



## Endoluminal vacuum therapy in the management of a large gastrobronchial fistula

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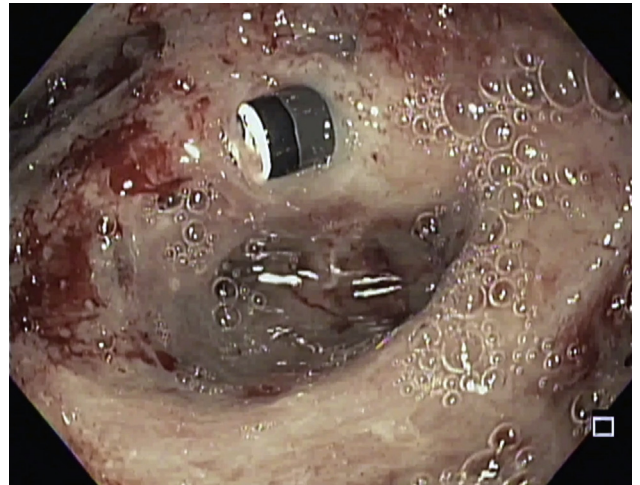
Transthoracic esophagectomy with gastric reconstruction is associated with a high postoperative morbidity rate of 40% to 50%. Gastropulmonary fistula is a rare adverse event of esophagectomy with a reported incidence rate of 0.8% to 3.9% with a high mortality rate more than 57%.<sup>1</sup> Here, we discuss a challenging case of a critically ill patient with gastropulmonary fistula successfully treated with endoscopic vacuum therapy (EVT) as a bridge to definitive surgery.

### CASE AND PROCEDURE

A 43-year-old man with a history of distant esophagectomy was admitted to the intensive care unit for adult respiratory distress syndrome secondary to necrotizing pneumonia. He was hospitalized 2 weeks earlier for community-acquired pneumonia, with cross-sectional imaging demonstrating right lower and right middle lobe



**Figure 1.** Endoscopic view of esophagogastric anastomosis.



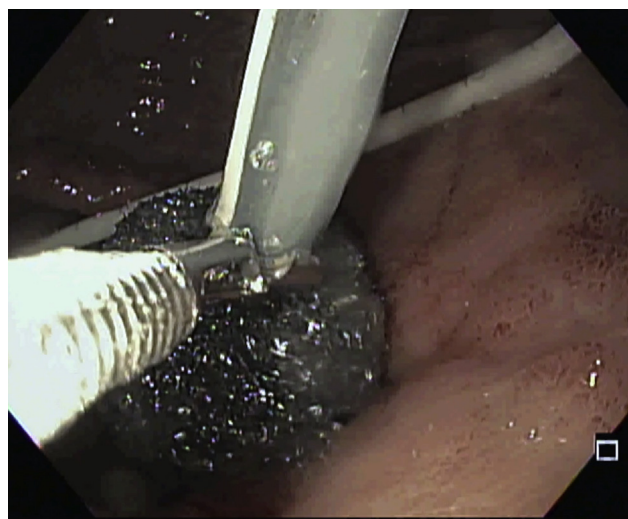
**Figure 3.** Endoscopic view of bronchoscope within the gastrobronchial fistula.



