Case Reports

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Importance of postural change for accidental ingestion of dental prostheses: a case report

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Abstract

Accidental ingestion of dental prostheses requires immediate emergency action. The authors report a case of accidental ingestion of a dental prosthesis in a patient with a disorder of consciousness. The accidental ingestion was diagnosed by imaging examination, and the location of the dental prosthesis was explored under general anesthesia according to the preoperative examination images. However, no dental prosthesis was found in the hypopharyngeal region. The operators found a radiopaque region in the nasopharynx that was suspicious of a dental prosthesis by X-ray examination of the head and neck region. According to the X-ray examination, the dental prosthesis was removed from the nasopharynx. The patient's postoperative course was uneventful. Postural change for cases of accidental ingestion of dental prostheses may be a simple and important lifesaving step in addition to traditional methods.

Keywords

Accidental ingestion, dental prosthesis, postural change, case report, X-ray, hypopharynx

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Introduction

Functional limb weakness and cognitive decline usually cause deterioration of the oral environment and its function. Recent studies have also suggested that poor oral health and activities of daily living are associated with cognitive impairment in older people.[1,2] With increasing concern for oral

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health, middle-aged and elderly people have a large number of remaining permanent teeth.[3,4] However, periodontitis-related tooth mobility is frequently observed in these people.[4] In particular, the frequency of tooth mobility may be increasing in bedridden patients at home and in hospitals. These patients may not receive dental professional interventions, and the risk of accidental ingestion and aspiration of teeth and dental prostheses owing to periodontitis-related mobility may also increase.[5] If medical and/or dental professionals, or patients and their caregivers, realize that a tooth has fallen out, and no one has previously noticed, exploring the surrounding area is the first step, followed by performing imaging examinations as the second step. The presence and location of the lost dentition can be confirmed through these steps, and removal methods, including surgery under general anesthesia, should be considered as soon as possible. In some cases, traditional methods, such as the Heimlich maneuver and slapping on the back, may also be useful.[6,7] However, these methods are not feasible when the patient cannot assume/maintain an appropriate position, and serious complications have also been reported.[8]

In this study, we report a case of accidental ingestion of a dental prosthesis that occurred in a patient with a disorder of consciousness owing to pre-existing disease, and we discuss the importance of postural change in cases of accidental ingestion.

Case report

A 54-year-old man was admitted to our hospital with a disorder of consciousness caused by craniopharyngioma (Japan coma scale II-20), and he was referred to our department for accidental ingestion of a dental prosthesis. First, caregivers, including the patient's wife and nurses, noticed the falling out of the patient's teeth during oral care. This suggested the possibility of accidental ingestion of teeth. However, the patient, with a disorder of consciousness, did not complain of respiratory distress, and no cough or swallowing reflexes were observed; no decrease in peripheral arterial oxygen saturation was observed. The presence of a dental prosthesis in the hypopharynx was confirmed using computed tomography and endoscopy (Figure 1). These examinations suggested that the dental prosthesis was a dental bridge consisting of two permanent teeth. Considering the risk of the dental prosthesis migrating into the respiratory tract or the esophagus, we planned removal of the prosthesis under general anesthesia with endotracheal intubation. For safety reasons, medical and dental professionals did not use suction or the traditional method of slapping on the back and/or the Heimlich maneuver, in this case. General anesthesia with endotracheal intubation was initiated, and the suspected location of the dental prosthesis was explored according to preoperative examination images. However, no dental prosthesis was found in the hypopharyngeal region. The operators suspected that the prosthesis had moved into the esophagus or airway and performed an X-ray examination of the abdominal region. However, the prosthesis was not located in these regions. Subsequently, upon additional X-ray examination of the head and neck, the operators found a radiopaque area in the nasopharynx that was potentially indicative of a dental prosthesis (Figure 2a). According to these results, the dental prosthesis was removed from the nasopharynx (Figure 2b). In this case, no cough or swallowing reflexes were observed, and the patient did not change posture, except for bed transfer by medical and dental professionals in the computed tomography and operating rooms. However, the dental prosthesis moved from the hypopharyngeal

region to the nasopharynx. The removed dental prosthesis was a three-unit metal bridge consisting of two permanent teeth, originally located in the left mandibular molar region. The patient's postoperative course was uneventful.

