



Retained bronchial foreign body diagnosed after 29 years of penetrating chest trauma

Ankit Rimal¹, Bishika Pun², Bipin Karki¹, Ashmita Paudel¹, Utsav Lal Pradhan¹, Pramesh Sunder Shrestha¹

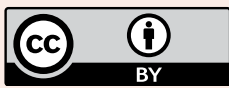
¹Department of Critical Care Medicine, Tribhuvan University Teaching Hospital, Kathmandu, Nepal

²Department of Radiodiagnosis, Frontline Hospital, Kathmandu, Nepal

ABSTRACT

This is a case of retained bronchial foreign body identified by Computed Tomography (CT) scan after 29 years of initial penetrating chest trauma. The patient had a long-standing history of shortness of breath which was diagnosed and treated as recurrent pulmonary infections. The case report is an attempt towards eliciting the importance of CT scan in identifying such foreign bodies. Interpretation & diagnosis of long standing organic foreign bodies may present with occasional diagnostic dilemma. However, prompt and accurate diagnosis is necessary to prevent complications that can be serious and, as in our case, potentially fatal.

Keywords: Foreign body bronchus; penetrating trauma; sepsis.



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INTRODUCTION

Occurrences of long standing retained foreign body post trauma within the tracheobronchial tree presenting as a chronic lung disease is relatively rare. Most of the retained foreign bodies are due to accidental inhalation. Furthermore, organic foreign bodies are difficult to diagnose as they may mimic air or appear iso-dense to the surrounding soft tissues or may even calcify in the chronic setting. Complications occur when diagnosis of retained foreign body goes unestablished for a long period of time leading to formation of lung abscess, intractable pneumonia and atelectasis. Proper clinical history in cases with a high index of suspicion and relevant imaging modalities are essential for early diagnosis and prevention of serious complications.

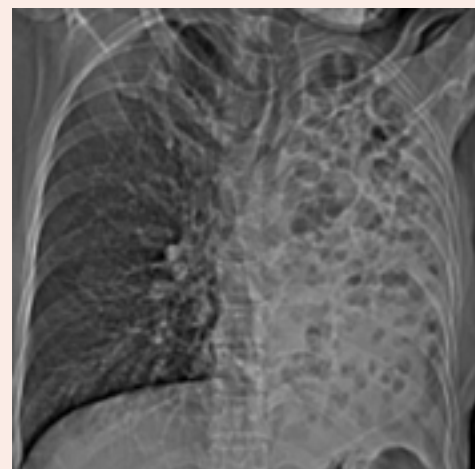
CASE REPORT

A 41-year female from a rural part of the country presented to the emergency department with severe respiratory distress, fever, productive purulent sputum and left sided chest pain. The patient gave a history of long-standing recurrent chest infections extensively treated with antibiotics for a duration of over 20 years. A remote history of chest trauma following a fall from a tree 29 years back was obtained. She had reported to have had a bamboo shoot being stuck onto her chest on the right side which was removed on the site by the locals with no major issues. The skin lesion had healed with local dressing. No previous X-rays or other radiological images were available.

At the emergency department, she had an arterial oxygen saturation of 90% on a face mask with 60% fractional inspired oxygen (FiO₂), a respiratory rate of 42 breaths per minute, blood pressure of 108/65 mm of Hg and a pulse rate

of 128 beats per minute. She was afebrile, responsive to voice but was in visible respiratory distress. She was having bouts of cough with expectoration of copious foul smelling, yellow colored sputum which was sent for cultures. On auscultation of the chest, she had very minimal air entry on the left side with coarse crepitation. Broad-spectrum antibiotics were started. A high-resolution CT (HRCT) was obtained. The images obtained in the CT are discussed subsequently.

The CT tomography image showed features of volume loss and complete opacification of left lung with interspersed cystic areas indicating bronchiectasis with a dense obliquely oriented fibrotic band in right lung upper lobe (Figure 1).



Corresponding author:
Dr. Bishika Pun
bishikapun@gmail.com

High resolution computerized tomography (HRCT) of the chest revealed a dense thick-walled tubular fluid filled structure traversing the carina extending to the left main bronchus with marked volume loss with multiple fluid filled cystic bronchiectasis suggestive of superadded infection, most probably an abscess (Figures 2, Panel A and Panel B).

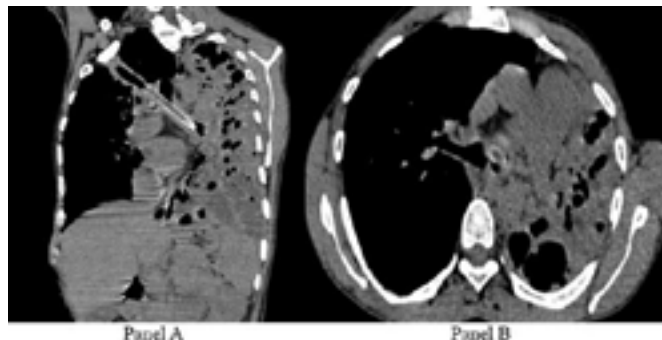


Figure 2 Panel A: Coronal reformatted image shows a tubular dense walled foreign body (white arrow), cystic bronchiectasis with fluid (asterisk). Panel B: Axial image at the level of carina demonstrating foreign body (white arrow).

