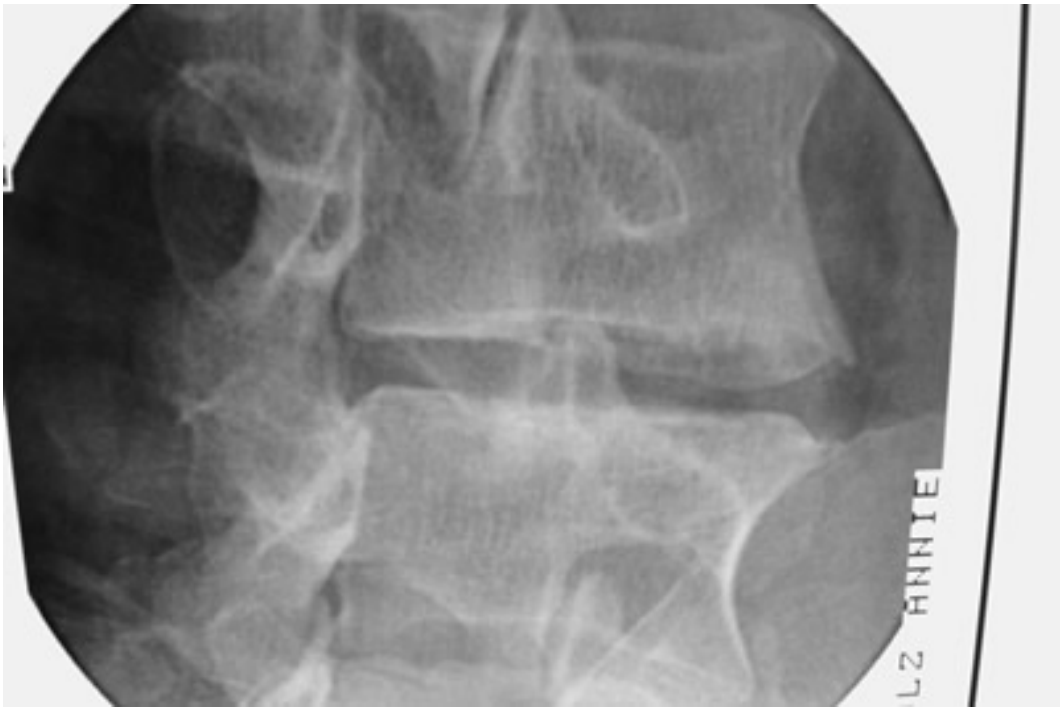


Fig. 8: Oblique projection. "Scotty dog" technique.

