



Case Report

Incidental unintentional breakage of epidural catheter in supralaminar area: A case report

Arth Patel¹, Nitin Adsul¹, Shvet Mahajan², R. S. Chahal¹, K. L. Kalra¹, Shankar Acharya¹

Departments of ¹Ortho-Spine Surgery and ²Anesthesiology, Sir Ganga Ram Hospital, New Delhi, India.

E-mail: Arth Patel - arthpali7@gmail.com; *Nitin Adsul - no1.nitinadsul@gmail.com; Shvet Mahajan - shvetmahajan@gmail.com; R. S. Chahal - rupinder72@hotmail.com; K. L. Kalra - kashkalra55@hotmail.com; Shankar Acharya - spineshankar@gmail.com



*Corresponding author:

Nitin Adsul,
Department of Ortho-Spine
Surgery, Sir Ganga Ram
Hospital, New Delhi, India.

no1.nitinadsul@gmail.com

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ABSTRACT

Background: Among some of the known complications, breakage of epidural catheter, though is extremely rare, is a well-established entity. Visualization of retained catheter is difficult even with current radiological imaging techniques, and active surgical intervention might be necessary for removal of catheter fragment. We report such a case of breakage of an epidural catheter during its insertion which led to surgical intervention.

Case Description: A 52-year-old, an 18G radiopaque epidural catheter was inserted through an 18G Tuohy needle into the epidural space at T8-T9 interspace in left lateral position. Resistance was encountered. While the catheter was being removed with gentle traction along with Tuohy needle, it sheared off at 12 cm mark. After informing the operating surgeon and the patient, immediately an magnetic resonance imaging and computed tomography (CT) scan were done. CT scan with sagittal and coronal reconstruction was done. Epidural catheter was visualized at D9 lamina-spinous process junction who was removed by surgical intervention.

Conclusion: Leaving of epidural catheter puts the anesthetist in a dilemma. To evade such an event, it is important to stick to the traditional guiding principle for epidural insertion and removal. In spite of safety measures, if event occurs, the patient should be informed about it. Surgery is reserved for symptomatic patients or asymptomatic patients to avoid future complications.

Keywords: Catheter breakage, Catheter fragment, Epidural catheter

INTRODUCTION

Epidural catheter placement in epidural space is a common practice for providing anesthesia in many of the surgical procedures.^[6] Complications including breakage, migration, kinking, abscess, radiculopathy, and hematoma can occur as the catheter is inserted into the epidural space.^[2,4] Occurrence of broken epidural catheter is uncommon, it is greatest problem to the anesthesiologists. Insertion of an epidural catheter is usually safe, they have been known to break during removal, leaving a segment stuck in patient's Spine.^[3] Between 1957 and the present date, 15 articles reporting thirty cases of epidural catheter breakage were acknowledged.^[2] Due to the minor number of cases found in the literature, it is debatable to decide whether to leave or remove indwelling catheter fragments. The uneasiness to the patient and the challenging complication that may rarely result from such an adversity could seriously terrify surgeons, anesthesiologists and patients from this most useful anesthetic technique. We report a successful surgical removal

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of an epidural catheter which broke during a prior attempt to insert it by hand.

CASE REPORT

A 52-year-old, 75 kg female, was admitted for liver transplant donor; a thoracic epidural was planned to provide intra-operative pain relief and improve hemodynamic stability as well as to provide postoperative analgesia. Using the loss-of-resistance technique, an 18G radiopaque epidural catheter (Perifix® Mini Set - B. Braun) was inserted through an 18G Tuohy needle into the epidural space at T8-T9 interspace in left lateral position in two attempts. Epidural space was encountered at 6 cm at the skin and catheter was inserted 17 cm at the hub of the needle. Resistance was encountered while giving test dose and therefore it was decided to relocate the epidural space. While the catheter was being removed with gentle traction along with Tuohy needle, it sheared off at 12 cm mark. After informing the operating surgeon and the patient, immediately an magnetic resonance imaging (MRI) and computed tomography (CT) scan were done. CT scan with sagittal and coronal reconstruction was done. Epidural catheter was visualized at D9 lamina-spinous process junction [Figure 1].

