

Challenging Endoscopic Management of a Benign Bronchoesophageal Fistula

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INTRODUCTION

Bronchoesophageal fistulas (BEFs) are pathologic communications between the bronchus and esophagus. The majority of the BEFs are congenital, but a BEF can be acquired during adulthood as a result of malignancy, infection, trauma, inflammation, or idiopathic causes.^{1,2} The management of BEFs can be challenging and requires a multidisciplinary approach. We present the case of a spontaneous BEF requiring multiple endoscopic attempts at closure with eventual success.

CASE PRESENTATION

A 69-year-old malnourished woman with a past medical history of tobacco use, chronic obstructive pulmonary disease, gastroesophageal reflux disease, peripheral arterial disease, alcohol use disorder, and multiple recent hospital admissions for aspiration pneumonia presented for swallow evaluation.

A video fluoroscopic swallow study showed a fistula in the mid-esophagus communicating with the left mainstem bronchus (Figure 1), prompting admission.

Initial diagnostic upper endoscopy confirmed a 4 mm fistula at 29 cm from the incisors. Concurrent bronchoscopy identified the fistula opening in the left main bronchus 1 cm below the carina.

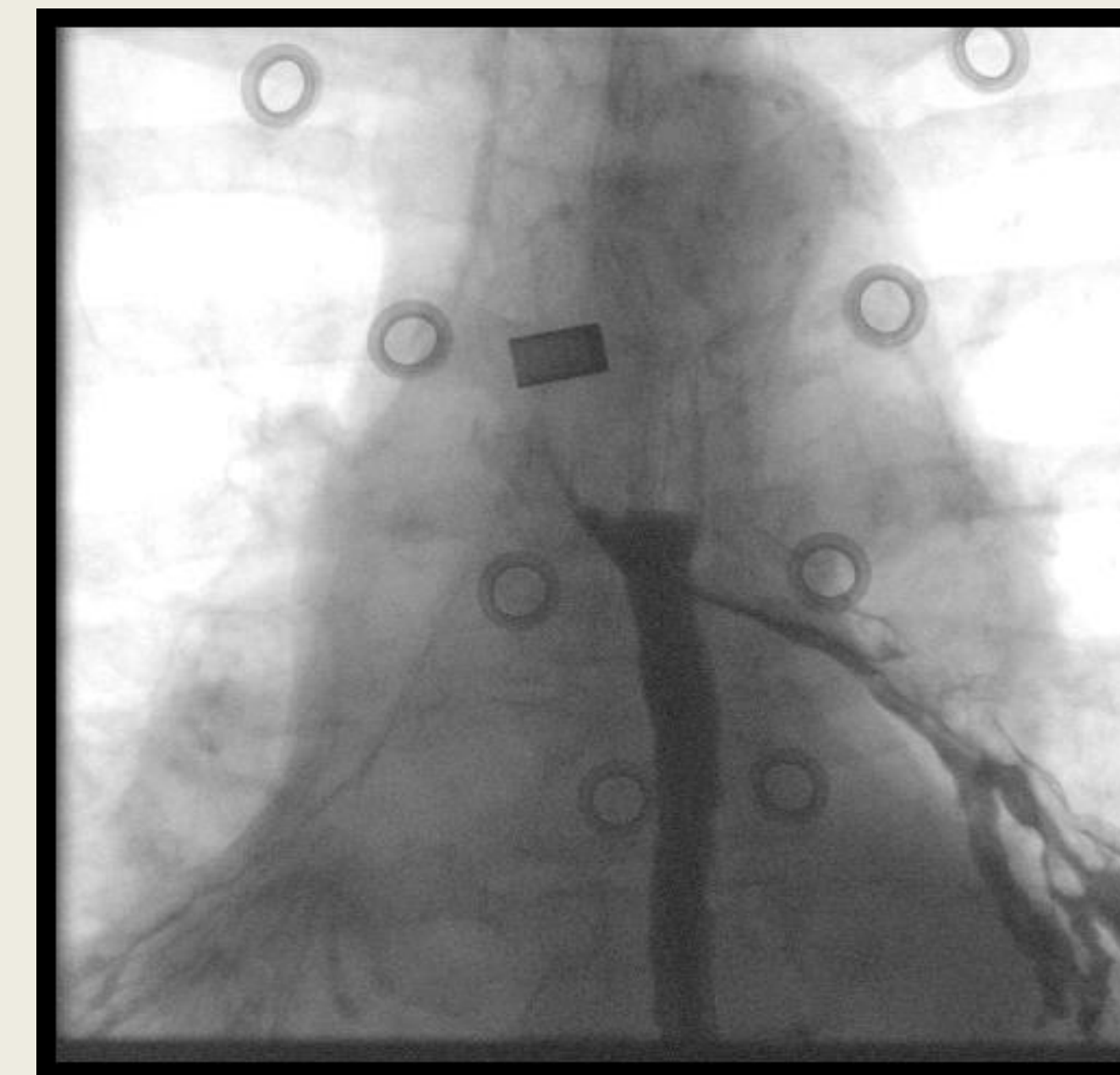


Figure 1

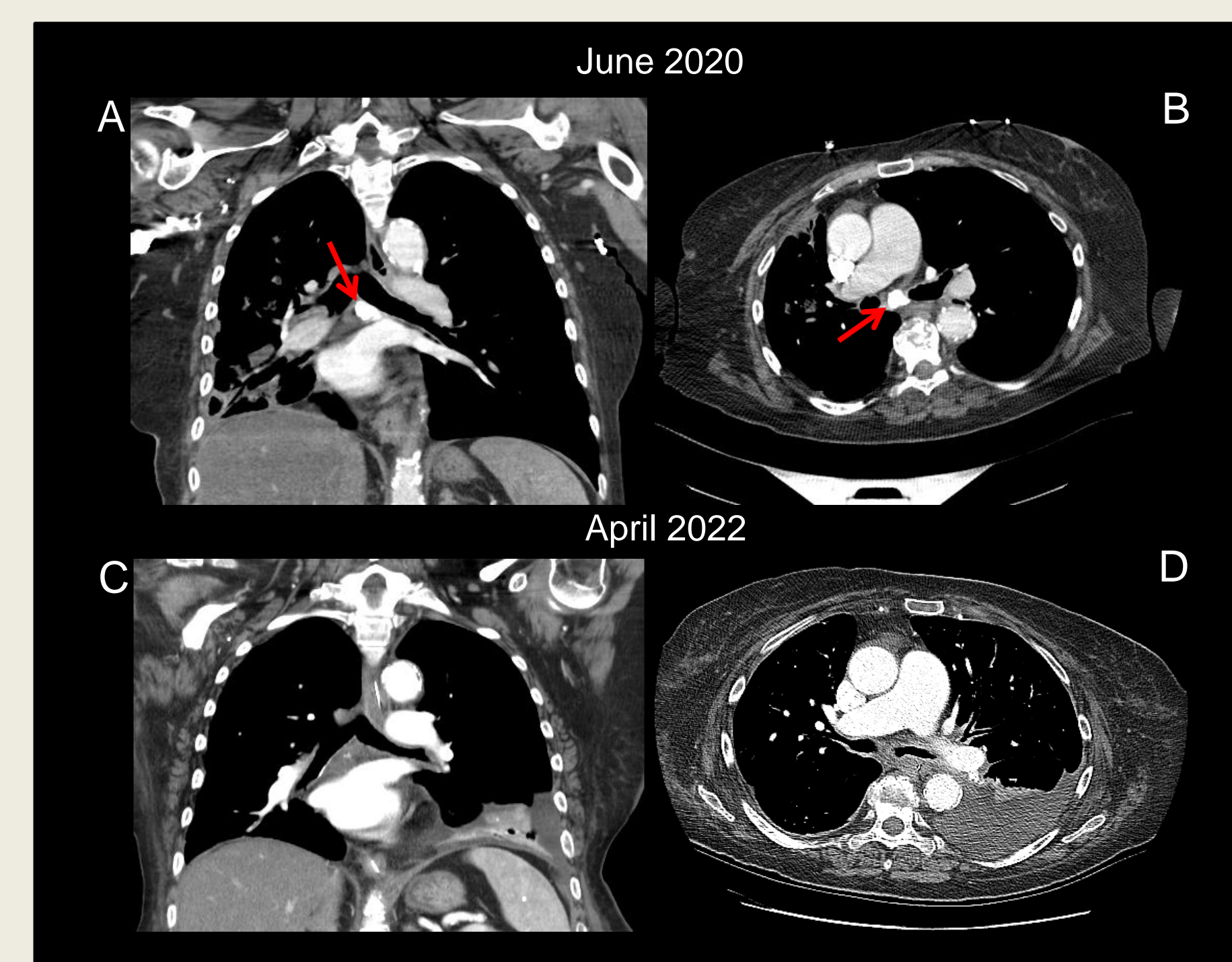


Figure 2

A subcarinal 2.3 cm broncholith seen on a chest CT performed 2 years prior was now noticeably absent, suggesting **broncholith erosion** as the cause of the BEF (Figure 3).

Biopsy at the fistula site revealed patchy hyperplastic squamous esophageal mucosa with no intraepithelial eosinophils and negative Grocott Methenamine Silver (GMS) stain.

Repeat endoscopy for initial endoscopic closure attempt noted a small divot in the middle third of the esophagus at the same distance from incisors at the previous site of the fistula (Figure 4) but attempts to confirm fistula site were unsuccessful despite multiple approaches including probing with a flexible guidewire and fluoroscopic contrast instillation.

A subsequent esophagram was obtained to evaluate for spontaneous fistula closure, but this confirmed ongoing presence of the BEF (Figure 5).

This prompted a combined bronchoscopic-endoscopic procedure with identification of the fistula opening from the bronchoscopic view, allowing passage of a flexible guidewire through the fistula tract into the esophagus. Once localized, endoscopic ablation of the fistula orifice with argon plasma coagulation followed by **over-the-scope clip (OTSC)** closure was performed. Fluoroscopic contrast and methylene blue instillation post OTSC closure showed adequate sealing of the BEF. Unfortunately, the patient developed symptomatic and radiographic recurrence at 2 weeks post OTSC placement.

