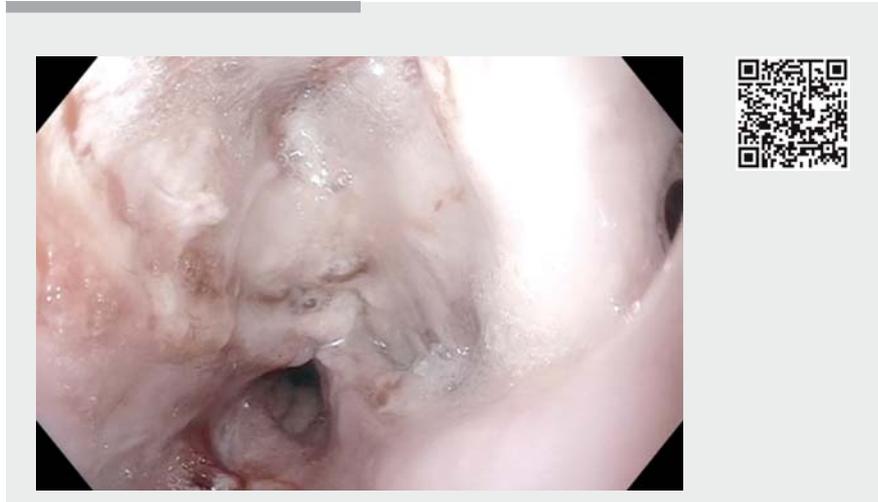


Endoscopic closure of a 6-cm long esophageal defect with tracheoesophageal fistula

A 68-year-old man with metastatic esophageal adenocarcinoma previously treated with esophagectomy and chemoradiation presented with new-onset dysphagia and cough. A recent good response to chemotherapy resulted in shrinkage of a 7-cm mediastinal metastasis. Chest computed tomography revealed a large esophageal defect. A barium swallow confirmed the presence of a tracheoesophageal fistula (TEF). Upper endoscopy showed a 6-cm defect on the anterior esophageal wall with a clear opening into the trachea (► **Fig. 1**, ► **Video 1**).

An upper gastroscope was advanced to the esophagojejunostomy. A 0.035-inch guidewire was passed through the scope and coiled within the jejunum. The scope was withdrawn while maintaining the position of the wire and a double-channel endoscope was fitted with an endoscopic suturing device. The defect was closed using two running sutures, with an average of 5 bites per suture. Immediately after suturing, the patient's capnography improved significantly. Subsequently, a 23 mm × 12 cm fully covered self-expandable metal stent was successfully placed, with the proximal flange positioned at 2 cm above the esophageal defect and just distal to the upper esophageal sphincter (► **Fig. 2**). The esophageal stent was secured with two sutures (► **Fig. 3**). A subsequent esophagram showed no extravasation of contrast (► **Fig. 4**). The patient tolerated an oral diet and was discharged home in a good condition.

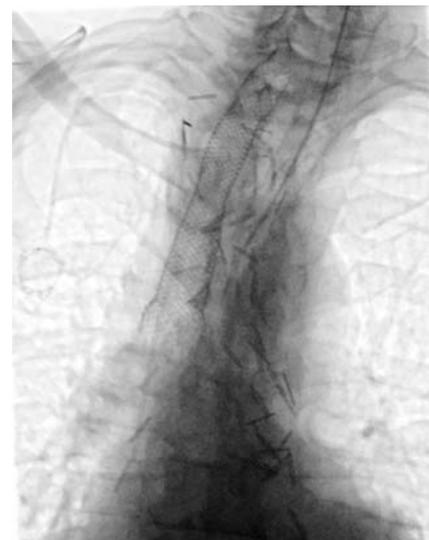
TEF is a rare yet life-threatening condition that develops in up to 5% of patients with esophageal malignancy [1]. Management is challenging, and closure often requires a multidisciplinary approach and is associated with high rates of recurrence [2]. Surgery is associated with extremely high morbidity, and endoscopic therapy has been proposed as a



► **Video 1** Successful closure of a large tracheoesophageal fistula using combined modalities of endoscopic suturing and metal stent placement.



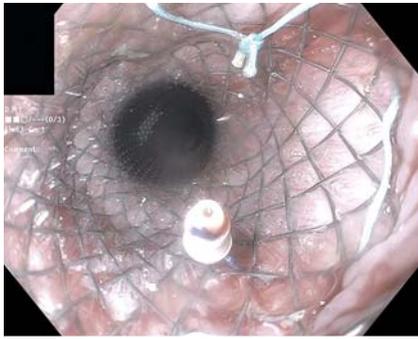
► **Fig. 1** Endoscopic view of a large esophageal defect and tracheoesophageal fistula (arrow) in the upper esophagus.



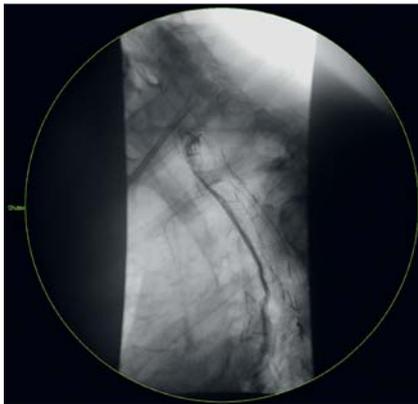
► **Fig. 2** A fully covered self-expandable metal stent was successfully deployed traversing the defect.

minimally invasive and relatively safe modality that improves the quality of life in patients with TEF [3,4]. The current case demonstrates that very large esophageal defects and fistulae can be successfully closed using a multi-modality approach of endoscopic suturing and stent placement.

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► **Fig. 3** The proximal flange of the stent was sutured to the esophageal wall to prevent stent migration.



► **Fig. 4** Barium swallow test showing no extravasation of contrast confirming complete closure.

Competing interests

Dr. Sharaiha is a consultant for Boston Scientific, Olympus, Apollo, and Medtronic. Dr. Carr-Locke is a consultant for Steris, Telemed, Boston Scientific, Valentx, Ergogrip, and Screwire.

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