

CASE REPORT

Unusual foreign body impacted in the upper oesophagus: original technique for transoral extraction

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Accepted 16 June 2018

SUMMARY

Foreign body ingestion is a common event; in the adult population, most ingestions occur in patients with mental disability, psychiatric disorders, alcohol intoxication or in prisoners seeking secondary gain. Removal through flexible endoscopy is generally the first-line approach but rescue oesophagotomy may be necessary for foreign bodies impacted in the upper oesophagus. A 27-year-old man was admitted in the emergency room after intentional ingestion of a wooden spherical object with a central hole. A total body CT scan showed that the object was completely obstructing the upper oesophageal lumen but there were no signs of perforation. In the operating room, a Weerda diverticuloscope and a 5 mm 0° telescope were used to visualise the foreign body under general anaesthesia. A standard endoscopic biopsy forceps was passed through the hole of the sphere and was retracted with the jaws open allowing transoral extraction without complications.

BACKGROUND

Foreign body ingestion accounts for about 4% of all emergency endoscopies.¹ Accidental or intentional ingestion of foreign bodies is a frequent event, especially in children. Coins comprise about 70% of all foreign bodies, followed by batteries, toys, food bolus, jewellery and dentures. In the adult population, the majority of ingestions occur in patients with mental disability, psychiatric disorders, alcohol intoxication or in prisoners seeking secondary gain.² The oesophagus is the most common site of impact.^{3–5} Lodgment of the foreign body occurs more frequently in the cervical oesophagus (57%) compared with the thoracic (26%) or distal oesophagus, and the risk of foreign body impaction is greater in the presence of structural or functional oesophageal abnormalities.⁶ The vast majority of the ingested foreign objects pass spontaneously, while 10%–20% require an interventional endoscopic approach; about 1% of the patients will require surgery.^{2 7–10} However, in the setting of intentional ingestion, the rate of endoscopic intervention may be much higher (up to 76%) and so the need of surgical intervention (up to 11%).⁹ The variable morphology of the swallowed objects, site of impaction, clinical presentation and time elapsed since ingestion can make the choice of treatment challenging. Flexible endoscopy is generally the first-line approach for blunt foreign

bodies impacted in the upper oesophagus.⁷ Surgery through a cervical or thoracic approach represents a rescue approach after multiple failed endoscopic attempts.¹¹ We report the complex case of a 2 cm wood sphere impacted in the cervical oesophagus that was successfully removed transorally through a videoassisted approach.

CASE PRESENTATION

A 27-year-old man was admitted in the emergency room after intentional ingestion of a non-specified foreign body. He reported having ingested, for a bet, a wooden sphere that was part of his mother's necklace. Flexible endoscopic removal of the foreign body had been previously attempted in another hospital without success.

On admission, the patient presented with absolute dysphagia, drooling of saliva and neck and chest pain. He appeared anxious and uncooperative, but denied history of psychiatric disorders and use of drugs and alcohol. Vital signs were normal and the patient was afebrile. Laboratory results showed abnormal white cell count ($0.01972 \times 10^9/L$), neutrophils (81.5%) and C-reactive protein (2.6 mg/dL). On physical examination, there was no evidence of neck emphysema. Soon after hospital admission, the patient entered a status of mystical delirium and tried to escape the hospital. Intravenous sedation was therefore necessary to complete the preoperative assessment.

INVESTIGATIONS

A preoperative plain chest radiograph did not show any radiopaque foreign body or pneumomediastinum. A total body CT scan showed a spherical object located at the level of D3 and obstructing the oesophageal lumen. The proximal oesophagus was dilated but there were no signs of perforation, and therefore the patient was taken to the operating room for possible transoral removal under general anaesthesia (figure 1).

TREATMENT

The patient was positioned supine with a pillow under the shoulders and the neck hyperextended. A modified bivalve Weerda diverticuloscope (Storz) and a 5 mm 0° telescope connected to a cold-light source and to a videocamera were used to access the hypopharynx and obtain a manifested view of the operative field on a television screen. Once



To cite: Riva CG, Toti FAT, Siboni S, et al. *BMJ Case Rep* Published Online First: [please include Day Month Year]. doi:10.1136/bcr-2018-225241

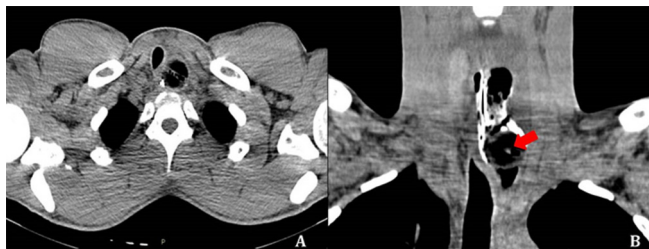


Figure 1 Appearance of the impacted foreign body at preoperative CT scan on axial (A) and coronal (B) plane at D3 vertebral level. The arrow shows the central hole of the sphere bead.

the upper oesophageal sphincter was entered, the valves of the diverticuloscope were opened. A 2.5 cm wooden spherical object with a central hole was visualised 2 cm distal to the sphincter. Manipulation of the sphere with a laparoscopic grasper, separately introduced through the diverticuloscope, caused rotation of the foreign body and allowed to clearly identify the central hole. At this point, a standard endoscopic biopsy forceps was passed through the hole of the necklace bead and was retracted by keeping the instrument jaws open (figure 2). This allowed safe retrieval of the foreign body under direct vision. Postprocedural endoscopy showed an area of mucosal erosion in site of impaction, but no evidence of perforation.

