

Case Report

Accidental swallowing of dentures: case report and literature review

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ABSTRACT

Unintentional ingestion of dentures is relatively common. Several factors have been implicated in increasing the risk of accidental denture swallowing including neurological impairments, dementia, cerebral hemorrhage, intoxication, and learning difficulties. This paper will aim to discuss a case and review the literature on accidental ingestion of dentures. The paper involved reviewing a case of accidental denture ingestion by a 34-year-old male patient. The patient ingested his dentures while eating ice cream. He displayed no signs of respiratory distress and reported difficulty ingesting solids, nausea, and a feeling of something lodged in his throat. X-rays revealed an increase in the anteroposterior diameter prevertebral space. The dentures were removed by direct laryngoscopy with the aid of optical foreign body removal forceps. The case and the literature review revealed that denture ingestion can occur when engaging in high-risk activities such as falls, eating, anesthesia, drinking, and sleeping. The site of denture impaction determines the signs and symptoms that the patient will present. Complications associated with denture impaction may include necrosis, bleeding, perforation, and obstruction. Assessing the patient involves considering psycho-neurological deficits, the possibility of mental health problems, oral assessment, the nature and dimensions of the ingested denture, and the presence of complications. Treatment typically involves wait-and-watch, endoscopy, or surgery. Accidental ingestion of dentures can constitute a medical or airway emergency that should be managed promptly. The management of such patients should involve considerations of the site of ingestion and the possibility of complications.

Keywords: Accidental, Swallow, Dentures

INTRODUCTION

One of the risks of wearing dentures is the possibility of swallowing them. Unintentional ingestion of dentures is relatively common, especially among the elderly.¹ Several factors have been implicated in increasing the risk of accidental denture swallowing including neurological impairments, dementia, cerebral hemorrhage, intoxication, and learning difficulties.^{2,3} Individuals that regularly sleep with their false teeth in situ are also at an elevated risk of accidental denture swallowing. People may wear dentures overnight due to the lack of knowledge about the risk of swallowing, habit, ease, communication reasons, and for cosmetic purposes. In addition to the risk of swallowing, there is also the risk of aspirating partial dentures into the

lungs which could lead to impaired respiration.⁴ Accidental swallowing of dentures can lead to pharyngeal denture impaction which poses the risk of choking and is potentially life-threatening. Pharyngeal denture impaction is a medical emergency that requires prompt diagnosis and management.⁵ The symptoms of the presence of foreign bodies in the upper airways and esophageal include swallowing problems, throat pain, persistent harsh cough, impaired respiration, foreign-body sensation, and unusual voice quality.^{2,6}

Swallowed or missing dentures are commonly reported alongside these symptoms. In such cases, the possibility that the dentures have been swallowed should be considered until the presence of a foreign body is ruled out

via medical imaging. Radiographic evaluation is often needed in cases where the presence of a foreign body is suspected. The problem is that the popular acrylic dentures are radiolucent and may not be easily detected using standard X-ray.⁷ Moreover, if the dentures are made up of radiopaque elements such as metal clasps, they may be completely overlooked. Thus, in cases where the patient's symptoms persist even after a non-diagnostic X-ray or an insignificant oral exam, it is imperative to carry out direct visualization in conjunction with otolaryngology. Esophageal or bronchial visualization may be needed in cases where the foreign body is not visible during the examination as it may have descended below the pharynx.⁵

Swallowed or inhaled dentures is a multidisciplinary problem that spans emergency medicine, otolaryngology, anesthesiology, psychiatry, dentistry, neurology, surgery, and endoscopy. From the perspective of anesthesiologists, surgeons, and otolaryngologists, ingested dentures are foreign bodies to either the respiratory or the gastrointestinal system.⁵ On the other hand, dentists view the ingestion or aspiration of dentures as a complication of the dentures. The multidisciplinary nature of denture ingestion makes it quite different from other forms of foreign bodies. Consequently, collaborative decision-making may be crucial in the prevention, early diagnosis, and management of denture ingestion or aspiration. Statistics show that almost 4 out of 5 ingested foreign bodies pass out through the gastrointestinal tract while the remaining can cause impaction at different levels. Moreover, the presence of complications is influenced by the duration and location of impaction.⁸ Denture impaction often occurs at the esophagus though it can also occur in the small bowel in rare cases.⁹ Denture impaction at different parts of the gastrointestinal tract can lead to various surgical complications including bleeding, obstruction, perforation, and penetration of neighboring organs. However, of these complications, bleeding and obstruction are the most common while penetration and obstruction are rare. This paper aims to discuss a case and review the literature on accidental ingestion of dentures.

