A Case Report of Non-Surgical Esophagocutaneous Fistula Closure: Even a Blind Squirrel Finds a Nut

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INTRODUCTION

Chronic esophagocutaneous fistulae are an infrequent pathologic entity in adults. Their management is challenging and often includes surgical management including esophagectomy or esophageal diversion with distal enteral nutrition. Here, we describe a chronic, recalcitrant esophagocutaneous fistula that was effectively closed using an antibiotic-soaked bio-absorbable mesh.

Figure 1 and 2. Admission Imaging

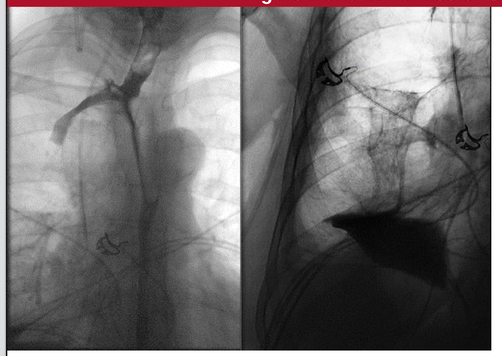


Figure 1. Esophagram obtained on admission demonstrating the esophagocutaneous fistula within the right thoracic cavity communicating to the thoracotomy incision.

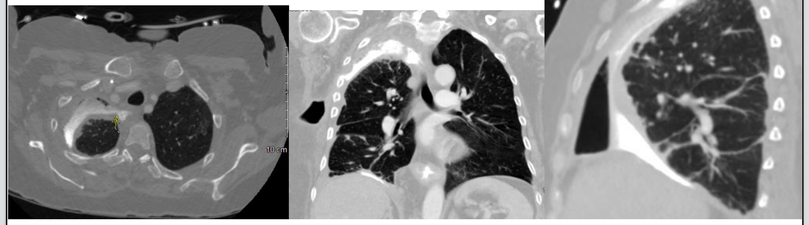


Figure 2. Chest CT with oral contrast demonstrating contrast extravasation into the right hemithorax and the right thoracotomy incision.

CASE DESCRIPTION

The patient is a 67-year-old female with a history of “esophageal surgery” as an infant and subsequently developed chronic esophageal stricture requiring serial dilatations throughout her adulthood. During a routine esophageal dilatation, she sustained an esophageal perforation. The patient underwent several operative procedures at an outside facility including a right thoracotomy, a pericardial patch, an intercostal muscle flap, several chemical pleurodeses, and gastrostomy and jejunostomy tube placements. A postoperative esophagram was negative for leak, and the patient was discharged to a rehabilitation facility on enteral feeds.

Unfortunately, the patient developed purulent drainage from her thoracotomy wound, and she was transferred to our hospital for further treatment. On admission, an esophagram and CT chest with oral contrast demonstrated an esophageal stricture with contrast extravasation from the esophagus into the right thoracic cavity with communication to the right thoracotomy (Fig 1 and Fig 2). The patient declined an esophageal diversion and esophagectomy. Therefore, we attempted several less invasive measures to close the fistula, including a duration of nil per os (NPO), covering the fistula with an esophageal stent, filling the thoracic space with muscle flaps, and attempting closure with various endoscopic methods: endo-VAC therapy and T-tube placement. While the muscle flaps helped to decrease the space within the thoracic cavity, the fistula never closed leaving a persistent track from esophagus through the apex of the chest cavity and out to the skin.

Having exhausted traditional methods, we placed doxycycline-soaked bio-absorbable mesh (STRATTICE™) across the fistula like a plug, occluding the fistula tract (Fig 4). The patient was kept NPO, the gastrostomy tube was placed to gravity, and enteral feeds were instilled through the jejunostomy tube. Six weeks later, flexible esophagoscopy revealed complete resolution of the fistula (Fig 5). An esophagram confirmed these findings (Fig 6). Oral intake was permitted, and once the patient demonstrated sufficient intake and weight gain, the jejunostomy and gastrostomy tubes were removed.

Figure 3 Mesh Placement

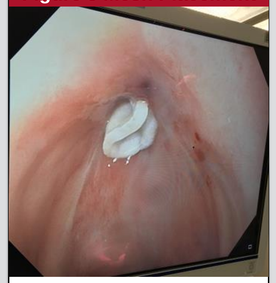


Figure 3. Endoscopic view of a bio-absorbable mesh plug within fistula tract following placement.

Figure 4 and 5. Fistula Closure

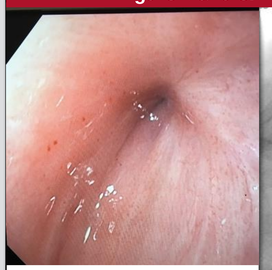


Figure 4. Endoscopic view of healed fistula tract performed 6 week following mesh plug placement.



Figure 5 Esophagram performed 6 weeks following mesh plug placement showing no extravasation.

CONCLUSION

The method described permitted closure of a chronic esophageal fistula after traditional non-operative methods had failed. Although rare, there have been reports of esophagocutaneous or other foregut fistulae closure with bioabsorbable mesh following failure of traditional therapy. Our method required endoscopic placement of the mesh across the fistula in addition to nil per os, distal enteral nutrition, and gastric decompression. This case demonstrates a non-surgical alternative for upper gastrointestinal tract fistulae.

REFERENCES

1. Frei LW. Endoscopic closure of an esophagocutaneous fistula using a bioabsorbable material and tissue glue. SAGES. 2010. P286.
2. Li B, Shamah S, Swei E, Chapman CG. Endoscopic closure of a refractory enterocutaneous fistula by use of a fistula plug with fixation and mucosal oversewing. VideoGIE. 2019 May. 4(5):203-205