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CASE REPORT

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Contained hypopharyngeal and cervical esophageal perforation masquerading as retropharyngeal abscess

Theodore D. Klug | **Courtney B. Shires**

West Cancer Center, Germantown, TN, USA

Correspondence
Theodore Klug, West Cancer Center, 7945 Wolf River Blvd, Germantown, TN 38104.
Email: theodklu@gmail.com

Abstract

It is possible to have a spontaneous hypopharyngeal and cervical esophageal perforation following yelling. We believe our case is the first study showing such an event, which can become catastrophic if not addressed in a timely manner.

KEYWORDS

drainage, esophageal perforation, irrigation, prevotella, retropharyngeal abscess

1 | BACKGROUND

Esophageal perforation is most commonly caused by endoscopic instrumentation of the upper GI tract and most commonly presents with chest pain in more than 70% of patients, vomiting, and subcutaneous emphysema. Our 49-year-old female patient presented as a retropharyngeal abscess with sore throat and dysphagia for 5 days. She underwent endoscopic transoral incision and drainage of the posterior pharyngeal wall. She continued to have symptoms and was found to have a contained esophageal perforation (CEP) between the layers of the esophagus. She underwent open repair and stenting and returned to oral feeds in 3 weeks. Esophageal perforations are usually full thickness and in the lower esophagus from high pressure (vomiting or coughing). In contrast, our patient had a cervical CEP from yelling that was contained by the outer layer of the esophagus. She had very mild symptoms in contrast to the severe chest pain seen in lower esophageal perforations. Our patient underwent a combination of open drainage and repair, placement of a drain, endoscopic stenting, and nonoral feeds which resulted in a full recovery. CEP can be caused by yelling and can be found in the hypopharynx and cervical esophagus. In this location, CEP can be mistaken for retropharyngeal abscess. Patients with CEP can have mild symptoms. CEP can have good outcomes with aggressive intervention.

Esophageal perforation is a rare but life-threatening condition.[1] Early detection and diagnosis are important to ensure good patient outcomes. At least half of esophageal perforations are iatrogenic, oftentimes caused by endoscopic instrumentation use in the upper gastrointestinal tract.[1] Still, about a third of esophageal perforations are spontaneous.[1] The scientific evidence that steers management of esophageal perforation is based primarily upon retrospective studies at single institutions, as well as on a few nationwide studies.[1-8] Randomized studies are virtually nonexistent.[1] The case that we present is of a patient that was eventually found to have a contained esophageal perforation instead of the initially suspected retropharyngeal abscess.

2 | CASE PRESENTATION

A 49-year-old female patient with a past medical history significant for depression, schizophrenia, and nicotine abuse presented with progressive sore throat and dysphagia for 5 days. White blood cell count was 9, and she was afebrile. She was not tachycardic, and she had no subcutaneous emphysema. She was not drooling and had a normal voice. She underwent CT imaging to rule out pharyngitis, peritonsillar abscess, and head and neck mucosal neoplasm. Imaging showed a retropharyngeal fluid collection (Figure 1). She