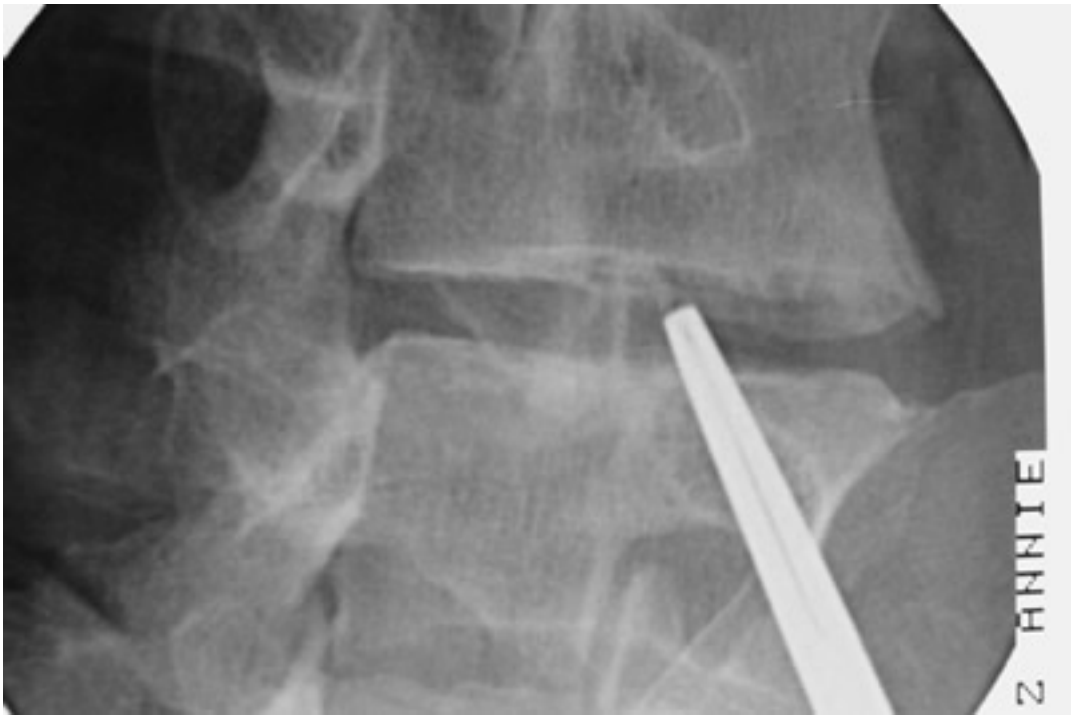


Fig. 9: Oblique projection. "Scotty dog" technique. Entry point.

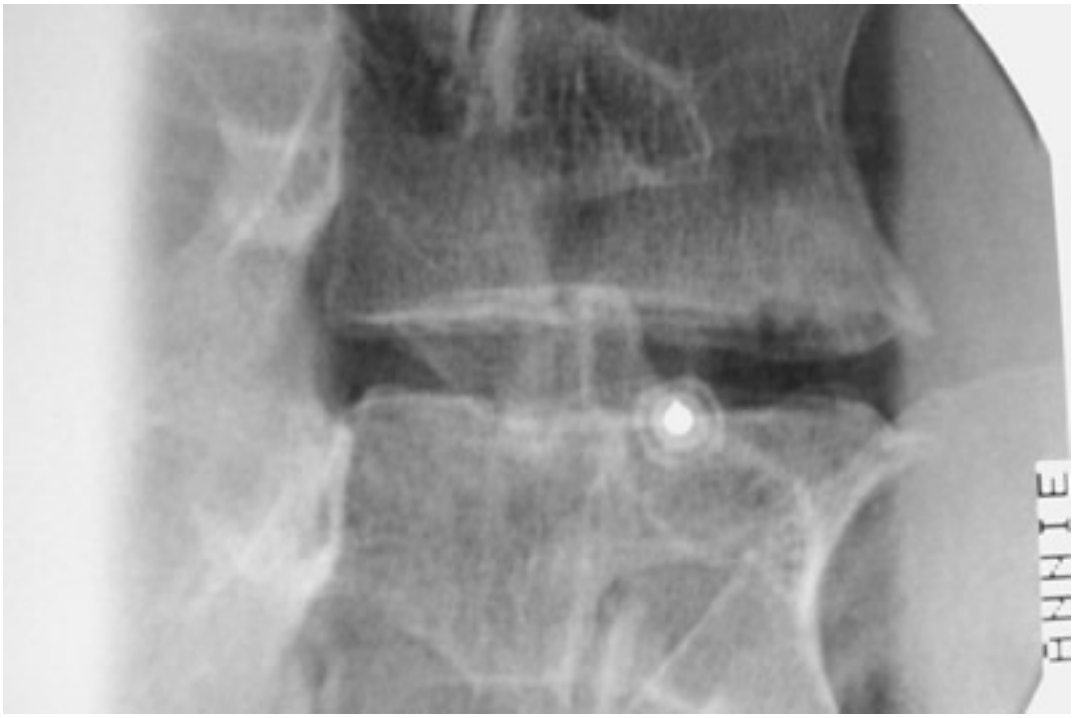


Fig. 10: Oblique projection. "Scotty dog" technique. Needle positioning.

