

## CASE REPORT

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### Broken epidural catheter; a rare complication

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#### ABSTRACT

Breakage of epidural catheter is a rare and worrisome complication. However, if this happens, the presence of retained epidural catheter fragment should be properly documented and should also be informed to the surgical team as well as to the patient. Visualization of retained catheter is difficult even with modern radiological imaging techniques and active surgical intervention should be reserved only for symptomatic cases. The usual guidelines and precautions for insertion and removal of catheter should strictly be followed on a routine basis to avoid such complication. Here we report a case with such complication in which catheter broke during insertion, the reason of which could be attributed to a multiple cause.

**Key words:** epidural, catheter, breakage, retained.

#### INTRODUCTION

Epidural catheterization is a commonly performed procedure in anaesthesia. Although complications have been associated, breakage is mostly seen during removal and rarely during insertion. The breakage of an epidural catheter within a patient (both during insertion and removal) is a rare but worrisome complication.<sup>1</sup> Sequestered catheter fragment is generally considered to be inert and should not produce a foreign body reaction. Therefore, in most cases the current standard of management is to leave them alone unless symptomatic as the risk associated with any surgical intervention may be significant.<sup>2</sup> Awareness about retained epidural catheter is essential both for surgeon and patient.

#### CASE REPORT

A 45-year-old male was admitted with diagnosis of squamous cell carcinoma penis and was planned for total penectomy and bilateral inguinal lymphadenectomy under combined spinal epidural anaesthesia. A 16 Gauge, 80 mm Touhy needle (Romson's EPI-KIT) was used to access the epidural space in L3-L4 intervertebral space with loss of resistance technique in the sitting position. The epidural space was encountered 4 cm from skin and an 18 Gauge radio-opaque multihole epidural catheter advanced up to 9 cm after which a resistance was felt. Withdrawal of the needle, leaving the catheter in situ was tried but resistance was encountered. Unable to remove the needle alone, both needle and catheter were simultaneously withdrawn with gentle traction. In this process the catheter sheared off at approximately 2 cm from the tip. The distal part of catheter was removed with the needle.

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A new epidural catheter was placed through L1-L2 inter-vertebral space in cephalic direction. The sub-arachnoid block was given at L2-L3 space with 3 ml of 0.5% Bupivacaine heavy and Fentanyl 25 micro-gram. The patient was laid in Trendelenberg position and after achievement of sensory level of up to T4 surgery was started which lasted 2 hours. Postoperative analgesia with 0.125% isobaric bupivacaine in epidural catheter was given as 2 hourly top up boluses of 10 ml drug. Patient had complete motor recovery after 4 hours of spinal anaesthesia. Epidural catheter was removed after 6 hours of surgery and there was no sensory or motor deficit 2 hours after its removal.

Patient remained asymptomatic in the post-operative period and there was no feature of local infection, sepsis, or any neurological deficit. No abnormality was detected on daily neurological examination till the day of discharge. The digital X-ray of lumbar spine both in antero-posterior and lateral position was unable to detect the retained catheter. Since the patient was symptom-free, no further imaging study was carried out to trace the same. The patient was well informed and counseled regarding the complication. He was kept on regular follow up with advice to report in event of any adverse symptom. He remained well at a follow up of one year.

#### DISCUSSION

In general, epidural catheterization is a safe procedure and is associated with low complication rate. Breakage or shearing off of the epidural catheter during insertion or removal is a rare complication and only a few cases having been reported.<sup>3</sup>

While the insertion of epidural catheter is usually safe, they have been known to break while removal, leaving a fragment in the epidural space. However, in our case breakage took place during insertion of catheter. The possible causes can be shearing while with-

drawing a catheter through Touhy needle, slicing the catheter into two pieces. The catheter may also tear as it catches the barbs of an unsharpened needle by application of undue force in an attempt to withdraw the catheter through the introducer needle. It can be due to weakness of the catheter produced by imperfections in manufacturing.<sup>4</sup> A catheter get looped or knotted by resistance encountered by anatomical obstacles on its path. A catheter can become entangled with nerve roots, vessels, fascia, posterior vertebral arches, vertebral processes and facet joint.<sup>5</sup> Excessive catheter threading may increase the likelihood of entanglement. Kinking and twisting of epidural catheter can occur anywhere between the skin and the epidural space.<sup>6</sup>

Radiological imaging tests are not very helpful in locating the catheter even though the catheter is radio opaque. This may be because of the small thickness of the epidural catheter and the surrounding tissue being highly radio dense. Sequestered temporary epidural catheter pieces are generally considered to be inert and should not produce a foreign body reaction. The broken fragment usually becomes walled off by fibrous tissue after remaining within the epidural space for about 3 weeks.<sup>7</sup> Though theoretically possible, the migration of retained fragment in epidural space has not been reported in literature. Symptoms can arise when the catheter impinges a nerve or causes traction on it or a superimposed infection occurs. Rare complication of foraminal stenosis presenting with low back ache has also been reported.<sup>8</sup> In such cases a surgical intervention for the removal of catheter is a must. Symptoms can also arise when the catheter fragment is sitting partially intrathecally and is acting as a wick which allows persistent CSF leakage.<sup>9</sup> If the proximal end of the segment is located at or just beneath the skin such that it can be retrieved through a skin incision by gentle traction.<sup>10</sup> Surgical removal is mandatory in such a situation as bacteria can readily track along the catheter remnant.

Our patient was informed and counseled regarding the complication before discharge and was advised to report in case of any adverse symptoms. Patient was closely followed up for one year during which he remained symptom free.

## CONCLUSION

The insertion and removal of catheter should be done with utmost caution following the usual guidelines. If it happens then presence of a retained catheter fragment should be documented and communicat-

ed to the patient and surgeon. If symptoms develop, imaging of spine to find out the level of involvement and early surgical intervention to retrieve the retained fragment is advocated. Symptoms related to the catheter may occur months or years later and so patient should be regularly followed up.



**Figure 1**, Broken epidural catheter after removal

## REFERENCES

1. R Kasivisvanathan, M Sodhi, S Setty. The broken epidural catheter: to remove or not to remove? *British Journal of Hospital Medicine* 2012;73 :718.
2. Mitra R, Fleischmann K. Management of the sheared epidural catheter: is surgical extraction really necessary? *Journal of Clinical Anesthesia* 2007;19: 310–4.
3. Tio T, Macmurdo S, McKenzie R. Mishap with an epidural catheter. *Anesthesiology* 1979; 50:260-2.
4. Tsui BCH, Finucane B. Tensile strength of 19- and 20-gauge arrow epidural catheters. *Anesth Analg* 2003;97:1524-6.
5. Collier C. Epidural catheter breakage: a possible mechanism. *Int J Obstet Anesth* 2000; 9: 87 –93.
6. Gough JD, Johnston KR, Harmer M. Kinking of epidural catheters. *Anaesthesia* 1989; 40:1060.
7. Bromage PR. *Epidural Analgesia*. Philadelphia, WB Saunders.1978 pp 664-66.
8. You JW, Cho YH. Foraminal stenosis complicating retained broken epidural needle tip -A case report. *Korean J Anesthesiology* 2010; 59: 69–72.
9. Pasquariello C, Betz R. A case for the removal of the retained intrathecal catheter. *Anesth Analg* 1991;72:562.
10. De Armendi AJ, Ryan JF, Chang HM, Liu LMP, Jaramillo D. Retained caudal catheter in a paediatric patient. *Paed Anaes* 1992; 2:325-7.