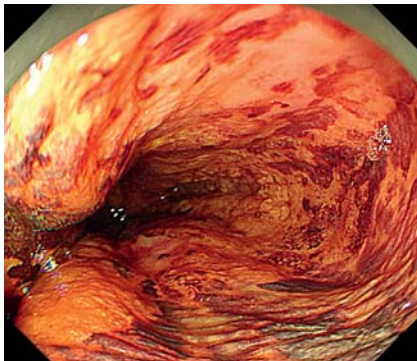


## Unexpected gastric perforation during endoscopic submucosal tunnel dissection for early circumferential esophageal cancer

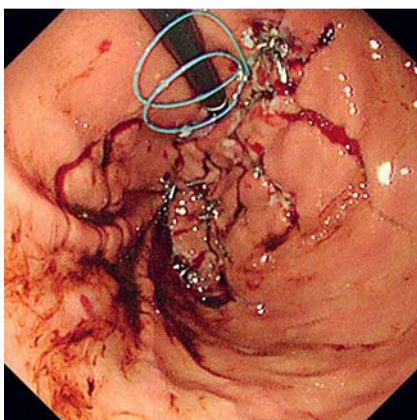
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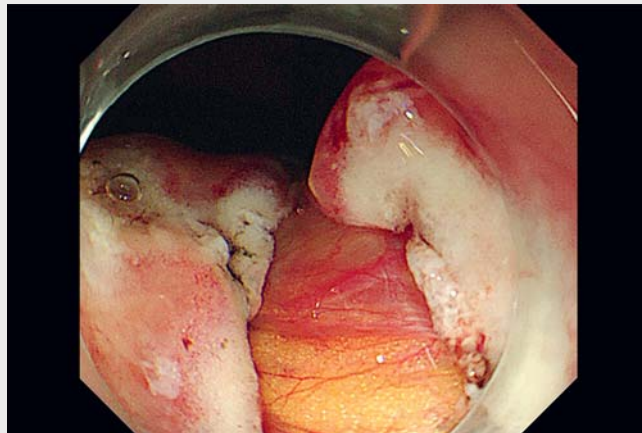
► **Fig. 1** A circumferential esophageal lesion.



► **Fig. 2** En bloc circumferentially resected specimen presented over a plastic tube.



► **Fig. 3** View of the stomach after closure of the perforation site and the multiple gastric tears.



► **Video 1** Multiple gastric tears including a 3-cm perforation with oozing extraluminal omental vessels were observed during endoscopic submucosal tunnel dissection for an early circumferential esophageal cancer.

Endoscopic submucosal dissection (ESD) has been widely accepted as an effective and minimally invasive treatment for superficial esophageal neoplasms. Mallory–Weiss tear (MWT) during esophageal ESD has been recognized as a possible complication, with an approximate incidence of 5.4% according to Chen et al. [1] Here, we report a very rare case in which Mallory–Weiss tear led to severe gastric perforation during esophageal ESD.

An 82-year-old man was admitted for treatment of a circumferential superficial esophageal neoplasm (► **Fig. 1**). Endoscopic submucosal tunnel dissection (ESTD) – a modified ESD method – was performed by the highly skilled endoscopist, under general anesthesia. Carbon dioxide was used for insufflation. The procedure has been described previously [2].

Repeated gas suction was applied intentionally every 15–20 minutes to reduce the gastric pressure. However, abrupt massive gastric bleeding with a large amount of blood gushing up into the



► **Fig. 4** Follow-up endoscopy after 3 months.

esophagus was noted approximately 45 minutes after the operation started, when we were establishing a submucosal tunnel. The endoscope was immediately reinserted into the stomach for inspection. Multiple tears were observed, one of which was 3 cm in size and full thickness, with oozing extraluminal omental vessels (► **Video 1**). The oozing was stopped successfully by coagulating forceps. The ESTD procedure was then continued

and completed uneventfully, with a total procedure time of 116 minutes. Finally, en bloc resection was achieved without any muscularis injury (► Fig. 2). After successfully managing the esophageal wound, we sutured the large perforation in the stomach using the endoloop string method and closed all other tears with clips (► Fig. 3).


The patient did well after the procedure and was discharged on postoperative Day 5 without any further adverse events. Follow-up endoscopy 3 months later showed good healing at all tearing sites (► Fig. 4).

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### Competing interests

The authors declare that they have no conflict of interest.

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