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CASE REPORT | ENDOSCOPY

Timely Endoscopic Recognition of Aortoesophageal Fistula With Successful Treatment

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ABSTRACT

Aortoesophageal fistula (AEF) is a devastating cause of upper gastrointestinal bleeding that occurs because of pathologic communication of the esophagus with the aorta. Bleeding AEF has high mortality even with appropriate interventions. In this study, we present a case of a 52-year-old man who presented with hematemesis, which was found to be due to an actively bleeding AEF. Prompt identification of the fistula led to multiple endoscopic interventions that stabilized the patient and allowed him to undergo emergent endovascular aortic stent placement with successful bleeding control.

KEYWORDS: aortoesophageal fistula; endoscopy; gastrointestinal bleeding; endoscopic interventions; esophageal stents

INTRODUCTION

Aortoesophageal fistula (AEF) is a rare and devastating cause of upper gastrointestinal (GI) bleeding that occurs because of pathologic communication of the esophagus with the aorta. AEFs can be either primary or secondary in etiology, with the latter being significantly more common.[1] The most common cause of primary AEF is aortic aneurysm, with malignancy, radiation therapy, foreign body ingestion, and infection being less common etiologies,[2] whereas secondary AEF occurs after aortic surgery, typically involving graft placement. AEF is a rapidly fatal condition when left untreated. We describe the case of a patient who developed acute upper GI bleeding due to AEF during esophagogastroduodenoscopy (EGD).

CASE REPORT

A 52-year-old man was diagnosed with non-small cell lung cancer 9 months previously. He was treated with chemoradiation therapy. Treatment was complicated by esophageal stricture in the mid-esophagus at 25 cm from the incisors, which required multiple endoscopic dilations. All of his dilations were successful and without complication; the most recent dilation was performed 2 weeks before presentation. He had a history of percutaneous gastrostomy tube placement for malnutrition. The patient presented to hospital after a syncopal episode at home associated with hematochezia and hematemesis. The patient left the hospital against medical advice because he felt well, and he returned the next day for urgent EGD.

EGD showed a mid-esophageal scar at 25 cm from the incisors associated with a visible blood vessel without any evidence of active bleeding (Figure 1). During the procedure, the patient started coughing and suddenly developed profuse bleeding from the mid-esophageal scar (Figure 1). Bleeding was not controlled despite epinephrine injection, thermal therapy using a gold probe, hemostatic clip application, and hemospray. The patient became hypotensive and required vasopressors and endotracheal intubation. Bleeding was controlled temporarily by tamponade using a 20 mm esophageal dilation balloon. The balloon was kept inflated for 10–15 minutes, but bleeding recurred every time the balloon was deflated, so we proceeded with placement of a fully covered esophageal stent. After deployment, the scope was advanced through the stent and confirmed the site of bleeding near the center of the stent placement. Bleeding persisted after placement of the esophageal stent, so a second fully covered esophageal stent was placed to overlap the first stent hoping to provide a better radial force to tamponade bleeding. Unfortunately, bleeding persisted, so a 20 mm esophageal dilation balloon was inflated within the esophageal stents, which was successful in

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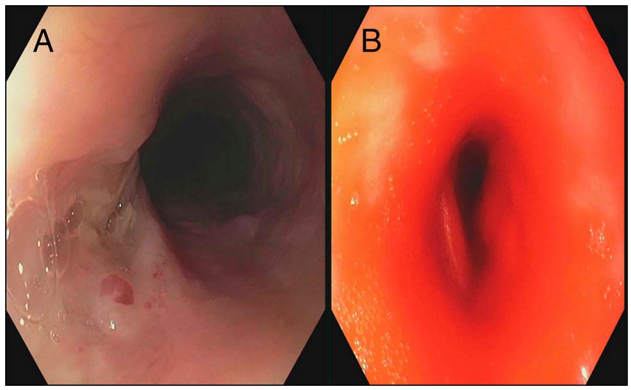

Figure 1. (A) AEF before bleeding. (B) Active bleeding from the AEF. AEF, aortoesophageal fistula.

controlling bleeding (Figure 2). After discussing the case with our interventional radiology team, the patient was transferred to interventional radiology for emergent angiogram, which was performed while the endoscope with the inflated esophageal dilation balloon was kept inside the esophagus. Constant visualization of the dilation balloon could not be maintained during transfer. The dilation balloon was passed through the channel of the scope under endoscopic visualization, and it kept the inflated balloon in the correct position pulled against the tip of the scope while marking the location of the scope at the incisors, thereby allowing the balloon to be kept in the correct location during transfer.

Angiogram showed active extravasation of contrast from the aorta into the esophagus confirming the diagnosis of AEF. Vascular surgery was consulted, and they were able to place an endovascular aortic stent graft, which sealed the AEF and allowed deflation of the esophageal dilation balloon (Figure 3).