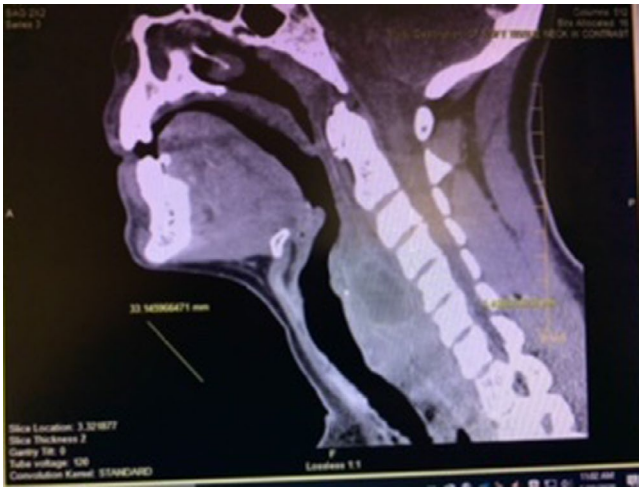

FIGURE 1 Initial CT scan showing retropharyngeal fluid collection

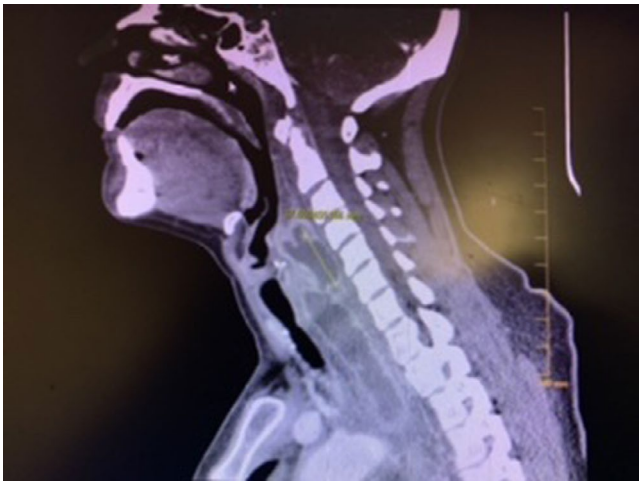

FIGURE 2 Repeat CT scan showing increasing fluid collection behind the esophagus extending into the mediastinum

underwent direct laryngoscopy and cervical esophagoscopy. After the laryngoscope was placed, the oropharynx was visualized. There were no tonsillar exudates or tonsillar enlargement noted. The hypopharynx was visualized. The pyriform sinuses appeared normal. A bulge in the posterior pharyngeal wall just above the esophageal inlet was noted. A sickle knife was used to make an incision in the posterior pharyngeal wall, but no significant amount of purulence was released. She was maintained on intravenous antibiotics. Her white blood cell count remained within normal limits during her hospitalization. She was discharged 2 days later.

Three days after her procedure, she was presented again to the emergency department with increased neck and throat pain. Her white blood cell count was 13, and she was afebrile. A computed tomography (CT) scan showed that the fluid collection had worsened, with it now extending into the posterior mediastinum from the postcricoid area of the hypopharynx to the aortic arch on the sagittal, axial, and coronal angles, respectively (Figures 2-6).

The patient was taken to the operating room the following day in a joint effort by Otolaryngology and Thoracic Surgery. A horizontal incision in a left neck crease was made. The platysma was divided. The sternocleidomastoid muscle was retracted laterally. The larynx and esophagus were rotated to the right. The retropharyngeal space was evaluated. Surprisingly, there was no fluid collection in this space. As the esophagus was rotated to the right, a bulge was noted of the posterior esophageal wall. Blunt dissection with hemostats of a small area of the posterior esophageal wall was performed. A space was entered, and saliva was released. This musculature was opened, and she was noted to have a large potential space down the posterior wall of the esophagus. This was followed inferiorly into the thoracic cavity. She underwent primary repair of cervical and thoracic esophageal perforation, sternocleidomastoid muscle flap reinforcement of the esophageal repair, and cervical and thoracic esophageal myotomy. Gastroenterology (GI) was also called into the operating room to assist with an esophagogastroduodenoscopy (EGD), which showed an esophageal tear 17 cm in length. The patient then had two esophageal stents placed in an overlapping fashion (Figure 7 and 8), as well as a nasogastric tube and G-tube.

Her white blood cell count was elevated at 15 on postoperative day 1, but then consistently decreased to within normal limits during the rest of her hospitalization. She remained afebrile.

