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Case Report
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Aspirated Teeth - Rigid or Flexible Bronchoscopy Challenge

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Keywords

Trauma; Foreign body; Bronchoscopy

Introduction

Tracheobronchial Foreign Body Aspiration (FBA) is a common problem in clinical practice requiring early recognition to prevent potential complication of obstructed airways. Foreign body aspiration are much more common in children in comparison to adults, with about 80 percent of recognized cases occur in patients younger than 15 years of age [1,2]. FBA in children may be suspected on the basis of a choking episode if such an episode is witnessed by an adult or remembered by the child. It can be life threatening in children with occlusion of the large airways and potential asphyxiation [3]. In contrast the clinical presentation in an adult is frequently subtle and requires a high index of suspicion. The most common setting for aspiration in adults is loss of consciousness and airway protective mechanisms like trauma, intoxication or neurological disease [2]. It is important to note that over 90% of foreign bodies are radiolucent and an initial chest radiograph may be normal in first 24 h. The presence of atelectasis, air trapping, pulmonary infiltrates, and mediastinal shift may be the initial signs of FBA [4].

In adults the right bronchus system is the most common site of FB aspiration. This rule is however not true in children as the left bronchus is nearly equivalent in size to the right and it does not does not branch at the same acute angles as in adults. Most FB lodge in the main stem bronchi in comparison to the distal airways [4].

Case Presentation

A 64-year-old man was involved in a motor vehicle accident, sustaining a subarachnoid hemorrhage secondary to rupture of the anterior communicating artery. He was intubated and noted to be missing several teeth. On portable CXR, there were hyperlucencies in the lower lobes bilaterally (Figure 1A). He underwent clipping and coiling of the aneurysm.

CT thorax confirmed the presence of three teeth (Figure 1B) - one in the right lower lobe and the two in the left lower lobe (Figure 1C, 1D). Rigid bronchoscopy was planned but the patient was still under spine precautions on mechanical ventilation. Flexible bronchoscopy was performed through the endotracheal tube to retrieve three identified teeth (Figure 2A). These were removed using a Roth net (Figure 2B, 2C) and Dormia basket (Figure 2D) [2]. He was subsequently extubated without any complications.

Discussion

Therapeutic bronchoscopy for foreign body removal was introduced into clinical practice over 100 yrs ago by the German otolaryngologist Killian [5]. Rigid bronchoscopy is considered to be the preferred modality for foreign body removal especially in children. Children have a narrower tracheobronchial tree than adults, making it essential to use rigid bronchoscopy for removal of the central foreign bodies. Rigid bronchoscopy offers the advantage of direct airway visualization and a larger diameter allowing for greater instrumentation options. Its use is especially useful for removal of FB in the presence of active hemoptysis as it provides greater ability to simultaneously manage the airway [4].

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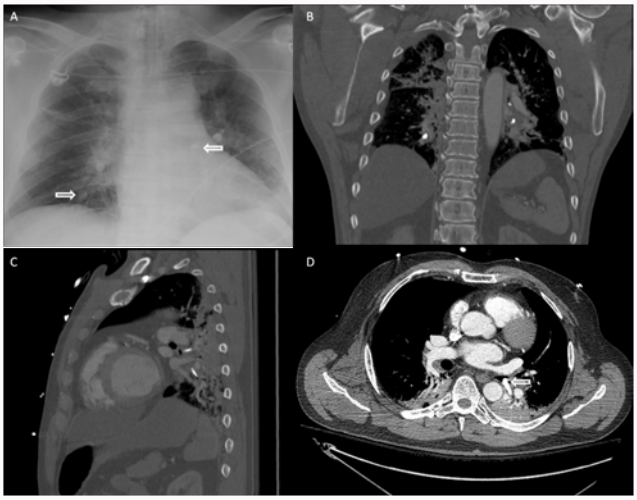

Figure 1: AP CXR (1A) and CT chest demonstrate teeth in RLL and LL (1B, 1C, 1D).

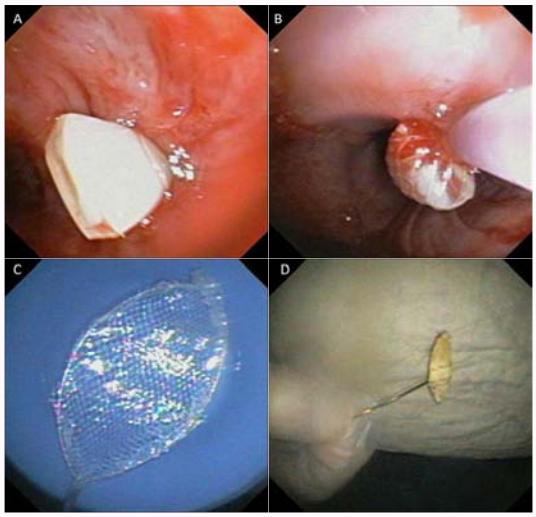

Figure 2: Tooth in RLL (2A); teeth removed by Roth net (2B, 2C); tooth removed with Dormia basket (2D).

Advancements in flexible bronchoscopy techniques and tools have made it the initial preferred method for diagnosis and removal of foreign bodies in adults and children older than 15 years [2]. Flexible bronchoscopy also has advantages for being able to access more peripheral foreign bodies as well as being more feasible in patients with contraindication to rigid bronchoscopy like spine injury, maxillofacial injuries or mechanical ventilation [2]. Clinicians should keep an open mind about the choice of retrieval device, depending on the site, size, shape and composition of the foreign body. A multidisciplinary approach is recommended for successful removal of the different typed of foreign bodies [6].

Authors Contribution

Amour BU Patel, MD wrote the initial rough draft, created the figures, and presented the case to the department. Pankaj Mehta, MD edited the initial rough drafts. Chris Feliu assisted with editing and patient follow-up. Lawrence S. Chin was the admitting attending who requested consult of the thoracic surgery service and edited the article from a neurosurgery perspective. Barbara Robinson, MD supervised the student then, now Dr. Patel in the write-up, case presentation; supervised the fellow Dr. Mehta in the editing; supervised the PA in editing and patient follow-up.

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