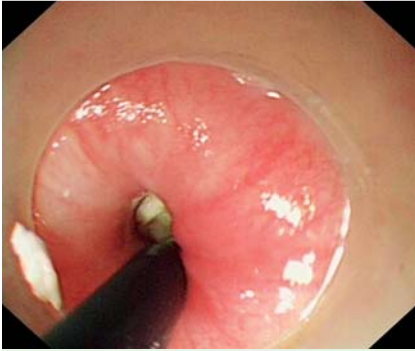


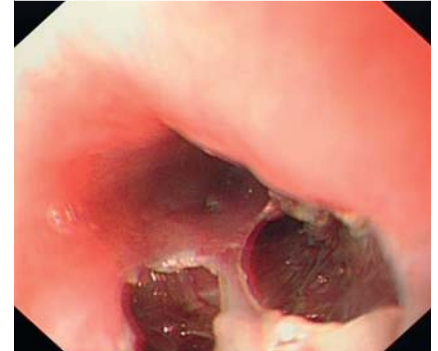
## Successful use of a covered, retrievable stent to seal a ruptured mucosal flap safety valve during peroral endoscopic myotomy in a child with achalasia



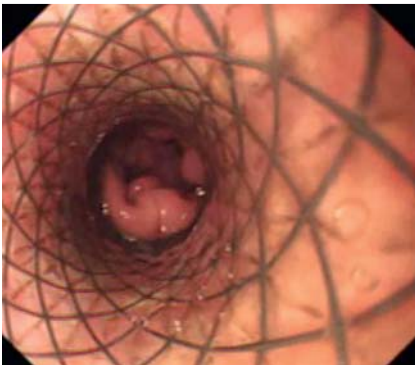
**Fig. 1** Prior to carrying out peroral endoscopic myotomy (POEM) in an 8-year-old child with dysphagia, the cardia was too tight for an endoscope to pass through.



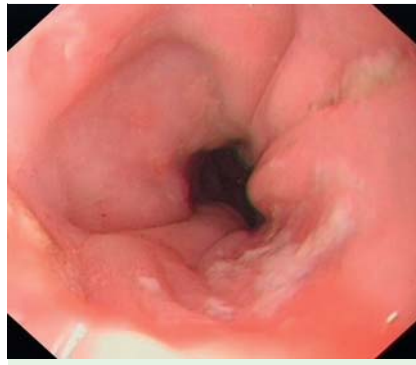
**Fig. 2** The opened cardia after peroral endoscopic myotomy (POEM).



**Fig. 3** The mucosal flap safety valve ruptured in an irregular fashion at the level of the lower esophagus.



**Fig. 4** A covered, retrievable Ni-Ti stent was used to seal the rupture.



**Fig. 5** After 3 weeks, the stent was removed and the rupture of mucosal flap healed well.

An 8-year-old boy was admitted to our hospital due to intermittent episodes of dysphagia over the past 5 years, which was severely affecting his physical growth and quality of life. He was diagnosed as having achalasia 3 years ago, and had twice undergone endoscopic balloon dilation. However, both times the dysphagia recurred very soon after the dilation procedure. The child was only able to swallow fluids at the time of admission.

We carried out peroral endoscopic myotomy (POEM) after careful evaluation. Prior to the procedure, the cardia was so tight that the endoscope could not pass through (● Fig. 1). A submucosal injection was commenced at the level of the mid-esophagus, approximately 8 cm proximal

to the cardia, and a submucosal tunnel was created accordingly. The muscle layer was completely divided starting 2 cm distal to the mucosal entry and ending within the stomach 3 cm distal to the cardia. After the myotomy, the endoscope advanced smoothly through the cardia (● Fig. 2). However, the submucosal scarring resulting from the previous balloon dilation made the procedure very difficult, and a 2-cm rupture of the mucosal flap safety valve occurred at the lower esophagus (● Fig. 3). Due to the risk of restenosis, we did not close the rupture with endoscopic clips. Instead, a covered, retrievable nickel-titanium (Ni-Ti) stent was placed to seal the rupture (● Fig. 4). The stent was removed after 3 weeks when the rupture had healed (● Fig. 5).

The child was easily able to eat solid food 3 days after POEM. At follow-up 1 month after POEM, the child's weight had increased by 5 kg, and the barium meal traveled through the cardia without delay (● Fig. 6). The pressure at the lower esophageal sphincter decreased from 90 mmHg before POEM to 16 mmHg.

POEM is a novel endoscopic esophago-myotomy procedure for the treatment of achalasia and was first reported by Inoue et al. [1] in 2010. Although several studies with favorable results have been published [2–5], the complications related to the procedure and their management are still not fully elucidated. As far as we are aware, this is the first report of use of a covered, retrievable Ni-Ti stent to seal a ruptured mucosal flap safety valve during POEM.

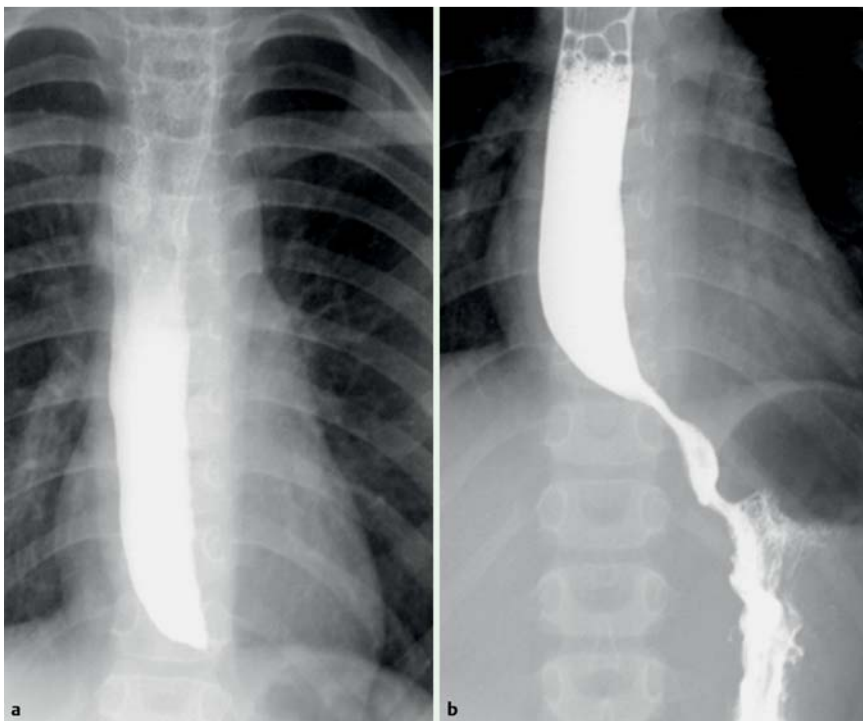
Endoscopy\_UCTN\_Code\_CPL\_1AH\_2AK

**Competing interests:** None

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**Fig. 6** **a** The narrow and beak-shaped cardia on barium swallow before peroral endoscopic myotomy (POEM). **b** The barium meal easily passed through the cardia 1 month after POEM.

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## Bibliography

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