



Removal of a chronically impacted cylindrical esophageal foreign body by innovative fiberoptic endoscopy with a team approach

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PRESENTATION

A 10-month-old female infant had an episode of choking without a clearly witnessed foreign body ingestion. Her mouth was clear, and she was able to take liquids well but no other foods.

She had several medical visits in the community that did not result in imaging until the child was 12 months of age. At that time, and due to shortness of breath, decreased oral intake, and weight loss over the prior 2 months, supine and lateral chest radiographs taken revealed a radio-opaque cylindrical foreign body with a flared lower section in the upper chest region (Fig. 1). She was then referred to our service for management.

WORK-UP

A water-soluble contrast esophagram showed an esophageal cylindrical foreign body at the thoracic inlet with contrast passing through and without evidence of extravasation or fistulization.

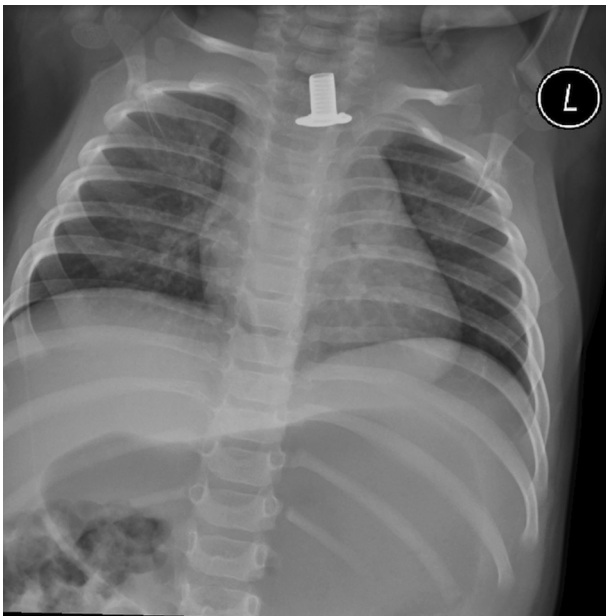


Figure 1. Supine chest radiograph showed a radio-opaque cylindrical foreign body with a flared lower section in the upper chest region.

INTERVENTION

The procedure was performed with the patient under general anesthesia. Two attempts at endotracheal (ET) intubation were made by the pediatric anesthesia team. The first attempt used a 4.0-mm cuffed ET tube, which was too large to pass. On the second attempt, a 3.5-mm cuffed ET tube was successfully placed.

Once the airway was secured, coordinated fiberoptic endoscopic management by pediatric gastroenterology and surgery revealed a cylindrical metallic foreign body lodged in the proximal esophagus (Fig. 2). A pediatric endoscope (5.4-mm outer diameter) could not be passed through the lumen of the foreign body.

The team considered several accessories for foreign body removal, but these were not used because of the following limitations: weak grasp (tripod grasping forceps), suboptimal position with inability to access the foreign body from the side (Roth net), and limited patient size with high risk for traumatic injury (overtube). Ultimately, we decided to pass a biopsy forceps through the lumen

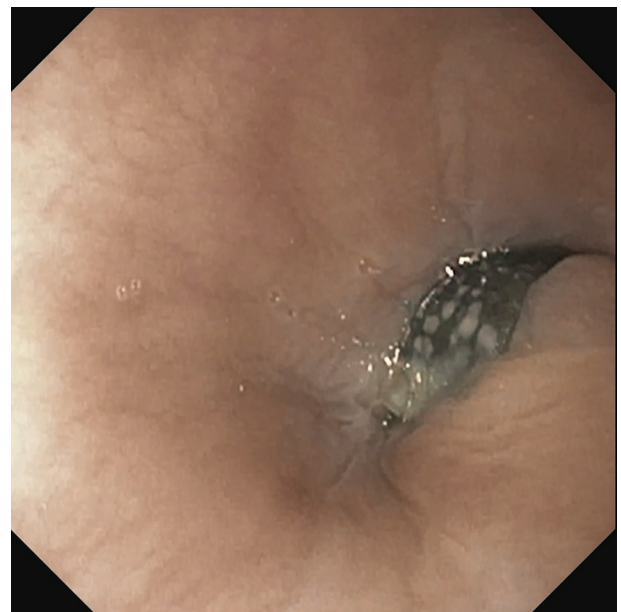


Figure 2. Endoscopy revealed a metallic cylindrical foreign body lodged in the proximal esophagus.

