

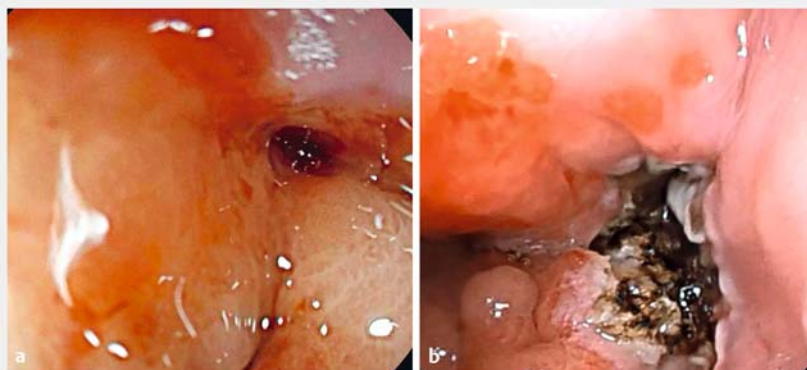
Successful closure of a refractory gastrobronchial fistula using endoscopic mucosal ablation followed by single loop-and-clips technique



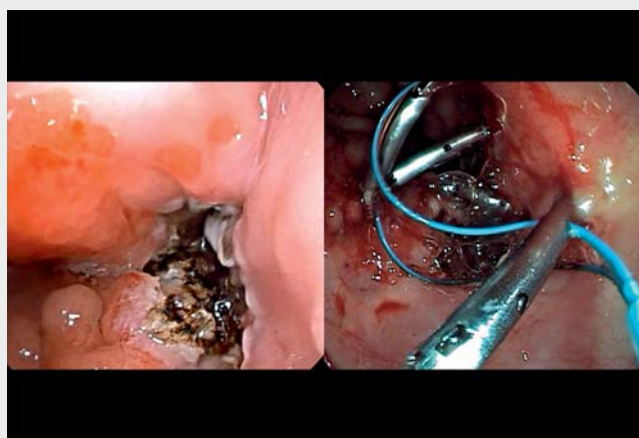
A 78-year-old man developed a late fistula between the gastroplasty pouch and right bronchus following Ivor Lewis esophagectomy for esophageal neoplasia (► **Fig. 1**). He was unable to ingest food orally, necessitating the placement of a permanent percutaneous jejunostomy. He had a persistent cough, and the fistula was refractory to various endoscopic interventions, including placement of clips, tissue adhesives, and stents.

In the first session, the fistula was treated using a combination of endoscopic submucosal dissection (ESD) and over-the-scope (OTS) clip. ESD was performed around and inside the fistula tract, aiming to create a 1-cm mucosal patch that was centrally positioned at the orifice (► **Video 1**). To extract the fistula from the wall, traction was applied to the mucosal flap using the clip-with-line traction technique, enabling deeper dissection of the fistula tract. Finally, an OTS clip was deployed to close the orifice. However, after a period of 7 days, the patient experienced a recurrence of symptoms due to the detachment of the OTS clip from the gastrointestinal wall.

During the second session, a persistent 5-mm fibrotic fistula orifice was observed. To address this, a combination of mucosal ablation and the single loop-and-clips technique (“King” closure) was performed (► **Fig. 2**). Endoscopic mucosal ablation was performed using argon plasma coagulation targeting the intra-fistular mucosa and a surrounding circumferential area to eliminate the mucosal scar tissue and promote the healing of the fistular orifice (► **Fig. 1**). Next, the King closure technique was successfully applied using five clips and a coaxial polyloop. Immediate post-procedure capnography did not detect the presence of CO₂. The follow-up at 8 weeks after the procedure confirmed fistula resolution based on the absence of symptoms and no contrast leakage on



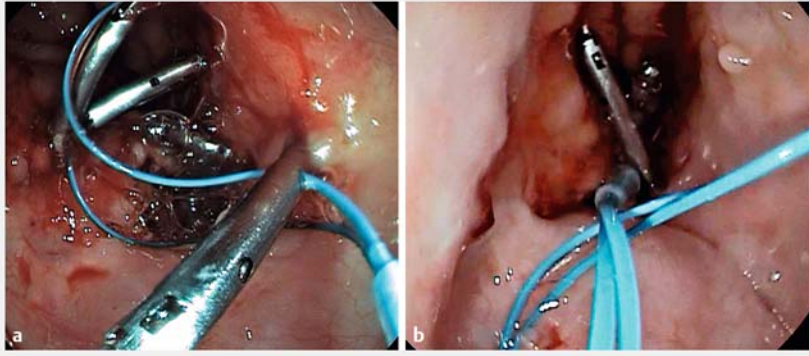
► **Fig. 1** Endoscopic images of the post-esophagectomy fistula **a** before and **b** after endoscopic mucosal ablation using argon plasma coagulation.



► **Video 1** Ultimately successful closure of a refractory gastrobronchial fistula using the combination of endoscopic submucosal dissection (ESD) and application of an over-the-scope (OTS) clip, followed later by argon ablation and single loop-and-clip technique.

imaging (► **Fig. 3**). At the 1-year follow-up, the patient remained asymptomatic. The management of esophagobronchial and gastrobronchial fistulas is challenging. Recently, some French investigators have reported the use of ESD followed by the application of an OTS clip for the treatment of severe fistulas. However, this method can fail in some cases [1–3].

Studies have reported that the King closure is a safe technique and provides superior long-term histological healing outcomes compared with OTS clipping [4–5]. In conclusion, perifistular mucosal ablation followed by the single loop-and-clips technique appears to be an effective approach for the treatment of complex fistulas.



► **Fig. 2 a, b** Gastrobronchial fistula closure using the single-loop-and-clips technique.



► **Fig. 3** Esophagogram showing no signs of persistence of fistula.

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Competing interests

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