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## Case Report

# Successful esophagotomy after failed attempts of esophagoscopy retrieval of impacted denture <sup>☆</sup>

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## ABSTRACT

Ingested foreign bodies, although fairly common among children, can present in individuals of all age. Most common risk factors for such cases in adults include psychiatric illness, alcohol abuse and ill-fitting dentures. Most of the ingested foreign bodies pass through the gastrointestinal tract but intervention maybe required in case of impaction, obstruction or perforation. Foreign bodies mostly tend to get impacted at anatomical constrictions like cricopharyngeus, aortic arch and lower esophageal sphincter. We present a rare case of impacted denture in esophagus which could not be retrieved despite multiple esophagoscopy retrieval attempts leading to removal by successful esophagotomy. Investigations including X-ray and rigid esophagoscopy confirmed the presence of denture with its hooks impacted in the esophageal wall at the level of C6-C7 vertebra. Majority of the foreign bodies can be removed by flexible endoscopy or esophagoscopy but due to its impaction in esophageal wall these techniques were unsuccessful. Therefore, multidisciplinary team decided to opt for an esophagotomy with transcervical approach. Successful esophagotomy was performed with the retrieval of sharp hook like body. Our case underscores the importance of early surgical intervention in case of failed attempt to remove the foreign body through minimally invasive techniques to prevent complications in form of perforation and mediastinitis.

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## Introduction

Ingested foreign bodies in the esophagus, although more common in children, can occur in all age groups [1]. In children the commonly ingested foreign bodies include coins and batteries while in adults and elderly, these are meat, fish bones,

and impacted dentures [2]. Risk factors in adults include psychiatric illness, mental retardation, alcohol abuse, and ill-fitting dentures [3]. Although most the ingested foreign bodies can pass through gastrointestinal tract on their own, intervention is required in 10-20 percent of cases [4]. Complications in these cases may include impaction, perforation, and obstruction.

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**Fig. 1 – Metal frame of the partial denture at the level of the C6-C7 vertebra.**

While an impacted foreign body is an ENT emergency, dentures can be misdiagnosed in 47 percent of cases [5]. Early management leads to a significant decrease in complication rates and shorter postoperative duration of stay in the hospital.

### Case presentation

A 40-year-old male presented with a history of accidentally ingesting his artificial incisors when he was having breakfast 2 days back. The patient felt something fall into his throat as he took a bite and started having a constant foreign body sensation in his chest afterwards. Patient had been unable to eat since the denture passed into the throat. On presentation, patient had complaints of dysphagia and odynophagia since the ingestion. However, there was no respiratory distress or fever. Patient had stable vital signs. Initially, the patient was presented to the emergency department and subsequently ENT department was consulted. X-ray soft tissue neck lateral view was done which showed a metal frame of the partial denture at the level of the C6-C7 vertebra as shown in Fig. 1.

Indirect Laryngoscopy was unremarkable. Rigid Esophagoscopy was done which showed a partial denture inside the lumen of esophagus just below the level of cricopharyngeus, but its sharp hooks could not be seen which indicated their likely impaction in the wall of the esophagus. Consequently, attempts at esophagoscopy removal were unsuccessful.

The surgical department was consulted for further management. A multi-disciplinary team meeting was held involv-

ing surgical, ENT, radiology and anesthesia departments. The meeting decided to retrieve the foreign body through an open esophagotomy. Esophagotomy was performed through a trans-cervical approach. Open esophagotomy was done and enterotomy was closed using vicryl 3/0 interrupted sutures in single layer. Patient was kept NPO for 1 day, sips allowed on second post-op day and the drain removed on fourth post-op day. There were no complications in the post-op period and the patient was discharged after being kept under observation for 1 week. Operative findings included a hard hook-like foreign body in mid esophagus (cervical part) as shown in Figs. 2 and 3.

### Discussion

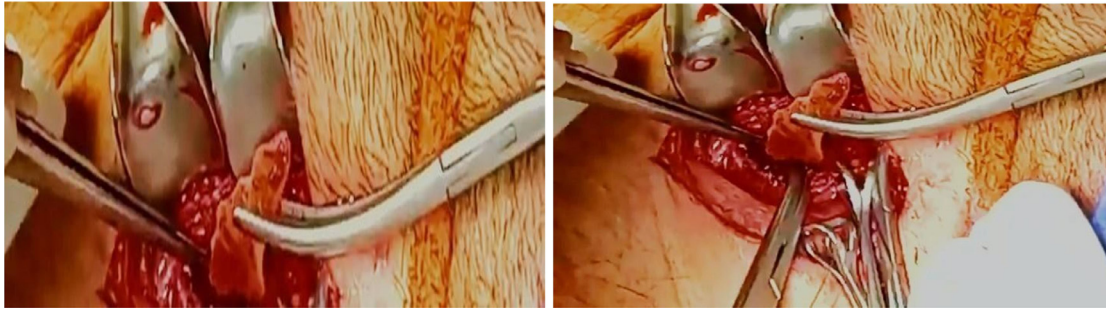
Foreign bodies tend to be impacted at the sites of natural constrictions. These sites include cricopharyngeus, which is the narrowest part of the esophagus and the most common site of impaction of a foreign body, other constrictions include aortic arch, left main bronchus, and lower esophageal sphincter [1–3].