Closure Attempt #1

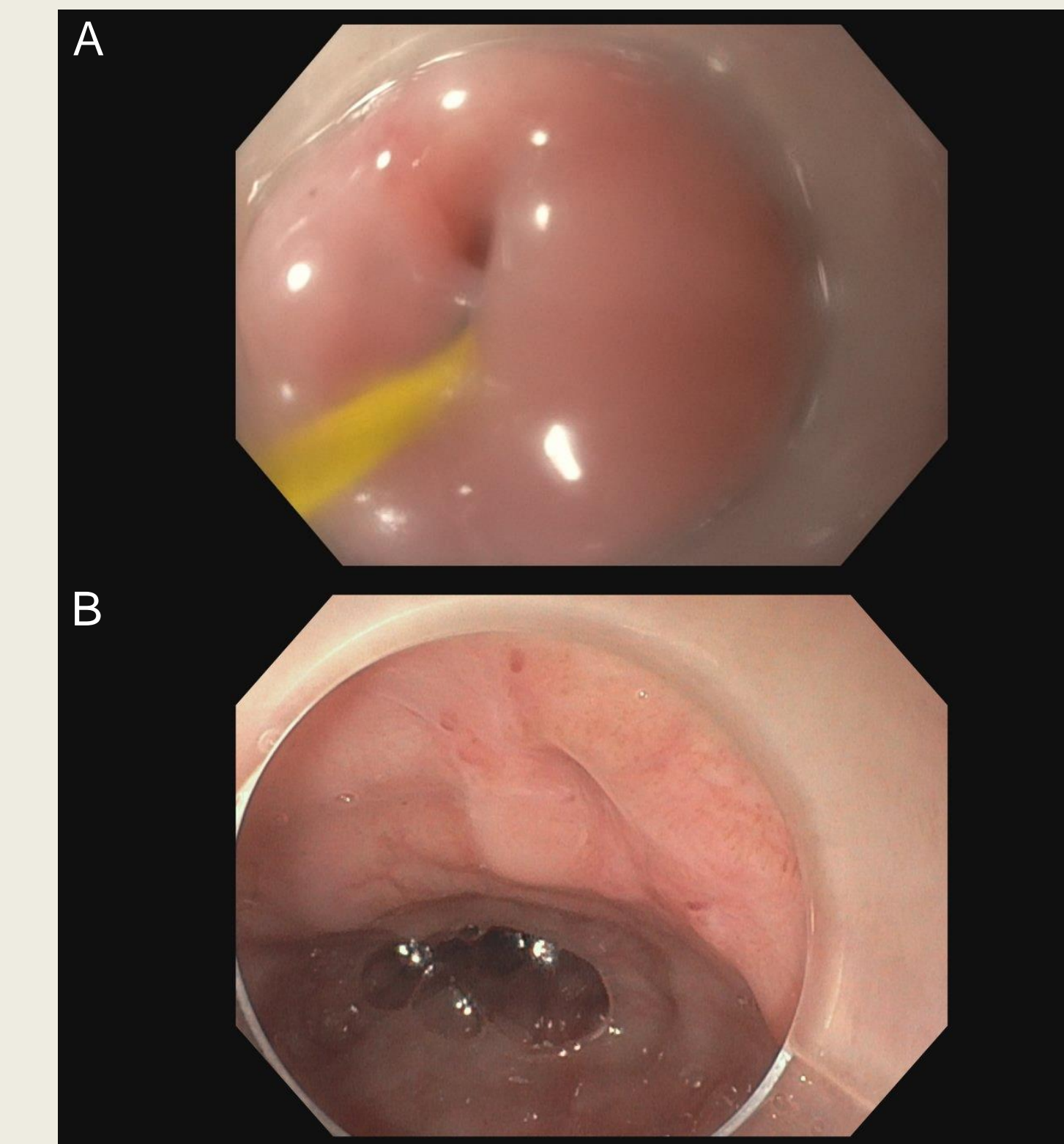


Figure 3

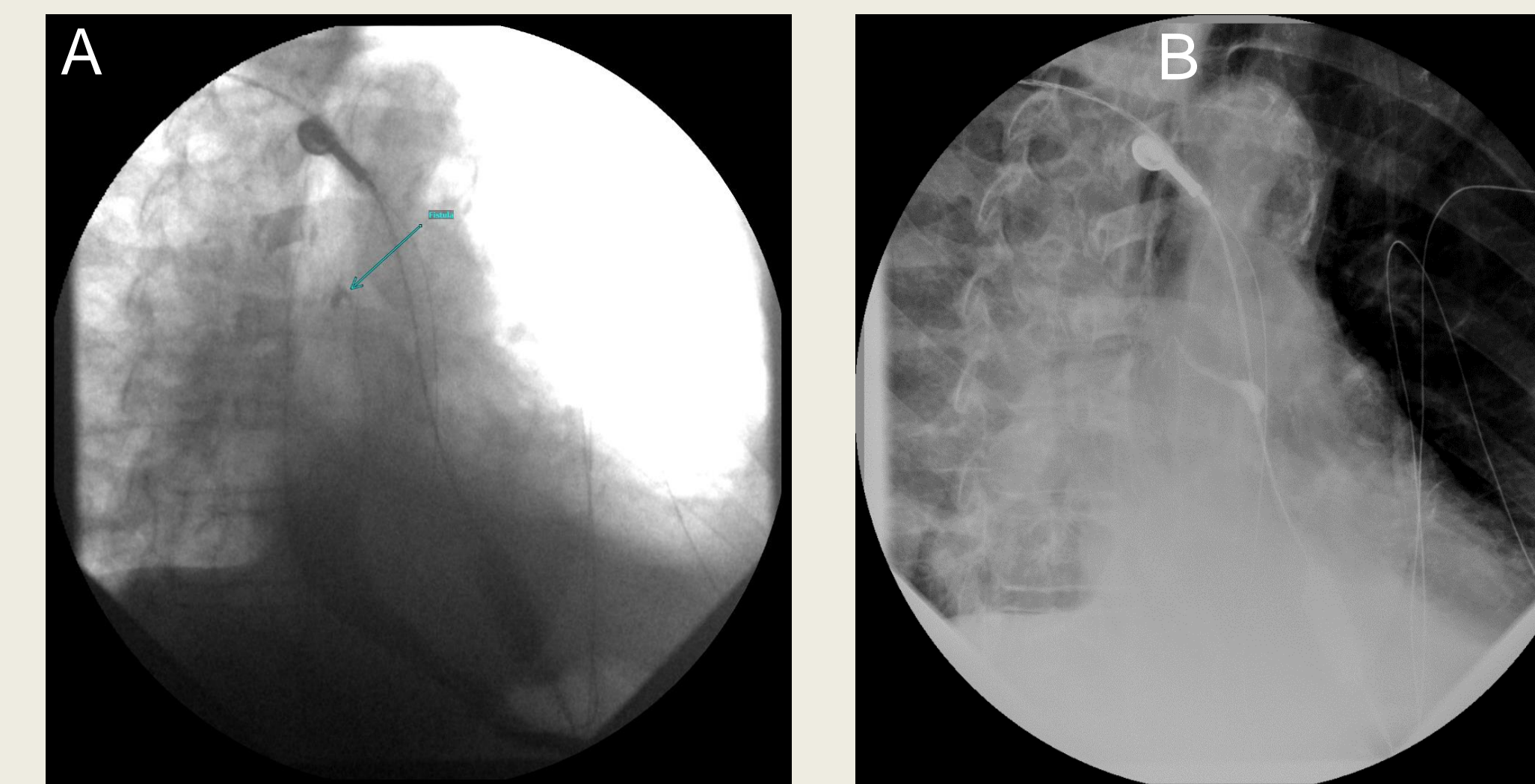


Figure 4

Closure Attempt #2

Endoscopy showed distal migration of the OTSC, which was removed, and a fully covered self-expandable metal stent was placed with endoscopic suture fixation (Figure 6), resulting in adequate sealing of the BEF. However, severe and persistent stent-induced chest pain necessitated removal of the stent one week later.