CASE REPORT

A 34-year-old male presented to the emergency department of a model 3 hospital with the inability to eat, nausea, and drooling. It was reported that the patient had ingested his dentures nearly four hours prior while eating ice cream. The patient, who is an ex-intravenous drug use (IVDU) and a smoker, had his dentures fitted due to poor dentition. He displayed no signs of respiratory distress. The patient reported feeling something in his throat, an inability to ingest solids, and nausea. His bloodwork was unremarkable. An X-ray of his chest and neck that were taken before being referred to the facility revealed an increase in the AP diameter of the prevertebral space in neck films. Flexible laryngoscopy was carried out to displace the pooling of saliva in the left pyriform fossa and the tip of the dentures. The patient was placed under general anesthesia followed by direct laryngoscopy and

the removal of dentures from the hypopharynx and cricopharyngeal region using optical forceps. The patient's postoperative recovery was uneventful and he was able to resume a normal diet after six hours.

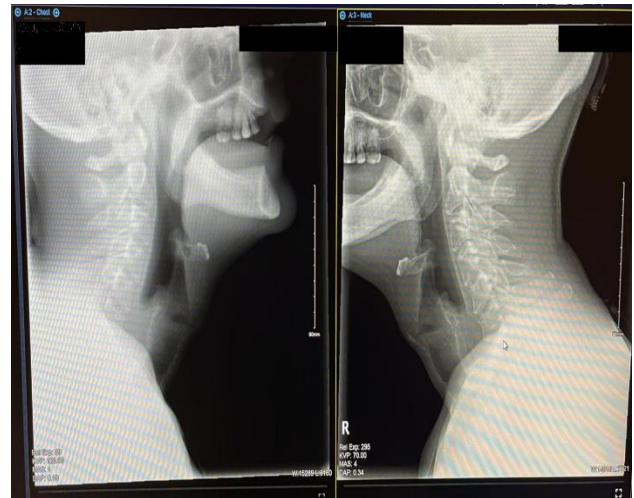


Figure 1: X-ray neck lateral view.



Figure 2: Flexible laryngoscopy.

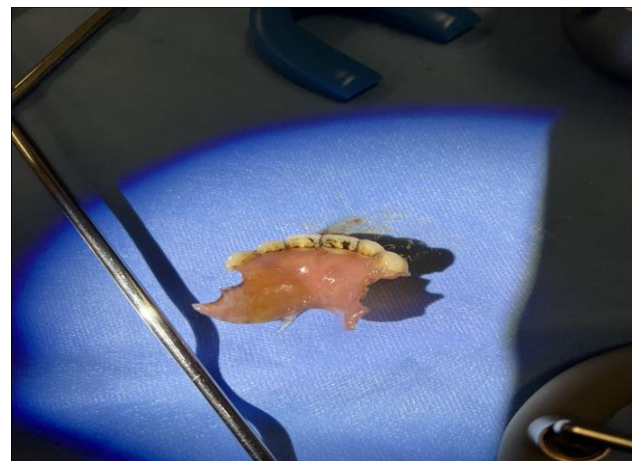


Figure 3: The removed denture.

DISCUSSION

The risk of swallowing dentures is high in patients that are unaware of the value of denture change, use compliance, and regular checkups. Dentures are medical devices employed to improve mastication, aesthetics, articulation, and self-esteem. Thus, it is imperative to ensure that each patient that has dentures is aware of the potential risk of ingestion and takes the relevant steps to minimize this risk. The patient in this case did not have any other risk factor for denture ingestion. He did not have a history of acute disorders of consciousness. However, denture ingestion occurred during one of the high-risk activities that include sleep, drinking, anesthesia, falls, and eating. The patient was eating ice cream when he accidentally ingested his dentures.

Impaction site

The esophagus is the most reported site of denture impaction. Impaction of dentures or any other foreign body in the gastrointestinal tract can result in angulations, stenoses, and constrictions.⁷ The constriction of the esophagus due to denture impaction plays a major role in the clinical presentation of this problem. Both removable and fixed dentures can be ingested. However, most cases of accidental denture ingestion involve removable dentures. Permanent dentures can be dislodged by trauma such as a fall. The clinical presentation of denture impaction depends on the site and the associated complications. Some of the complications that may arise from denture impaction include perforation, necrosis, bleeding, and obstruction. These complications were absent in this case as the patient was able to resume a normal diet six hours after the removal of the denture.

Assessment and diagnosis

Diagnosis of denture ingestion requires thorough and attentive history taking. In some cases, the patient may not be mentally or neurologically competent to notice that he or she has ingested a denture. The patient in this case was competent enough to notice and remember not only the ingestion of the denture but also the approximate time when it occurred and the activity that led to the ingestion of the denture. Thus, there was no need for a more thorough history that would have provided information on the possibility of cognitive disorders and/or altered mental status. An oral exam is also vital in the diagnosis of denture ingestion. The oral exam can provide evidence of a missing denture and possibly additional information on the shape and size of the ingested denture.⁷ The value of an oral examination is even higher among patients with psychiatric or neurological disorders.

