

Sharp Inhaled Foreign Bodies Retrieved with Flexible Videobronchoscope: A Case Series

Amit Panjwani^{1*} and Mehek Panjwani²

¹Department of Pulmonary Medicine, SevenHills Hospital, Mumbai

²Department of Periodontology and Oral Implantology, Mumbai

***Corresponding Author:** Amit Panjwani, Department of Pulmonary Medicine, SevenHills Hospital, Mumbai.

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Abstract

Inhalation of foreign bodies into the lower airways of adults is uncommon. Invariably it is seen in special clinical situations like dental care visits, under the influence of sedation or alcohol, neurological, neuromuscular diseases and swallowing disorders. Rarely, the aspiration of foreign body may go unnoticed. Though rigid bronchoscopy is a time tested, safe and effective procedure for foreign body removal from the airways; the fiberoptic bronchoscopy is proving to be a viable alternative to it. We present two interesting cases of foreign body aspiration which were successfully managed with fibre optic bronchoscopy.

Keywords: Foreign body aspiration; Endodontic file; Screw; Fibre optic bronchoscopy

Introduction

Foreign body aspiration (FBA) is a challenging global problem endangering lives. It is of significant concern in the pediatric population. The majority of FBA occurs in children less than 3 years of age [1]. In adults, the FBA usually occur in patients with facial trauma, during dental care visits, convulsions, neurological disorders and with excessive alcohol or sedative use. Most of the patients with FBA have a definite history of aspiration. Almost a quarter of the patients with FBA may not be aware of the foreign body in their lungs. Two interesting cases of FBA encountered in our institute, which were successfully managed with the help of a video fiberoptic bronchoscope (FOB), are presented here.

Case Report

Case 1: A 65 year old woman, controlled diabetic, had presented for a routine treatment care to her dentist at a private clinic, when an inadvertent cough caused the inhalation of an endodontic file. The patient was rushed to the emergency department of our hospital for the appropriate management. At the time of presentation, the patient was normoxemic and hemodynamically stable. No signs and symptoms of choking were seen. A quick survey of her opened mouth along with a systemic examination was done which was unremarkable. A series of x-rays involving the lateral and antero-posterior views of her neck and chest were done. The endodontic file was seen in the right lung in the bronchus intermedius (Figure 1,2). Patient was quickly shifted to the bronchoscopy suite of the hospital. There under topical lignocaine, supplemental oxygen, atropine premedication and midazolam sedation administered by the anesthesiologist, the patient was subjected to video FOB carried out transorally. The endodontic file was visualized in the right bronchus intermedius with its sharp end pointing cranially (Figure 3). The grasping forceps was advanced carefully through the working channel of the bronchoscope. After several futile attempts, the endodontic file was grasped from its sharp end, with the forceps. Once the file was secured, the FOB was pulled back along with the forceps holding the needle outside the working channel, from the lungs and outside the body. Thus, the endodontic file was successfully retrieved from the patient's lungs with the help of the FOB (Figure 4).

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Figure 1: Endodontic file seen in the right paracardiac area.



Figure 2: Endodontic file seen in the bronchus intermedius.



Figure 3: Endodontic file in right bronchus intermedius.



Figure 4: Retrieved endodontic file.

Case 2: A 32 year old gentleman was working with a call centre for the last few years. He presented to our hospital emergency department with mild pain on right side of the chest and uneasiness for around a day. He underwent a physical examination and was found to have no significant abnormality. Since he was uncomfortable and very anxious about his underlying uneasiness he was advised to undergo a chest X- ray examination. To our surprise, a screw was seen the right lung (Figure 5,6). He was immediately questioned whether he could recall aspirating or swallowing a screw at any time in the past few days, weeks or months. The answer to this question was a negative. He was a person with no predisposing situations to unaccountable foreign body aspirations like neurological or neuromuscular disease, swallowing disorders, alcohol intoxication, poor dentition and drug abuse. Patient was immediately shifted to the bronchoscopy suite of the hospital. There he was subjected to the video FOB examination for visualization and retrieval of the foreign body. The procedure was done under local anesthesia and conscious sedation. The screw was seen embedded in the right lower lobe bronchus (Figure 7). It was challenging to remove the screw form the lungs as there was always a risk of bleeding or a pneumothorax if the screw migrated lower down during the manipulation to remove it from the lungs. The screw was gently freed from the bronchus and skillfully grasped with a three pronged grasping forceps (Figure 8). With the screw secured in the grasping forceps, the bronchoscope was gently pulled back from the patient's lungs and outside. The screw was 2.5 cm (1 inch) in size (Figure 9) and it was unbelievable as to how such a big screw could find its way into the patient's lungs without him realizing about the same. After the procedure the patient was comfortable and the uneasiness and chest pain gradually subsided over the next 2 days.



Figure 5: Screw seen in the right lower zone.

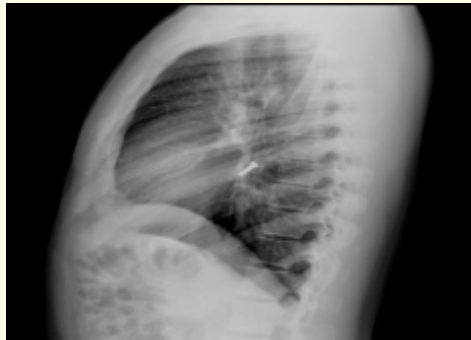


Figure 6: Screw seen in the retrocardiac area.

