

## Thoracoscopic Retrieval of Unusual Iatrogenic Foreign Bodies

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**Background:** Management of pyothorax and pneumothorax requires aspiration and/or intercostal drainage. **Case characteristics:** We present two cases which were complicated by instrument-related events resulting in breakage of needle or intercostal drainage tube resulting in pleural foreign body. **Intervention/Outcome:** The patients were stabilized and the foreign bodies retrieved using thoracoscopic approach. **Message:** Thoracoscopy provides a minimally invasive approach to deal with pleural foreign bodies.

**Keywords:** Foreign body, Pyothorax, Thoracoscopy.

The management of pyothorax and pneumothorax involves diagnostic or therapeutic aspiration and intercostal drainage (ICD) tube insertion. These procedures are considered minor and done under local anaesthesia, usually without sedation in children. Rarely these procedures may get complicated with some human- or instrument-related mishaps. Two such cases of empyema with unusual iatrogenic foreign bodies are presented here. The role of thoracoscopy in removal of such pleural foreign bodies is highlighted.

### CASE REPORTS

**Case 1.** A 21-day-old girl presented with cough for 15 days, rapid breathing and high grade fever for 2 days. Clinical examination and chest X-ray revealed the presence of right sided pyopneumothorax. Supportive treatment for management of septic shock started and urgent ICD tube insertion using a Malecot's catheter were tried. When manipulating for insertion, a part of the Malecot's catheter broke and got retained inside the pleural cavity. Another Malecot's catheter was inserted for drainage of pyopneumothorax (*Fig. 1*). Thoracoscopic removal of foreign body was planned after hemodynamic stabilization of patient.

After three days, when the infant recovered from septic shock and her lungs expanded significantly, she was operated upon. Surgery was performed under general anaesthesia in left lateral thoracotomy position. The foreign body was localized thoracoscopically. But as patient was not maintaining oxygen saturation with carbon dioxide pneumothorax required for procedure to continue, further port placement was abandoned. The ICD site incision was enlarged to about 5 cm and foreign

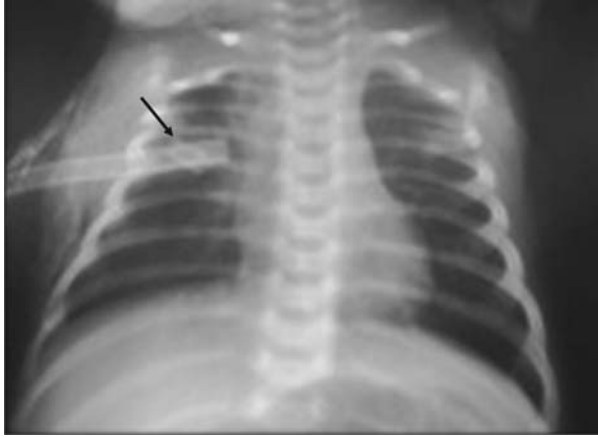
body extracted under direct vision. Localization of foreign body using thoracoscopy helped in its extraction with a smaller than usual incision. Pleural cavity was lavaged and cleaned thoroughly. An ICD was placed again. The infant recovered well and was discharged.

**Case 2.** A 2-year old male child, presented with fever and cough for 2 weeks. Clinical examination was suggestive of severe pneumonia with right-sided pleural effusion. His X-ray chest showed patchy opacities in the right wing with effusion and left lung hyperinflation. During aspiration of pleural effusion, the needle got detached from its hub and got sucked into the pleural cavity (*Fig. 2*).

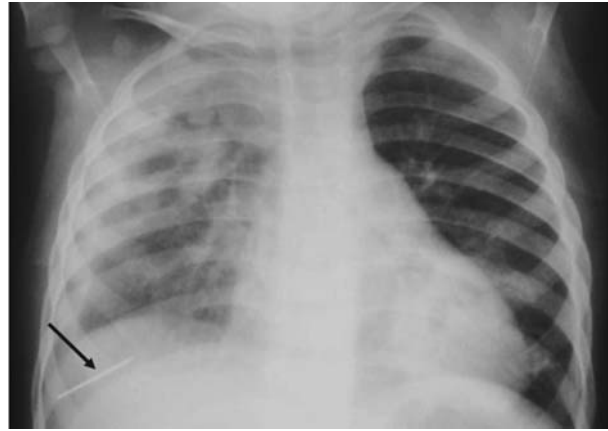
Urgent thoracoscopy was planned in view of the sharp foreign body. The child was placed in left lateral position and three ports were placed: 1st in 6th intercostal space in posterior axillary line and 2nd and 3rd in anterior axilla two spaces above and below the first port, respectively. Needle was found lying in cardio-phrenic angle. It was held with forceps and extracted along with port. Thoracic cavity was lavaged thoroughly and ICD was placed. Patient recovered well.

### DISCUSSION

Thoracic foreign bodies had broadly been divided into three categories: (1) Aspirated Foreign bodies, which are most common and involve tracheobronchial tree, (2) traumatic or accidental foreign bodies which are more common in thoracic cavity; bullet being the most common among this category and (3) Iatrogenic foreign bodies, which occur as result of human and equipment error [1]. Among the iatrogenic category, earlier the accidentally left gauze pieces and instruments during a



**FIG. 1** Chest X-ray (PA-view) showing Malecot's catheter in right pleural cavity to drain pyopneumothorax. Note the broken tip of the Malecot's catheter inserted at first attempt (arrow).



**FIG. 2** Chest X-ray (PA-view) showing needle in right costophrenic angle (arrow) broken while attempting aspiration of pleural effusion.

surgical procedures were the most frequent. These type of foreign bodies are now reduced by 80% as a result of universal practice of counting them before closure, and efforts are on to reduce it to “never occurring event” [2].

Other form of pleural thoracic bodies are extremely rare. On search of English literature we could find published reports of retained pieces of ICDs [3,4], surgical blade which got detached from scalpel [5], retained washer of rib approximator [6], broken blade of foreign body forceps [1] and Abram's needle [7], but all in adults. These kind of iatrogenic complications can have predictable consequences. Similar complications in future can be avoided by creating increased awareness of such occurrence among doctors in training. As such mishaps occur with struggling child leading to breakage of instruments, it is suggested that proper stabilization of the patient by using sedation and restraints, where necessary, be used to avoid such occurrences. Moreover, removal of such a foreign body should be undertaken after adequate hemodynamic stabilization of the child.

Thoracoscopy proved to be very useful procedure in both these cases. In the first case, it helped in localisation of foreign body and thus in retrieval through mini-thoracotomy incision. In the second case, the removal of a sharp foreign body could be achieved successfully using the thoracoscope. In both cases the procedure also helped in clearing the purulent secretions and the debris due to empyema. Thoracoscopy is gaining wide acceptability in removal of all types of thoracic foreign bodies. The expected advantages of thoracoscopy over thoracotomy in removal of FB are reduced pain, reduced chest wall deformity (including winging of scapula and scoliosis), better visualization and cosmesis.

Procedures for the management of empyema should be done with utmost care and adequate sedation should be used to make the patient comfortable. If these complications do happen, use of thoracoscopy facilitates the management of any such condition and aid in speedy recovery of patients.

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