CASE REPORT

Four Cases of Airway Foreign Body by Dental Prostheses

Akihiko Iwase

ABSTRACT — Background. In the aging society of Japan, the number of people using dentures has increased, and airway foreign body (AFB) aspiration of dental prostheses is sometimes encountered. Cases. Four patients with AFB of dental prostheses are described. Two patients were bedridden because of cerebrovascular disorders, and easily aspirated dental prostheses. Two healthy cases experienced aspiration during dental treatment. The aspirated foreign bodies consisted of 2 dentures and 2 dental crowns. In two cases, removal of the aspirated foreign body was delayed, and the extractions were very difficult. All aspirated foreign bodies were successfully extracted using flexible bronchoscope under local anesthesia. Conclusion. AFB aspiration of dental prostheses are expected to increase in aging society. It is important to extract the AFB soon after aspiration. Flexible bronchoscopy is considered the first line approach to extract the AFB.

KEYWORDS — Airway foreign body, Dental prostheses, Flexible bronchoscopy

INTRODUCTION

In the aging society of Japan, the number of people using dentures has increased. In general, elderly people can easily aspirate airway foreign bodies (AFBs) due to decreased cough reflex and cerebrovascular disorders. AFB of dental prostheses has increased in daily practice. This report describes 4 cases of AFB aspiration of dental prostheses and discusses the technical issues related to bronchoscopic extraction of AFB and the patient backgrounds.

PRESENT CASE

Case 1

A 61-year-old man was taken to the emergency room (ER) due to aspiration of a denture. He had left hemiplegia and dysarthria as a result of cerebral hemorrhage and resided in a nursing home. A chest X-ray film at admission (Figure 1A) showed a denture was invaginated in the right truncus intermedius. Bronchoscopy showed scattered food residue in the trachea and the lodged denture in the right truncus intermedius (Figure 1B).

The AFB was successfully extracted using alligator forceps for digestive endoscopy with a large bite.

Case 2

A 68-year-old man was transferred to the ER with AFB and obstructive pneumonia. He was bedridden with consciousness disorder caused by sequelae of cerebral hemorrhage, and resided in a medical facility. Two days previously, he developed a high fever, and his doctor discovered an AFB and obstructive pneumonia by chest X-ray. It was unclear as to when he had aspirated the AFB. A chest X-ray film at admission (Figure 2A) showed the denture lodged in the orifice of the left lower lobe bronchus and obstructive pneumonia of the left lower lobe. The bronchoscopy findings showed the denture to be invaginated in the left lower lobe bronchus with edema of the surrounding bronchial mucosa (Figure 2B). At admission it was impossible to extract the denture by basket, alligator forceps or other foreign body forceps under endotracheal intubation. Administration of antibiotics was started to control the pneumonia. After 1 week of therapy for pneumonia the swelling around the foreign body improved, and the AFB
Airway Foreign Body by Dental Prostheses—Iwase

Figure 1. A chest X-ray film and bronchoscopy image of case 1. A: A chest X-ray film shows the denture located in the right lung. B: Bronchoscopy shows that the denture lodged in the right truncus intermedius.

was successfully removed with alligator forceps for digestive endoscopy.

Case 3
A 92-year-old woman was transferred to the hospital due to aspiration of a dental crown during dental treatment. She was very active in daily living. Her chest X-ray film showed an AFB in the left lung (Figure 3A). The dental crown was located in the left lower lobe bronchus, and it could be easily removed with flexible bronchoscopy (Figure 3B).

Case 4
A 64-year-old man was referred to the respiratory division due to AFB of a dental crown. Although he aspirated the dental crown during dental treatment 3 months previously, he did not undergo any treatment. He arrived at the hospital due to appetite loss. The AFB was pointed out on a chest X-ray film (Figure 4A). The dental crown was embedded in granulation tissue in the right truncus intermedius (Figure 4B). It was successfully removed using alligator forceps for digestive endoscopy.

DISCUSSION
In the aging society of Japan, there are many elderly patients who have become bedridden with dysphasia and...
decreased cough reflex due to various diseases. It is very important to prevent AFB among these patients in nursing homes and private houses. Although AFB has been reported to generally occur in the elderly and children, the clinical manifestations are slightly different. In childhood AFB has been mainly reported for many legumes, such as peanuts, and toys. In elderly people, some investigators have also reported AFB of dentures and other dental prostheses. In the future we presume that AFB of dental prostheses will increase in elderly people.

In the 4 cases, 2 patients were bedridden with sequelae of cerebrovascular disease, and easily aspirated the foreign bodies with deterioration of consciousness and cough reflex. Adult AFB is sometimes encountered in patients with central nervous system disorders, which was reported as important underlying diseases. In these patients prevention of aspiration of foreign objects during meals and oral care is important. Oral hygiene and the stability of dental prostheses by dentists are also important. In cases 3 and 4, the patients were active in daily living, and aspiration of the AFBs occurred during dental treatment. The prevention of aspiration should also be considered during dental treatment in elderly people with decreased cough reflex.

Figure 3. A chest X-ray film and bronchoscopy image of case 3. A: A chest X-ray film shows the dental crown located in the left lung. B: Bronchoscopy shows the dental crown within the left lower lobe bronchus.

Figure 4. A chest X-ray film and bronchoscopy image of case 4. A: A chest X-ray film shows the dental crown in the right lung. B: Bronchoscopy shows the dental crown embedded in the granulation tissue of the right truncus intermedius.
Some investigators have reported aspiration and ingestion during dental practice in a review. They suggested the use of a special device to prevent aspiration during dental treatment, and that aspiration and ingestion were more likely to occur when patients were reclined far back in the treatment chair. The patient in case 4 did not undergo any treatment immediately after the aspiration. His dentist probably believed that the patient had ingested the dental crown. However, some dentists have suggested that oral surgeons should suspect any tooth that has been avulsed or extracted and not found as having been ingested or aspirated. They also emphasized that early diagnosis by neck, chest and abdominal X-ray methods, and management is essential in such incidents.

Delayed extraction of AFB becomes more difficult because of edema and increased granulation tissue in bronchial mucosa. In the cases 2 and 4, delayed treatment made the extractions very difficult. Case 2 was complicated by obstructive pneumonia, and the denture was tightly wedged in the left lower lobe bronchus with mucosal edema. Antibiotic therapy was effective for reduction of the bronchial edema around the foreign body. In patients with suspected of AFB aspiration, immediate bronchoscopy is important for early diagnosis and treatment.

We used flexible bronchoscope with a large working channel (Olympus BF type 1T 260, Olympus, Tokyo, Japan) to remove the AFB under local anesthesia. In the treatment, alligator forceps for digestive endoscope with a large bite (Olympus FG-47L-1, Olympus, Tokyo, Japan), which closely pass through the working channel, was useful. Because bronchoscopy forceps for AFB have a small bite, it was very difficult to manipulate large AFBs. Digestive endoscopy forceps with a large bite have strong grasping potential, and were especially useful in extracting large dentures with smooth surfaces (case 2). The usefulness of flexible bronchoscope has been reported for AFB in the elderly patients. However, the procedures largely depend on the technical ability of operators, and the success rates of flexible bronchoscopic extraction in adults range from 60 to 90 percent. Therefore, it is important to switch from removal by flexible bronchoscopy to rigid bronchoscopy in difficult cases. In rare cases, patients in whom bronchoscopic removal attempts have failed were reported to require surgical thoracotomy.

REFERENCES