

# Role of virtual and flexible bronchoscopy in the management of a case of unnoticed foreign body aspiration presented as nonresolving pneumonia in an adult female

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## ABSTRACT

It is not so common to aspirate foreign body in normal adults without any predisposing factors as compared to children and those with the altered neurological state. Endobronchial foreign bodies are one of the causes of obstructive pneumonia and difficult to diagnose as signs and symptoms are often nonspecific. However, once they are diagnosed, they can generally be removed, leading to rapid and drastic resolution of symptoms. Bronchoscopy is the gold standard in the identification and localization of an airway foreign body and also for better management of the ailment. However with the help of virtual bronchoscopy one can decide the location of the foreign body before any invasive intervention and being noninvasive it can be performed in follow-up easily to check the patency of airways. It is not possible to detect the exact size of foreign body with the virtual bronchoscopy. In this article, we report a case of unnoticed foreign body aspiration in a 49-year-old female patient who was initially treated for pneumonia. However, due to nonresolution of opacity contrast enhanced computed tomography thorax with virtual and flexible bronchoscopy were performed, which revealed a foreign body in the right lower lobe bronchus that was removed with biopsy forceps in piecemeal. In her follow-up visit, she underwent virtual bronchoscopy that revealed clear airways. Thus, detailed history and high index of suspicion is required for nonresolving pneumonias that may occur due to unnoticed foreign body/ies in an adult.

**KEY WORDS:** Flexible bronchoscopy, foreign body aspiration, nonresolving pneumonia, virtual bronchoscopy

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## INTRODUCTION

One of the differential diagnoses of nonresolving pneumonia is foreign body aspiration. Foreign body aspiration can occur at any age from childhood to adult but more commonly found in children.<sup>[1-4]</sup> It is not so common to have aspiration of foreign body in healthy adults without any predisposing factors and so history is many times negative for aspiration, and it is presented late as recurrent pneumonia or atelectasis that ultimately delays the diagnosis and optimal management.<sup>[4]</sup> Various risk factors for aspiration of a foreign body in adults include swallowing disorders, neuromuscular or

neurologic diseases, diminished intellectual abilities and psychiatric illness.<sup>[4,5]</sup> In adults, foreign body aspiration accounts for 20% of reported cases of aspiration. Data from the National Security Council reported that approximately 80% of cases occur in patients younger than 15 years of age, with the remaining 20% presenting over the age of 15 years.<sup>[6]</sup> Most common site of foreign body aspiration is right lower lobe bronchus. A cough, dyspnea, chest pain, stridor, wheezing and hemoptysis are common presenting symptoms.<sup>[7,8]</sup> Radiographic evaluation may assist, but flexible bronchoscopy is the gold standard in the identification with localization of

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an airway foreign body. Removal of the foreign body using a flexible bronchoscope under local anesthesia can be performed safely and successfully.<sup>[9]</sup> With the help of virtual bronchoscopy, one can decide the location of foreign body but not the size. However, it is a noninvasive procedure so it can be performed in follow-up visits with ease to check airway patency as compared to real bronchoscopy.

### CASE REPORT

A 49-year-old female was presented with a high-grade fever, right sided chest pain, dry cough and moderate breathing difficulty for 5 days without any co morbidities. On examination, she was found to be febrile, tachypnic and hypoxic. On respiratory examination, intensity of breath sound was diminished in right lung field. Along with it, coarse crepitations were heard on the same area. From the history and examination, it was found that she might have had pneumonia involving right lung. This was confirmed by chest X-ray [Figure 1] and white blood cell count. She was admitted in intensive care and put on oxygen therapy

with higher antibiotics. During the course of treatment for approximately 2 weeks, she improved clinically but the radiological resolution was lacking [Figure 2]. It raised the possibility of collapse or postobstructive pneumonia, and computerized tomography (CT) of the chest was performed along with virtual bronchoscopy. From the CT and virtual scopy, it was found that she had right lower lobe obstructive pneumonia [Figure 3] that might be due to mucous plugging, endobronchial granuloma, or growth [Figure 4]. Finally, flexible bronchoscopy was performed. Bronchoscope had an outer diameter of 6 mm with an inner diameter of instrument channel was 2.8 mm. During bronchoscopy black colored soft foreign body [Figure 5] with surrounding granulation tissue was observed in right lower lobe bronchus. The Foreign body was removed in piecemeal after being broken with biopsy forceps that featured oval cup endojaw type without needle and cup opening size of 7.3 mm. The Foreign body was black in color, soft, fragile, round with a diameter of 6–7 mm and it could be broken easily. Immediately after removal of foreign body chest X-ray was repeated that showed complete lung expansion [Figure 6]. The patient was finally discharged with antibiotics and steroids for

