

## Emergency endoscopic negative pressure therapy of a long oesophageal perforation in eosinophilic esophagitis with a single-lumen nasogastric tube-like open-pore film drain

After a bolus event with recurrent hematemesis, a 46-year-old patient complained of severe thoracic pain. Computed tomography revealed extensive paraesophageal mediastinal emphysema over



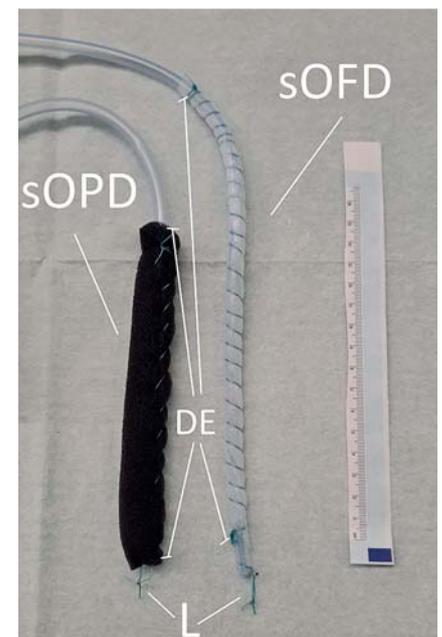
► **Fig. 1** Initial computed tomography shows the mediastinal emphysema (arrows) 3 hours after the spontaneous perforation event. Source: Department of Diagnostic and Interventional Radiology of Marienkrankenhaus Hamburg.

the entire length of the esophagus (► **Fig. 1**, ► **Video 1**).

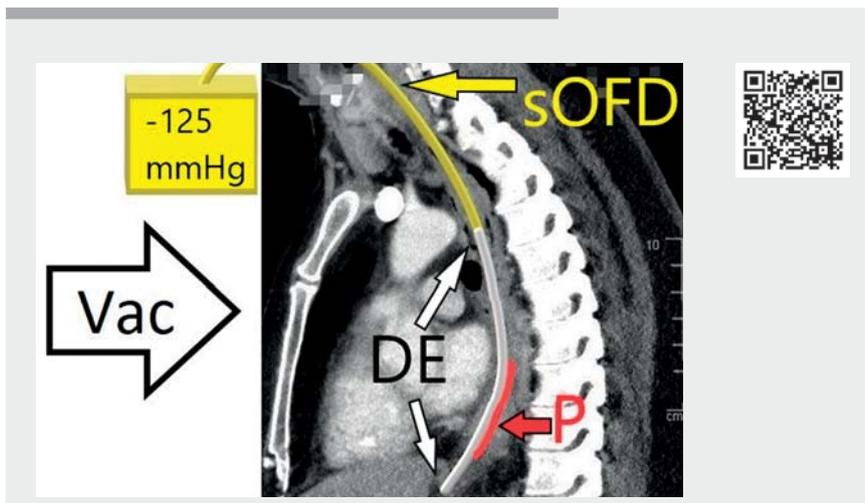
During endoscopy with CO<sub>2</sub>-inflation, an 8-cm transmural distal perforation (from 31–39 cm) was found with gaping wound edges. An extraluminal wound cavity could not be passed. Within 6 hours after the perforation event, immediately after the endoscopic diagnosis, intraluminal endoscopic negative pressure therapy was established with continuous negative pressure of –125 mmHg (ACTIV.A.C., KCI USA Inc., San Antonio, Texas, USA) [1, 2]. For the initial emergency treatment, we used a single-lumen open-pore film drain with a 25-cm drainage element (Suprasorb CNP drainage film; Lohmann & Rauscher, Rengsdorf, Germany) (► **Fig. 2**). The long drainage element covered the perforation defect completely [3]. The single-lumen open-pore film drain is like a nasogastric tube (NGT), but with the additional benefit that suction can be applied. The thin diameter of 6 mm allows transnasal insertion.

After 36 hours, the drain was replaced with a single-lumen open-pore polyurethane foam drain with a 15-cm drainage element (► **Fig. 2**) [1, 2, 4]. The perforation defect had already been taped and was still present as a broad ulceration (► **Fig. 3**).

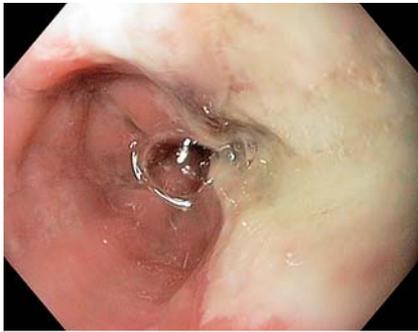
After a total of 4 days, intraluminal endoscopic negative pressure therapy ended with stable wound conditions (► **Fig. 4**, ► **Video 1**). The patient was discharged



► **Fig. 2** Two types of open-pore drains with long drainage elements were used to cover the long perforation defect for intraluminal endoscopic negative pressure therapy with 125 mmHg of negative pressure. A single-lumen open-pore film drain and a polyurethane foam drain were used. Initial emergency endoscopic negative pressure therapy was started with the nasogastric tube (NGT)-like single-lumen open-pore film drain. The drain had a diameter of only 6 mm. It was easily inserted like an NGT through the nose. sOFPD, single-lumen open-pore film drain; SOPD, single-lumen open-pore polyurethane foam drain; DE, drainage element; L, loop.



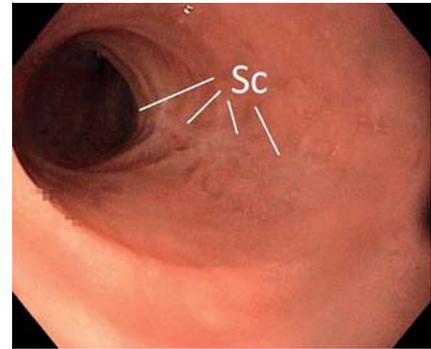
► **Video 1** Emergency intraluminal endoscopic negative pressure therapy with a nasogastric tube-like single-lumen open-pore film drain for spontaneous esophagus perforation in eosinophilic esophagitis. Source for radiological images: Department of Diagnostic and Interventional Radiology of Marienkrankenhaus Hamburg.



► **Fig. 3** Inspection of the perforation wound after 36 hours with intraluminal endoscopic negative pressure therapy using the NGT-like single-lumen open-pore film drain.



► **Fig. 4** Perforation wound after 4 days of intraluminal endoscopic negative pressure therapy. Therapy was terminated and nutrition started with a liquid diet.



► **Fig. 5** Follow-up 2 months after the long spontaneous perforation of the distal esophagus. Only a small scar was found, no stenosis. Sc, scar.

9 days after the perforation. The defect healed completely with a small scar without stenosis (► **Fig. 5**). Endoscopically, an esophageal trachealization was noticeable. The biopsy verified eosinophilic esophagitis. Therapy was initiated according to the guidelines.

For the initial emergency therapy of an esophageal perforation, the very easy-to-use single-lumen open-pore film drain nasogastric tube was suitable. Intraluminal negative pressure application resulted in an immediate stop of extraluminal contamination. The esophagus was decompressed, the lumen collapsed, and secretions were drained. It is essential to check the inner wound and change the drain at regular intervals [1, 4, 5].

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### Competing interests

Gunnar Loske is consultant of Lohmann & Rauscher GmbH & Co. KG. Ernst Scharsack and Olaf Gobrecht declare no conflict of interest.

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