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INTRODUCTION

- Fracture of epidural catheter is a rare(0.002%), but well-known complication of epidural anesthesia. It was first reported in 1957(1).
- Once it happens, it puts the anaesthesiologists' in a dilemma whether to remove it or not, as there is no consensus on the management.
- Strict adherence to epidural insertion and removal guidelines is vital for prevention.
- Literature suggests surgical exploration if the retained tip is within the spinal canal.
- Our case is unique in that three imaging modalities couldn't locate the broken fragment, hence we decided to leave it with regular follow up.

CASE DESCRIPTION

- 27-year-old G2P1 received epidural analgesia by a resident under consultant's supervision at 4cm. The epidural space was reached at 5 cm in a smooth insertion.
- The patency and catheter tip was examined prior to procedure, intact.
- While withdrawing the catheter before fixing, it was accidentally pulled out to 6 cm, which he pushed back in to 10cm, but it came out again to 6 cm. So, the same catheter was reinserted in the same space and fixed at 10 cm.
- After a bolus of 10 ml of 0.1% levobupivacaine with 2 mcg/ml fentanyl, PCEA infusion was started (5 ml/hr, bolus 10 ml and lockout 20 minutes). Since there was no pain relief, rescue bolus of 15 ml was given, which too was ineffective, and a leak was found under the dressing.
- So, to re-site, the catheter was removed smoothly, in lateral position, but the tip was found to be sheared off at 6 cm (fig 1). A thorough search in the room couldn't find the broken fragment.
- Meanwhile, CTG showed bradycardia, cervix was fully dilated on examination, so delivery expedited by vacuum extraction. The patient was informed about the incident, and OVA was initiated.



figure 1. Broken catheter

FURTHER MANAGEMENT

- USG spine done to trace the tip, in case it's underneath the skin, but couldn't visualize it.
- The neurosurgeon and radiologist were consulted. They ordered Xray lumbar spine, done 4 hrs later, failed to locate the tip (fig 2).
- MRI lumbosacral spine done the same day found a small round signal void shadow in the posterior epidural fat, suspicious of the fragment.
- CT lumbar spine done was on Day1 to confirm it, but it was identified as an air locule due to the epidural procedure.
- An MDT meeting on Day2 with an anesthetist, obstetrician and neurosurgeon and radiologist decided to do a whole spine CT to plan further management.
- The patient didn't have any neurological deficits or other complaints.
- As the whole spine CT also couldn't trace the catheter tip, exploration was not done.
- The patient and her husband were educated about the complications, reassured that treatment will be provided in case of any symptoms in future and is on regular follow-up.

DISCUSSION

- Epidural catheters can fracture if the catheter is faulty or knotted due to the excessive length in the space and by forceful advancement or removal against resistance.
- Withdrawing the catheter alone through the Touhy needle, advancement of the needle over catheter and impingement of catheter tip against bone are other causes.
- If resistance is encountered, an attempt to remove by firm traction after saline injection through the catheter or removal in a flexed lateral position can be tried.
- Despite precautions, if epidural catheter is broken, inform the patient and document the event.
- The retained fragment can cause back pain, local subcutaneous effusion, infection, migration and neurological deficits,

