

Endoscopic treatment of esophageal perforation and paraesophageal abscess formation due to foreign body impaction

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ABSTRACT

Although foreign bodies located in the esophagus are not frequently encountered, it is a problem that can cause serious morbidity and mortality, especially if a perforation has occurred. Flexible endoscopy is the preferred therapeutic option for removing foreign bodies in cases of perforation due to its high success rate and low risk of complications. Presently described is the case of a 65-year-old female who was admitted to the hospital with an impacted esophageal foreign body, which was revealed to be a meat bone that had perforated the esophageal wall, accompanied by a paraesophageal abscess formation. Flexible endoscopy was performed in the operating room under general anesthesia and the esophageal foreign body was gently removed with rat tooth forceps and a snare. Purulent abscess fluid was drained from the esophageal perforation site and aspirated through the endoscope. The perforation site in the esophageal mucosa was about 1 centimeter in size and was closed with an endoscopic hemoclip. Perforation due to esophageal foreign bodies may lead to clinical conditions with serious mortality and morbidity. Endoscopic procedures performed by an experienced endoscopist may be appropriate in selected cases and avoid a major surgical operation.

Keywords: Endoscopy; esophageal foreign body; esophageal perforation; paraesophageal abscess.

Introduction

Foreign bodies located in the esophagus can cause serious morbidity and mortality, especially if the perforation is present. The most common foreign bodies are coin and toy parts in children and unbroken foods bolus impaction and bone-fishbone parts in adults. Esophageal perforation is a rare and potentially life-threatening entity with a 20% survival rate.^[1] The first esophageal perforation case which spontaneous rupture by intractable vomiting was reported by Hermann Boerhaave in 1724.^[2] Two hundred

years later, in 1947, Olsen made the first attempts for surgical repair of an esophageal perforation.^[3] Since then, various treatment approaches have been discussed, but there is still no agreement on the standard treatment option.

Esophageal perforation may occur due to a number of different causes. It may be most frequently iatrogenic, spontaneous or caused by trauma, tumors or foreign bodies. Sharp or penetrative foreign bodies are responsible for 80% of cervical perforations and for 9–35% of all esophageal perforations.^[4] The most common early symp-



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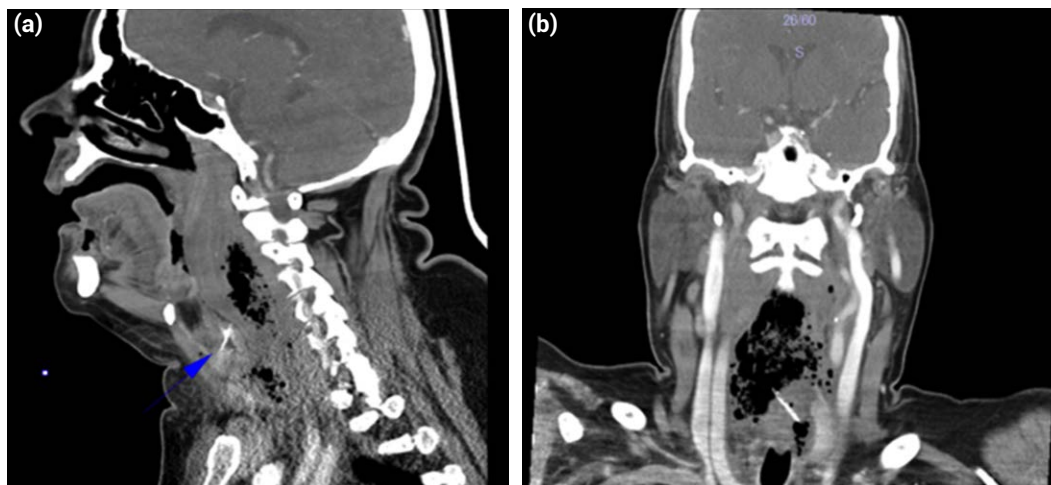


Figure 1. (a) Computerized tomography scan shows that large foreign body, presumably a meat bone (blue arrow), horizontally impacted in the cervical esophageal region. (b) Computerized tomography scan shows that an air-fluid collection and abscess formation in the paraesophageal-retropharyngeal region.

toms and signs are vomiting (84%), thoracic pain (79%), dyspnea (53%), epigastric pain (47%) and dysphagia (21%) respectively.^[5] In suspected cases of esophageal perforation, a computerized tomography (CT) scan of the neck and thorax are mandatory. It clearly shows the pathology compared to the plain lateral cervical radiography. CT scan also provides more detail information regarding the perforation site, abscess formation and relationship of great vessels. Early endoscopic examination and management is the first choice of the treatment of esophageal foreign bodies because it is quite safe and effective.

