Brunei International Medical Journal
B I M J

Case Report
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Delayed Presentation of Oesophageal Perforation from Dental Prosthesis

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Abstract

Dental prosthesis ingestion in adults is uncommon, and delayed presentation may complicate diagnosis and management. We report a 39-year-old woman with epilepsy who accidentally ingested a broken dental prosthesis during sleep. She initially presented with a foreign body sensation and underwent laryngoscopy and oesophagogastroduodenoscopy 24 hours after ingestion and these were unremarkable with no foreign body identified. Four days later, she developed dyspnoea, chest pain, and sepsis. Clinical and radiological assessments revealed a massive left pleural effusion, pneumomediastinum, and contrast leakage from the distal oesophagus, consistent with an oesophageal perforation. The patient was referred urgently for surgical intervention and was successfully treated. This case illustrates the diagnostic challenges of radiolucent dental prostheses and the potential for mucosal injury that may not be immediately evident, which can lead to delayed diagnosis or misdiagnosis resulting in severe complications. Awareness and early recognition, appropriate imaging with computed tomography or contrast studies, and high clinical suspicion are critical, particularly in neurologically compromised patients. Prompt diagnosis and intervention are essential to prevent serious complications such as mediastinitis, sepsis, and respiratory failure.

Keywords: Oesophageal perforation; Foreign bodies; Sepsis; Mediastinitis; Hydropneumothorax; Dental prosthesis

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INTRODUCTION

Foreign body (FB) ingestion is less common in adults compared to children,[1] with most FBs passing through the gastrointestinal tract without complications.[2] However, dental prosthesis ingestion is a common endoscopic emergency in the elderly due to reduced oral mucosa sensitivity and poor motor control of the laryngopharynx.[3] The diagnosis of dental prosthesis ingestion can be challenging, as these prostheses are often radiolucent, and complications may present with non-specific symptoms. A high index of suspicion, timely intervention, and prompt referral for surgical management are essential for improving patient outcomes, reducing morbidity, and preventing mortality.

CASE REPORT

A 39-year-old woman with epilepsy presented to the Emergency Department (ED) with FB sensation in her throat. Upon waking, she noticed that her dental prosthesis was broken and missing a part (**Figure 1**) and presumed to have been swallowed. She reported episodes of vomiting but no dyspnoea or chest pain. She initially visited the ED the following morning and underwent laryngoscopy and esophagogastroduodenoscopy (OGDS), both of which were unremarkable and no FB was seen. She was discharged, but on day 4 post-ingestion, her condition worsened with fever, cough, dyspnoea, and chest discomfort, prompting another visit to the ED.

Upon re-presentation, she was tachypnoeic, speaking in phrases, and had a temperature of 37.9°C. Physical examination revealed tachycardia, reduced breath sounds on the left side, and dullness on percussion. Point-of-care ultrasound (POCUS) showed absent sliding signs and a massive left pleural effusion. Blood tests showed a high white blood cell count (19,000/µL; normal range 7 - 11.5 x 10^9). Chest radiograph confirmed the presence of massive left pleural effusion with pneumomediastinum, and a barium swallow study revealed contrast leakage from the distal oesophagus into the left thoracic cavity (**Figure 2**).

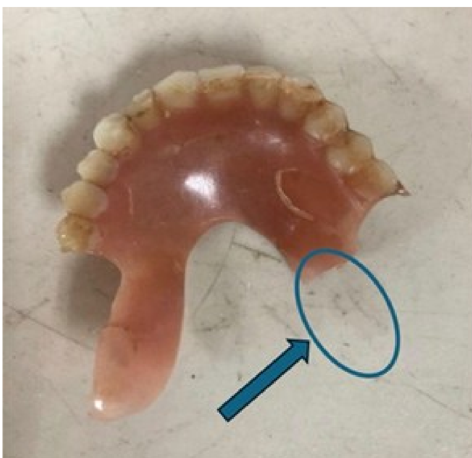

Fig. 1: A broken denture with a missing piece.

