Thoracoscopic management of a mediastinal abscess caused by extra-esophageal migration of a metal brush bristle

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ABSTRACT

Foreign body perforations of the esophagus are infrequent events yet have the potential to cause significant morbidity and mortality. The clinical consequences of esophageal perforation by a foreign body are dependent upon the severity of infectious sequelae and damage to surrounding structures by the foreign object itself, as detailed in previous published reports. We describe the thoracoscopic management of a mediastinal abscess caused by a foreign body perforation in a patient with an intact esophagus.

KEYWORDS Esophageal foreign body; esophageal perforation; mediastinal abscess; mediastinitis

CASE DESCRIPTION

A 72-year-old man presented to the emergency department with chest pain and cough. He reported that 1 week prior while eating a homemade barbeque dinner, he experienced dysphagia to solid food and mild substernal pain. Although his symptoms transiently resolved, he soon experienced symptom recurrence. Computed tomography of the chest revealed a small abscess and radiopaque foreign body (FB) in the posterior mediastinum adjacent to the esophagus at the level of the aortic arch (*Figure 1*). Esophagram was negative for perforation and Ancef was initiated. The patient was afebrile and hemodynamically stable and laboratory tests were unremarkable. He was taken to the operating room for esophagogastroduodenoscopy (EGD) and video-assisted thoracoscopic surgery (VATS) to remove the FB. EGD showed no evidence of perforation or FB. VATS of the right chest was performed through ports at the seventh intercostal space at mid-axillary line and sixth space at posterior axillary line. Adhesions of the right upper lobe to the mediastinal pleura at the level of the azygocaval junction were bluntly mobilized and the abscess cavity was identified. This was opened and purulent fluid was found and sent for culture. Inside the abscess cavity, a 2.0 × 0.2 cm metallic barbeque brush bristle was found (*Figure 2*). The thoracic cavity was irrigated and the esophagus was insufflated with air to ensure absence of perforation. Both an abscess and pleural drain were placed prior to completing the case. A postoperative esophagram confirmed no evidence of esophageal perforation on postoperative day 1. Abscess fluid grew out

Viridans streptococcus and *Haemophilus parainfluenzae*. Ancef was discontinued after operative source control was obtained. Drains were removed on day 3 and the patient was discharged without complications, tolerating a regular diet, on day 4.

DISCUSSION

Esophageal perforations most often occur as a result of iatrogenic injury during surgery or endoscopy. Perforations due to FBs are less common and may account for 9% to 35% of perforations.¹ A wide range of ingested FBs have been described in the literature; the most common are fish and meat bones and dental prostheses. FBs may remain fixed within the esophagus or migrate extraluminally. As the FB moves through the esophagus, it may pierce the lumen itself or become lodged at a point of anatomical narrowing such as the cricopharyngeus muscle, aortic arch, or lower esophageal sphincter, leading to pressure necrosis and subsequent perforation. Extraluminal migration of an FB may damage nearby structures such as the trachea, aorta, or lung or lead to infection, manifesting as either a local abscess or necrotizing mediastinitis.^{2,3}

Contained perforations of the thoracic esophagus are generally managed by conservative measures, which include nothing by mouth, intravenous antibiotics and fluids, and analgesia.⁴ In the present case, several features prompted operative management with VATS: (1) persistent symptoms due to the compressive effects of the abscess, (2) no evidence of esophageal perforation on EGD, and (3) the presence of a metallic FB adjacent to the superior vena cava. Thoracoscopic techniques are currently standard of

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Figure 1. A 2.0 × 0.2 cm radiopaque metallic object adjacent to the esophagus and superior to the vena cava on computed tomography of the chest.

care for a variety of thoracic and mediastinal pathologies, offer excellent operative exposure, and have been successfully utilized in similar complicated cases of FB ingestion.⁵ When preoperative imaging ensures that mediastinal vasculature is uninjured by an extra-esophageal foreign body, a minimally invasive approach to mediastinal abscess and FB extraction is safe and feasible.

Figure 2. Intraoperative view of foreign body (arrow head) retrieval. Note the drained abscess cavity (arrow) between the right upper lobe (A) and superior vena cava (B).

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