

Case Report

Use of Medical Thoracoscopy for Retrieval of Broken Intrapleural Catheter

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Abstract

Small-bore pleural catheters are used to drain simple effusions effectively. They are less invasive and more comfortable than tube thoracostomy. As with any other intervention, these small catheters have their associated complications. Herein, we report a case of a young woman who was diagnosed with tuberculous pleural effusion. Easydrain pleural catheter was inserted to drain the effusion; it broke in situ because of improper insertion and was later removed using medical thoracoscopy. We emphasize on the need for proper training for doctors and staff regarding these procedures to avoid undue complications. We have also highlighted the importance of medical thoracoscopy in the removal of retained intrapleural foreign bodies.

KEYWORDS: Easydrain, foreign body, medical thoracoscopy, pleurocath, pleuroscopy

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INTRODUCTION

Tube thoracostomy is a common procedure performed in different medical and surgical departments. Varying types and sizes of chest tubes are available. Small-bore tubes such as pigtail catheters and Pleurocath/Easydrain are better suited for draining simple pleural effusions (Figure 1). The methods of insertion and removal of these small-bore tubes are simple, and they are more comfortable for the patient, especially when chest drain is needed for a longer time [1]. As with any other procedure, they may get complicated because of human or instrumental errors [2]. The rate of complications is highest for tubes with a trocar [3]. These small tubes may get kinked easily and can be broken by the mishandling of the sharp trocar. Thoracotomy is needed to remove these iatrogenic foreign bodies.



Figure 1. Pleurocath/Easydrain pleural catheter: Trocar, radio-opaque catheter, stop-cock with catheter connector, conical adaptor for connection with drainage system

Our case alerts clinicians of the complication and also highlights the use of medical thoracoscopy for the removal of iatrogenic intrapleural foreign bodies.

CASE PRESENTATION

A 22-year-old girl presented with fever, weight loss, and left-sided chest pain for 1 month. Chest examination findings were consistent with left-sided pleural effusion, further confirmed by chest X-ray and chest ultrasound. A 10-Fr radio-opaque pleural catheter (Vygon Easydrain) was inserted posterolaterally below the angle of scapula under ultrasound guidance with the patient sitting upright. The trocar was introduced into the pleural space, and then the catheter was passed in. There was resistance when some part of the catheter was in the pleural space and force was applied to the trocar to overcome this resistance. The sharp trocar sectioned Easydrain, which then got dislodged into the pleural space. The patient presented to us with this referral note.

Her new chest radiograph confirmed the presence of pleural fluid and this iatrogenic foreign body in the left pleural cavity (Figure 2. a, b). After stabilization and after obtaining written informed consent, thoracoscopy was done using

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procedural sedation (for local anesthesia at the site of entry, 10 mL of 2% inj. lidocaine was used; for analgesia and sedation, 5 mg of inj. nalbuphine and 2 mg of inj. midazolam were used intravenously). A 10-mm rigid thoracoscope (Karl Storz) was introduced on the left side at the triangle of safety. The site of insertion of the thoracoscope was marked using ultrasound. One end of the broken part of the pleural catheter was visualized abutting the parietal pleura, and the other end was floating free in the pleural space. Rigid forceps were introduced through the working channel of the thoracoscope to hold the broken catheter, which was extracted through

the thoracoscope port. Figure 3 shows the 18-cm part of the broken catheter which was removed. The thoracoscope was reinserted and 1.8-liter of pleural fluid was drained, septations were removed, and multiple pleural biopsies were taken (Figure 4). A new 24-Fr chest tube was inserted and secured with silk 1 sutures, and sterile dressing was done. No complications were observed during or after the procedure. The patient was stable during the procedure and discharged after 6 days. Pleural biopsy showed granulomatous inflammation with caseous necrosis. The patient was started on antituberculous treatment.