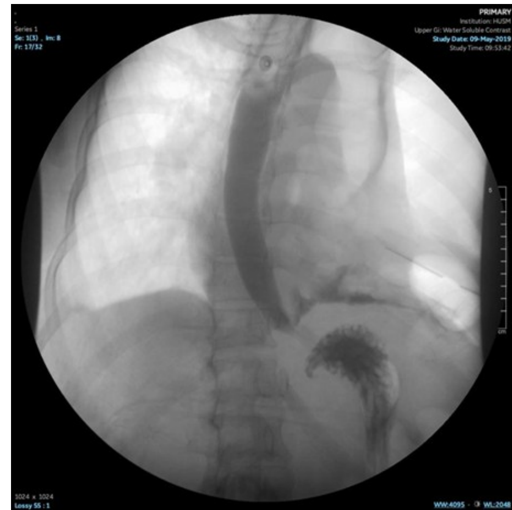

Fig. 2: Leakage of contrast from oesophagus to the left thoracic cavity in barium swallow study.

A computed tomography (CT) scan demonstrated a postero-lateral perforation of the left oesophageal wall at the T10 level with left hydropneumothorax and bilateral pleural effusion (**Figure 3**).

The patient was treated conservatively, and started on total parenteral nutrition. She later underwent a left video-assisted thoracoscopy and decortication for unresolved left hydropneumothorax.

Interestingly, 34 days after presentation the broken piece of the dental prosthesis was passed out.

She was discharge well after 40 days of admission.

DISCUSSION

Denture ingestion is more prevalent among the elderly due to edentulism, making dental prostheses a common cause of FB ingestion in adults. Risk factors include advanced age, neurological disorders such as stroke, Alzheimer's disease, Parkinson's disease, and altered mental status from drug or alcohol use.[4–6] Dentures, being sharp and variably shaped, are prone to impaction in the aerodigestive tract.[7] The duration and site of impaction is critical, with oesophageal perforation being a serious complication.[7–9]

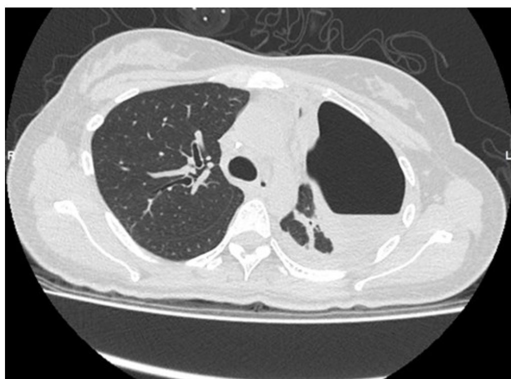

Fig. 3: CT image in lung window demonstrate air fluid level in left hemithorax suggestive of hydropneumothorax with adjacent collapsed lung.

Oesophageal perforation, though rare, carries significant morbidity and mortality, especially with delayed diagnosis.[10] Nonspecific symptoms and the radiolucency of many dentures hinder early detection. CT scanning, with high sensitivity (100%) and specificity (91%), is the preferred imaging modality, especially when complications such as pneumomediastinum or pleural effusion are suspected.[11] Fluoroscopy is sensitive but CT offers more comprehensive evaluation in emergencies.

Plain radiographs are typically used first but may not detect radiolucent materials like polymethyl methacrylate (PMMA).[12–13] POCUS, a valuable bedside tool, helps assess pleural effusions and detect extravascular origins such as pulmonary effusion of extravascular origin (PEEVO). POCUS can be useful to assess the cervical oesophagus if there is suspected FB in this area. POCUS has also been used to diagnose achalasia. It is especially useful in unstable patients or where CT is delayed, allowing rapid evaluation for complications like pneumomediastinum and intra-abdominal free fluid.[14]

Literature search revealed eight published case reports of oesophageal perforation secondary to denture ingestion, as summarised in **Table I**. Most involved elderly patients with comorbidities with diagnostic delays that ranged from hours to 12 days. Multimodal imaging was often required due to varied clinical

Table I: Summary of case reports of oesophageal perforation from ingested dental prostheses.