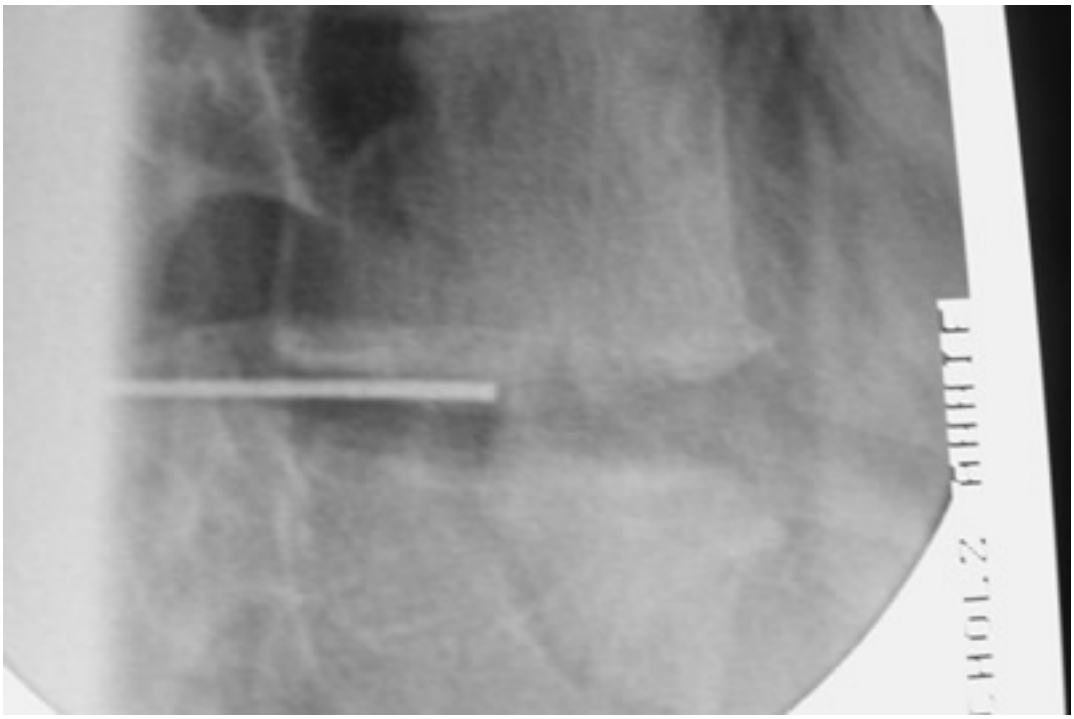


Fig. 11: Lateral projection.

- 1 to 2 ml of contrast agent are injected for lumbar level; 0.3 to 0.5 for cervical level. The patient is asked to describe the pain reproduction and radiation during injection. Memory pain is positive if injection reproduces his leg or back pain.

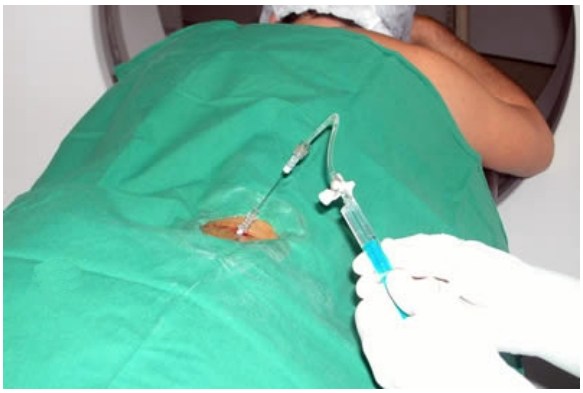


Fig. 12: Discography with provocative test.