Next, it is imperative to assess the ingested denture. The assessment may focus on the dimensions, configurations, materials used, and type. Such an assessment involves considering whether a whole or partial denture was ingested and whether the denture was removable or fixed.

Assessing the nature of the ingested denture may provide some insights into the potential site of impactions, complications, the suitable treatment modality, and the value of radiology in diagnosing the problem.¹⁰ Most if not all the reported cases of swallowed dentures involve partial dentures and typically involve removable dentures. The patient in this case fits in both cases as the denture was partial and removable.

Unlike in other cases where X-rays may be non-informative, the X-rays used in this case were informative (Figure 1). In cases where the materials used in the dentures are radiolucent, X-rays may not provide information of any diagnostic value. However, even in such cases, air entrapment around the denture and the local inflammatory response can be observed via X-rays. In cases where X-rays may not be beneficial, as is the case when dealing with acrylic dentures, computed tomography (CT) scans and even magnetic resonance imaging (MRI) can be used. The challenge in using these alternatives is their accessibility in an emergency department. The X-rays that were used for diagnosis, in this case, revealed that the prevertebral space AP diameter was increased. Thus, the X-rays, in this case, were valuable in providing valuable diagnostic information about the site of denture impaction.

The signs and symptoms that the patient presented in this case also provided some insights into the site of impaction. The patient presented nausea, inability to swallow food after chewing, and drooling. These signs point to the impaction of the swallowed denture in the upper gastrointestinal tract.

Treatment

There are three approaches to managing the accidental ingestion of dentures the first being the wait-and-watch approach. The approach is used when the dimensions of the ingested denture are small. Moreover, the approach assumes that the denture is not long, pointed, or with sharp edges which would lead to trauma in the gastrointestinal tract. The other two approaches to managing denture ingestion are endoscopy and surgery.⁷ Endoscopy, the modality of choice, is not always possible. Endoscopy should not be performed if the removal of the denture presents a high risk and when there is evidence of either primary or secondary complications.

Hypopharyngoscopy and direct laryngoscopy can be used to remove foreign bodies that impact in the hypopharynx. In this case, flexible laryngoscopy was employed (Figure 2). When complications arise, such as perforation or the failure of endoscopic removal, open surgery via a transcervical approach should be employed. Dentures that are impacted in the esophagus can be removed successfully using either flexible esophagoscopy or endoscopy.⁶ If these methods fail, then open surgery is indicated. Some of the surgical procedures that can be carried out include esophagectomy, transthoracic esophagostomy, or transcervical esophagostomy. In this

case, rigid esophagoscopy was used which allowed the removal of dentures from the cricopharyngeal region using optical forceps. Open surgery was not required.

Had the dentures impacted the small or larger bowel, it may have been removed endoscopically or by surgery depending on the presence of complications or the dimensions of the denture.¹¹ It is imperative to note that the gold standard for the removal of dentures impacted in the upper gastrointestinal tract in the absence of complications is endoscopy. The presence of complications necessitates surgery. The wait-and-watch approach is employed for denture impaction in the lower gastrointestinal tract in the absence of complications. The success of the treatment approach used in the management of denture ingestion is dependent on early diagnosis, prompt decision-making, and timely access to treatment. Poorly fitted dentures can affect the patient's swallowing and speech in the future. Thus, it is imperative that the patient schedule a dentist visit to determine whether the denture should be replaced or adjusted to prevent other complications that may arise from the use of a poorly fitting denture. The picture of the removed denture is presented in Figure 3.

Prevention

Prevention of denture ingestion involves the use of pre-emptive measures aimed at identifying those that are at risk of denture ingestion. First, dentists need to identify patients that are at risk of denture ingestion, for instance, patients with neurological problems that use dentures. Such patients should then be educated on the best practices in the use of removable dentures. Secondly, dentists need to recommend checkups for dentures. The patient in this case should also have been referred to a dentist to address the missing denture part and check on other parts of the dentures to ascertain their integrity. Moreover, patients that observe that their dentures have loosened should be encouraged to visit their dentists. This information should be furnished to all patients that are fitted with dentures or are provided with removable dentures. In cases, where the ingestion of the dentures was intentional, psychiatric assistance should be provided to the patient.

CONCLUSION

Dentures are vital medical equipment that are fitted or given to patients to aid in chewing, speaking, and improving their overall appearance. However, dentures can be ingested either accidentally or intentionally. Depending on the site of impaction, the ingestion of a denture may constitute a medical emergency. The signs and symptoms of denture impaction depend on the site. The treatment modality employed is also dependent on the site. A wait-and-watch approach, endoscopy, and surgery are all valid treatment modalities that are dependent on the risk posed by the denture and the presence of other

complications. Accidental denture ingestion constitutes a medical emergency. Early diagnosis and urgent treatment are of critical value in the management of swallowed dentures.

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