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Case Report

An autopsy case of prolonged asphyxial death caused by the impacted denture in the esophagus

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ABSTRACT

A foreign body impacted in the esophagus is not a rare incident among adults or children. In adults, a dental prosthesis is prone to become impacted in the esophagus. The diagnostic difficulty of this often causes a delay in its removal, which can lead to serious complications, including death.

This report describes the autopsy case of a man who died of prolonged asphyxiation induced by the delayed removal of an impacted denture, which was misdiagnosed on his first visit notwithstanding that a part of the denture could be seen on X-rays. Cases in which an impacted denture led to death have rarely been reported in contrast to numerous papers about recovered cases.

1. Introduction

A foreign body impacted in the esophagus is not rare incident; it can occur among adults as well as children. In adults, while meat or bone is a common object in esophageal impaction, dental prostheses also account for a significant proportion of incidents. Dental prostheses accounted for 11.5% of the laryngotracheal or esophageal impacted foreign bodies in 200 patients [1]. Although an impacted denture that can lead to serious complications is considered a medical emergency [2], due to the difficulty of diagnosis, the diagnosis of it can be delayed [1,3] or sometimes not be provided [4], increasing morbidity and mortality [5]. Here we report the autopsy case of prolonged asphyxiation caused by the delayed removal of an impacted denture due to misdiagnosis on the patient's first visit.

2. Case report

2.1. Ante-mortem history

A man in his 50s, who had hemiplegia due to an obsolete cerebral hemorrhage without dysphagia, accidentally swallowed his lower partial denture, which lodged in the pharynx, during lunch in a nursing home. He notified his caregiver of the denture swallowing and complained of dysphagia, sore throat, and foreign-body sensation in the pharynx. He was immediately taken to the emergency department, and the doctor was informed that impaction of denture was suspected. The doctor could not detect the partial denture by oral examination or by chest and abdominal X-rays; consequently, he assumed that the patient had not swallowed his partial denture even though the partial denture had not been secured and judged that no treatment was necessary. (In fact, the clasp of the partial denture was visible and recognizable behind the mandible on chest X-rays (Fig. 1) and should have been removed immediately.) After returning to the nursing home, the subject could eat half of his usual meal that evening and the next morning; however, his sore throat continued, and hoarseness occurred. A few minutes after starting lunch, he was found unconscious on his bed and transferred to the hospital immediately in an ambulance while cardiopulmonary resuscitation was being performed on. The doctor at the hospital detected the partial denture in the pharynx, which was filled with food residue, and removed the denture and food residue. After intubation, intratracheal food residue was also removed through the intubation tube. Although spontaneous circulation returned, the patient lapsed into hypoxic encephalopathy and

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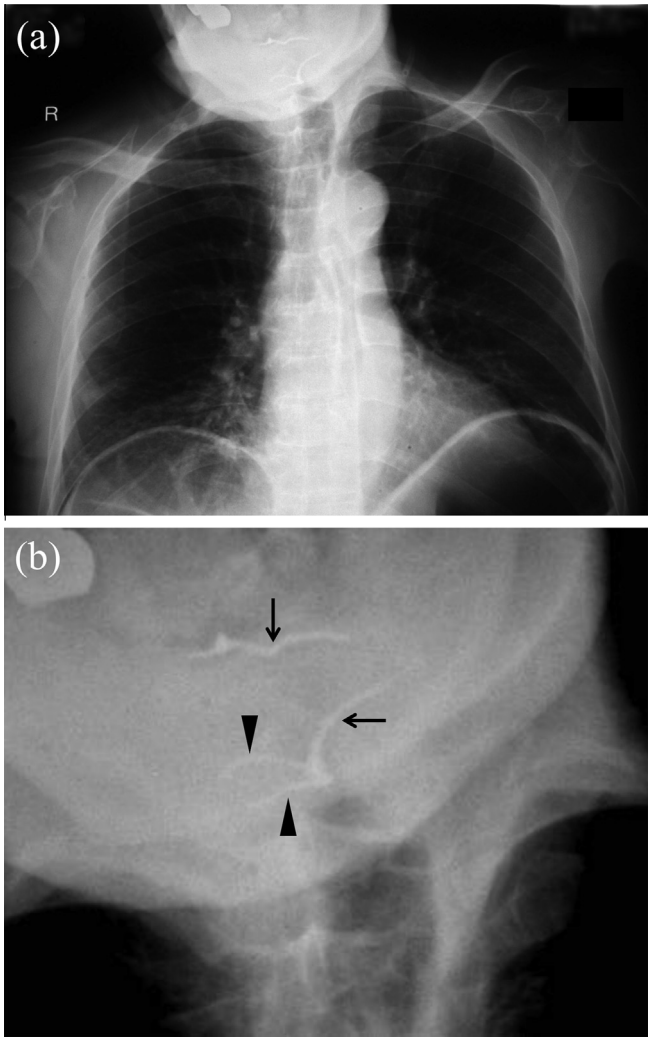

