

Placement of cut epidural catheter when kinked: a cost effective & novel method

Letter to editor

It was reported that epidural catheter kinked several times during its insertion. However, a range of complications including breakage, migration, kinking, and knotting can occur as the catheter is inserted in the epidural space.^{1,2} The insertion of kinked catheter is difficult and challenging for anaesthesiologist. Here we are reporting a case of 60 year old male posted for excision of right anterior chest wall liposarcoma measuring 16.3x 13.2x 11.6 cm involving pectoralis major and minor muscle. After informed consent for the general anaesthesia we planned to insert thoracic epidural catheter considering the extent of tumour. As thoracic epidural catheter insertion would preserve the diaphragm function, provide early extubation, decrease in atelectasis and pneumonia leading to decrease in perioperative morbidity and mortality with postoperative pain management.^{3,4} Under full aseptic precaution, in the sitting position, using the loss of resistance to air technique, epidural needle was advanced in the T4–T5 interspace. The epidural space was identified at 5 cm and 19 G epidural catheter (FlexTip Plus®, Arrow, USA) was inserted and advanced 4 cm into the epidural space, i.e. 9 cm from skin was advanced cephalad up to 13 cm at the hub of the needle. While injecting the test dose, resistance was felt, so we decided to relocate the space. After negative aspiration on giving the test dose we feel resistance over the piston then we pulled the catheter for 0.5 cm and again same resistance was felt so we remove epidural catheter on removing it was found that catheter was kinked at two places one at 3cm and other at 5cm from catheter tip. Now we cut epidural catheter at 5 cm level from catheter tip for completely removing the kinked portion. Epidural catheter was cut vertical to make distal opening round. Thereafter epidural catheter was successfully inserted under C arm guidance to check the pre-cut distal catheter position and to rule out presence of any coiling and then it were fixed at 15 cm at skin level considering 5cm of cut catheter. Then epidural test dose of 3 ml of 2 % lidocaine with 1: 200,000 epinephrine is given without resistance and there were no significant changes in his vital signs. Patient were administered general anaesthesia as per standard protocol and single shot epidural anaesthesia were given using inj 0.125% levo bupivacaine and 50mcg fentanyl and total volume given were 10 ml. Intraoperative period was uneventful and all vitals were within normal limits with no additional doses of fentanyl was given. Then postoperatively thoracolumbar spine anteroposterior and oblique view X-ray was done to locate the pre-cut portion of the epidural catheter and it were lying at T4-5 Level. Postoperatively pain management were done with epidural top ups using a combination of 0.0625% levo bupivacaine hydrochloride and fentanyl citrate (5mcg/ml) with total volume of 10 ml. The patient had adequate pain relief and chest condition improved satisfactorily. These epidural top up were used for 3 days and then epidural catheter was removed uneventfully. Subsequently the patient was discharged without any neurological sequelae.

As per our knowledge is concern, there are no reports of cutting thoracic epidural catheter prior to insertion except for some on

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the breakage of a thoracic epidural catheter during its removal is reported.⁵ The breakage of an epidural catheter may be because of various reasons, including the length of the catheter in epidural space being longer than required, cut because of compression between the epidural needle and bony surface, degenerative effects of structural alterations caused by degenerative osteoarthritis, impairment in catheter flexibility, withdrawal of catheter by patient, injury of catheter by the Tuohy needle breakage of the strengthening wire in the catheter and varying catheter resistance to tension.⁶ In our case the epidural catheter breakage was probably due to Tuohy needle during insertion against catheter resistance to tension. It was found that many a times epidural catheter was discarded when it was kinked during insertion leading to placement of a new catheter results in increasing the cost. In our case we found that cutting a kinked epidural catheter provide a chance to place same catheter without any catheter related complication, cost effective method for patient and it is also an effective means for remote location where epidural catheter availability is poor. However in our case major limitation were cutting of epidural catheter leading to absence of radiopaque marker but radio opaque epidural catheters are easier to locate radiologically than non-radiopaque ones, but paradoxically, they have a lower tensile strength than standard clear catheters. In fact, a radiopaque fragment may be impossible to locate radiologically because the surrounding structures are radio-dense and measurement of cut portion of epidural catheter is not visualised. So a breakage or Kinking of epidural catheter puts the anaesthetist in a dilemma. To avoid such an event, it is imperative to stick to the usual guidelines for epidural insertion and removal. Our patient has not reported any adverse symptoms so far till the writing of this article - a time period of roughly four months.

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Conflicts of interest

The authors declare that there is no conflict of interest.

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