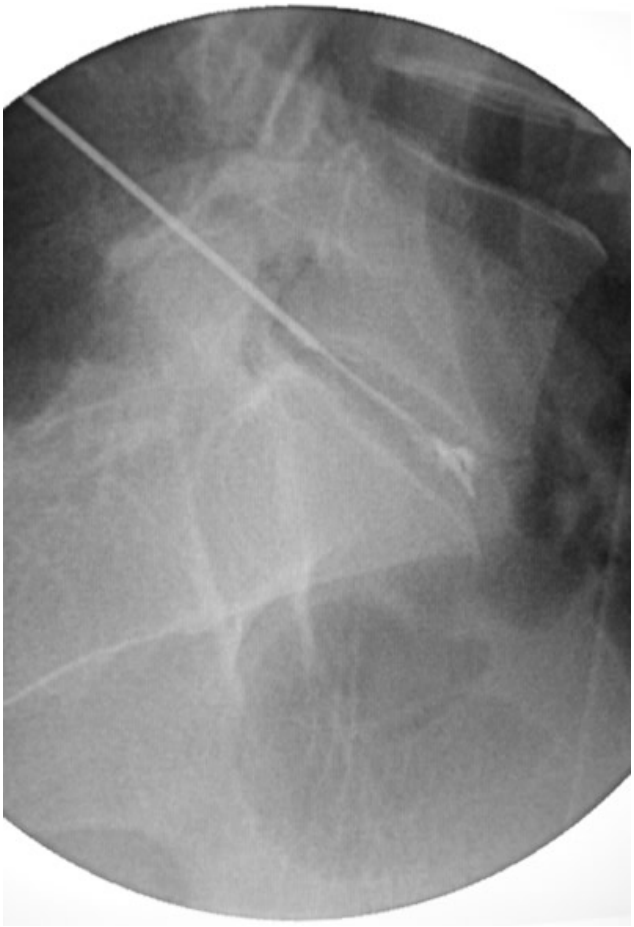


Fig. 13: Discography, contrast agent is injected, fluoroscopy control.