The reporting of this study conforms to the CARE guidelines.[9]

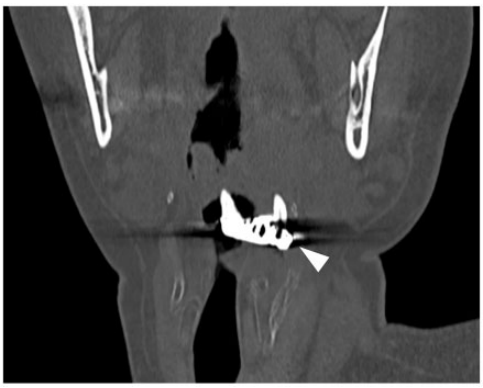

Figure 1. Computed tomography image with the dental prosthesis visible in the hypopharynx region (white arrow).

Discussion

In this case, a removal procedure under general anesthesia for a three-unit bridge located in the hypopharynx was planned in a patient with a disorder of consciousness, without attempting the traditional methods, namely slapping on the back or the Heimlich maneuver, beforehand, because of safety concerns.[6,7] In addition, no cough reflex was observed. However, contrary to the results of preoperative imaging examination, the dental prosthesis was confirmed in the nasopharynx. In other words, the dental prosthesis had moved from the hypopharynx to the nasopharynx before the removal procedures began. Thus, the authors speculated that the dental prosthesis moved with the patient's postural changes in the computed tomography and operating rooms. Therefore, the authors consider that this rare case suggests the importance of postural change as the first step for accidental ingestion of dental prostheses, where dental suction is unavailable.

Figure 2. (a) The dental prosthesis in the nasopharynx clarified by X-ray examination of the facial region (white arrow). (b) The removed three-unit bridge originally located in the left mandibular molar region.

In the case of a pharyngeal foreign body and/or airway obstruction, the traditional methods of slapping on the back or the Heimlich maneuver may also be useful as "basic life support".[6,7] However, all caregivers involved with the patient must consider the potential complications and the patient's condition when using these methods.[8] Urgency, simplicity, and adaptability are important when dealing with cases of accidental ingestion. Changing the patients' posture to remove an accidentally ingested foreign body is a simple and easy method that is not influenced by age or medical history.

In this case, permanent teeth with a dental prosthesis fell out spontaneously in a patient with a disorder of consciousness. Intervention by dental professionals is important to reduce the risk of accidental ingestion in bedridden patients with disorders of consciousness. In addition, all caregivers involved with patients with communication limitations, namely professional caregivers and the patient's family, must be aware of tooth mobility.[10] Sharing this information may contribute to early recognition and response to dental problems, including teeth falling out.[10] Additionally, depending on the degree of tooth mobility and communication problems with/without cognitive decline, it may be necessary to consider tooth extraction to prevent accidental ingestion. Needless to say, in any situation, informed consent must be obtained from patients and/or their caregivers, including the patient's family, while considering tooth extraction, in accordance with medical ethics.[11]

Based on the accumulating evidence of the effects of oral care, the need for professional bedside oral care for bedridden patients at home and in hospital will likely continue to increase.[12] Dental professionals, including dentists and dental hygienists, should conduct appropriate risk assessments for accidental ingestion and carefully provide oral care and dental procedures while carefully considering a patient's systemic conditions. Medical doctors managing the underlying disease and dental specialists should work closely together to make dental interventions more effective. Appropriate bedside oral care and dental treatment may reduce the burden on patients and their families and contribute to the maintenance of a healthy oral environment.

In conclusion, postural change in cases of accidental ingestion of dental prostheses may be a simple and important lifesaving step in addition to traditional methods.

Ethics statement

Consent for removing the dental prosthesis was obtained from the patient's family. Verbal consent for publication of this case report and any accompanying images was also obtained from the patient's family, and we deidentified all patient details in this report. Approval from an ethics review committee was not sought because of the nature of this report (case report).

Declaration of conflicting interest

The authors declare that there is no conflict of interest.

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