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Case Report

Unusual Bronchial Foreign Body with a Bizarre Entry Path

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ABSTRACT

Foreign body in the bronchus is usually aspirated, ingested or deposited. Entry of a bronchial foreign body through the neck via a rent in the trachea is rare. A freak accident occurred when our 58 year old patient was overseeing crane operation at 4- a steel plant and a metallic foreign body pierced the patient's trachea and was lodged in his right bronchus intermedius. Metallic body was removed using a snare via a flexible bronchoscope. A morbid open thoracic surgery was avoided by a timely procedure. Our case highlights that foreign body in the lungs can also enter via open penetrating wounds in the neck or chest and can be removed by bronchoscopy avoiding complex surgical procedures.

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Introduction

Foreign body in the bronchus is usually aspirated, ingested or deposited. Entry of a bronchial foreign body through the neck via a rent in the trachea is rare. We report a case of large metallic foreign body from heavy metal equipment lodged in right bronchus after an accidental neck injury.

Case Presentation

A 58-year-old male patient with no prior comorbidities presented to our tertiary care hospital with traumatic neck injury which occurred while overseeing crane operations in a steel plant. On arrival he was mildly hypoxic with room air oxygen saturation of 94%, otherwise all parameters were stable. He had a deep lacerated wound in the anterior

surface of neck just cranial to the sternal notch (Figure 1). Chest X ray was suggestive of foreign body in right bronchus (Figure 2).



Figure 1: Deep lacerated wound in the anterior surface of the neck just cranial to the sternal notch.

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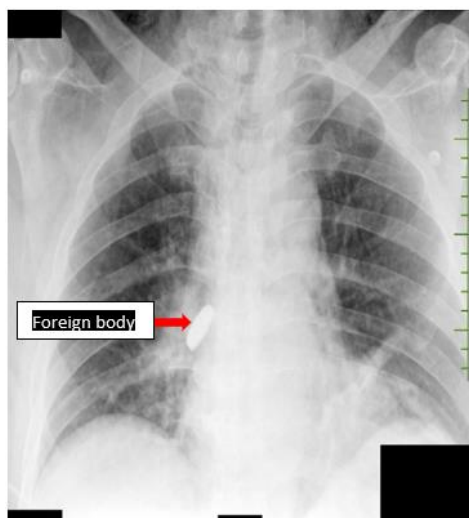


Figure 2: Chest X ray showing foreign body in right main bronchus.

HRCT chest revealed wound over the neck puncturing the trachea with a pneumomediastinum with large elongated 2.6×1 cm high density foreign body lodged in right bronchus intermedius entering into the lower lobe (Figures 3 & 4). A small rent is seen 3 cm below the vocal cords in the left anterolateral wall. Patient was considered for open surgery by thoracic surgeon and was referred for possible noninvasive procedure.



Figure 3: Foreign Body in right bronchus intermedius.

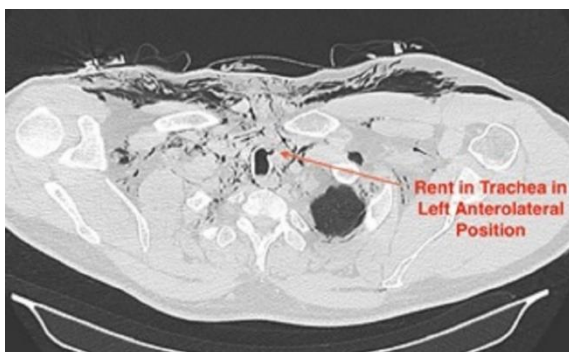


Figure 4: Rent in trachea in left anterolateral position. Pneumomediastinum seen.

A fiber optic bronchoscopy through the oral route was planned with standby rigid bronchoscopy in an attempt to avoid thoracotomy. On inspection, a small rent is seen 3 cm below the vocal cords in the left anterolateral wall at 10 O' clock position (Figures 5 & 6).



Figure 5: Rent in trachea seen in anterolateral position.



Figure 6: Rent in trachea at 10 o'clock position.



