Novel dual scope via single lumen technique in resection and closure of esophagobronchial fistulas

Mary Read MD, Jordan E. Grubbs MD, Thomas E. Gaines MD FACS, Kyle L. Kleppe MD FACS
University of Tennessee Graduate School of Medicine, Knoxville, TN
University of Tennessee Medical Center, Knoxville, TN

INTRODUCTION

Benign esophagobronchial fistulas are a pathology that remains difficult to treat. Classically, fistula tracts were managed via an open surgical technique. Open technique had significant morbidity and mortality associated. Complications from thoracotomy can be severe and result in lengthy hospitalizations. More recently, endoscopic techniques have emerged. These techniques vary and offer a minimally invasive approach. Some initial techniques included mucosal abrasion, clip closure as well as stent placement. These techniques decreased morbidity, however, they only resulted in a fistula closure rate of about 53%. Mucosal resection has improved closure rates and endoscopic techniques have been introduced. Techniques have been developed to improve endoscopic resection. We present two cases of utilization of a bronchoscope alongside the gastroscope to aide in mucosal resection. This single lumen dual endoscopic technique provided several advantages to the previously described techniques.

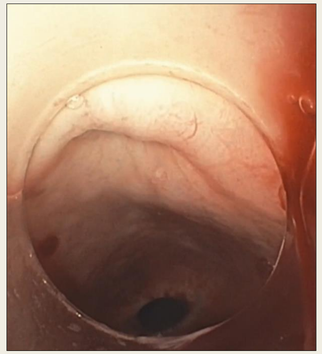
METHODS

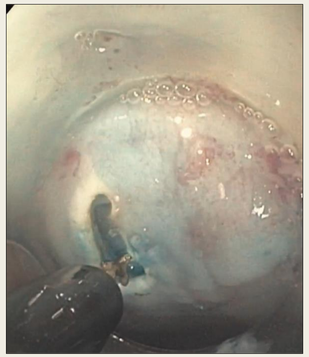
Two patients with benign esophagobronchial fistulas related to granulomatous lymphadenopathy presented for endoscopic management. Bronchoscopy and esophagoscopy were used to identify the fistula tract. Once identified, the esophageal mucosa was resected circumferentially around the fistula orifice using cautery . In Patient A, we attempted to use a previously described "clip in line" technique. However, the tissue was dense, and when attempting to manipulate the tissue the clip would become dislodged. This required multiple clips. The bronchoscope was then introduced into the esophagus alongside the gastroscope. Forceps via bronchoscope were then used to retract the tissue to assist in resection. Mucosal defect was then closed with clips. In Patient B, this technique was re-produced and allowed for successful resection of the fistula orifice. However, unlike in the first case, submucosal fibrosis prevented the successful application of clips for defect closure. A stent was therefore used to close defect.

PRINCIPLE ADVANTAGES OF TECHNIQUE

- Increased ability to manipulate tissue with greater range and force
- Directional control including pushing the tissue in addition to retraction
- Option to re-grasp the tissue when dislodged without having to fashion a new clip, allowing for improved efficiency
- Efficiency and flow of procedure is improved with the ability to have more instruments working simultaneously.

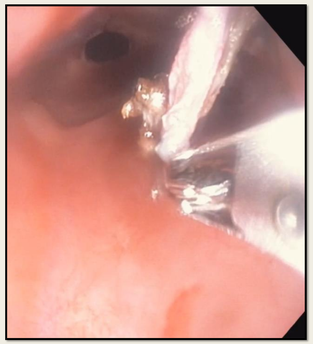
ENDOSCOPIC VIEW



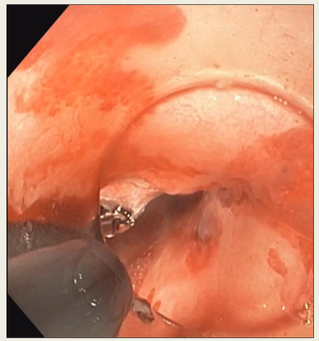


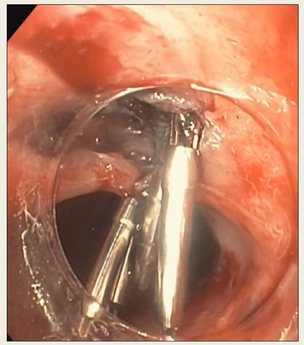


BRONCHOSCOPIC VIEW



ENDOSCOPIC VIEW





RESULTS

In both cases, each patient had successful resolution of their tracheoesophageal fistulas. Successful closure was demonstrated on imaging. For the first patient, esophagram performed for an unrelated reason revealed closure at 12 months. The second patient underwent esophagram and was asymptomatic at 8 months follow up.

CONCLUSION

Management of esophageal airway fistulas remains a challenging entity and increased success of closure has been demonstrated with mucosal resection. The technique described, utilizing an additional scope to aide in tissue manipulation improved the quality of resection and speed of the procedure. We believe this approach is promising and can provide an additional resource when treating these fistulas and other pathology endoluminally.

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