



## Accidental Aspiration of Dental Crowns and Retrieval

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### ABSTRACT

**Aim:** The aim of this article is to create awareness among the dental practitioners regarding the various accidents which can happen during a dental procedure and stress upon the preventive measures that can be taken to reduce the same.

**Background:** This article presents a case of aspiration of dental crowns by the patient and its retrieval by coughing and preventive measures which can be taken to avoid such circumstances.

**Case description:** A patient reporting to private dental practice accidentally aspirated the two-unit prosthesis (crowns) in the right lung during cementation. He was immediately taken to the hospital, where chest radiographs and computed tomographic (CT) scan were done in order to locate the actual position of the prosthesis. Bronchoscopy was planned to retrieve the crowns but the patient had a bout of cough and the crowns came out. A chest radiograph was taken to confirm the absence of crowns.

**Clinical significance:** Taking adequate precautions while performing any dental procedure in supine position can decrease the occurrence of such incidents. Rigid bronchoscopy is the advised method of retrieval in case the crowns are not coughed out.

**Keywords:** Aspiration, Dental crowns, Bronchoscopy, Retrieval.

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### INTRODUCTION

Foreign body aspiration (FBA) and ingestion during dental treatment is a serious situation. Main reasons of aspiration are maxillofacial trauma, dental treatment procedures or ethanol intoxication and dementia.<sup>1</sup> The handling of dental objects requires particular care, especially where the patient is supine or semirecumbent. Adverse outcomes resulting from aspiration or ingestion of instruments and materials can occur in any dental procedure.<sup>2</sup> Dental objects commonly aspirated or swallowed include burs, rubber dam

clamps, fragmented or complete tooth material, endodontic instruments, dentures and impression materials.<sup>3</sup>

Ingestion occurs more often than aspiration<sup>4</sup> and usually does not cause any clinical signs or symptoms as it is spontaneously rejected from the gastrointestinal tract in most of the cases. However, aspiration always requires specific treatment since the foreign body may cause severe obstruction and can become life threatening.<sup>5</sup> According to a data provided by the insurance companies in France representing 24,651 French general dentists over 11 years, all aspiration cases required hospitalization as compared to 36% of the ingestion cases.<sup>6</sup> Aspiration of dental crowns can occur in children particularly while administering conscious sedation.<sup>7</sup> The shape and composition of dental crowns complicate their extraction from the tracheobronchial tree, sometimes necessitating thoracotomy.

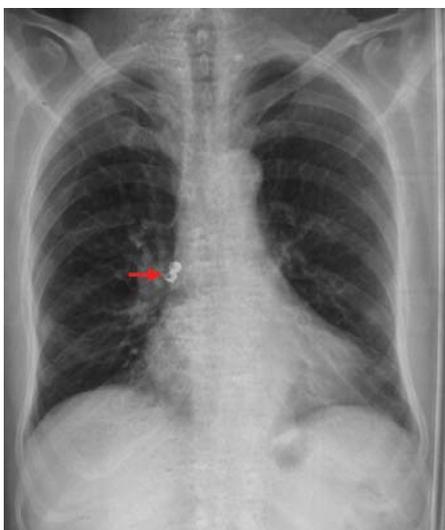
The earliest symptoms that commonly appear during aspiration include coughing, choking and wheezing. Even if the airway does not appear to be in immediate jeopardy, possible early complications of foreign body aspiration may occur including acute dyspnoea, laryngeal edema, perforation and pneumothorax. Long-term complications, such as lung abscess and pneumonia, may also develop.<sup>8</sup>

The purpose of this case report is to describe a case of aspiration of dental (crowns) and its nonsurgical retrieval. It also emphasizes that how an accurate diagnosis prompted early referral for treatment, resulting in a safe outcome for the patient.

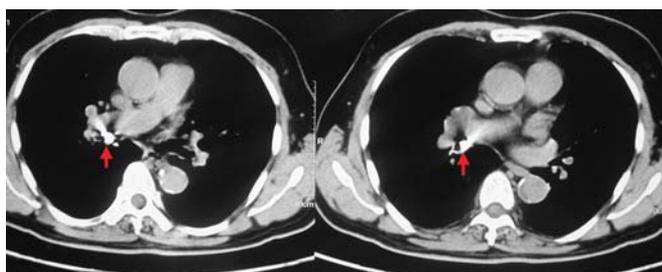
### CASE REPORT

A 70-year-old man of moderate built reported to the private practice for the treatment of both the premolars on his lower right segment (tooth no 44, 45). Both the teeth were carious and were in bad periodontal condition with grade II mobility. After endodontic treatment of these teeth it was decided to give porcelain fused to metal crowns on them. As the teeth