The patient had an esophagram 2 days later, with no contrast extravasation. However, the patient did aspirate. She used her G-tube for 3 weeks. Cultures of the abscess were taken, showing positivity for Prevotella bacteremia, and the patient was started on antibiotics. She then had another esophagram

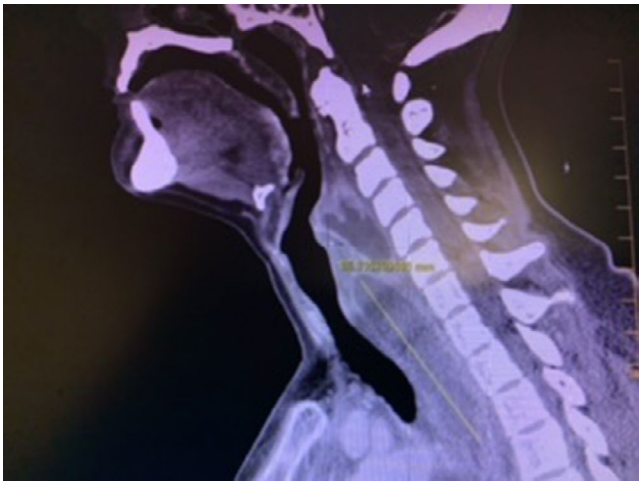

FIGURE 3 Sagittal CT showing fluid collection posterior the hypopharynx

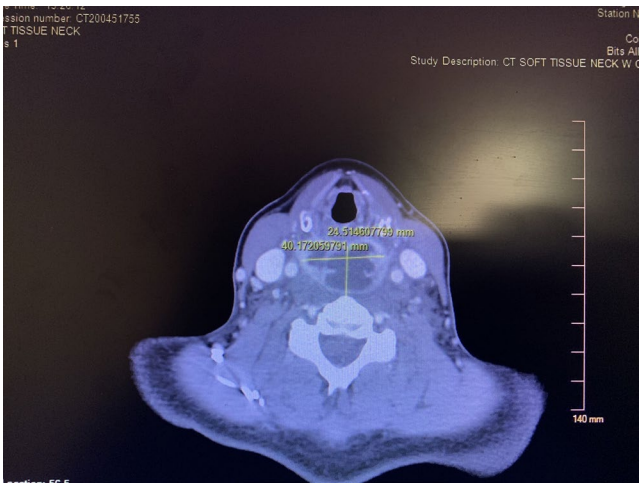

FIGURE 4 Axial CT showing fluid collection posterior to the hypopharynx

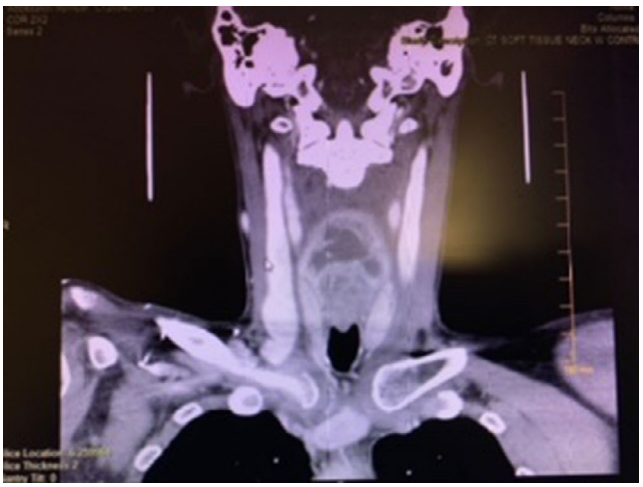

FIGURE 6 Coronal CT showing fluid collection posterior to the hypopharynx

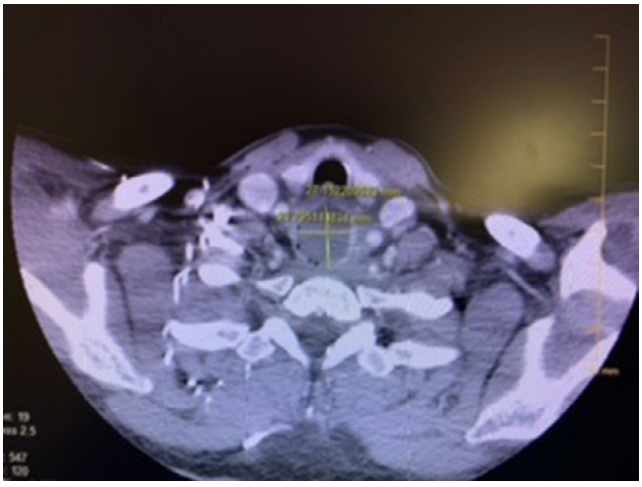

FIGURE 5 Axial CT showing fluid collection posterior to the esophagus

1 week later which showed no extravasation or aspiration. She was allowed to drink orally 2 weeks postoperatively and was able to take in soft foods 3 weeks after surgery. She did not have any foreign body sensation in her throat. She was discharged home 4 weeks from her second surgery. She is doing well with no issues 5 months after surgery.

3 | DISCUSSION

Our patient experienced a perforation from the hypopharynx to the aortic arch. Based off of the patient history, we postulate that the esophageal perforation that occurred was a result of an increase in pressure due to patient activity. According to the patient, she had been yelling at her significant other for quite some time, with no other voice-related activity. She had not swallowed any sharp objects. She had no previous esophageal disease. She has no known history of caustic ingestion. As such an impressive perforation seems far-fetched, we also considered the patient's history of mental illness and her ability to provide significant details of her medical history.