Case Report

A 65-year-old female patient admitted to the emergency department of our hospital with mild, sharp, intractable neck and chest pain and dysphagia. She had complaints of sudden swallowing difficulty after solid meat ingestion 3 days ago. Also, she was complaining of a persistent

sore throat and dysphagia for 2 days. During the physical examination, fewer, subcutaneous cervical and thoracic emphysema were found. Blood examination of the patient revealed leukocytosis ($WBC=21.000/mm^3$), blood glucose level was 140 mg/dL, creatinine was 1.2 mg/dL and urea was 54 mg/dL. A computerized tomography scan of the neck and chest was performed in the emergency department and it demonstrated a large foreign body—presumably a meat bone—horizontally impacted on the cervical esophageal wall about 2.5 cm below the cricoid cartilage (Fig. 1a). Furthermore, large subcutaneous emphysema was detected in the supraclavicular fossa of the cervical region. We also established an air-fluid collection and abscess formation in the paraesophageal-retropharyngeal region in the CT scan (Fig. 1b). Representative CT scan results of the patient are shown in Figure 1a and b.

Flexible endoscopy showed the presence of the foreign body that was stuck transversally in the distal cervical



Figure 2. (a) Endoscopic view of the meat bone that was stuck transversally in the distal cervical esophagus. (b) A large meat bone mobilized and gently removed with a rat tooth forceps. (c) Perforation site about one-centimeter size in esophageal mucosa was closed with endoscopic hemoclips.

esophagus (Fig. 2a). Unfortunately, it could not be mobilized and we did not succeed to remove because of the patient's discomfort. Upper flexible endoscopy was repeated in the operation room under general anesthesia and identified more accurately a large meat bone 3 cm in size below the cricoid cartilage in the esophageal lumen. It could be mobilized and removed gently with a rat tooth forceps and snare (Fig. 2b). Esophageal perforation site about 1 cm diameter was also visualized. Approximately 150 mL of purulent abscess fluid drained from the esophageal perforation site and aspirated with endoscopy. Perforation site in esophageal mucosa was closed with an endoscopic hemoclips (Fig. 2c). Antibiotics, antacids, and analgesic were used for medication. Oral feeding was stopped for the next 72 hours. A subsequent barium esophagogram showed no evidence of contrast extravasation on the 4th day. The patient was discharged from the hospital on the 8th day with oral antibiotics and fluid-soft diet. In the 3rd month of her follow up, endoscopic control and CT scan showed complete healing.

Discussion

Major complications such as mediastinitis, paraesophageal abscess, pneumomediastinum occur as a result of esophageal perforation; in particular, sharp foreign bodies, such as fish and meat bones are more likely to cause perforation. The most common symptom of an esophageal injury is localized chest pain along the course of the esophagus and dysphagia. Chest X-ray may be normal in some cases and is not adequate to detect the retained esophageal foreign body. Computerized tomography may reveal perforation-related complications, such as air, fluid collection, or abscess in the pleural space, pericardium, or mediastinum.^[6]

According to the American Society of Gastrointestinal Endoscopy, foreign body management is divided into three categories: emergent, urgent, and nonurgent endoscopic removal.^[7] Emergent cases include esophageal obstruction and perforation, disk battery in the esophagus, and sharp pointed objects in the esophagus. Urgent cases include esophageal objects that are not sharp and pointed, esophageal food impaction without complete obstruction and magnets within endoscopic reach. Ingested foreign bodies that reach the gastroesophageal junction can be passed through without complication (up to 90% of cases), approximately 10–20% of the patients need to be removed endoscopically and less than 1% of foreign bodies cause perforation.^[8] Reports indicate that 1–14%

of cases require a surgical approach either for removal of the impacted body or to treat complications.^[9–11] In proper cases, flexible endoscopy is the most effective procedure to remove the impacted esophageal foreign body and manage the esophageal injury.

As a conclusion, perforations due to esophageal foreign bodies constitute clinical conditions with serious morbidity and mortality. Nowadays, innovative endoscopic intervention possibilities and modern endoscopic equipment are opening new horizons in approaching these cases. Although the primary treatment for esophageal perforation is surgical, conservative management including endoscopic procedures performed by experienced endoscopist may be appropriate in individualized cases without surgery.

Disclosures

Informed Consent: Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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