

A rare complication of epidural anaesthesia a case report with brief review of literature

Sir,

A 29-year-old, G1-P0, woman presented to our delivery suite at 39 weeks of gestation, in early labour. 70 minutes later, at 4 to 5 cm cervical dilatation, she requested an epidural labour analgesia.

Her medical and obstetric history was unremarkable, and she was not taking any medication. The epidural space was identified in the L3-4 interspace at a depth of 7 cm using the loss of resistance to saline technique, with an 18-gauge Tuohy needle and the catheter was easily inserted with the patient in left lateral position. The catheter was threaded to the 15 cm mark, the needle was removed and the catheter was left with 11 cm mark at the skin. This left 4 cm of catheter in the epidural space. Following a test dose of 3 ml of lignocaine 2% with 1:200000 epinephrine, the catheter was taped in place. 10 ml of bupivacaine 0.125% solution with 50 µg fentanyl was administered after no signs of intravascular or subarachnoid cannulation. Then, the catheter was connected to bupivacaine 0.125% and fentanyl 2 µg/ml infusion at a rate of 7 ml/hr. The patient was attached to the automatic blood pressure measurement machine, foetal heart monitor and an intravenous (iv) fluid of Ringer's lactate was run. Patient was comfortable and stable all through her labour which lasted around 4 hours.

After vaginal delivery, the catheter could not be removed. Repeated attempts to remove the catheter

continued to be unsuccessful; however, after four attempts, we pulled out the catheter by steady increase in the traction force. Fortunately, the epidural catheter was removed intact without shearing. The patient experienced no paraesthesia or other symptoms during the procedure. However, inspection of the catheter revealed a tight knot about 1 cm from the tip and slight catheter stretching proximal to the knot was also observed [Figure 1] (epidural catheter knotting). However, the subsequent postnatal period of the patient remained uneventful.

Epidural analgesia still is the most effective way of labour pain relief but unfortunately this luxury comes at a price of some complications. Though serious complications to epidural anaesthesia or analgesia are uncommon, rarely knotting of lumbar and caudal epidural catheters has been reported,^[1-3] which has an estimated incidence of 0.0015%.

Several sources have suggested that advancing the catheter beyond a certain distance into the epidural space increases the incidence of epidural knotting,^[2] but still there is no consensus about the optimal length of catheter insertion. Conceptually, an epidural catheter may tend to curl or coil if threaded more than 4 or 5 cm. However, development of a knot in a catheter that was inserted <3 cm has also been reported.^[4] Thus, signifying the role of other factors, like the type of catheter and the level of catheter placement. Depending on catheter type and level of insertion, insertion lengths from 2 to 8 cm have been proposed.^[1,3] Since the catheter placed in our patient was inserted upto 15 cm and then withdrawn and fixed at 11 cm mark in the lumbar region; this must have probably allowed the catheter to turn 180° and form a knot.

The management proposed for an irretrievable epidural catheter includes change of the patient's



Figure 1: Epidural catheter knotting

position,^[5] steady stretch or pull-out possibly under administration of general anaesthesia,^[2] radiological investigation using contrast medium or guidewire and surgical intervention.

Some studies found patient position to be a factor for ease of catheter removal. They reported that less force is required to remove a catheter in the lateral position, with a gentle and steady traction placed on the catheter at the skin. Steady traction allows the catheter and the knot to decrease in diameter and thus facilitating its passage through the ligaments.

Fortunately, in our case, the catheter could be pulled out by using a steady force without the patient experiencing any neurological symptoms. Although pulling may result in tearing the catheter, steady and gentle stretch is frequently successful by making a possible knot smaller. It is firmly stressed that neurological functions should be carefully observed during the procedure. If signs like paraesthesia, radicular-type pain or any other signs of possible spinal root damage appear, further attempts at withdrawing should be abandoned. It is mandatory to delay all attempts to retrieve the catheter until all effects of the administered local anaesthetic have worn off.

Fortunately, following the guideline of slow, steady and gentle traction in the absence of paraesthesia, we were successful in removing the tip of knotted epidural catheter intact.

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