**Figure 2.** Endoscopic view of large fistula measuring approximately 2 cm.



**Figure 4.** Supplies needed to fabricate endoscopic vacuum therapy.



**Figure 5.** Endoscopic placement of endoscopic vacuum therapy within the fistula cavity.

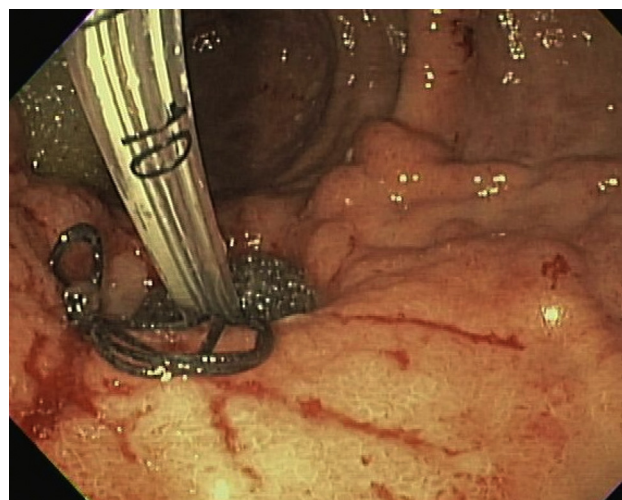
consolidation. He was treated with intravenous antibiotics and was subsequently discharged to complete an oral course of antibiotics. He then presented with worsening cough and shortness of breath. While in the emergency department, he was intubated for acute hypoxemic respiratory failure. GI consultation was requested for endoscopic placement of a nasogastric tube.

An upper endoscopy was performed, and approximately 10 cm of esophagus was encountered with an esophago-gastric anastomosis (Fig. 1). A large defect measuring approximately 2 cm was noted with evidence of purulent drainage (Fig. 2). The defect was intubated, and air bubbles refluxed into the cavity with each inspiration, suggestive of a gastropulmonary fistula (Fig. 3).

The surgical team was consulted and deemed the patient a poor candidate for intervention given the critical severity of the adult respiratory distress syndrome. Several endoscopic alternatives were considered, such as mechanical clipping, esophageal stent placement, or suturing; however, these options were considered low yield for success, and the decision was made to attempt EVT (Video 1, available online at [www.VideoGIE.org](http://www.VideoGIE.org)).

Abdulsada et al<sup>2</sup> previously highlighted the materials used in and the preparation for EVT (Fig. 4). A nasogastric tube (NGT) was inserted in the nares, grasped from the oropharynx, and removed from the mouth. A piece of wound vac sponge was cut and sutured securely on the nasogastric tube. A snare was passed down the therapeutic channel of the endoscope, and the nasogastric tube was grasped to aid in passage down the GI tract. The EVT was deployed via intracavitary placement (Fig. 5), and continuous negative pressure at 150 mm Hg was initiated (Fig. 6).

EVT was used for 11 days with a total of 3 exchanges before definitive surgical intervention. Clinical improvement was evident as the patient was weaned from prone positioning and had decreasing FIO<sub>2</sub> requirements by



**Figure 6.** Intracavitary placement of endoscopic vacuum therapy.

postoperative day 2. Vasopressor requirements were weaned and were discontinued by postoperative day 5. Pressure support trials were attempted between postoperative days 7 and 11. He then underwent surgery for gastric conduit takedown, creation of a cervical esophagostomy, and stapling of the pulmonary fistula. He was discharged from the hospital after 2 months.

## DISCUSSION

Gastropulmonary fistulas are pathologic connections between the respiratory and gastrointestinal tract. Without treatment, they carry a poor prognosis, and surgery is not considered first-line management given increased risk and mortality.<sup>3</sup> Traditional endoscopic options for therapy include mechanical clips, over-the-scope clips, self-expandable metal stents, and endoscopic suturing.

Many of the treatments for gastropulmonary fistulas have insufficient drainage of the mediastinal cavity. EVT offers an alternative therapeutic modality that allows continual drainage and debridement via negative pressure.<sup>4</sup> EVT actively promotes healing through 5 mechanisms: macrodeformation, microdeformation, changes in perfusion, exudate control, and bacterial clearance. A recent meta-analysis showed that EVT has a significantly higher esophageal defect closure rate, shorter treatment duration, lower major adverse event rate, and lower in-hospital mortality than compared with self-expandable stent therapy.<sup>5</sup>

Gastropulmonary fistula is a rare but life-threatening adverse event of transthoracic esophagectomy. Our case serves to highlight the potential role of EVT as an adjunctive bridge to definitive surgical intervention.

## ACKNOWLEDGMENTS

The authors received grant support from the ASGE Robert W. Summers Grant.

## DISCLOSURE

*All authors disclosed no financial relationships.*

Abbreviation: EVT, endoscopic vacuum therapy.

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<https://doi.org/10.1016/j.vgie.2020.06.005>

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