Common presenting complaints with a history of foreign body ingestion include discomfort, foreign body sensation, dysphagia, odynophagia, retrosternal pain, sore throat, retching, and vomiting [1–3]. Another case series reported dysphagia and tracheal tenderness to be the most common symptoms of upper esophageal denture impaction [4]. Patients can present with clinical signs and symptoms suggestive of respiratory compromise caused by tracheal compression i.e. choking, stridor, and dyspnea [1].

Similarly, a patient with a history of ingestion of a sharp foreign body can present with features suggestive of esophageal perforation such as fever, neck swelling, chest pain, tachycardia, and subcutaneous emphysema [2]. In this case, the patient who was previously using partial dentures, presented with dysphagia and odynophagia after the accidental swallowing of the denture. No signs or symptoms were suggesting any complications. X-rays with anteroposterior and lateral views can help to detect the presence, site, number, site, size, and shape of ingested foreign bodies [5].

In our patient with a history of ingestion of foreign body, a lateral soft tissue neck radiograph is the initial investigation of choice [6]. On lateral neck radiograph, although direct visualization of foreign body can be seen, however, there are certain indirect features on this view which suggest the presence of the foreign body: prevertebral soft tissue swelling, loss of cervical lordosis, and column of air in the proximal esophagus [5,6]. Moreover, plain radiographs can also detect perforation by the presence of free mediastinal or peritoneal air [2].

Studies have shown that certain foreign bodies are not easily identified on a plain radiograph. These include fish bones, chicken bones, glass, plastic, wood, thin metal items, and non-bony food bolus [2]. Multidetector CT scans can identify such foreign bodies with a sensitivity of approximately 97% [7]. CT scan with IV contrast can reveal certain complications such as abscess, mediastinitis, and fistula formation [1]. CT scan was unnecessary in this case as the denture was visible on the radiograph. Most dentures are made from Polymethylmethacry-



**Fig. 2 – Hard hook like foreign body found in mid-esophagus.**



**Fig. 3 – Removed denture.**

late (PMMA) plastics, which are radiolucent [8]. Some dentures may contain a combination of materials such as a metal frame in our case, which is visible on an X-ray film.

In a patient with a history of foreign body ingestion, it is mandatory to check the airway patency systematically [1]. In case of airway compromise, it requires early management with high flow oxygen and airway maintenance with an endotracheal tube [2]. After securing the airway, an ENT surgeon should perform a rigid esophagoscopy under general anesthesia to retrieve the foreign body [9]. If the patient has no airway compromise, further management is determined by the type of foreign body i.e. hard or soft one [9].

A soft foreign body such as food-bolus impaction can be managed with medical therapy which includes hyoscine butyl bromide. If it fails to progress the FB into the stomach, endoscopy is the definitive treatment. Methods like bougienage and Fogarty catheter can be considered only for some cases with smooth foreign bodies [10]. If a patient with a soft foreign body is asymptomatic and clinically well, then the patient can be observed for 24 hours for spontaneous passage but failure to pass after this is an indication for endoscopic removal [2]. Failure to remove a foreign body that has been impacted for more than 24 hours carries an increased risk of complications such as esophageal perforation, mediastinitis, retropharyngeal abscess, and Porto-esophageal fistula formation [11].

Hard foreign bodies, especially sharp and pointed ones require urgent removal within 2 hours [1–5]. Delayed removal is associated with a high complication rate [12]. An impacted Button battery can cause erosion and thus requires prompt removal [1,2].

The majority of foreign bodies in adults can be removed with flexible endoscopy under conscious sedation [1,2]. Rigid esophagoscopy requires general anesthesia and is more suitable for impacted foreign bodies at the upper esophageal sphincter. It also provides airway protection [2]. A meta-analysis of data suggests no statistically significant difference in efficacy and complication rate between these 2 [12]. A more advanced technology is flexible transnasal oesophagoscopy (TNO) used by ENT surgeons [9]. A small calibre flexible videoscope is used to evaluate esophagus during which foreign bodies can also be removed. Olympus (Japan) manufactures ENF-VT3 which is the first rhino-laryngo videoscope in the world to incorporate 4 direction angulations. It features a slim outer diameter of 4.9 mm, and an inner diameter of 2.0 mm. Accessory instruments used include grasping forceps, biopsy forceps and electrosurgical devices [13]. TNO is superior to other endoscopic techniques because it can be done as an office procedure under topical anesthesia. The skills required to perform TNO are not available commonly and enough data is not available to compare it with the aforementioned endoscopic techniques [9]. If endoscopic removal fails, surgery is the treatment of choice. It involves open esophagectomy via transcervical approach as in this case. There are certain other indications for open surgery including complications of FB ingestion such as perforation, fistula formation, retropharyngeal or parapharyngeal abscess, mediastinitis, empyema, and FB migration into adjacent structures [14]. No significant post op complications have been reported yet after open esophagectomy [10].

## Conclusion

Literature review and experience from this case conclude that surgical rather than endoscopic approach should be considered as the treatment of choice in the removal of an impacted denture where the wires pierce the esophageal wall. Further, early referral of such a patient to a healthcare setup where

emergency surgical management is available will spare the patient from severe complications.

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### Patient consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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