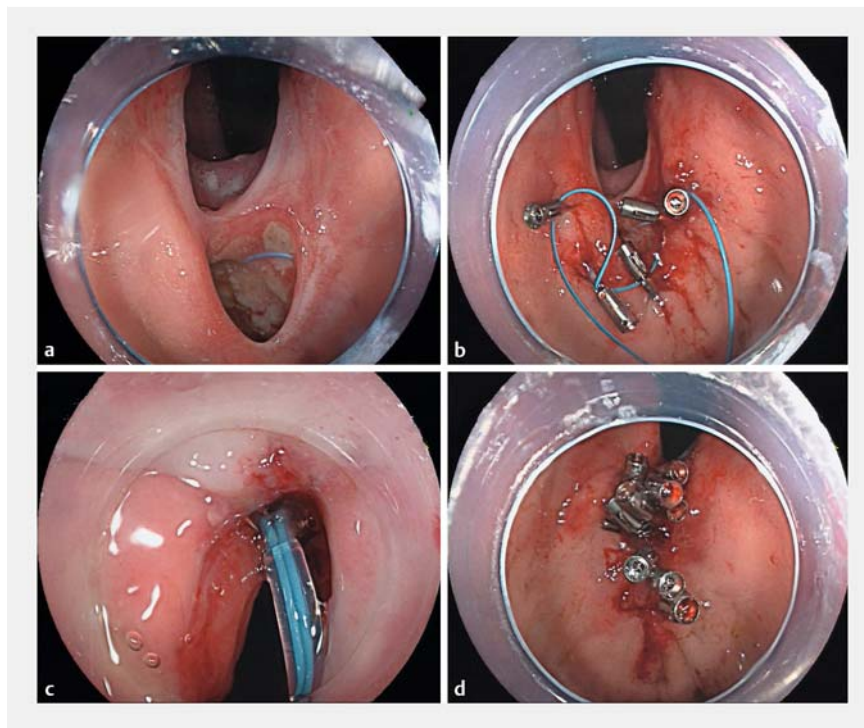


Successful closure of a rare tracheogastroesophageal fistula with an endoloop and endoclips

Tracheoesophageal fistula after esophagectomy is a rare complication with a high mortality rate. Conventional treatment of tracheoesophageal fistulas includes surgical re-exploration, or endoscopic and bronchoscopic techniques with stent implantation or fibrin glue application [1,2]. Here we report the successful treatment of a tracheogastroesophageal fistula with an endoloop-aided purse-string suture.

A 51-year-old man underwent thoracoscopic esophagectomy with gastric reconstruction for esophageal carcinoma. He subsequently developed symptoms of choking, especially after intake of liquid. Right lateral pneumonia was found 3 months later on computed tomography (CT) scanning, and esophago-gastroduodenoscopy (EGD) revealed a tracheogastroesophageal fistula around the esophagogastric anastomosis at the fundus of the stomach, measuring about 20×16 mm (► **Fig. 1 a**). A diagnosis of tracheogastroesophageal fistula was made.

We decided to perform a purse-string suture using an endoloop and endoclips to close the fistula. The endoloop (HX-400U-30; Olympus Medical Co.) was placed around the fistula orifice and anchored with nine endoclips (R-C/D-26-165/195C; Micro-Tech [Nanjing] Co. Ltd.) (► **Fig. 1 b**). The endoloop was then tightened to close the defect (► **Fig. 1 c**). A tiny leak was still seen after completion of the purse-string suture because of high tension. Subsequently, three additional endoclips were applied to completely close the tiny leak (► **Fig. 1 d**). Eventually, the fistula was successfully closed and there were no bubbles when the wound was flushed (► **Video 1**). After the endoscopic closure, no further symptoms of choking occurred during his period of hospitalization. EGD 3 months later showed that the fistula had completely healed (► **Fig. 2**).



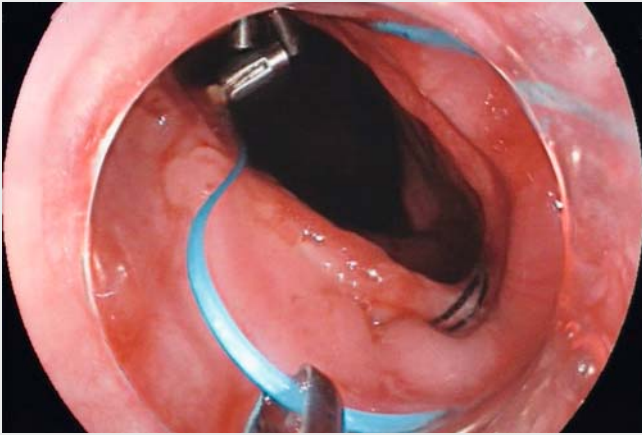
► **Fig. 1** The procedure of purse-string suture for a tracheogastroesophageal fistula. **a** View of the tracheal fistula located in the gastric fundus and the fistula connecting the esophagus and stomach. **b** An endoloop was placed around the fistula orifice and anchored with nine endoclips. **c** The endoloop was then tightened to close the defect. **d** Three more endoclips were used to close the tiny leak.

The method of purse-string suture with endoloop and endoclips has been previously reported for closure of a large Mallory–Weiss tear and a large gastric defect after complex endoscopic submucosal dissection [3,4]. In our case, the method was proposed as a treatment option for tracheogastroesophageal fistula following esophagectomy to avoid surgical re-intervention. To our knowledge, this is the first report on the successful endoscopic closure of a tracheogastroesophageal fistula with an endoloop and endoclips.

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► **Fig. 2** The fistula was completely healed and had disappeared 3 months after the endoscopic closure.



Video 1 Successful closure of a rare tracheogastroesophageal fistula with endoloop and endoclips.

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Competing interests

None

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