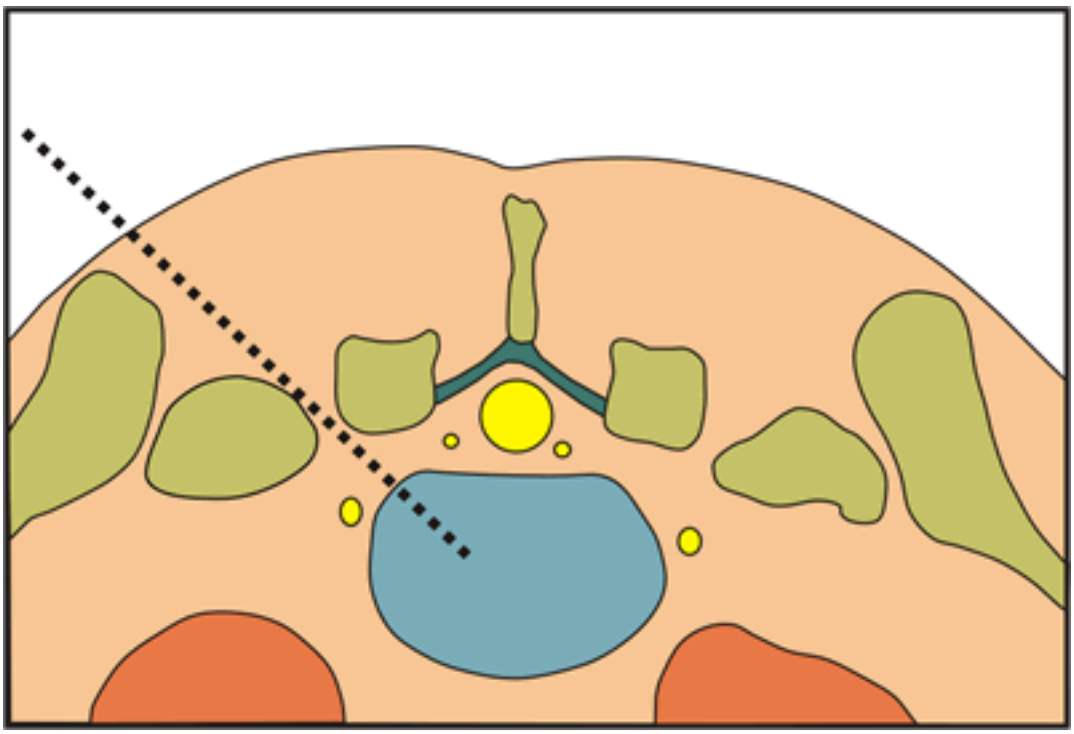


Fig. 14: Standard extra-pedicular posterior-lateral approach.

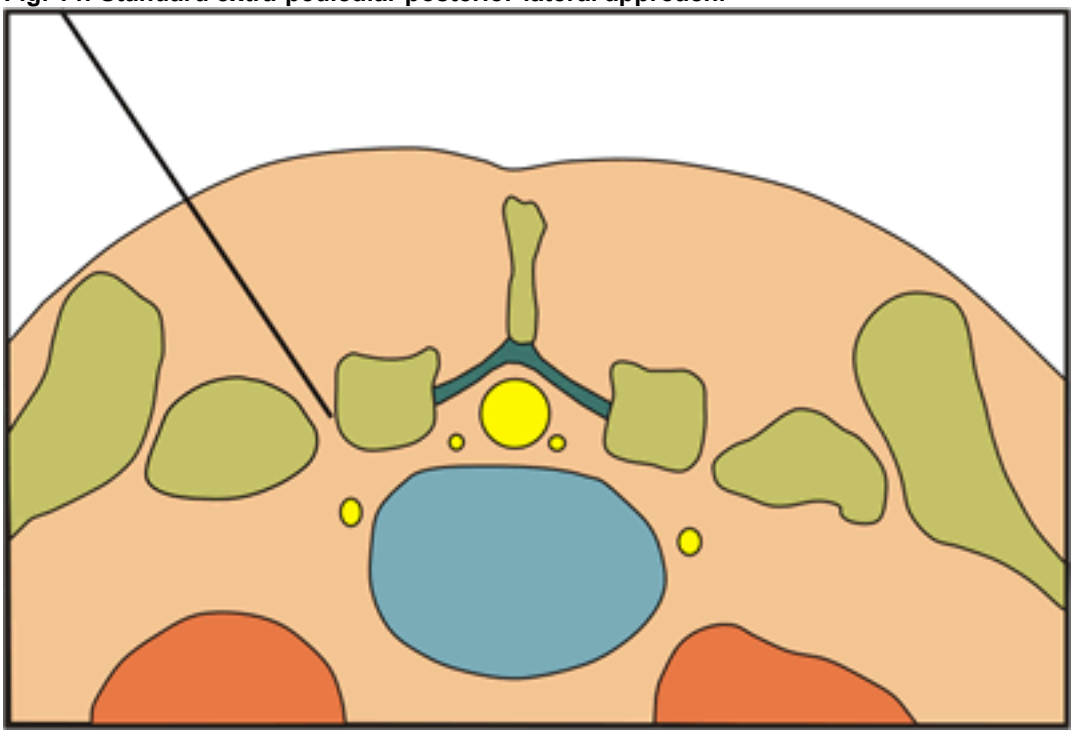


Fig. 15: The skin's subcutaneous layers, muscles and articular process are infiltrated with local anesthesia (1% lidocaine) with a 22-gauge spinal needle.