OUTCOME AND FOLLOW-UP

A gastrografen swallow study on postoperative day 1 confirmed a regular transit and no signs of perforation: the patient was allowed a semisolid diet. A psychiatric evaluation on postoperative day 2 confirmed the absence of cognitive impairment and the patient was discharged home the same day. Repeat endoscopy at 1 month follow-up showed a regular oesophageal mucosa.

DISCUSSION

Benign complications related to oesophageal foreign body impaction, such as erosions and ulcers are common, with an incidence ranging from 30% to 50%.^{3 12} On the other hand, severe complications (perforation, obstruction, mediastinitis, bleeding, fistula and foreign body migration through the digestive wall) occur in up to 5% of patients and are related to the shape and sharpness of the ingested object.^{1 11} It has been postulated that age >50 years, positive radiographic findings, location of the foreign body at the level of the cricopharynx or upper oesophagus and type and size of the object are associated with complications.¹²⁻¹⁴ It has been estimated that foreign bodies impacted in the oesophagus for more than 24 hours carry a 14-fold increased risk of perforation.¹⁵ The European Society of Gastrointestinal Endoscopy (ESGE) recommends an emergent (preferably within

2 hours, but at the latest within 6 hours) therapeutic endoscopy for foreign bodies causing complete oesophageal obstruction and for sharp-point objects or batteries lodged in the oesophagus.⁷

There are some features that make our case report unique compared with the literature. First, despite the object had been retained in the oesophagus for 3 days, the patient did not develop perforation but only a mucosal erosion at the site of impaction. Second, we used a Weerda diverticuloscope and a 0° scope connected to a videocamera rather than flexible endoscopy. Third, the presence of a central hole in the wood sphere allowed the passage of standard biopsy forceps, subsequent pull-through with the jaws open and safe transoral removal of the foreign body.

Use of rigid endoscopy for the management of oesophageal foreign bodies was first described by Jackson and Jackson in 1937.¹⁶ Bigler introduced the Foley catheter as an aid for removal of blunt foreign bodies in 1966.¹⁷ In the 1970s, flexible fiberoptic endoscopy was introduced and has since been increasingly used.³ Despite the reported high success rate, the safety of flexible endoscopy has been questioned especially in case of sharp foreign bodies such as dental prostheses. In these circumstances, multiple endoscopic attempts may cause distal migration of the foreign body, intramural perforation or a full-thickness oesophageal tear depending on the size of the object, the expertise of the operator and the number of previous endoscopic attempts.¹¹ Therefore, primary surgical extraction through a left cervicotomy or a right transthoracic approach (thoracotomy or thoracoscopy) is highly recommended in these patients.¹¹ In case of blunt foreign bodies impacted in the upper oesophagus, removal through flexible endoscopy is generally recommended as the first-line treatment. Failure of this approach by an expert operator may require pushing the foreign body into the stomach and then extract it surgically or endotracheal intubation and rigid endoscopy.

The Weerda diverticuloscope is commonly used for the video-assisted transoral treatment of Zenker diverticulum.¹⁸ In our patient, this procedure allowed optimal exposure of the oesophageal inlet and facilitated rotation of the axis of the foreign object; subsequent pull-through with the open jaws of a standard biopsy forceps passed through the necklace hole bead was the key for removal.

Transoral removal of a foreign body ingested and impacted in the upper oesophagus may be technically demanding and requires a tailored approach. In selected patients, especially those with multiple failed previous attempts by flexible endoscopy, transoral extraction using a Weerda diverticuloscope

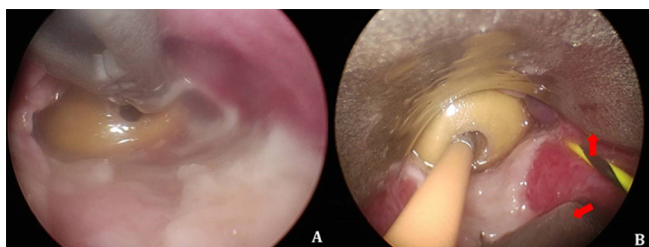


Figure 2 Exposure of the foreign body through the Weerda diverticuloscope. After turning the bead using a laparoscopic grasper (A), a standard biopsy forceps is advanced through the central hole (B). Red arrows show the upper and the lower valve of the diverticuloscope.

Learning points

- ▶ A tailored approach for removal of foreign bodies impacted in the upper oesophagus is advocated according to the characteristics of the ingested object.
- ▶ Rapid intervention for removing impacted foreign bodies in the upper oesophagus is recommended because the incidence of serious complications is directly correlated with the length of impaction.
- ▶ Transoral videoassisted approach using a Weerda diverticuloscope under general anaesthesia provides optimal exposure and safe retrieval manoeuvres of blunt foreign bodies in patients with previously failed flexible endoscopic attempts.

under general anaesthesia provides excellent exposure and safe retrieval manoeuvres and has the potential to avoid surgery.

Acknowledgements We thank Mrs Claudia Alina Croitoru for her expert assistance in the OR. We are also grateful to AIRE (Associazione Italiana Ricerca Esofago) for the kind support.

Contributors CGR, FATT and SS collected the data and wrote the first draft of the manuscript. LB revised the manuscript. All authors approved the final draft.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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