During the procedures, the patient received 8 units of packed red blood cells for resuscitation. He was admitted to the surgical intensive care unit intubated and on 3 vasopressors. His hemoglobin nadir was 8.5 g/dL. He was extubated 2 days after admission and transferred to the general medical floor. He subsequently recovered and was discharged home without any further bleeding.

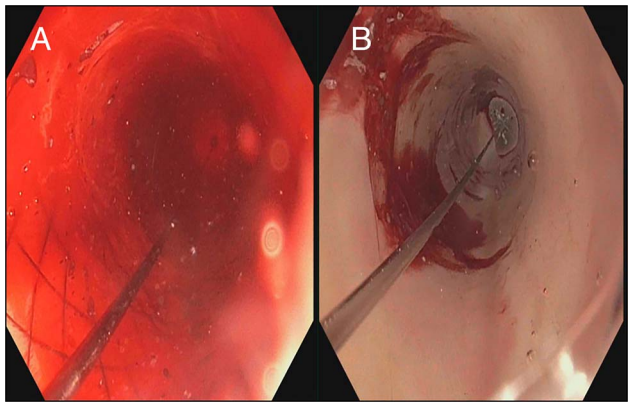

Figure 2. Interventions to control active bleeding from the aortoesophageal fistula. (A) Luminal stent without control of the bleeding. (B) Through-the-scope balloon was able to tamponade the area with temporary control of the bleeding.

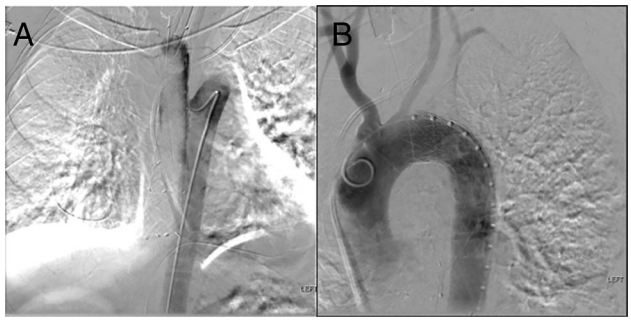

Figure 3. Fluoroscopic images of the AEF. (A) Aortogram with supplemental angiograms demonstrating the AEF. (B) Angiogram after placement of the endovascular thoracic stent graft showing complete closure of the AEF. AEF, aortoesophageal fistula.

DISCUSSION

AEF is a rare but life-threatening cause of upper GI bleeding. A systematic review in 2020 by Li et al[3] found the overall fistula-related morality rate to be 47%.

Classic clinical signs include mid-thoracic pain or dysphagia, followed by sentinel hemorrhage and exsanguination after a symptom-free interval (ie, Chiari triad).[4] However, a prior literature review found that only 20%–45% of patients with AEF meet all criteria of Chiari triad.[3–5] The most commonly presenting symptom is hemorrhage, followed in a decreasing order of frequency by chest/abdominal/back pain, fever, and dysphagia.[3] Risk factors present in our patient include prior radiation therapy and esophageal strictures needing dilation.

Prompt diagnosis of AEF is critical because of the catastrophic consequences of this condition. EGD is often the initial diagnostic tool in patients presenting with GI bleeding. EGD findings include pulsating protrusions with central fistula with possible overlying clot formation.[6,7] However, the sensitivity of EGD for aortoenteric fistula is low, estimated at 25% in a review of 81 patients in 2005.[1] EGD in patients with AEF carries the risk of provoking exsanguination.[8] Other diagnostic tools include computed tomography or angiogram, as in our case.

Management of AEF is surgical; conservative therapy offers no long-term survival.[9] Traditional surgical management consists of open thoracotomy with repair of the aortic lesion and esophagus.[10] However, open surgical repair is associated with significant morbidity and mortality.[10] Endovascular aortic repair through stent-graft placement offers a less invasive option for bleeding control that is particularly useful for patients who are not candidates for open repair.

EGD also plays a role in the management of AEF. Other cases have described the use of hemostatic clips, injection of sclerosing

agents, use of a Sengstaken-Blakemore tube, use of esophageal metal stents, and use of esophageal dilation balloons as temporizing measures or to repair esophageal damage after endovascular stent placement.[11–17] Our patient required an array of endoscopic temporizing measures, with bleeding remaining refractory until endoscopic stent placement with balloon tamponade.

In conclusion, we present a case of a patient who presented with upper GI bleeding who subsequently developed hemorrhagic shock during his EGD because of bleeding AEF. Prompt recognition and utilization of multiple endoscopic methods of temporizing hemostasis allowed for confirmation of diagnosis and effective intervention.

DISCLOSURES

Author contributions: T. Brotherton reviewed the literature and wrote, edited, and revised the manuscript. L. Numan edited and revised the manuscript. S. Al-Kaade provided the endoscopic images, edited and revised the manuscript, provided intellectual input, and is the article guarantor.

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Informed consent could not be obtained from the family of the deceased. All identifying information has been removed from this case report to protect patient privacy.

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