Urgent spine surgeon's opinion was taken for removal of broken catheter. The patient and his relatives were well informed and counseled regarding the complication. A 3 cm incision was taken at the site of insertion of epidural catheter (D8-D9 space). The surgeons gently removed the epidural catheter after dissecting through the subperiosteal plane, and catheter was found lying at D9 lamina-spinous process junction. Hemostasis achieved and closure done in layers. A total length of 12 cm of epidural catheter was retrieved [Figure 2]. Liver transplant surgery held after 2 days and after surgery, the patient was discharged without significant neurological complications.

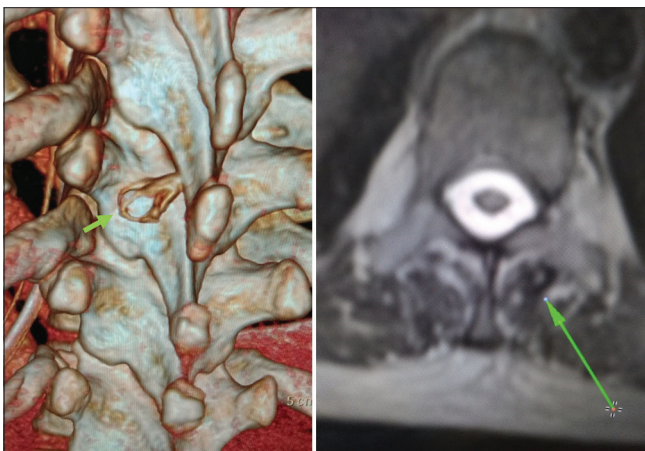


Figure 1: Computed tomography scan and magnetic resonance imaging showing radiopaque broken fragment of catheter (arrow) seen near the D9 vertebral lamina outside the canal.

DISCUSSION

Epidural catheterization is a harmless procedure and is associated with low complication rate. Rupture of the epidural catheter during insertion or removal in the epidural space is a rare complication, and only few cases have been documented.^[2] There can be many causes of severed epidural catheter such as application of undue force resulting in stretching or tearing of catheter, manufacturing defect, and catheter damage due to excessive insertion. We believe in our case it was due to heavy contact between the tip of epidural needle and bony surface resulting in catheter breakage. Not many cases have been reported and there is always a dilemma in the mind of all anesthetists and surgeons, regarding the fate of leaving the catheter fragment in situ. Hence, we thought of briefly review in the literature about diagnose and manage such a case.

All patients with retained epidural catheter piece should undergo suitable imaging studies to know its precise location. It is also necessary for documentation purposes and asymptomatic patients for timely follow-up so that early possible diagnosis of symptoms can be done. Of these radiographies, CT, ultrasonography, and MRI all have been used.^[3]

However, radiological imaging tests are not very helpful in locating the free catheter even though the catheter is radiopaque. The reason may be slight thickness of the epidural catheter and the fact that surrounding tissue is very radiodense,^[2,8] so catheters should be manufactured with materials that improve their visualization. In accordance with the data, we also could not see the catheter in digital X-ray and only a small fragment (2 cm) was seen on CT plates.

If the epidural catheter breaks during removal, the presence of free catheter fragment should be properly documented and should also be conveyed to the surgical team as well as to the patient. The patient must be assured that occurrence



Figure 2: Broken epidural catheter removed after surgery.

of neurological sequel is rare and must be informed about treatment options available in such cases.^[8]

Neurological consequences of a broken catheter are rare, surgical intervention is indicated only in complicated cases such as leaking CSF through the catheter^[1] or either the patient progresses infection or radiculopathy;^[7] or when the broken end of the catheter is sprouting out of the skin, acting as an entry for infection. An occasional complication of the progress of spinal stenosis due to the development of scar tissue around the catheter piece.^[5] The other possible decisions being, leaving a retained epidural catheter in place in adult patients, consultation of spine surgeons for cases of broken catheter.^[6]

CONCLUSION

Leaving of epidural catheter puts the anesthetist in a dilemma. To evade such an event, it is important to stick to the traditional guiding principle for epidural insertion and removal. In spite of safety measures, if event occurs, the patient should be educated about it. Surgery is reserved for symptomatic patient. Asymptomatic case is managed conservative which consists of imaging studies to document the position of the shattered fragment and close follow-up to recognize the complications which may progress in future.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Conflicts of interest

There are no conflicts of interest.

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