



## Effective Use of an Inadvertently Placed Interpleural Catheter for Post Operative Pain Relief

Harshal Wagh, Shyam Goankar, Aparna Date

Department of Anaesthesia, Kokilaben Dhirubhai Ambani Hospital and Medical Research Institute,  
Mumbai

**Correspondence:** Dr. Harshal Wagh ([drhdw@yahoo.com](mailto:drhdw@yahoo.com))

**About the Author:** Dr. Harshal Wagh has done his DA, DNB, FCPS in Anaesthesia from KEM hospital, Mumbai. He has also done FRCA from London (UK) where he worked for five years. At present he is working as an Anaesthesia Consultant in Kokilaben Dhirubhai Ambani Hospital, Mumbai. His special interests include regional anaesthesia, obstetric anaesthesia and anaesthesia for liver transplant.



**Abstract:** This case describes an unintentional interpleural placement of an attempted thoracic epidural catheter for a subtotal oesophagectomy. The interpleural catheter was left in situ and effectively used for post operative pain relief.

**Key Words:** Thoracic epidural, Interpleural catheter, Post-operative pain relief.

**Introduction:** Thoracic epidural analgesia has been widely used for post operative and post traumatic pain. Complications, including interpleural catheter placement and pneumothorax have been reported during both midline and paramedian approaches.

We report a case where an inadvertently placed interpleural catheter was effectively used for post operative pain relief after a subtotal oesophagectomy

**Case Report:** An ASA2, 70-year-old female patient was scheduled for Subtotal oesophagectomy. She was a known hypertensive for which she was taking beta-blockers. The surgical plan was to do the thoracic mobilisation of the oesophagus by Video-Assisted ThoracoScopy (VATS) and the abdominal part by laparoscopic technique.

The anaesthetic plan was to put an awake thoracic epidural and arterial and central lines post induction of anaesthesia. Accordingly the patient was consented, IV line secured and positioned in a left lateral position for the epidural. Monitoring included ECG, non-invasive blood pressure and pulse oximetry. 16 G epidural set was used. Under strict sterile precautions the epidural was attempted at T7, T8 level with 2 attempts by paramedian approach (routine approach adopted by the anaesthetist). After unsuccessful attempts as a result of encountering bone on both occasions midline approach was attempted in the same space. Loss of resistance to air was used and the



epidural space was located at 6 cm with negative aspiration. The epidural space was diluted using 4 ml of normal saline. The patient remained stable at all points with no complaints. The epidural catheter was threaded upto 12 mark with no problems. The operator however commented that the epidural catheter was threaded much easier than it normally does. Nothing untoward was suspected at that point since the patient had no complaints. The catheter was flushed with saline and checked for fall of the meniscus, which was positive. Negative aspiration for blood and CSF was confirmed again. 3 ml of 0.5% bupivacaine was given as test dose. The patient was then positioned supine and general anaesthesia was administered with fentanyl, midazolam, propofol and atracurium. A Double lumen tube (DLT) size 37 left was positioned and confirmed. Right Internal jugular vein and arterial line cannulation were done without any problems.

The thoracic part of the surgery was started with introduction of the thoracoscope by collapsing the right lung. However before starting any dissection, the epidural catheter was visualised in the right hemi thorax. About 5 cm of the catheter with the tip intact was visualised and the entry point into the pleural space was traced just lateral to the midline on the right side.

No further drug was given through the epidural and the pain relief during the surgery was given by continuous fentanyl infusion @ of 30 –50 mcg/hour. The initial plan was to remove the epidural catheter and use fentanyl PCA for post operative analgesia. However after discussions with surgical consultant and consultant anaesthetist colleagues it was decided to keep the catheter in situ and use it as an continuous interpleural block with local anaesthetic infusion for post operative pain relief. The surgery lasted for about 6 hours and the patient remained stable throughout. The patient was extubated post procedure and 10 ml of 0.125% bupivacaine was given through the interpleural catheter and a continuous infusion of 0.1% bupivacaine with 2mcg/ml fentanyl was started at 7ml /hour. 1 gm IV paracetamol and 75mg diclofenac IV were given half an hour before extubation. The patient was completely pain free on the right side where the thoracoscope ports and the right ICD were inserted. However the left side ICD was painful which was controlled by regular NSAIDs and paracetamol. IV tramadol was used as a rescue analgesic. Since the right sided intrapleural catheter was working well the catheter was left in situ for 3 postoperative days with subsequent infusions of 0.1% bupivacaine with 2mcg/ml fentanyl @ 5-7ml/hour. The patient was discharged from the ICU after 3 days after which the catheter was removed.

**Discussion:** We describe a case of inadvertent interpleural catheter placement following an attempted thoracic epidural catheter and its successful and effective use as postoperative analgesic tool. Thoracic epidural analgesia has been widely used for post operative and post traumatic pain<sup>1-2</sup>. However, complications, including interpleural catheter placement and pneumothorax have been reported during both midline and paramedian approaches<sup>3-7</sup>. Although several cases of interpleural catheter have been reported the incidence appears to be low<sup>4-6</sup>. Migration of catheters in the interpleural space have also been reported<sup>6</sup>. Accidental interpleural catheters have been reported to provide satisfactory analgesia when dosed with larger than usual infusion of local anaesthetic<sup>8</sup>.

Both epidural and interpleural insertion of a Tuohy needle will result in loss of resistance<sup>4-6</sup> making inadvertent interpleural placement difficult to identify.



Some reports recommend the removal of the interpleural catheter with subsequent replacement into epidural space<sup>4,5</sup>, but administration of local anaesthetic through the interpleural catheter has been reported<sup>8</sup>.

In our case the epidural catheter was successfully used as an interpleural catheter for adequate pain relief with a standard concentration of 0.1% bupivacaine with 2 ug/ml fentanyl at a rate of 5-7 ml/hour. Therefore an interpleural catheter may be effectively used for perioperative pain relief in indicated cases.

### References

1. Bulger EM, Edwards T, Klotz P, Jurkovich GJ. Epidural analgesia improves outcome after multiple rib fractures. *Surgery* 2004; 136:426-30.
2. Della Rocca G, Coccia C, Pompei L, et al. Postthoracotomy analgesia: epidural versus intravenous morphine continuous infusion. *Minerva Anestesiol* 2002; 68:681-93.
3. Zaugg M, Stoehr S, Weder W, Zollinger A. Accidental pleural puncture by thoracic epidural catheter. *Anaesthesia* 1998; 53:69-71.
4. Furuya A, Matsukawa T, Ozaki M, Kumazawa T. Interpleural misplacement of an epidural catheter. *JCA* 1998;10:425-6
5. Koch J, Nielsen JU. Rare misplacements or epidural catheters. *Anesthesiology* 1986; 65:556-7
6. Shime N, Shigemi K, Hosokawa T, Miyazaki M. Intrathoracic migration of an epidural catheter. *J Anesth* 1991; 5:100-2.
7. Miura K, Tomiyasu S, Cho S, et al. Pneumothorax associated with epidural anesthesia. *J Anesth* 2004;18:138-40
8. Inoue S, Nishimine N, Furuya H. Unintentional intrapleural insertion of epidural catheter: should we remove it or leave it in situ to provide perioperative analgesia? *Anesth Analg* 2005; 100:266-8.

We would like to extend our special thanks to Dr. Rajesh Mistry (head of Oncosurgery) for his valuable support.