Fig. 1. Chest X-ray (a) and enlarged image of the cervical region (b) show the clasps of the impacted denture (arrows). The end of the lower clasp (arrowheads) seems to be bifurcated toward the right side.

Fig. 2. The removed denture has a protruding clasp on one side and a buried clasp on the other side.

died 12 days after the accidental swallowing. The removed denture, which was composed of 10 teeth and a protruding clasp, was not broken (Fig. 2).

2.2. Autopsy findings

A judicial autopsy was performed 1 day after death on the suspicion of malpractice by the doctor who initially examined the patient. The body was 168 cm in length and weighed 46.5 kg. Several petechial hemorrhages were present in the palpebral conjunctiva. The brain swelled and softened grossly with foraminal herniation and bilateral transtentorial herniation. Specific findings, including an obsolete cerebral hemorrhage, were not unclear due to the influence of malacia in global brain ischemia. The heart weighed 370 g, and coagulated blood was identified in the four chambers. No evidence of coronary stenosis or occlusion or of myocardial ischemia was confirmed, although arteriosclerosis on the left coronary artery was confirmed. The right and left lungs weighed 420 g and 380 g, respectively, and both showed moderate congestion and poor aeration. A longitudinal laceration of the mucosa with an abscess was apparent, ranging from the right pyriform sinus to the right side of the cervical esophagus (Fig. 3); however, extensive mediastinitis was not observed.

2.3. Histological examination

In the lungs, there were patchy areas of inflammatory cell infiltration with alveolar hemorrhage and effusion indicating bronchopneumonia, a few foreign body giant cells and focal organization (Fig. 4). A localized submucosal abscess without distinct organization was observed around the mucosal laceration.

3. Discussion

Denture swallowing or aspiration has been reported in many cases in the adult population; hence, it is not an uncommon incident for elderly adults [1,6]. The most common age of adults with dentures impacted in the esophagus is 60 years [7], and in the majority of reported cases, subjects have brain disorders such as dementia, cerebral hemorrhage sequela, schizophrenia, brain infarction, or cerebral palsy [8]. In the present case, the subject also had hemiplegia due to cerebral hemorrhage sequela; however, he was slightly younger than the most frequent age for such cases and hadn't suffered from dysphagia.

Although small dentures without clasps usually pass through the alimentary canal to the anus [2,7], partial dentures with sharp

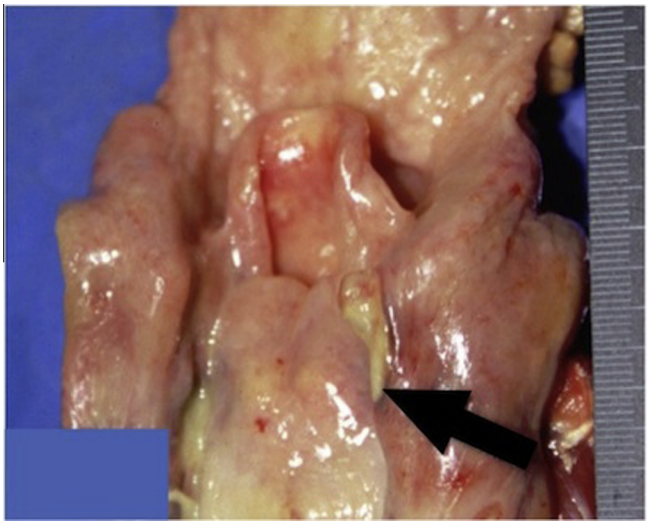

Fig. 3. An autopsy image of the hypopharynx and cervical esophagus shows the laceration ranging from the right pyriform sinus to the right side of the cervical esophagus (arrow).