


# Successful Repair of Bronchoesophageal Fistula Through Uniportal Video-Assisted Thoracoscopic Surgery

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## Abstract

This report describes a case of successful repair of bronchoesophageal fistula through uniportal video-assisted thoracoscopic surgery. A 79-year-old female patient presented with persistent cough and aspiration pneumonia. Chest computed tomography and esophagography showed a bronchoesophageal fistula at right side wall of mid to lower esophagus. Esophagogastroduodenoscopy confirmed a fistula in the esophageal diverticulum. Surgical treatment was planned. The operation was performed through uniportal video-assisted thoracoscopic surgery. The patient was discharged 6 days postoperatively without any complication. No recurrence has been observed during 3 months follow-up in the outpatient clinic to date.

## Keywords

bronchoesophageal fistula, esophageal diverticulum, uniportal video-assisted thoracoscopic surgery, VATS

## Introduction

Although bronchoesophageal fistula (BEF) may be congenital or acquired, it is a rare disorder in adulthood. Congenital BEF is most frequent in infancy, which is due to noncompletion of the tracheoesophageal division in the early embryonic stage. Malignant tumors may be the cause of acquired BEF. The cause of acquired nonmalignant BEF includes chronic infections, radiation injury, traumatic injury, and postsurgical sequelae.<sup>1,2</sup> Esophageal diverticulum would result from esophageal motility disorders or external inflammatory reactions.<sup>3</sup> BEF fistula requires surgical repair and it should be performed as soon as the diagnosis is established. Surgical repair for BEF caused by esophageal diverticulum has been especially rare.<sup>4</sup> In this article, we report a case of successful repair of BEF, which is associated with esophageal diverticulum, through uniportal video-assisted thoracoscopic surgery (VATS).

## Case Report

The 79-year-old, nonsmoking, Asian female presented to our hospital with a persisting cough and signs of aspiration pneumonia that lasted more than 1 year. The patient had a history of pulmonary tuberculosis about 50 years ago. Chest computed tomography showed a fibrotic change in the right lower lobe basal segment and suspicious finding of the

nearby esophageal diverticulum. Water-soluble contrast esophagography showed a BEF at right side wall of mid to lower esophagus (Figure 2A). Esophagogastroduodenoscopy confirmed BEF in the esophageal diverticulum at 30 cm from the incisors (Figure 1).

The patient underwent uniportal VATS under general anesthesia with one-lung ventilation. An incision was made in the sixth intercostal space of the mid axillary line. The soft tissue and intercostal muscles were retracted with an X-small wound retractor (Alexis; Applied Medical) to secure the intercostal space. A 5-mm, 30° video thoracoscope and endoscope instrument were used. Dissection of the diverticulum and the fistulous tract was done with Ligasure (Valleylab, Covidien), and fistulectomy and diverticulectomy was done with endoscopic linear staplers. The muscular layer of esophagus was approximated with interrupted sutures. There was no bronchial and esophageal defect. The parietal pleural flap

