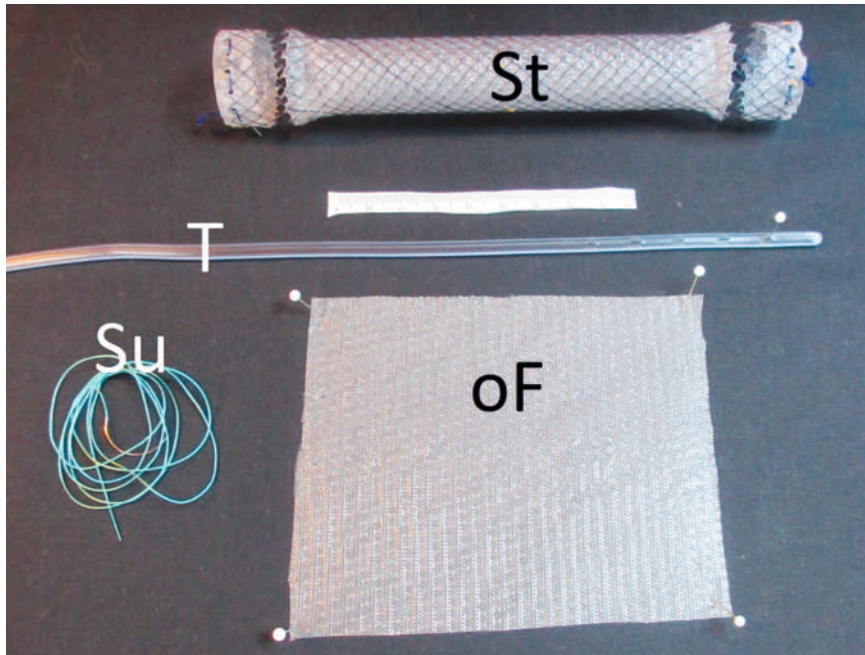


Open-pore drainage film-based vacuum stent for intraluminal endoscopic negative pressure therapy of the esophagus

OPEN
ACCESS



► **Fig. 1** Materials required for creation of an open-pore, double-layer film-covered vacuum stent. oF, open-pore drainage film (Suprasorb CNP Drainage Film; Lohmann & Rauscher, Rengsdorf, Germany); ST, covered stent; Su, suture; T, drainage tube.



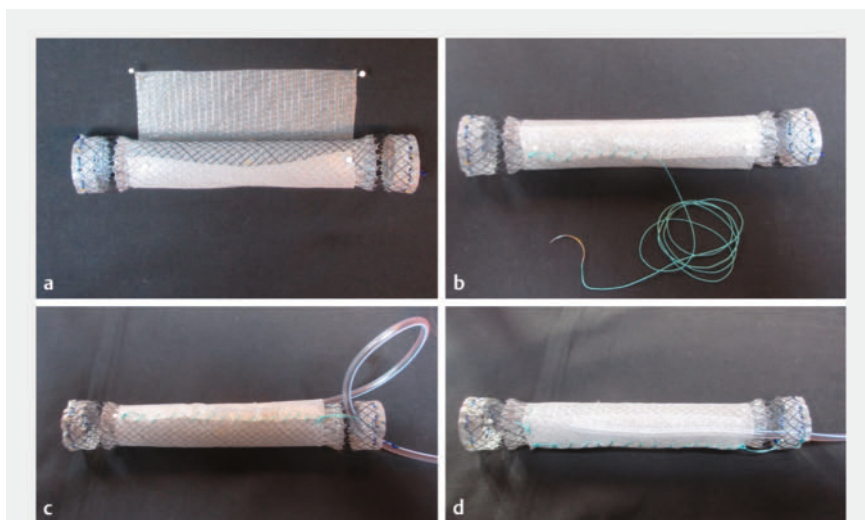
► **Video 1** Creation of a vacuum stent, using open-pore, double-layer, transparent drainage film, and over-the-scope placement.

Open-pore polyurethane foam drainage is used for endoscopic negative pressure therapy of the esophagus [1]. The vacuum stent (VacStent GI; MicroTech, Nanjing, China) is coated with a voluminous polyurethane foam [2].

An alternative drainage material for endoscopic negative pressure therapy is a very thin, open-pore, double-layer, transparent drainage film [3–5]. The volume of material is minimal, and it can be used to produce very narrow, open-pore film drainage devices with diameters of 4–6 mm [1].

This report describes in detail how a novel alternative vacuum stent can be manufactured using the open-pore, double-layer film. Placement of the film in an over-the-scope technique is demonstrated on an anatomical model.