Case report (year of publication)	Age	Presenting symptoms	Preceding event	Time to diagnosis	Imaging modalities	Intervention	Findings
Von Rahden BHA (2002)[14]	53	Epigastric pain, fever	Accidental denture ingestion following a horse-related facial injury	5 days	Pharygo-oesophagography, CT thorax	Endoscopic removal, mediastinal drain, antibiotics	Oesophageal perforation with mediastinitis
Singh RK (2007)[15]	57	Mild pain on swallowing	Accidental denture ingestion	12 days	Chest radiograph, CT thorax	Thoracotomy, oesophageal repair and chest tube	Oesophageal perforation with pulmonary/ mediastinal complications
Tihan D (2011)[16]	32	Foreign body sensation after swallowing denture	Accidental denture ingestion during sleeping	N/A	Chest radiograph, Oesophagography	Thoracotomy, denture removal, primary repair	Oesophageal perforation with fistula
Mohanty HS (2016)[17]	53	Chest pain, dysphagia, odynophagia, dyspnoea	Accidental denture ingestion	4 hours	Chest radiography, CT thorax	Trans-gastric operation, enterostomy	Oesophageal perforation
Giles AE (2021)[18]	60	Drooling, dysphagia, neck pain	Accidental denture ingestion due to improper adhesive	Not listed	Chest radiography, CT thorax	Open neck surgery, oesophageal repair	Oesophageal perforation
Nitta D (2024)[19]	66	Referral for removal from clinic	Accidental denture ingestion	Not listed	CT thorax	Trans-gastric operation	Oesophageal perforation
Perez-Sanchez A (2024)[20]	74	Severe sore throat, dyspnoea	Accidental denture ingestion	72 hours	Chest radiography, CT Thorax	Rigid endoscopy removal	Oesophageal perforation with mediastinitis
Current case, (2025)	39	Dyspnoea, orthopnea and fever	Accidental ingestion of a broken piece of denture during sleeping	5 days	POCUS, Chest radiograph, Oesophagography, CT Thorax	Chest tube, Conservative management, thoracoscopy and decortication of left lung	Oesophageal perforation with mediastinitis

CT - Computed tomography; POCUS - Point of care ultrasound

presentations. Despite the severity, all patients recovered following appropriate intervention.

Preventive strategies include ensuring well-fitting dentures, using adhesives, and regular dental evaluations. Education of healthcare providers and caregivers on risks in vulnerable populations is essential. Radiopaque markers in dentures may aid detection and reduce complications.

CONCLUSION

Early diagnosis and timely intervention are key to improving outcomes in dental prosthesis ingestion and oesophageal perforation as manifestation can be delayed. Identifying high-risk patients especially the elderly and neurologically impaired can reduce delays in treatment. CT imaging remains crucial for diagnosis, while POCUS plays a supportive role in detecting pleural effusions suggestive of perforation. Radiopaque dental prostheses and increased awareness among patients, caregivers, and clinicians can enhance prevention, early detection, and management.

Take-Home Messages

- Delayed presentation of denture ingestion can result in severe complications, including oesophageal perforation and mediastinitis, especially when the prosthesis is radiolucent and initially missed on endoscopy.
- High-risk groups, such as individuals with neurological impairment, cognitive limitations, or poorly fitting dentures, require heightened clinical vigilance and early imaging evaluation.
- CT scan is the most reliable imaging modality for detecting perforation and associated complications, while POCUS can provide rapid bedside assessment of pleural effusion and respiratory compromise.
- Prompt multidisciplinary intervention involving emergency medicine, gastroenterology, radiology, and thoracic surgery is essential for optimal outcomes and reducing morbidity.
- Preventive strategies, including proper denture maintenance, use of adhesives, routine dental review, and incorporating radiopaque components in prostheses, can help minimise delayed diagnosis and complications.

Abbreviations

FB	Foreign body
ED	Emergency department
POCUS	Point of care ultrasound
CT	Computed tomography
PMMA	Polymethyl methacrylate
PEEVO	Pulmonary effusion of extravascular origin

Declarations

All the authors declared no competing interests.

Patient Consent

Written consent was obtained from all patients for publications of the clinical details and accompanying images.

Acknowledgement

None

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