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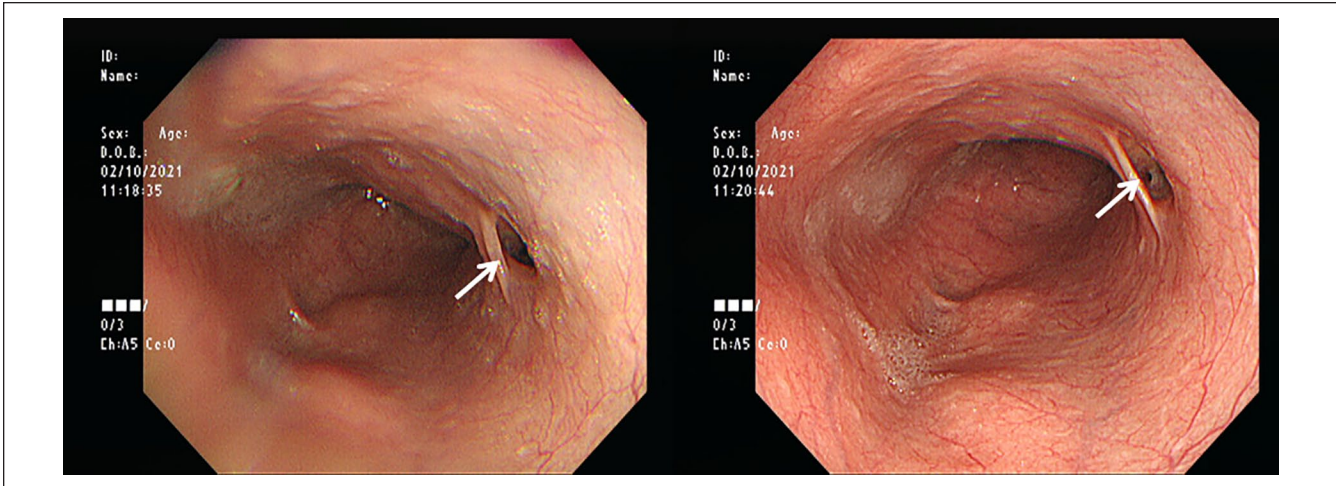
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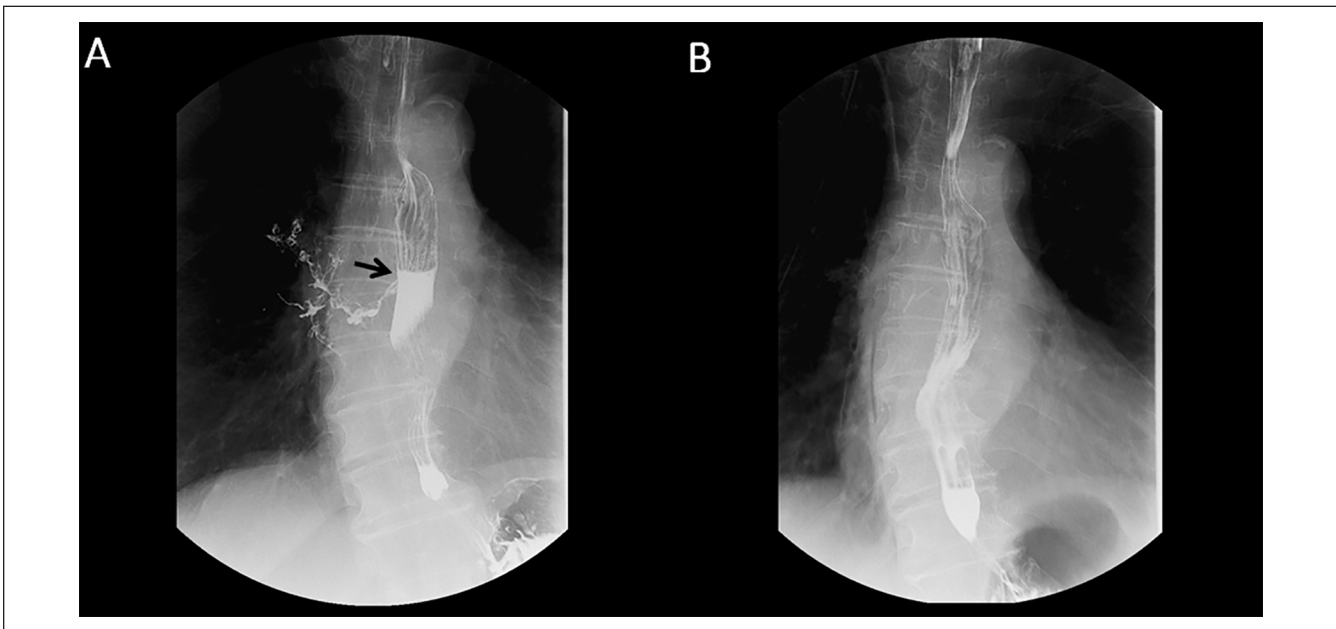
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**Figure 1.** The esophagogastroduodenoscopy shows a fistula in the esophageal diverticulum at 30 cm from the incisors (white arrow).