The equipment and material required include a strip of the film (Suprasorb CNP Drainage Film; Lohmann & Rauscher, Rengsdorf, Germany), a covered esophageal stent (e.g. partially covered Hanarostent Esophageal Stent; M.I. Tech, Pyeongtaek, South Korea), drainage tube (Argyle Ventrol Duodenal Tube 12Fr/Ch; Covidien, Dublin, Ireland), and suture



► **Fig. 2** Creation of the vacuum stent. **a** The middle covered part of the stent is wrapped in the drainage film. **b** The drainage film is fixed with a suture. **c** The drainage tube is inserted between the drainage film and the outside of the covered part of the stent. **d** The newly created vacuum stent.

(Mersilene; Ethicon, Raritan, New Jersey, USA) (► Fig. 1).

The stent is removed from the delivery device. The middle covered part is wrapped with a strip of open-pore drainage film (► Fig. 2a). The drainage film is sutured (► Fig. 2b). The distal end of the drainage tube is inserted between the outside of the stent and the film sleeve (► Fig. 2c). The drainage tube is fixed to the proximal end of the stent with a suture. The drainage film is secured to the stent with sutures. The newly created vacuum stent is then ready for use (► Fig. 2d, ► Video 1).

No special delivery device is required. The vacuum stent can be inserted using an over-the-scope method (► Video 1). The distal end of an endoscope is introduced into the stent. The string loop at the distal end of the stent is grasped and fixed with a grasping forceps. Then, the drainage tube (proximal end of the stent) is pulled. This stretches the stent and secures it over the endoscope. The introduction of the stent and placement in the correct location is carried out under continuous endoscopic view. After oro-nasal conversion of the drainage tube, vacuum is applied with an electronic pump.

With the open-pore, double-layer, transparent drainage film, any covered esophageal stent can be converted into a vacuum stent. The vacuum can be applied over the entire surface of the film coating. As the film is very thin, its application around the stent changes the design of the stent only slightly.

Endoscopy_UCTN_Code_TTT_1AO_2AI

Conflict of Interest

G. Loske is a consultant to Lohmann & Rauscher GmbH & Co.KG. His patents for negative pressure therapy have been transferred to Lohmann & Rauscher GmbH & Co.KG. There is a conflict of interest due to a financial participation in several negative pressure therapy systems currently being launched on the market.

The author

Gunnar Loske¹

1 Department for General, Abdominal, Thoracic and Vascular Surgery, Katholisches Marienkrankenhaus Hamburg gGmbH, Hamburg, Germany

Corresponding author

Gunnar Loske, MD

Department for General, Abdominal, Thoracic and Vascular Surgery, Katholisches Marienkrankenhaus Hamburg gGmbH, Alfredstrasse 9, 22087 Hamburg, Germany
Loske@posteo.de

References

- [1] Loske G. Endoscopic negative pressure therapy of the upper gastrointestinal tract. *Chirurg* 2019; 90: 1–6. doi:10.1007/s00104-018-0727-x
- [2] Chon SH, Scherdel J, Rieck I et al. A new hybrid stent using endoscopic vacuum therapy in treating esophageal leaks: a prospective single-center experience of its safety and feasibility with mid-term follow-up. *Dis Esophagus* 2022; 35: doab067
- [3] Loske G, Schorsch T, Rucktaeschel F et al. Open-pore film drainage (OFD): a new multipurpose tool for endoscopic negative pressure therapy (ENPT). *Endosc Int Open* 2018; 6: E865–E871. doi:10.1055/a-0599-5886
- [4] Kouladouros K, Wichmann D, Loske G. The role of open-pore film drainage systems in endoscopic vacuum therapy: current status and review of the literature. *Visc Med* 2024; 39: 177–183. doi:10.1159/000535029
- [5] Richter F, Conrad C, Hoffmann J et al. Endoluminal vacuum therapy using a new “fistula sponge” in treating defects of the upper gastrointestinal tract – a comparative, retrospective cohort study. *Medicina* 2024; 60: 1105

Bibliography

Endoscopy 2025; 57: E290–E291

DOI 10.1055/a-2569-3650

ISSN 0013-726X

© 2025. The Author(s).

This is an open access article published by Thieme under the terms of the Creative Commons Attribution License, permitting unrestricted use, distribution, and reproduction so long as the original work is properly cited.

(<https://creativecommons.org/licenses/by/4.0/>)

Georg Thieme Verlag KG, Oswald-Hesse-Str. 50, 70469 Stuttgart, Germany



ENDOSCOPY E-VIDEOS

<https://eref.thieme.de/e-videos>



E-Videos is an open access online section of the journal *Endoscopy*, reporting on interesting cases

and new techniques in gastroenterological endoscopy. All papers include a high-quality video and are published with a Creative Commons CC-BY license. *Endoscopy E-Videos* qualify for HINARI discounts and waivers and eligibility is automatically checked during the submission process. We grant 100% waivers to articles whose corresponding authors are based in Group A countries and 50% waivers to those who are based in Group B countries as classified by Research4Life (see: <https://www.research4life.org/access/eligibility/>).

This section has its own submission website at

<https://mc.manuscriptcentral.com/e-videos>