A thick walled air-filled fibrotic tract in the right lung upper lobe appearing contiguous with the foreign body and extending to axillary soft tissue (Figures 3 Panel A and Panel B) was also noted.

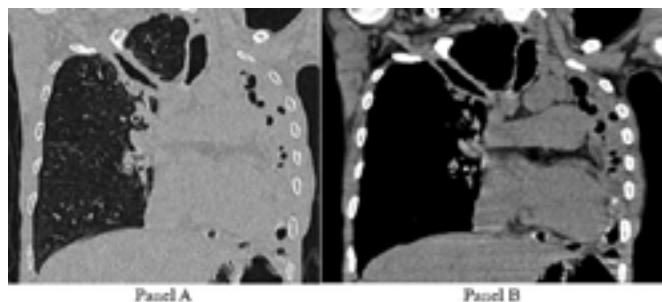


Figure 3 Panel A: Coronal image in lung window demonstrating a thick-walled fibrotic air-filled tract in right lung upper lobe (arrow). No pneumothorax. Panel B: Coronal image shows a linear soft tissue band extending from the tract to the axilla in between 1st and 2nd ribs (circle)

3-D images showed the orientation of the tubular foreign body within the chest (Figure 4). No pneumothorax was noted.



Figure 4: 3D volume rendered image showing the possible entry point of foreign body, as well as bony ankylosis of 1st and 2nd rib (black circle).

In the ICU, she was coughing violently. At the end of a bout of cough, she was tired and was lying down on her right. Suddenly, she started to gasp for air. Her oxygen saturation and her heart rate dropped and she became unresponsive. On suspicion of the right lung contamination with pus from the left lung, she was immediately intubated with a single lumen endotracheal tube with bronchial intubation into the right main bronchus which was initially confirmed clinically. Mechanical ventilation was initiated but she had a cardiac arrest. A return of spontaneous circulation was achieved after about 15 minutes of cardio-pulmonary resuscitation (CPR). Copious purulent endotracheal secretions were suctioned. Following the event, the patient developed refractory shock and multi-organ failure and passed away within hours of presentation the same day.

DISCUSSION

Foreign body in the airways is not a rare occurrence, although most are a result of aspiration. A large proportion of retained foreign bodies following trauma are organic foreign bodies.¹ Detection of these organic foreign bodies is particularly important as it may serve as a nidus for superimposed infections.² If these foreign bodies are left undetected, they may cause serious complications like abscess, fistula and obstructive bronchiectasis resulting in recurrent chest infections.³ Despite advances in imaging, they remain quite difficult to detect and diagnose. Radiographs have been reported to reveal wooden foreign bodies in about only 15% of the cases.¹ Our patient reportedly had CT imaging of the chest in the past and had been advised for surgical removal of the left lung as per her family members. There had been no mention of the foreign body previously.

CT scans are helpful in evaluation and detection of wooden and bamboo foreign bodies.^{4,5} However, the attenuation largely depends on its porosity, water and air content. Bodne et al. cited cases of wooden foreign bodies exhibiting different attenuation values ranging from very low (close to air) in acute to high (close to calcium) in chronic cases.⁶ Another study had also concluded that all dry and wet wooden and bamboo foreign bodies mimicked air in linear shape. This may cause difficulty in detection within air filled spaces, such as nasal cavity, sinuses and tracheobronchial tree.⁷ As evident from the images above, it is easy to mistake the track of the foreign body as traction bronchiectasis or fibrosis and the foreign body itself as a part of the normal airway anatomy.

In our case, attenuation value measured within the foreign body and walls were 11 HU and 545 HU respectively indicating fluid filled lumen with calcified walls. Since operative removal could not be planned, the exact nature of the foreign body was not identified. However, coupled with the past history and the appearance of foreign body which was a cylindrical, fluid filled structure with dense walls, it was most likely to be a piece of bamboo. Of note, though organic foreign bodies including wood should undergo desiccation with time, bamboo unlike other wooden foreign bodies, has been found to maintain its cylindrical structure for many years.⁸

CONCLUSION

Not all foreign bodies are created equal. Radio dense foreign bodies are relatively easier to diagnose as compared to organic or radiolucent foreign bodies. Delay in diagnosis may lead to subsequent complications. Therefore, early interpretation and diagnosis of organic foreign bodies, though difficult, is essential to prevent complications that can be serious and as in this case, lethal.

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None.

Conflict of interest

None.

Consent

Written informed consent was taken from the patient's family.

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None.

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