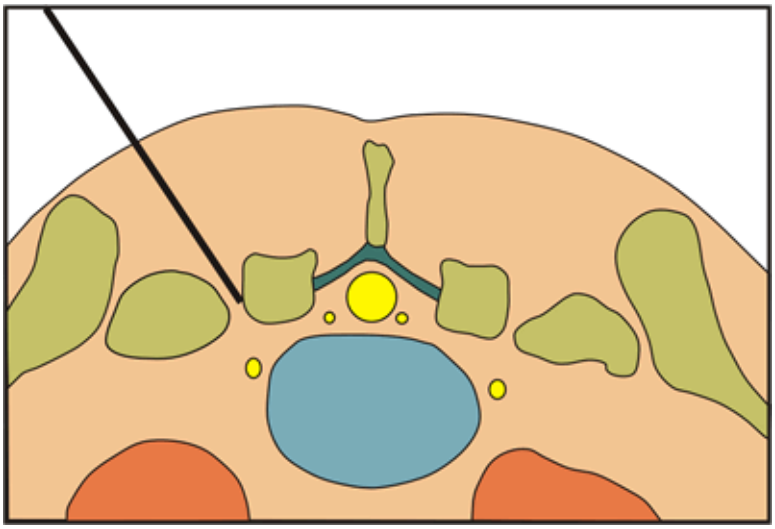


Fig. 16: Coaxial technique. An 18-gauge spinal needle is placed in contact with the articular process.

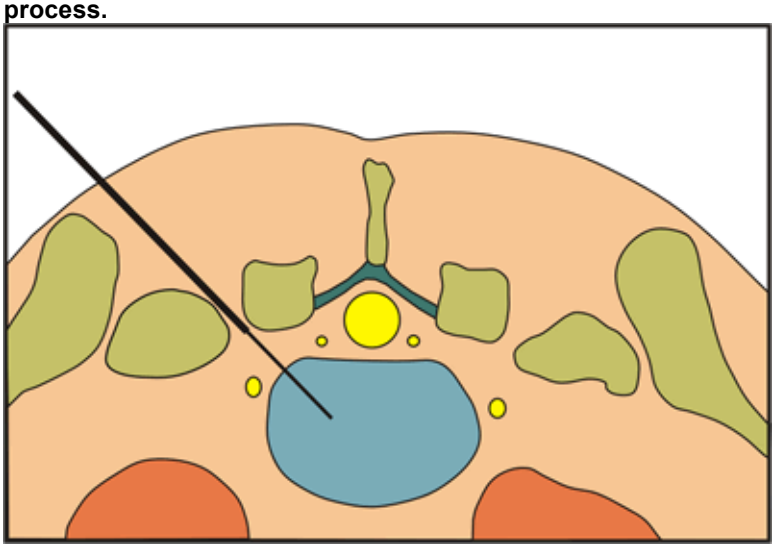
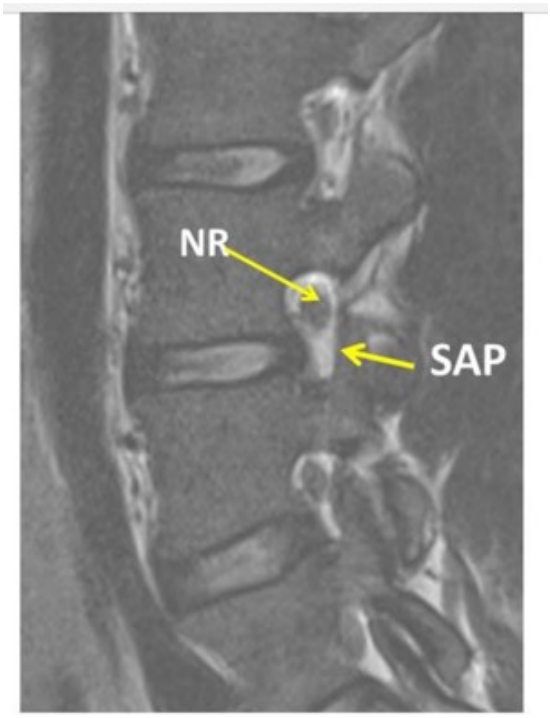