Figure 7: Foreign body lodged in right bronchus intermedius.

There was a large elongated sharp metallic foreign body impacted in the right bronchus intermedius. There was minimal mucus secretions present around it. A forceps would be too small to get hold of such a large foreign body. Dormia basket would not be able to pass through and hold such an elongated body. Cryotherapy would not help as it was a metallic foreign body. Considering the shape, position & location of the body, we decided

to use a snare for this case. At the opening of the right mainstream bronchus, snare was opened and looped around the metallic body. Then the body was withdrawn and held close the tip of the bronchus maintaining the vertical axis as it is (Figures 7 & 8).

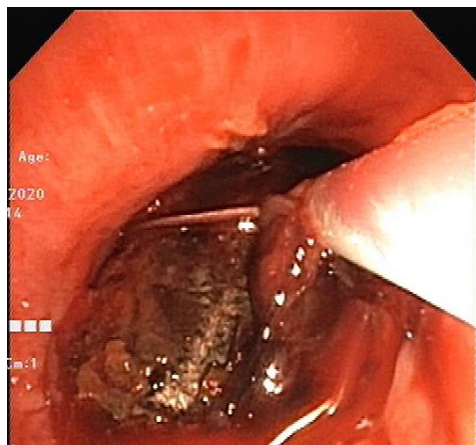


Figure 8: Snare used to hold the foreign body.

This is a very important step as a dangling foreign body would tilt into horizontal position during the retraction when it would enter the larger spaces of trachea and would damage the tracheal wall or vocal cord during exit. The foreign body was gradually withdrawn under direct vision navigating the trachea and the vocal cord and finally through the oropharynx. 2.6 cm long and 1.3 cm wide foreign body was thus removed without damaging the airway and an open thoracotomy was prevented (Figures 9 & 10). Patient has an uneventful post procedure stay. The pneumomediastinum resolved gradually and the neck wound healed.



Figure 9: Metallic foreign body size 2.6 × 1.3 cm.



Figure 10: Metallic foreign body size 2.6 × 1.3 cm.

Discussion

The first foreign body removal of a chicken bone dates to 1897 reported by G Killian [1, 2]. Foreign body aspiration can be life threatening if not addressed in time. Thorough search of literature as far as we are aware does not show a previous case report of foreign body penetrating through the trachea and lodging into the bronchial tree. In 1968, Shigeto Ikeda developed flexible bronchoscopy. Zavala and Rhodes used flexible bronchoscope for removal of foreign body in animal studies using various forceps [3]. Usually in case of a metallic foreign body aspiration, a rigid bronchoscopy is preferred to retrieve it. In cases of sharp objects like safety pin, rigid bronchoscope is preferred, as it would prevent trauma to trachea or vocal cord [4]. In cases of hypoxic patients, rigid bronchoscope would be ideal for ventilation and simultaneous removal. Even in pediatric population, in view of smaller airways, difficult instrumentation and ease of doing the procedure under general anaesthesia, a rigid bronchoscope would be preferred [5].

However flexible bronchoscopy under sedation can be attempted in adult patients who are hemodynamically stable. It also may help in more distal foreign bodies or when they are lodged in difficult to access upper lobes [6, 7]. Advantage of flexible bronchoscopy over rigid bronchoscopy is that it gives better visual of the airway and can easily be manipulated to find the foreign body, it can also be done under local anaesthesia hence making the procedure much easier to perform. Flexible bronchoscopy has a smaller size and can navigate better which makes it easier to examine the lower airways and is often less traumatic as compared to rigid bronchoscope [8]. It can also be helpful to take bronchoalveolar lavage, transbronchial, or endobronchial biopsies as and when required.

It is preferable to have a backup of rigid bronchoscope, as the foreign body can get impacted and may require stiffer rigid forceps for removal. In our case, as the patient was relatively stable and the foreign body was lodged in a vertical axis and was elongated in shape, we attempted the procedure by flexible bronchoscope.

Conflicts of Interest

None.

Consent

Consent of the patient is obtained but in another format.

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