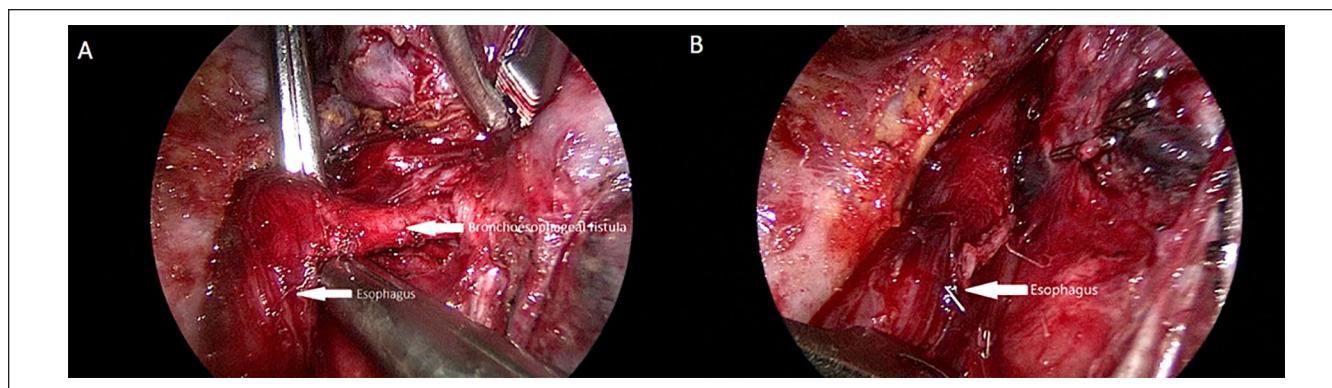


**Figure 2.** The preoperative esophagography shows bronchoesophageal fistula at right side wall of mid to lower esophagus (black arrow, A). There is no evidence of leakage in the postoperative esophagography (B).

was interposed between bronchial and esophageal ends of the divided fistula. At the end of the surgical procedure, a chest tube (24 Fr) was inserted through a single incision (Figure 3). The postoperative course was uneventful. On postoperative day 5, esophagography was performed to detect any esophageal leakage. There was no evidence of contrast leakage (Figure 2B). The patient resumed diet and discharged on postoperative day 6. No recurrence has been observed during 3 months follow-up in the outpatient clinic to date.

### Comment

Although BEF is rarely diagnosed in adults, it may lead to fatal complication, such as aspiration pneumonia. The most common causes for the acquired BEF are postintubation injury and previous esophageal surgery.<sup>1,2</sup> The BEF caused by esophageal diverticulum was rarely reported and there were 5 reports in literatures till now.<sup>4</sup> The methods to diagnose BEF are esophagography and bronchoscopy or esophagogastroduodenoscopy.<sup>5</sup> Surgical repair



**Figure 3.** Exposure of the bronchoesophageal fistula (A). After fistulectomy and diverticulectomy was done (B).

remains the treatment of choice and the most frequent approach is thoracotomy.<sup>6</sup> Currently, VATS has become the widely accepted approach since VATS has an advantage in alleviating the postoperative pain when compared with thoracotomy. Moreover, uniportal VATS could be a feasible and safe alternative compared with traditional VATS with regard to effective pain control, in-hospital mortality, and postoperative complication rates.<sup>7,8</sup> We believe that uniportal VATS could be a viable method for BEF repair.

#### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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#### Ethics Approval

Our institution does not require ethical approval for reporting individual cases or case series.

#### Informed Consent

Written informed consent was obtained from the patient(s) for their anonymized information to be published in this article.

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