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Closure of residual fistula after esophageal atresia repair in a 5-year-old using endoscopic submucosal dissection of surrounding mucosa

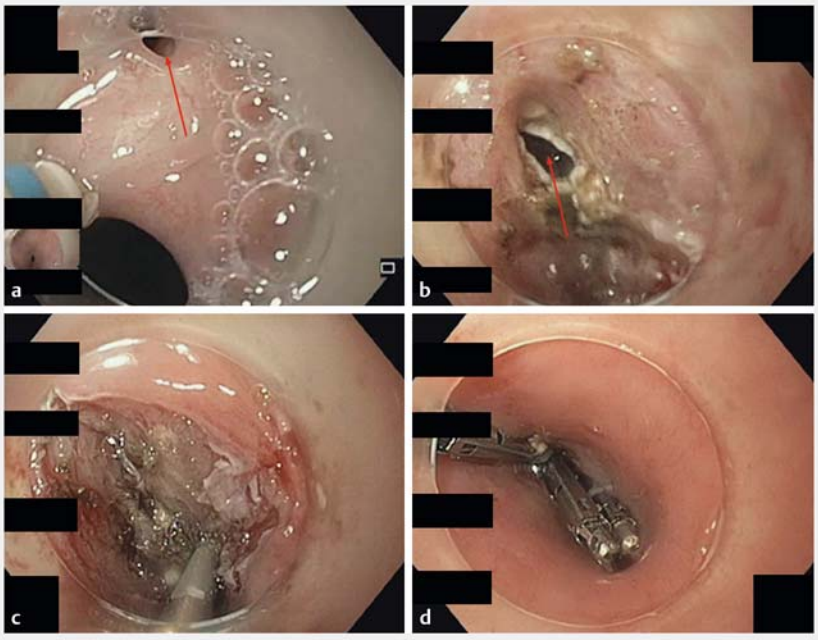
Esotracheal fistulas after esophageal atresia repair recur in 5 to 10% of cases [1,2] and lead to recurrent pneumonia or mediastinitis. Several surgical techniques are effective in closing an esotracheal fistula by thoracotomy or cervicotomy [3], but endoscopic success has never been published for this indication.

We present the case of a 5-year-old patient with a previous history of type III esophageal atresia neonatal surgery, chronic respiratory congestion, and poor weight gain. She experienced a fistula recurrence with a large tracheoesophageal defect (▶ **Fig. 1**).

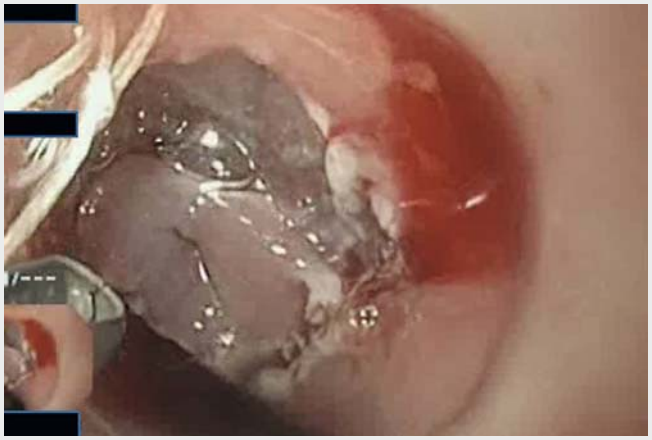
We performed an endoscopic fistula closure after prior endoscopic submucosal dissection (ESD) of the surrounding mucosa as previously reported for a button battery-induced esotracheal fistula [4] or idiopathic chronic fistula [5]. The patient underwent tracheal intubation with balloon placement just under the fistula. ESD was assisted by clip-and-line traction to dissect deeper into the fistula tract (▶ **Video 1**). Once the mucosa was resected, we closed the area using four clips anchored in the submucosa. A radiological check objectified the tightness of the closure.

The postoperative consequences were favorable, marked by a disappearance of the patient's respiratory symptoms during the following 3 months. A radiological check with opacification carried out 3 months before the gesture shows a tiny residual fistula and pseudo-diverticular scarring (▶ **Fig. 2**). The patient underwent a second procedure, during which ESD of the surrounding mucosa was done with deep cutting of the diverticular wall. Then, a new closure of the resected area was done. The closure of the residual fistula was confirmed by radiological control after 1 month.

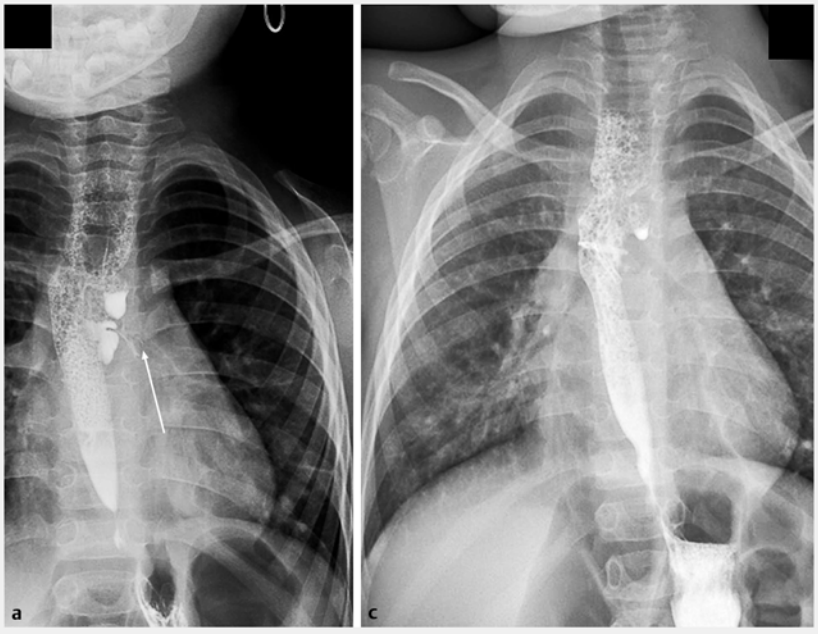
Currently, the management of recurrent esotracheal fistulas after atresia surgery is not well defined. Endoscopic closure after ESD of the surrounding mucosa



▶ **Fig. 1** First endoscopic submucosal dissection to remove mucosa surrounding the fistula. **a** Appearance of the residual tracheoesophageal fistula (red arrow showing the fistula). **b, c** Deep dissection of the entire fistulous tract using a clip-and-line system. **d** Clips placed in the submucosa to close the orifice.



Video 1 Successful endoscopic closure of a residual fistula after esophageal atresia repair in a 5-year-old using endoscopic submucosal dissection of the surrounding mucosa.



▶ **Fig. 2** Aspect of esophageal transit before and after the second procedure. **a** Radiological opacification after first endoscopic closure: small residual fistula and pseudo-diverticular scarring (red arrow showing the fistula). **b** Radiological opacification after second endoscopic gesture: no residual fistula.

could allow a definitive resolution of the esotracheal fistulas and avoid a second risky surgery.

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Competing interests

The authors declare that they have no conflict of interest.

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