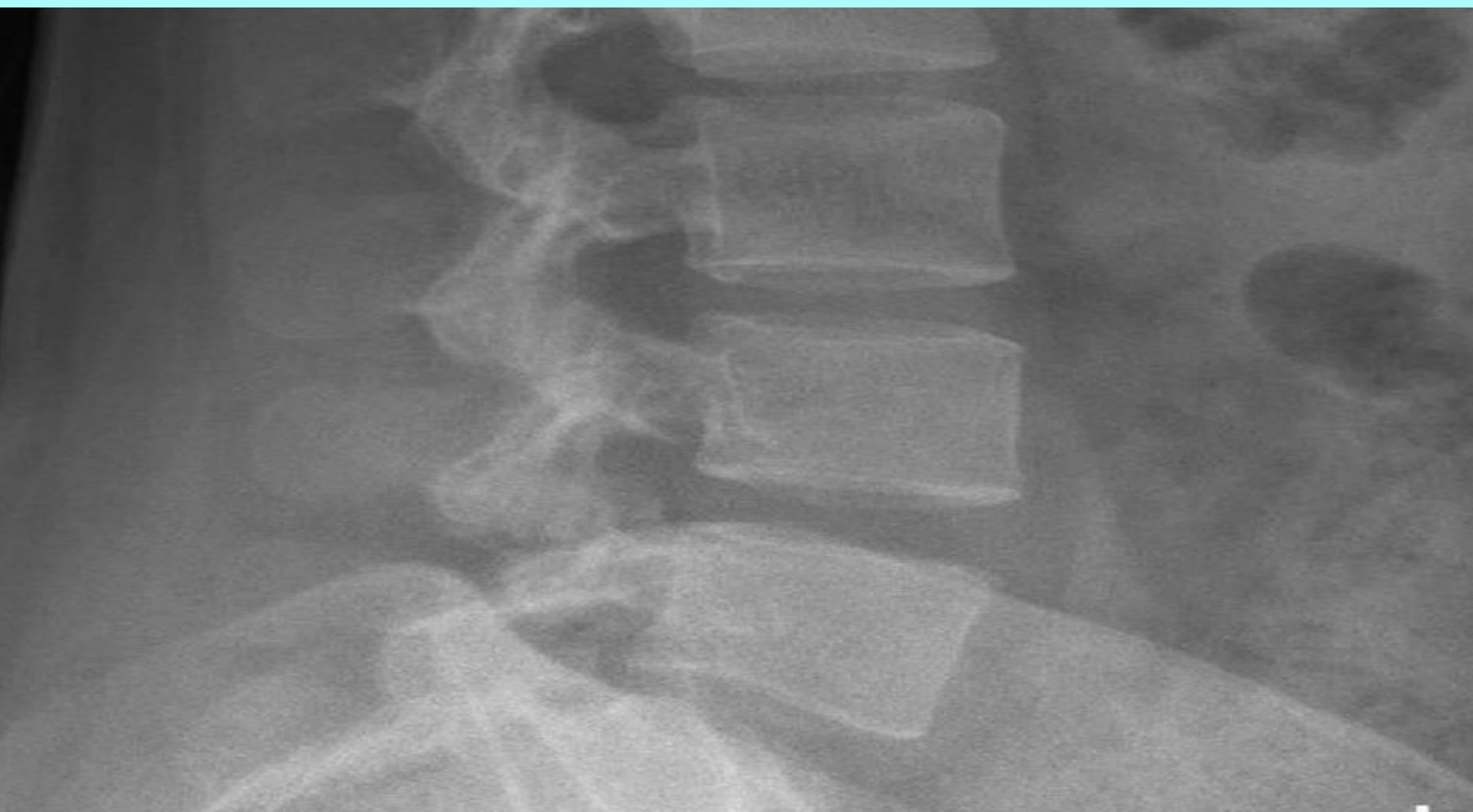


Figure 2: LS spine XR

MANAGEMENT OPTIONS

- Consider the surgical risk and patients' status against the benefit of the catheter removal.
- Though there are few reports of complications later, the literature hasn't shown any benefit of surgery in asymptomatic patients with inert catheters and hence management is conservative(2-4).
- As a new mother, spine surgery and its risks may be undesirable.
- Mitra et al., suggests conservative management in asymptomatic patients. Imaging studies, neurosurgical opinion, and regular follow-ups to identify late complications are mandatory(9).
- Surgical exploration is required in symptomatic cases(3).
- If the fragment is located within the spinal canal, early removal is advisable due to the formation of dense adhesions between dura and the fragment (5).
- The implications on the future neuraxial blocks are relatively unknown due to granulomas and adhesions.
- In our case, the resident is unsure whether the blue tip was intact, before the second insertion. The catheter could have inadvertently kinked and damaged at around 6 cm while trying to force it in back. There's a possibility that the tip would have broken and fallen between the two attempts.

CONCLUSION

- All catheters should be examined for any damage each time before insertion in multiple attempts.
- Avoid forceful manipulations of the catheter in or out of the needle.
- Ensure adequate supervision for residents according to their level of training.

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