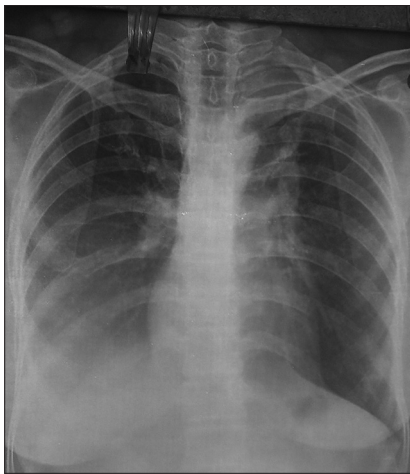


Figure 1: Chest X-ray s/o right lower zone collapse consolidation

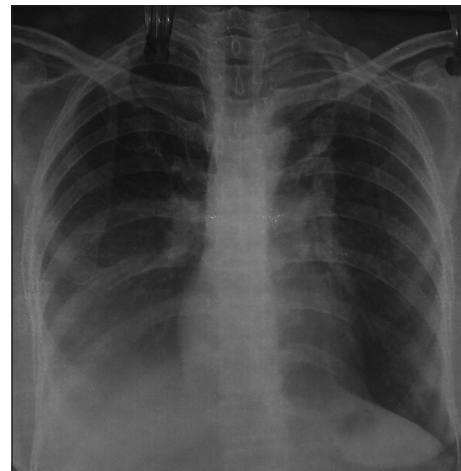


Figure 2: Chest X-ray s/o non resolution of opacity



Figure 3: Computed tomography chest s/o right lower lobe consolidation

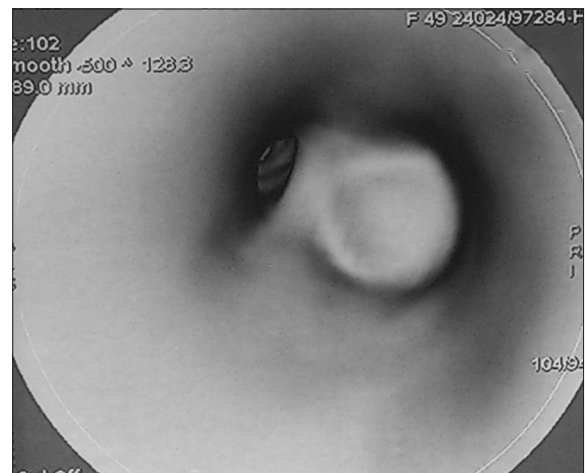
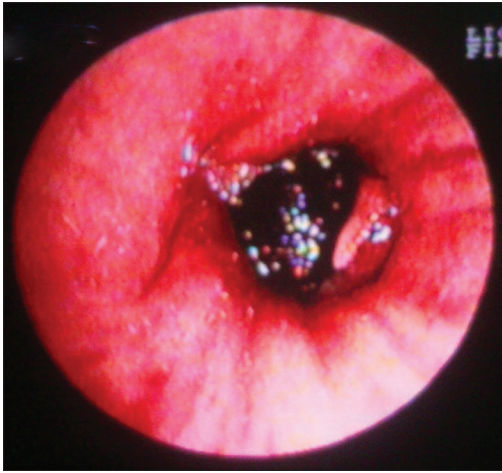
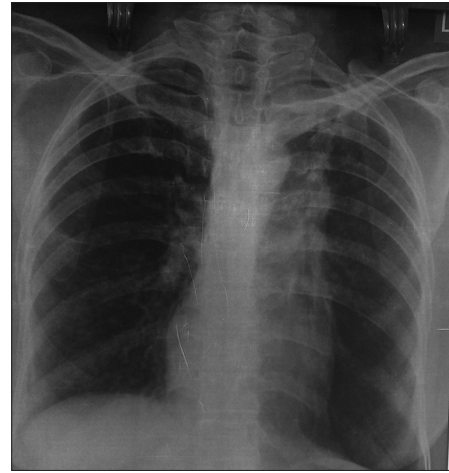


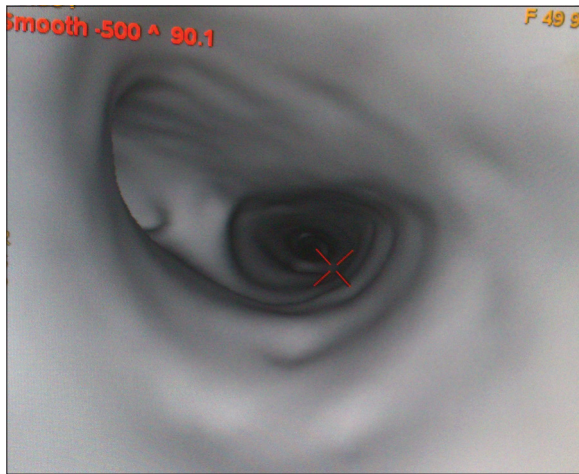
Figure 4: Virtual bronchoscopy s/o occluded right lower lobe bronchi



**Figure 5:** Flexible bronchoscopy s/o foreign body in right lower lobe bronchi



**Figure 6:** Postscopy chest X-ray s/o lung expansion



**Figure 7:** Follow-up virtual scopy s/o clear right lower lobe bronchi



**Figure 8:** Ayurvedic pill

7 days. In follow-up, virtual bronchoscopy was done to check lower lobe bronchi. It was clear and free of any granulation tissue, secretion, and remnants of the foreign body [Figure 7]. Retrospectively when the patient was asked regarding history of aspiration of foreign body she gave history of taking ayurvedic medicine [Figure 8] for headache and had one episode of choking once many days back while swallowing of it. However, she did not notice it significantly.

## DISCUSSION

There are various causes of nonresolving pneumonia in adult among which foreign body aspiration without any noticeable history is difficult to diagnose. As foreign body aspiration in the tracheobronchial tree is rare in healthy adults without predisposing factors such as altered neurological state, psychiatric illness, difficulty in swallowing, detailed history and a high index of suspicion is required for confirmation. It may present as nonresolving pneumonias, recurrent pneumonias, or atelectasis. Radiological investigations

like chest X-ray or a CT scan may assist in diagnosis but bronchoscopic evaluation and removal should be performed as soon as the diagnosis is suspected. Our experience shows that removal of foreign body with the help of flexible bronchoscope can be successful, safe, much more pleasant, and less difficult for both the patient and physician than rigid bronchoscopy in such type of cases. Though virtual bronchoscopy is least used modality as compared to flexible bronchoscopy, it can be used to identify exact location and being noninvasive it can be done with ease and patient's comfort even in follow-up.

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## Conflicts of interest

There are no conflicts of interest.

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