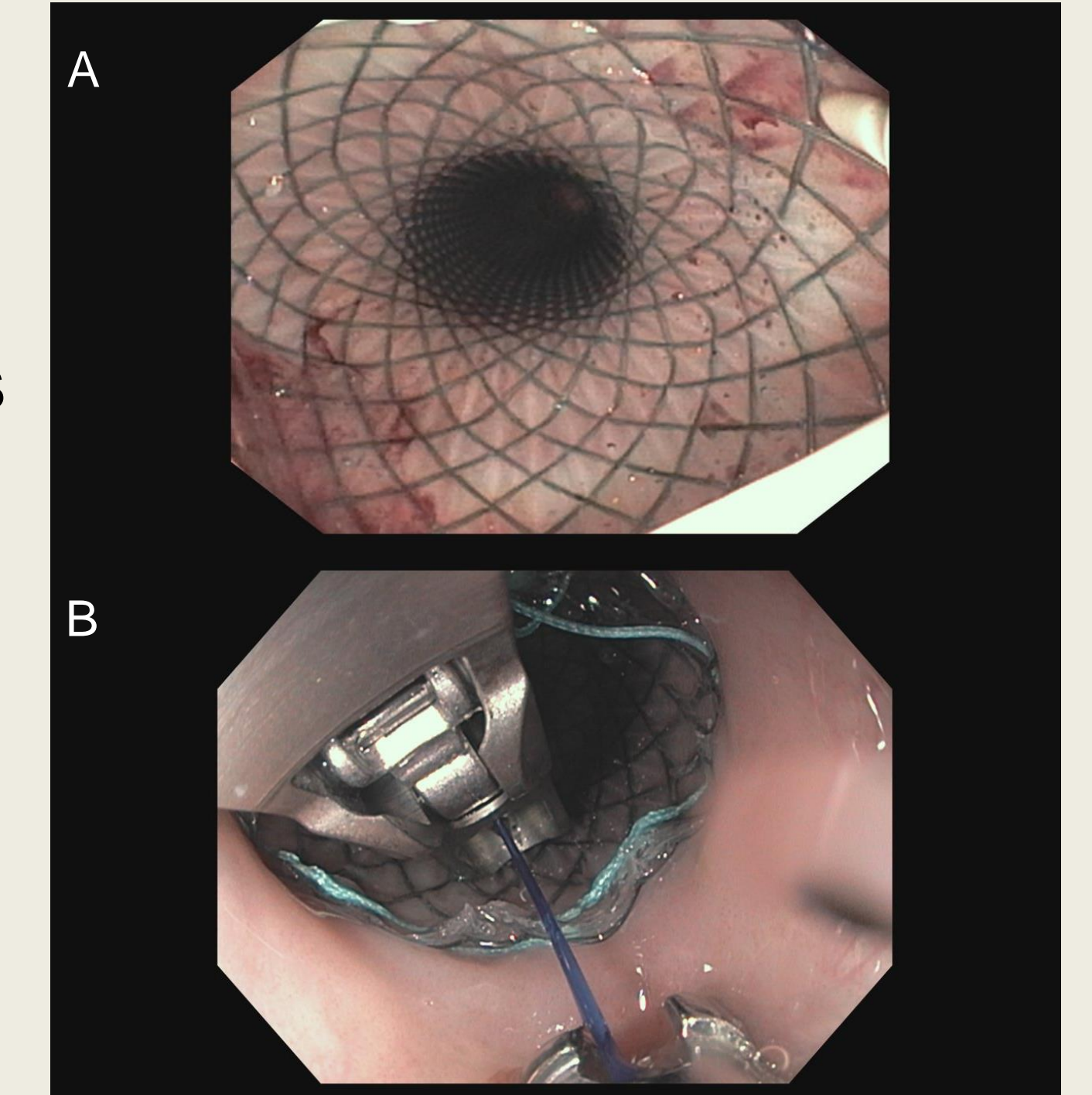


Figure 5

Closure Attempt #3

A third attempt at endoscopic repair of the BEF was performed utilizing endoscopic sutures to close the fistula site. In addition, a 24 Fr percutaneous endoscopic gastrostomy tube was placed through which both a jejunal extension was placed for enteral feeding and a retrograde pigtail drainage catheter maintained to bulb suction was placed in the esophagus above the BEF site to manage secretions.

CONCLUSIONS

This case highlights various challenges in endoscopic management of a benign BEF, and multiple endoscopic sessions and combination of techniques may be required for eventual fistula closure. Benign BEFs should be managed in a multidisciplinary fashion, and alternative treatment strategies can be pursued when endoscopic therapies are deemed unsuitable or fail at closing the fistula.³

REFERENCES

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