With no episodes of vomiting or ingestion of a foreign body recorded prior to the esophageal rupture, combined with a chest x-ray showing no pneumoperitoneum and no subcutaneous emphysema, Boerrhave's syndrome was ruled out. Thus, her diagnosis of esophageal perforation was delayed for a few days.

Spontaneous rupture of the esophagus as seen in Boerhaave's syndrome perforation commonly occurs in the lower one-third of esophagus. Our patient had spontaneous rupture in the hypopharynx and cervical esophagus.

While Boerhaave's syndrome involves a full thickness perforation, our patient experienced violation of the innermost mucosa, submucosa, and muscularis propria of the esophagus. The adventitia remained intact. This resulted in the perforation appearing as a walled off abscess on CT.

Iatrogenic perforations of the esophagus most frequently occur in the cervical esophagus just above the upper sphincter, whereas spontaneous rupture as seen in Boerhaave's syndrome perforation commonly occurs in the lower one-third of esophagus. Our patient had mild symptoms of esophageal perforation prior to her laryngoscopy. Therefore, we feel that she likely had a contained cervical esophageal perforation initially prior to her laryngoscopy and did not experience the perforation from laryngoscopy.

Because her esophageal perforation extended from the hypopharynx well into the thoracic cavity, a combination of surgical repair and stents was used. The open repair was performed of the hypopharynx and cervical esophagus, as stents could not be placed this superiorly due to foreign body sensation. The stents were placed in the thoracic esophagus in

