SURGICAL REMOVAL OF A LOOPED AND KNOTTED EPIDURAL CATHETER IN A POSTPARTUM PATIENT

- A Case Report -

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Summary

We report a case of unsuccessful removal of an epidural catheter in a postpartum patient following a labour epidural analgesia, which ultimately required surgical intervention and fenestration ligamentum flavum to remove the epidural catheter. A 26 year old, requested an epidural analgesia for her labour pain. The epidural catheter was inserted under aseptic technique, and she was comfortable throughout her labour and had a normal vaginal delivery 4 hours later. One hour later, the acute pain nurse tried to remove the epidural catheter and encountered difficulty, she reported this to the resident on call, who also tried and found it unusually difficult to remove. A senior consultant was involved where he found a high resistance, several methods had been tried unsuccessfully. Surgical removal was the option, patient and partner were informed and consented, a neurosurgeon was consulted. Through a small incision (1 inch) a fenestration of ligamentum flavum was performed and a knotted and looped epidural catheter was removed. Patient was discharged next day, and in the follow up and subsequent visits patient remained well with no other complaints.

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Introduction

Knotted and entrapped epidural catheters are well-described in postpartum patients. Several methods have been suggested for removal of entrapped or difficult to remove epidural catheter by Gozal et al.[1] and Jongleux et al[2]. In the presented case, removal of the catheter proved to be impossible as the catheter was totally fixed.

Few reports are available concerning this issue. Some suggest leaving the retained catheter in the epidural space. Via internet search on both public and medical sites, few case reports of surgical removals were found.

Case Report

A 26-year-old, G1-P0, women presented to our delivery suite at 39 weeks gestation, in early labour. 70 minutes later, at 4-5 cm cervical dilatation she requested an epidural analgesia for her labour pain. Her medical and obstetric history were unremarkable, and she was not taking other 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 a 20G PORTEX (minipack, system 1, clear catheter, 3 lateral eyes. Portex Ltd. CT21 6JL, UK) was easily inserted with the patient in left lateral position. The catheter was threaded to the 17 cm mark, the needle was removed, and the catheter was left with 12 cm mark at the skin. This left 7 cm of catheter in the epidural space. Following a test dose of 3 ml of 2% with 1:200.000 epinephrine preservative-free lidocaine, the catheter was taped in place. 7 ml of same solution in 50 microgram fentanyl was administered after no signs of intravascular or subarachnoid cannualtion. Then the catheter was connected to bupivacaine 1% and fentanyl 2 mic/ml at a rate of 8 ml/hr.

The patient was attached to the automatic blood pressure measurement machine, fetal heart monitor, and an i.v. fluid of Ringer’s

lactate was running. Patient was comfortable and stable all through her labour which lasted around 4 hours. After vaginal delivery the catheter could not be removed by the acute pain nurse, the resident was involved where he could also not remove the catheter. A senior consultant was involved. Repeated attempts to remove the catheter by several methods continued to be unsuccessful; catheter stretching and decrease in diameter were observed. All attempts were aborted as the patient and her husband started to show signs of frustration.

After discussion with the patient and her husband, options were discussed; to leave a broken tip in place or to remove it surgically. They opted for the second choice. A neurosurgeon was consulted and under general anesthesia, through a small incision a fenestration through the ligament flavum on a left, lateral position the catheter was followed and successfully removed a knotted and looped catheter entrapped in the ligamentum flavum (Fig. 1, 2).

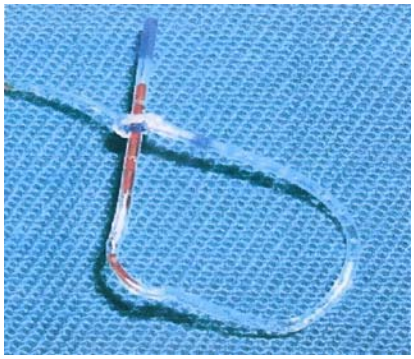

Fig. 1

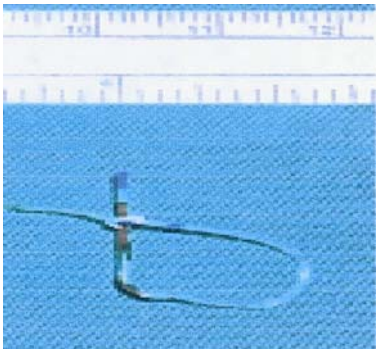

Fig. 2

Patient was discharged next day and in all her follow up visits remained well without any symptoms.

Discussion

The popularity of epidural anesthesia for cesarean section has increased during the last two decades, in view of the fact that epidural analgesia remains the most effective way of labour pain relief[4].

Unfortunately this comes with a price of some complications of epidural catheter insertion or removal, or late complications.

Knotted and entrapped epidural catheters are well-described in postpartum patients. Difficult catheter removal guidelines have been suggested by Gozal et al.[1] and Jongleux et al[2]. Several sources have suggested that advancing the catheter a certain distance in the epidural space increases the incidence of epidural knotting. Although Gozal recommended that the catheter be threaded less than 3 to 4 cm beyond the needle tip, Browne and Politi[5] recommended threading the catheter less than 5 cm. Others[6] reported threading the thoracic epidural catheters up to 10 cm without catheter curling.

The catheter placed in our patient inserted 7 cm in the lumbar region, probably caused the catheter to turn 180° and form a loop and knot. At our Institution, this was the only knotted catheter reported.

Morris et al.[7] and Boey and Carrie[8] found patient position to be a factor for ease of catheter removal. They recommend placing the patient in the same position for removal as for insertion, they reported that less force is required to remove a catheter in the lateral position, with a gentle, steady traction placed on the catheter at the skin. Steady traction allows the catheter and knot to decrease in diameter, facilitating passage through the ligaments.

Unfortunately none of these described methods solved the problem in our case. The stretching and decrease in the diameter of the catheter, could have lead to breakage of the epidural catheter, making surgical removal more difficult. The frustration of the patient and her husband, lead us to think of other available options.

The possibility of leaving the broken tip in the epidural space was discussed with patient but she was not in favor, as the loop would be too long to be left in situ. The surgical option was more appropriate.

Difficult catheter removal in our unit had been encountered on many occasions, all of which were removed successfully, using different methods. However in the present case, the catheter was totally fixed, unable to advance it, nor to feel any change in its position.

In summary, lumbar epidural are, on rare occasions, difficult to remove. Many reports show that they can often be removed intact with traction. However, catheter breakage is a reported risk potentially entailing a more extensive surgical exploration. Even if surgical removal of a retained catheter fragment is not attempted, complications may still arise[9].

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