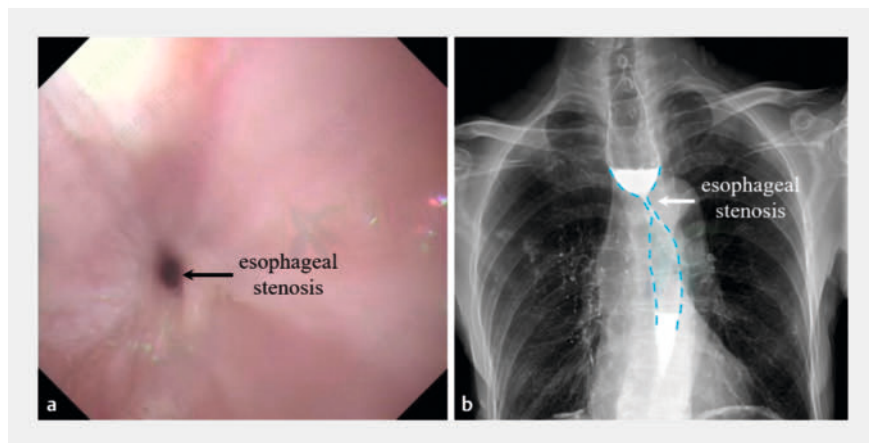
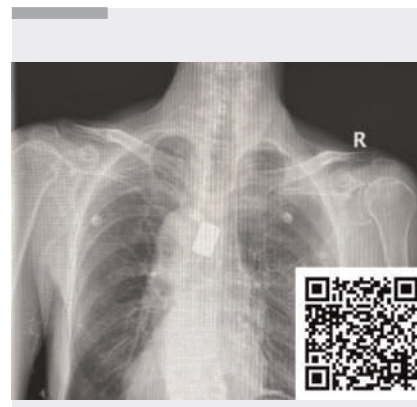


Treatment of refractory esophageal stenosis after endoscopic submucosal dissection with magnetic compression anastomosis

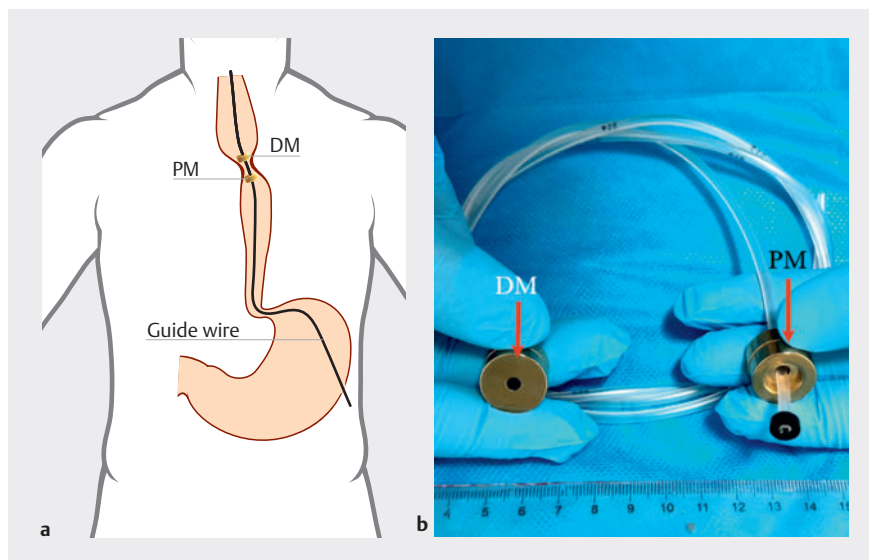
OPEN
ACCESS



► **Fig. 1** Persistent esophageal stenosis following endoscopic submucosal dissection: **a** gastroscopic image; **b** esophagogram.



► **Video 1** Surgical procedure for magnetic compression anastomosis to treat refractory esophageal stenosis following endoscopic submucosal dissection.



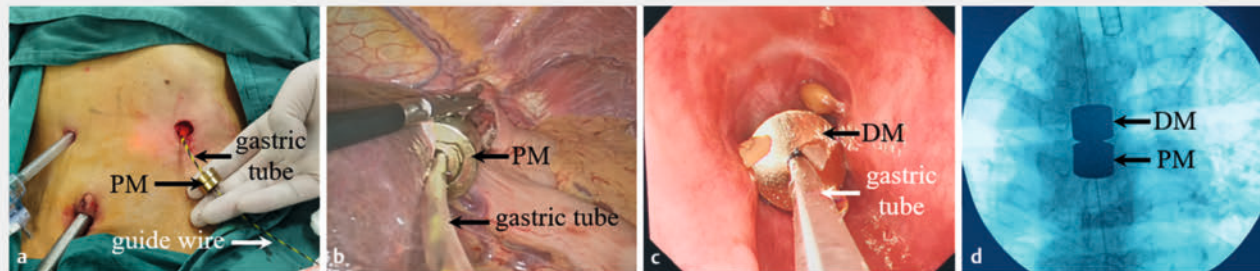
► **Fig. 2** Surgical planning for magnetic compression anastomosis: **a** the daughter magnet (DM) and the parent magnet (PM) were inserted through the mouth and gastrostomy respectively; **b** parent and daughter magnets

Magnetic compression anastomosis (MCA) has been previously used for the treatment of colorectal stenosis [1,2] and pediatric esophageal stenosis or atresia [3,4]. However, there have been no reports of MCA being used for the treatment of esophageal stricture after