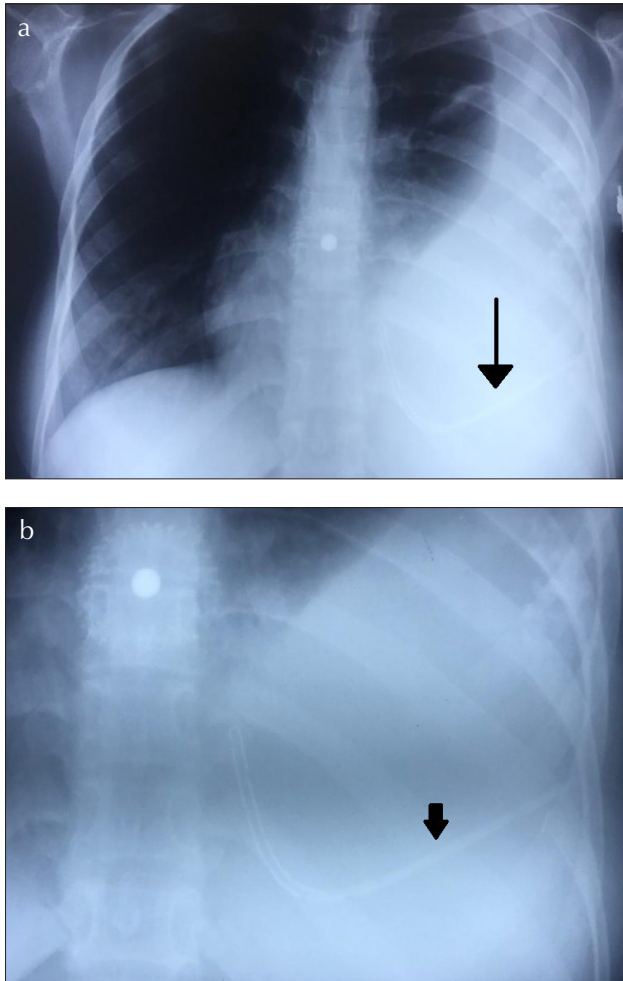


Figure 2. a, b. (a) Chest X-ray showing left sided pleural effusion and retained intrapleural catheter (shown by black arrow). (b) Chest X-ray showing close up view of broken intrapleural catheter (shown by thick black arrow). Catheter is not visible outside chest cavity

MAIN POINTS

- Easydrain/ Pleurocath are cost-effective alternatives to tube thoracostomy in managing simple effusions.
- Adequate training should be done to use easydrain safely.
- In case the easydrain breaks in the pleural cavity, medical thoracoscopy under local anesthesia is safe and cost effective for retrieval of the pleural catheter.
- Medical thoracoscopy saves the patient from undergoing open surgical procedure and from the use of general anesthesia

DISCUSSION

Pleurocath/Easydrain pleural catheters are an economical choice to manage pleural effusions with no or minimal intrapleural septations. They cannot drain loculated effusions well, and hence, complications may occur. Problems may arise during the insertion and manipulation of the catheter; in our case, Easydrain was sectioned inside the pleural cavity by the trocar during manipulation. The observed mechanism in this case was



Figure 3. Extracted broken pleural catheter, in kidney dish



Figure 4. Gross thoracoscopic image of the pleural cavity showing retained broken catheter grasped by rigid forceps

that undue force was applied during insertion when the catheter was not moving in as it was kinked. The sharp trocar cut the kinked tube, and it got dislodged into the pleural space.

This emphasizes the need for all doctors and staff using these equipment to be familiar with their handling and placement. Extreme care should be taken when handling small-bore tubes as they tend to kink and, hence, they are best inserted through the lateral chest wall to avoid kinking while in situ.

Another possible mechanism for such complications is the partial withdrawal of the catheter through the trocar, leading to shearing of the end of the catheter by the trocar. This strengthens the argument for refraining from withdrawing the tube through the trocar. If the catheter is in too far, it should be pulled back after the complete removal of the trocar.

In our case, medical thoracoscopy proved to be the least invasive, economical, and most beneficial procedure. It helped in localizing the broken catheter, in removing it, and also in clearing the intrapleural septations and taking pleural biopsies. Another major advantage was that the patient was managed in the pulmonology unit and did not need shifting to the thoracic surgery department and was saved from thoracotomy, general anesthesia, and chest deformity.

There are a few case reports in the literature of retained pieces of catheters in the pleural space [4-7]. Ours is the first case reporting such a complication with the Easydrain pleural catheter and also the first case of removal of a broken catheter using medical thoracoscopy under local anesthesia.

CONCLUSION

Small-bore pleural catheters such as Easydrain are cost-effective and more comfortable alternatives to tube thoracostomy in managing simple effusions. The authors recommend that all doctors and staff using these equipment must be adequately trained about the selection of the appropriate patient and the procedure so that the equipment can be used in a safe and reliable way. Medical thoracoscopy can be safely performed for the removal of retained intrapleural foreign bodies.

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