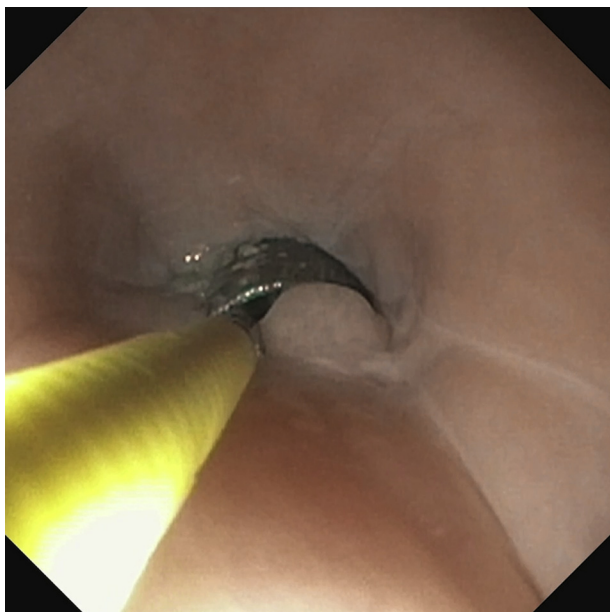


Figure 3. A biopsy forceps is passed through the foreign body lumen and opened to pull the foreign body proximally.

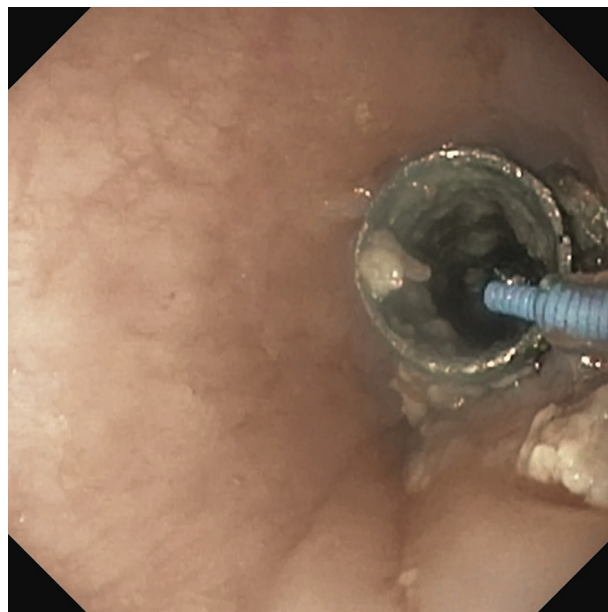


Figure 5. A wire-guided balloon dilator was placed through the foreign body lumen to deploy and inflate the balloon to assist with pulling the foreign body.

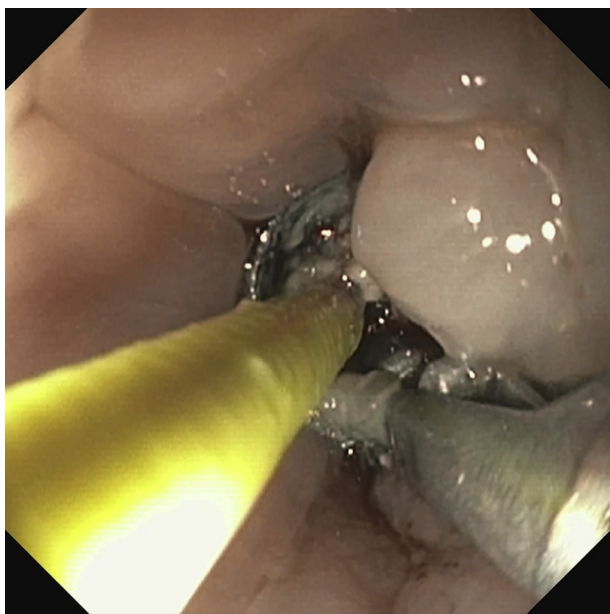


Figure 4. A rat-tooth forceps placed next to the endoscope to grasp the superior edge of the foreign body. The foreign body was partially moved proximally by using both the biopsy and rat-tooth forceps.

of the foreign body; this was opened but failed in attempts to pull the foreign body proximally (Fig. 3).

