

## Unusual case of inhaled metallic dental bur during dental procedure in a healthy adult

### ABSTRACT

Bronchial foreign body aspiration (BFBA) is not a rare incident in children. It can be managed successfully with flexible bronchoscopy in most of the cases, except for some cases, which require rigid bronchoscopy or even surgical intervention such as thoracotomy. Here, we report an unusual case of BFBA of metallic dental bur in a healthy 24-year-old dental nurse assistant, who was herself undergoing a dental procedure to remove dental caries, and suddenly the foreign body which was "diamond metallic dental bur" has slipped into her mouth and was aspirated to the bronchial tree. It was successfully removed 5 days after the incident using rigid and fiberoptic bronchoscopy with full recovery.

**Key words:** Bronchial foreign body aspiration; fiberoptic bronchoscopy; metallic dental bur

### Introduction

Bronchial foreign body aspiration (BFBA) is a common problem. It is one of the most common accidents in children.<sup>[1]</sup> However, BFBA in adults is rare and it is most commonly found in the setting of advanced age, underlying neurological disorder, poor dentition, alcohol consumption, and sedative use.<sup>[1-3]</sup> The objects that are usually aspirated are organic materials such as nuts, seed, vegetables, and bones.<sup>[2]</sup> The most helpful way to diagnose is high index of suspicion as it can be missed sometimes and remains occult for a long period, which can lead to chronic respiratory symptoms and complications such as bronchiectasis, erroneous diagnosis of pneumonia, asthma, or lung cancer.<sup>[4,5]</sup> Usually, it can be removed successfully using fiberoptic bronchoscopy (FOB); however, in some cases, it requires rigid bronchoscopy or even thoracotomy.<sup>[1,2]</sup>

### Case Report

A 24-year-old female, dental nurse assistant, medically free, was admitted urgently to our institute for removal of foreign body (FB) from her bronchial tree. Five days earlier, she underwent dental procedure for treatment of deep dental caries. During the procedure, the tip of the metallic instrument, which is the diamond metallic dental bur, which probably was not fixed properly to the dental headpiece, slipped in her mouth and was inhaled, as the mouth guard (rubber dam) was not applied. She went to nearby local hospital for removal of this FB by FOB, but it was unsuccessful; on the contrary, it was pushed further inside. On admission to our unit, she presented with fever, cough, shortness of breath (SOB), hemoptysis, and right side pleuritic chest pain for the last 5 days. Cough and pleuritic chest pain started immediately after the inhalation while

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#### Quick Response Code



**HAJJAR WM, ALJURAYYAD RS, AL-JAMEEL NI, SHAHEEN IS<sup>1</sup>, AL-NASSAR SA**

Departments of Surgery and <sup>1</sup>Anesthesia, College of Medicine, King Saud University, Riyadh, Kingdom of Saudi Arabia

**Address for correspondence:** Dr. Waseem M. Hajjar, Department of Surgery, College of Medicine, King Saud University, P.O. BOX 7805, Riyadh 11472, Kingdom of Saudi Arabia. E-mail: washajjar@yahoo.com

fever, hemoptysis, and SOB developed gradually over the last 2 days. On physical examination, the patient appeared well, with stable vital signs. Chest examination showed reduced air entry and fixed wheezing in the base of the right lung. On investigation, all routine blood tests were normal, chest X-ray both views showed FB, which is representing a metallic FB or metallic dental bur in the medial segment on the right middle lobe bronchus [Figure 1a and b]. Under general anesthesia, the patient underwent rigid bronchoscopy and as expected, the FB was not seen, and then FOB with the guidance of the image X-ray in the operating theater, FB was found and extracted by biopsy forceps [Figure 2]. Postoperative recovery was uneventful.

## Discussion

Our patient has very unusual circumstances for the BFBA, which is happened during dental procedure, and the FB which is “metallic dental bur” is not reported previously as inhaled FB. However, the patient presented with cough, SOB, localized pleuritic chest pain and wheezing immediately after the inhalation, and lately with fever and hemoptysis. This presentation and the timing is similar to what has been reported in the literature previously. As most of the patient's symptoms presented usually in the first 24 hours.<sup>[6]</sup> Chest x ray of our patient confirmed the diagnosis that the FB was located in the right bronchial tree, which was removed successfully using rigid and FOB with the help of intra-operative X-ray screening. However, it is reported in several studies in the literature that removal of FB with FOB is the primary and usually is successful choice, and this might be attributed to the nature and depth of FB within bronchial tree.<sup>[4,6]</sup>

BFBA is common and could represent a serious problem in children. Early diagnosis of BFBA is essential, and any delay in treatment may be dangerous and fatal.<sup>[4,5]</sup> It is more commonly observed in children, especially in boys between the ages of 2 and 3 years.<sup>[1]</sup> Most foreign bodies were organic and were

mainly located in the right bronchial tree.<sup>[1]</sup> In adults, it is rare and most commonly found in old age group with significant neurological impairment, or in a setting of alcohol and drug intoxication or poor dentition which identified as risk factors for such events in adults, and the most commonly aspirated material are food particles.<sup>[2,3]</sup>

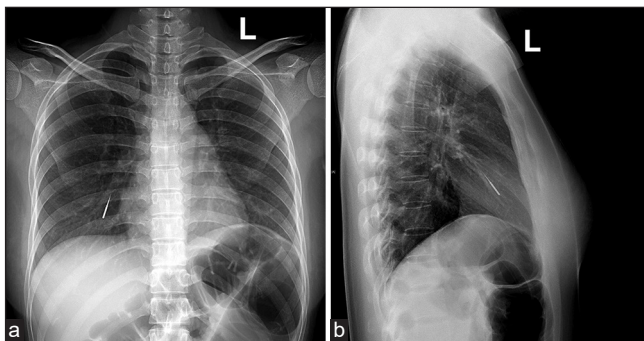
BFBA has wide range of clinical symptoms and outcomes. The presentation can vary between asymptomatic cases and other clinical symptoms such as cough, cyanosis, dyspnea, wheezing, fever, and stridor which usually present in the first few days after the aspiration.<sup>[5,7]</sup>

The incidents that fail to show clinical symptoms can remain undetected for a long time, and those occult cases are common.<sup>[8]</sup> Few cases reported that interval of 25-40 years passed before detection.<sup>[4,8]</sup> These cases if remained undiagnosed for a long period are often misdiagnosed and usually treated with antibiotics or bronchodilators as it can mimic a lot of diseases such as croup, asthma, pneumonia, bronchitis, or even lung cancer.<sup>[9]</sup>

Diagnosis of trachea-bronchial FB can be confirmed by chest X-ray if they are radioopaque-like our patient or if the history is suggestive of BFBA by bronchoscopy under general anesthesia.<sup>[4]</sup> However, other nonradiopaque foreign bodies may be missed in CXR.<sup>[4]</sup>

## Conclusion

BFBA is rarely seen in adults in the absence of any predisposing factor. Any delay in the diagnosis can predispose to serious consequences. It should be considered in the etiology of recurrent pulmonary infections, hemoptysis, lung abscess, middle lobe syndrome, and bronchiectasis.



**Figure 1: (a) Chest X-ray posteroanterior view showing a metallic foreign body in the right lower zone. (b) Chest X-ray lateral view confirming the position of the foreign body in the right middle lobe**



**Figure 2: Foreign body, metallic dental bur**

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## Conflicts of interest

There are no conflicts of interest.

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