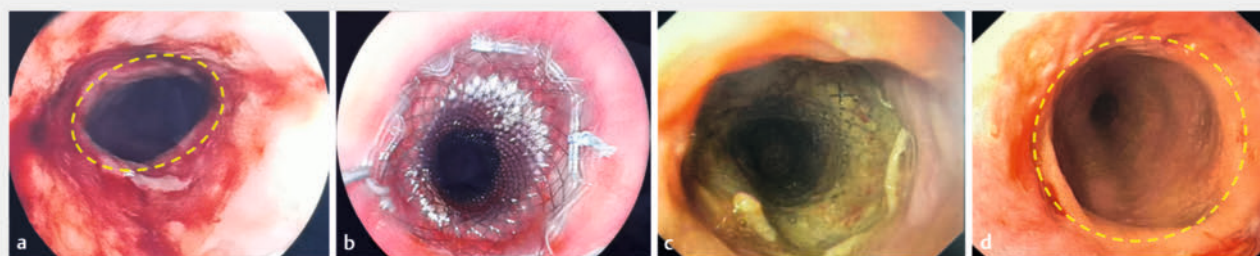
endoscopic submucosal dissection (ESD) in adults.

A 73-year-old man underwent ESD for early esophageal cancer and experienced dysphagia 1 month after the procedure. Gastroscopy revealed esophageal stenosis, for which he underwent three ses-

sions of balloon dilation and one session of esophageal stent placement. Unfortunately, the esophageal stenosis continued to worsen, as confirmed by esophagography and gastroscopy (► **Fig. 1**). The patient declined esophagectomy for the stenosis, and therefore MCA was recommended. A schematic diagram illustrating the surgical planning and the magnets is shown in ► **Fig. 2**. Following anesthesia, the patient underwent laparoscopic gastrostomy, and the proximal end of the esophageal stenosis was reached through oral endoscopy. After multiple attempts, the zebra guidewire was successfully passed through the stenosis to enter the stomach. From the stomach, the guidewire was pulled out of the abdominal cavity. Then, the parent magnet and the gastric tube on which it sat were inserted over the guidewire and sent to the stomach. The gastric tube was pulled out orally through the stenotic segment. The daughter magnet was then passed over the head of the tube and pushed by the gastroscope towards the proximal (oral) end of the esophageal stenosis. The daughter and parent mag-



► **Fig. 3** Surgical procedure: **a, b** the parent magnet was pushed into place; **c** the daughter magnet was pushed into place under gastroscopy; **d** the two magnets were attracted together.



► **Fig. 4** Establishment of a magnetic anastomosis: **a** the magnets were removed 11 days after surgery; **b** an esophageal stent was implanted; **c, d** after 3 months the esophageal stent was removed.

nets were attracted together (► **Fig. 3**; ► **Video 1**).

The magnets were removed endoscopically, and 11 days after surgery an esophageal stent was inserted (► **Fig. 4 a, b**). After 3 months, the stent was removed (► **Fig. 4 c, d**). The patient has been followed up for 8 months and has not received any further endoscopic treatment. He is now able to eat normally. MCA is a potential treatment option for esophageal strictures that do not improve with repeated balloon dilations.

Endoscopy_UCTN_Code_TTT_1AO_2AH

Funding Information

Institutional Foundation of The First Affiliated Hospital of Xi'an Jiaotong University
2022MS-07

Heye Health Science and Technology Foundation – Magnetic Surgical Technique and Basic Research
HX202197

Fundamental Research Funds for the Central Universities
<http://dx.doi.org/10.13039/501100012226>
xzy022023068

Conflict of Interest

The authors declare that they have no conflict of interest.

The authors

Miaomiao Zhang^{1,2}, Huanchen Sha¹, Guifang Lu³, Hairong Xue³, Yi Lv^{1,2}, Xiaopeng Yan^{1,2}

- 1 Department of Hepatobiliary Surgery, The First Affiliated Hospital of Xi'an Jiaotong University, Xi'an, China
- 2 Shaanxi Provincial Key Laboratory of Magnetic Medicine, The First Affiliated Hospital of Xi'an Jiaotong University, Xi'an, China
- 3 Department of Gastroenterology, The First Affiliated Hospital of Xi'an Jiaotong University, Xi'an, China

Corresponding author

Xiaopeng Yan, MD, PhD

Department of Hepatobiliary Surgery, The First Affiliated Hospital of Xi'an Jiaotong University, No. 277 West Yanta Road, Xi'an, 710061 Shaanxi, P.R. China
yanxiaopeng99@163.com

References

- [1] Zhang M, He S, Sha H et al. A novel self-shaping magnetic compression anastomosis ring for treatment of colonic stenosis. *Endoscopy* 2023; 55: E1132–E1134. doi:10.1055/a-2183-8942
- [2] Lu G, Li J, Ren M et al. Endoscopy-assisted magnetic compression anastomosis for rectal anastomotic atresia. *Endoscopy* 2021; 53: E437–E439. doi:10.1055/a-1322-1899

- [3] Kotlovsky AM, Muensterer OJ, Nikolaev VV et al. Magnetic compression anastomosis – past experience and current proposals for further development in pediatric minimally invasive surgery. *Children* 2023; 10: 1328
- [4] Krishnan N, Pakkasjärvi N, Kainth D et al. Role of magnetic compression anastomosis in long-gap esophageal atresia: a systematic review. *J Laparoendosc Adv Surg Tech A* 2023; 33: 1223–1230. doi:10.1089/lap.2023.0295

Bibliography

Endoscopy 2024; 56: E280–E282

DOI 10.1055/a-2279-6910

ISSN 0013-726X

© 2024. 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, Rüdigerstraße 14,
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>