

Fluoroscopic guided epidural anaesthesia: A rescuing skill in difficult anaesthetic management

Sir,

The epidural space is routinely approached blindly for placement of epidural catheter. It is not only difficult to perform the procedure in patients with spinal deformity but also it inflicts discomfort to patient from needle pricks during multiple attempts. This article reports the use of fluoroscopy for the placement of an epidural catheter.

A 26-year-old, male patient, American society of Anesthesiologists (ASA) physical status class II, was posted for urethroplasty for urethral stricture. He had severe scoliosis in thoracolumbar area with a Cobb's angle of 70° [Figure 1a and b]. His breath holding time was 10 s, he had severe restrictive lung disease on pulmonary function tests and moderate pulmonary arterial hypertension. In view of poor cardiopulmonary reserve and a difficult back, fluoroscopy-guided epidural anaesthesia via interlaminar approach was planned and an informed written consent was obtained. In the operative room, standard monitors were applied and the patient was laid in prone position on the operating table with bolsters below the abdomen. True anteroposterior (AP) view (i.e., pedicles of vertebra appear equidistant from their spinous process) followed by squaring of adjoining endplates of third and fourth lumbar vertebra (L3--L4) on fluoroscopic image were achieved. Lamina of L4 vertebrae over right side was identified and needle entry point was marked using a metallic marker. Under all aseptic

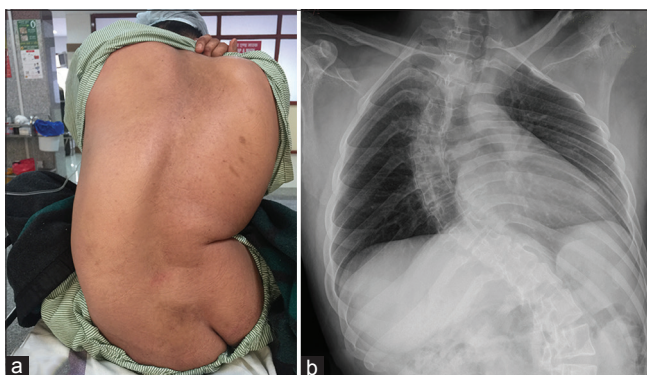


Figure 1: (a) Patient Spine, (b) X-ray spine

precautions and C-arm guidance, a 18 gauge Tuohy's needle was advanced to touch the targeted ipsilateral L4 lamina [Figure 2a]. Thereafter, the needle was directed cranially aiming towards the edge of lamina. Subsequently, contralateral oblique view of C-arm (orbital rotation of C-arm) was obtained where lamina appear like tear drops. The needle was advanced further of lamina in this view using loss of resistance (LOR) technique. Vertical spread of contrast in posterior epidural space [Figure 2b] further confirmed correct needle placement. A 20G epidural catheter was placed 4 cm in the epidural space. T10 dermatome sensory blockade could be achieved with injection of 10 ml of 0.75% ropivacaine.

Fluoroscopy is a well-established imaging tool in pain clinics and has the advantage of showing real time images.^[1-3] Literature suggests that in severe scoliosis (Cobb angle >50°), imaging modalities should be used for neuraxial access.^[4]

Positioning prone with bolster underneath pelvis reduces lumbar lordosis and widens the lumbar interlaminar space.^[5] Endplate squaring, that is, end-plates of adjoining vertebra appear parallel in image on monitor, is done to delineate the path of needle entry. The needle is targeted first to the lamina and then advanced off its upper edge. This prevents accidental dural puncture that might occur in case needle is advanced directly into radiolucent interlaminar window. Injecting a contrast agent under fluoroscopic guidance (i.e. epidurography) verifies the proper position of the needle in the epidural space, as loss of resistance technique alone can be misleading. On lateral view, contrast material is visible as vertical semilunar-shaped deposit along the spinolaminar line and in the AP view a thick ipsilateral contrast agent shadow is seen along the medial margin of the upper and lower pedicles and the exiting nerve sheath.^[1]

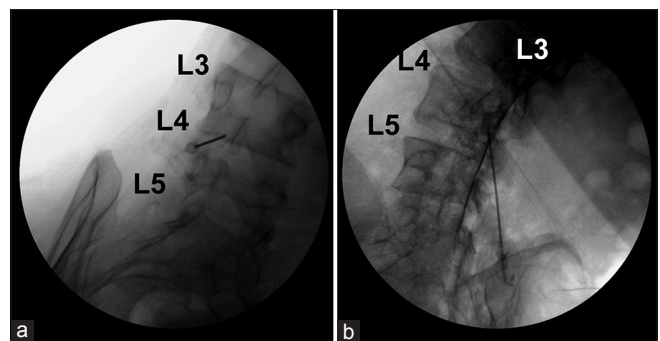


Figure 2: (a) Fluoroscopic anteroposterior view, (b) Fluoroscopic lateral view with dye confirmation

Incorrect needle placement can be in subarachnoid space (localised homogenous spread), in blood vessel (rapid run off of contrast agent), muscle, facet joint, neural structure, or disc. In patients who have a documented allergy to contrast agents, a small amount of air or gadolinium may be used as an alternative.^[4]

Fluoroscopy precisely and rapidly allows visualization of the optimal needle path and additionally identifies pathological conditions before needle insertion. This technique is also useful in patients with marked degenerative changes resulting in very narrow intralaminar spaces. Epidurography rules out complications such as intravascular injection. The technique is not suitable for patients unable to lie prone, in pregnancy and those with fractures who are difficult to position due to pain on movement.

The knowledge of fluoroscopic technique adds to the anaesthesiologist armamentarium and it offers an opportunity to provide regional anaesthesia in patients with anticipated difficulty.

Declaration of patient consent

The authors certify that they have obtained appropriate patient consent form. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understand that his name and initial will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Prior presentation

The case report was accepted for poster presentation on September 13, 2018 at 37th Annual ESRA Congress held at Dublin, Ireland and organised by European Society of Regional Anaesthesia and Pain Therapy.

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Conflicts of interest

There are no conflicts of interest.

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