Fig. 17: The stylet of the 18-gauge needle is then removed and a 22-gauge 17 cm spinal needle is inserted coaxially. The tip of the 22-gauge spinal needle is placed in center of the disk. longitudinal ligament.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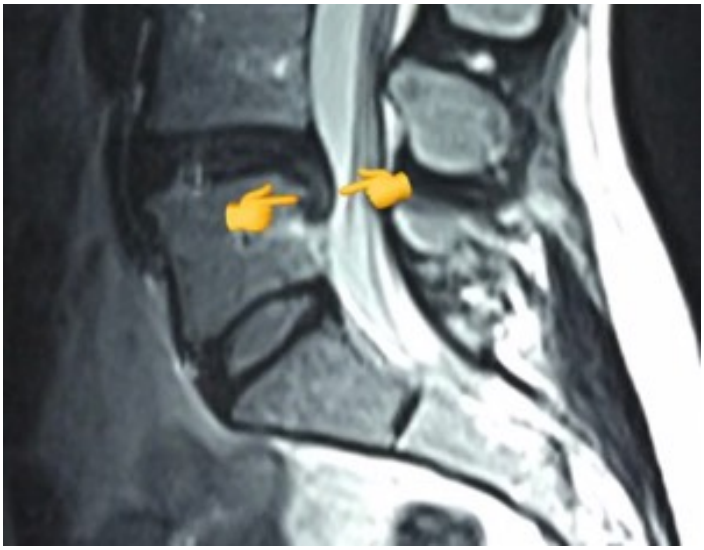

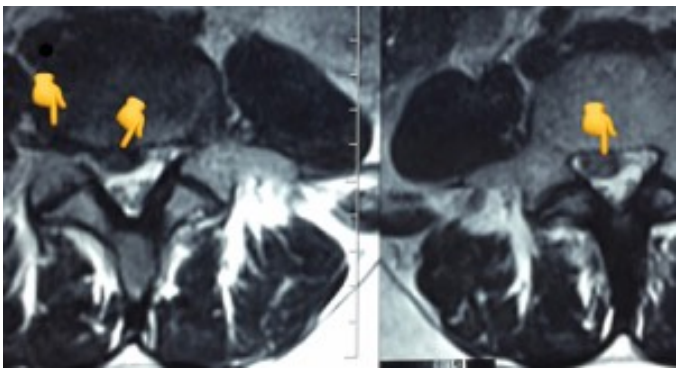

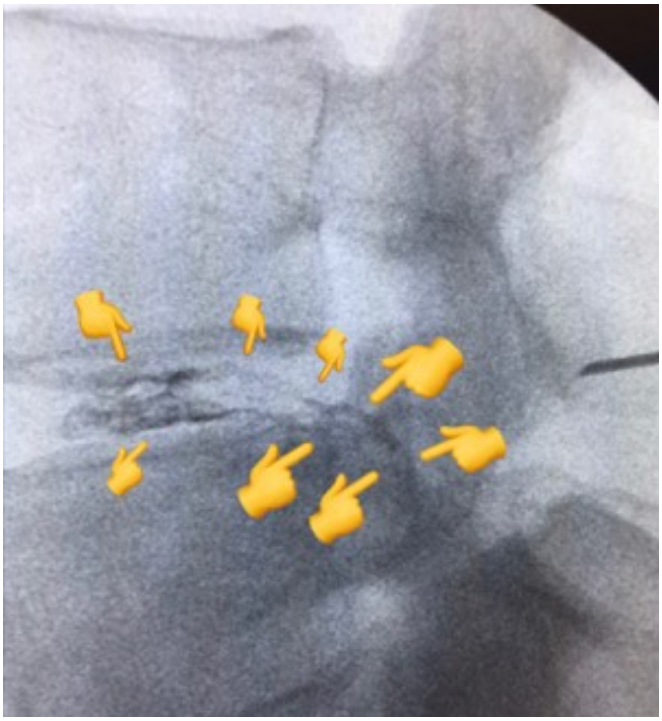

Discogel discography

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