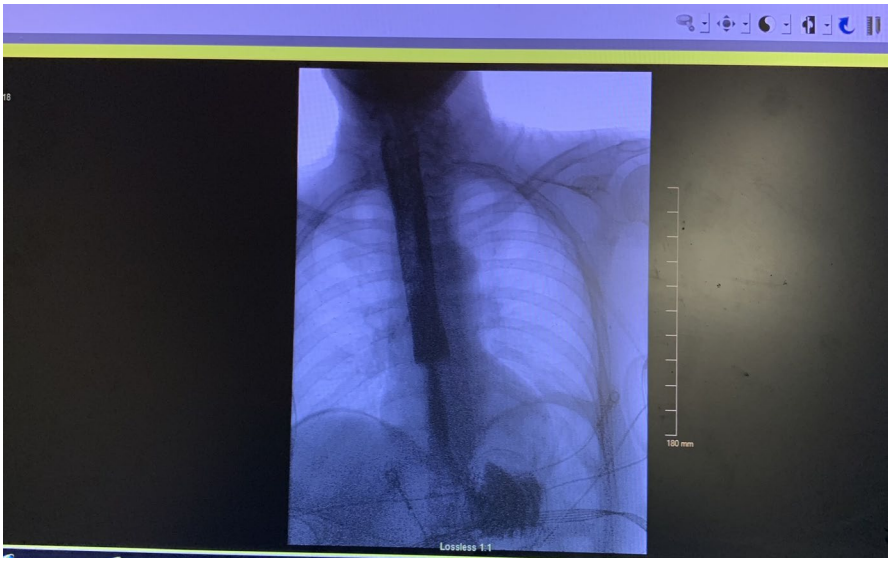

FIGURE 7 X-rays showing two esophageal stents placed in an overlapping fashion

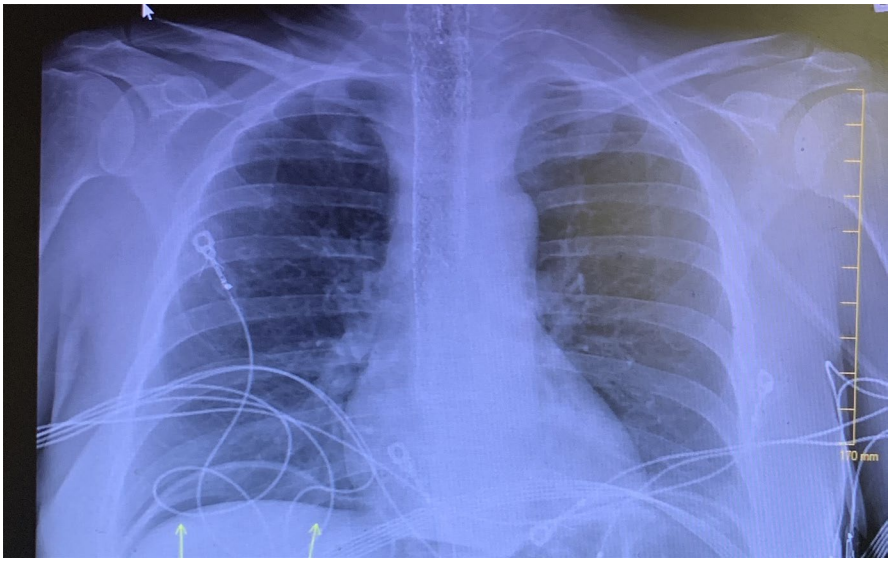

FIGURE 8 X-rays showing two esophageal stents placed in an overlapping fashion

efforts to avoid further incisions. Covered stents were used to avoid extravasation of saliva into the neck or chest cavity. We planned to remove the esophageal stents over the next few months to avoid migration and erosion. As such long perforations are associated with late strictures, we plan to perform further evaluation with esophagram at 6 months with likely subsequent stent removal.

4 | CONCLUSION

Our patient with no history of esophageal disease presented with partial thickness esophageal perforation from the hypopharynx to the aortic arch. Due to the unusual location of a spontaneous esophageal perforation, her mild symptoms, and her imaging, she was felt to have a retropharyngeal abscess. Our case is the first study showing a hypopharyngeal And cervical esophageal perforation following yelling. She underwent combined open and endoscopic repair and is back to baseline 5 months after intervention.

ACKNOWLEDGMENTS

Published with written consent of the patient.

CONFLICT OF INTEREST

The authors report no relevant financial disclosures related to this current work.

AUTHOR CONTRIBUTIONS

Courtney B. Shires, MD, FACS: collected data, wrote, and edited article. Theodore Klug, MD, MPH: collected data, wrote, and edited article.

ETHICAL CONSIDERATIONS

All issues related to ethics were taken into consideration throughout the study design and proposal and implemented during the research study itself. Informed consent was obtained, beneficence was made a top priority, and respect for confidentiality and privacy were upheld during the study and its various analysis and information assertation components.

DATA AVAILABILITY STATEMENT

Data available upon request.

ORCID

Theodore D. Klug https://orcid.org/0000-0002-2829-5846
Courtney B. Shires https://orcid.org/0000-0002-0918-8172

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