A rat-tooth forceps was placed by the pediatric gastroenterologist with the endoscope into the upper esophagus to grasp the superior edge of the foreign body (Fig. 4). Both the biopsy and rat-tooth forceps were used to partially move the foreign body proximally in the esophagus, but complete removal was not possible. A wire-guided balloon



Figure 6. Successful removal of a metallic button from a pair of jeans with the assistance of a balloon dilator.

dilator (size 12-13.5-15 mm) was placed through the foreign body lumen, and the balloon was inflated to 12-mm diameter below the foreign body (Fig. 5). The endoscope was removed, with the inflated balloon dilator kept in place. With proper index finger positioning in the hypopharynx and with firm cephalad traction applied, the foreign body was successfully removed (noted to be a metallic button from a pair of jeans, Fig. 6).

Repeat endoscopic reassessment was performed to inspect the esophagus and revealed ulcerated mucosa where the foreign body had been lodged, without evidence of perforation (Fig. 7). A nasogastric tube was placed to allow for enteral nutrition. The patient was admitted overnight for observation. A repeat water-contrast esophagram was conducted the next day,

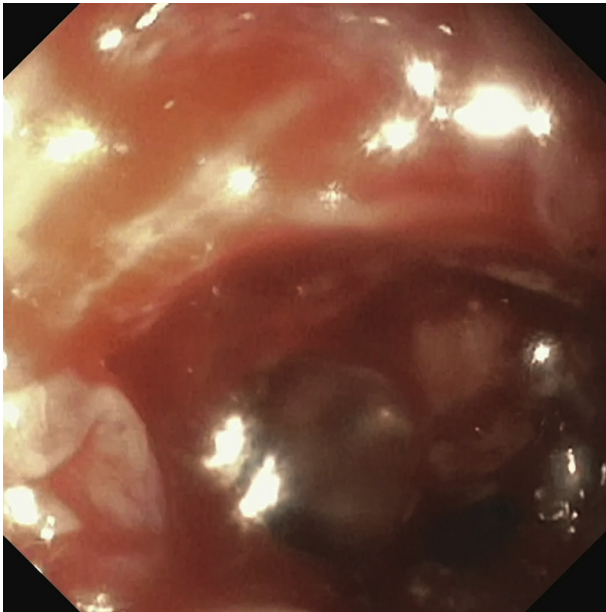


Figure 7. Immediate postremoval endoscopy revealed ulcerated esophageal mucosa where the foreign body had been lodged.

showing no perforation. She was discharged on a soft diet that she tolerated orally.

The patient subsequently developed a short proximal esophageal stricture at the site of lodgment, requiring a few outpatient endoscopic dilation sessions, and is now tolerating a full regular diet orally without restrictions. Follow-up 3 months after her last dilation noted normal oral intake and growth. She did not require any surgical intervention.

CONCLUSION

Foreign body ingestion is common among children, with the majority of ingestions passing the GI tract

spontaneously. Those that are retained chronically can result in significant morbidity. This case demonstrates that endoscopic removal of a chronically impacted esophageal foreign body is possible in an infant without need for surgery (Video 1, available online at www.giejournal.org).

A team approach with both an endoscopist and a surgeon would be ideal to address potential adverse events that can occur. The endoscopist should consider using a variety of maneuvers and accessories. As in this case, an esophageal stricture can occur at the site, which can be managed endoscopically.^{1,2}

DISCLOSURE

All authors disclosed no financial relationships.

Abbreviation: ET, endotracheal.

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