were mobile, it was decided to give joint crowns on the teeth as it would help to splint them. When the scheduled appointment for the fixation of the crowns was due, the patient had mild cough. Before the final fixation, the prosthesis (2-unit crowns) was tried on the abutments. At the time of removal of the prosthesis, the patient coughed and accidentally aspirated the prosthesis. At that moment, it was not clear whether it was aspiration or ingestion. The patient was placed in the prone position with several back slaps to attempt displacement of the crown from his airway in case they are aspirated. Immediately, the patient was taken to the hospital where a chest radiograph was taken and it was diagnosed that the prosthesis was lodged in the right lung (Fig. 1). To accurately verify its position in the lung, a computed tomographic (CT) scan was done where it confirmed the position of the prosthesis in the right lower lobe bronchus near its origin (Fig. 2). An emergency bronchoscopy under general anesthesia was planned to retrieve the crowns. The patient had no breathing problem and was waiting to be operated. Phenomenally, the patient had a bout of vigorous cough and simultaneously coughed out the prosthesis (Fig. 3). A repeated radiograph of the chest confirmed the absence of the crowns (Fig. 4). The patient was asymptomatic and was discharged from the hospital.



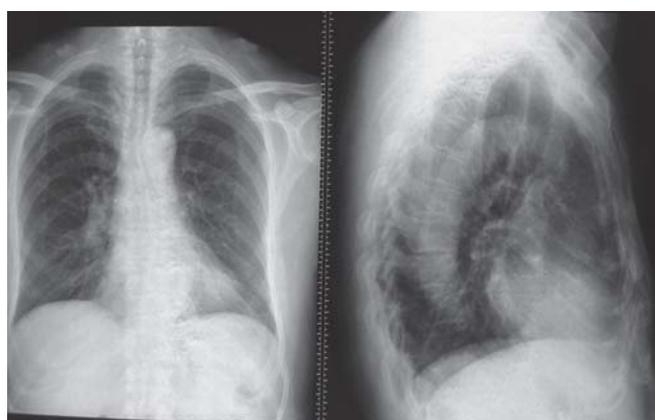
**Fig. 1:** Chest radiograph showing prosthesis (2-unit crowns) lodged in the right lung



**Fig. 2:** CT scan showing prosthesis in right lower lobe bronchus near its origin



**Fig. 3:** Retrieved aspirated prosthesis (crowns)



**Fig. 4:** Chest radiograph after retrieval of prosthesis showing absence of the prosthesis

## DISCUSSION

FBA is a serious problem and may occur in those patients who have impairment of protective airway mechanisms like in primary neurological disorders or impaired level of consciousness.<sup>9</sup> In these cases, the diagnosis can be difficult and may be missed even by experienced doctors because the initial choking episode is not witnessed. A similar case of two teeth aspiration was reported but, in that case, one of the teeth was expectorated by the patient himself. Only one tooth was left to be removed via flexible bronchoscopy.<sup>10</sup> An earlier case of aspiration of dental crowns is reported where multidisciplinary approach involving rigid and flexible bronchoscopy in concert with the use of wire snares under fluoroscopic guidance was used for extraction.<sup>11</sup> Cases of unrecognized aspiration of a dental implant have been reported, where it remained unidentified for 3 years as an endobronchial foreign body of the lower lobe bronchus. After bronchoscopy removal failed to remove the implant, lobectomy of the right lower lobe was performed because of chronic pneumonia.<sup>12</sup> Another case of inhalation of a dental implant screw driver is reported in a 62-year-old

female. The screw driver got impacted in the right main inferior bronchus and was successfully removed with rigid bronchoscopy under general anesthesia.<sup>2</sup> In elderly patients, there is a decrease in the psychological and neurological function which puts them in a greater risk group in regard to swallowing. The loss of tactile sense of the hard and soft palate as a result of complete denture use is another reason for frequent occurrence of this problem in elder patients.<sup>13</sup> The International Medical College publication 'foreign body aspiration during dental treatment' recommends that, after aspiration, the patient should be asked to cough. Aspirated foreign objects can be ejected in this manner especially if they have not passed the level of the glottis. Zitzmann NU et al<sup>14</sup> suggest that if the aspirated or ingested foreign body cannot be coughed out, it is mandatory to take frontal and lateral chest radiographs to identify the objects position in the intestinal system or the trachio bronchial tree. Responding to situations is extremely important both medically and legally. It should be ensured that the airway is not obstructed and the patient is informed about the problem.<sup>15</sup> Aspirated foreign bodies should be removed within 24 hours. Acute obstruction can be life threatening and delaying the removal of foreign objects may make a bronchoscopy technically more difficult. In patients where there is a greater risk of aspiration or swallowing, one should be very careful while treating such kind of patients.

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