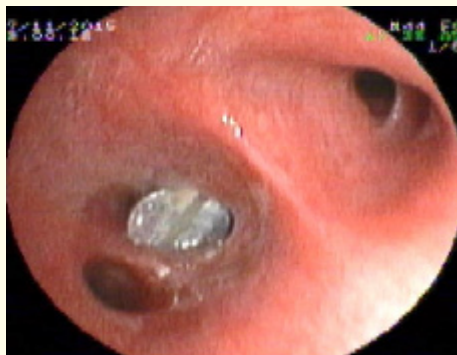


Figure 7: Screw seen embedded in the right lower lobe bronchus.

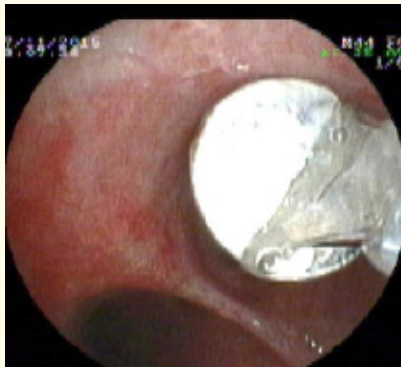


Figure 8: Screw grasped by the three pronged grasping forceps.

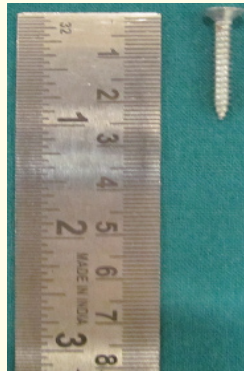


Figure 9: Retrieved 2.5 cm screw.

Discussion

FBA are infrequently seen in adults. Swallowing disorders, neuromuscular or neurological diseases, dental procedures, facial trauma and alcoholism are the common predisposing conditions for FBA in adults. Majority of the patients give a definitive history of foreign body inhalation while in around 25% of the cases there is no recollection of such an event. Penetration syndrome defined as the sudden onset of choking and intractable cough, with or without vomiting is the most frequent presentation in patients with FBA [2]. Proximal airway FBA are more symptomatic than the ones with distal airway involvement. Complications of FBA include life threatening asphyxia, chronic cough and recurrent pneumonia [3], bronchiectasis, empyema, mediastinitis, atelectasis and bronchial stenosis. Therefore, there is a need for the early removal of aspirated foreign bodies. Bronchoscopy is the best method for the removal of inhaled foreign bodies. Bronchoscopy for the removal of inhaled foreign bodies is credited to its first use by Gustav Killian, a German otorhinolaryngologist; in the late 19th century [4]. Traditionally rigid bronchoscopy has been used for the removal of inhaled foreign bodies. This has been the procedure of choice in the pediatric population which accounts for majority of FBA. However, in adults FOB seems to be the preferred modality for the last few decades [5,6]. The reasons could be that most of the pulmonologists are familiar with the use of FOB; it is easy to use, needs local anesthesia and can be performed in the bronchoscopy suite thereby reducing the cost of the procedure. It has a better range of visualization and easier manipulation is possible with it, especially for handling peripheral foreign bodies. This has resulted in the use of FOB as the initial procedure of choice even in children in the last few years [7]. The foreign bodies which cannot be removed with FOB can be subjected to the rigid bronchoscopy and very rarely to thoracotomy.

The types of foreign bodies encountered in our case series were interesting. The first case had an endodontic file aspiration while undergoing the dental procedure. Aspiration or ingestion may occur while performing a dental or surgical procedure involving the oral cavity. Aspiration is less common than the ingestion. Fixed prosthodontic therapy accounted for maximum number of cases of ingestion or aspiration of dental foreign objects in a study done in a dental educational facility [8]. In a French study the incidence of aspiration was 0.001 per 100000 root canal treatments and the incidence of ingestion was 0.12 per 100000 root canal treatments where rubber dams were not used [9]. There have been very few cases of aspiration of endodontic instruments reported from India [10,11].

The second case was interesting as the foreign body was discovered serendipitously. Therefore, the exact duration of the presence of this foreign body was not known. It is rare to discover asymptomatic foreign bodies in the respiratory tract. Healthy adults may tolerate the aspiration of foreign bodies for a long time without any serious life threatening consequences [12]. In a retrospective study, there was a delay in the diagnosis of the FBA in adults as compared with children [13]. The foreign bodies maybe lodged more distally in adults and this maybe the reason for subtle clinical presentation in these subset of patients [14].

Conclusion

The case series highlights the presentation of two uncommon foreign bodies encountered in an Indian setting. These non organic foreign objects were successfully removed with the help of a video FOB introduced transorally under local anaesthesia and conscious sedation in a bronchoscopy suite. This resulted in saving time and expenditure by avoiding the use of general anesthesia and the operation theatre. Rarely, the history of inhalation of a foreign object may be lacking and these patients may present with subtle and non specific clinical features. Therefore, a high index of suspicion is required to reach a correct diagnosis. Aspiration of dental materials or instruments, though rare as compared to their ingestion and can be prevented by using rubber dams, gauze throat screens or floss ligatures.

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