

Application of radiofrequency ablation in duodenal mucosal reconstruction

OPEN ACCESS

A 63-year-old woman was diagnosed with type 2 diabetes 8 months ago and was scheduled for duodenal mucosal reconstruction. The patient took metformin orally to control blood sugar. Before the operation, fasting blood glucose was 7.0 mmol/L (15.7 mmol/L 2 hours after a meal), and glycosylated hemoglobin was 7.1%. A single-channel flexible endoscope (EVIS GIF-N170; Olympus, Tokyo, Japan) was introduced into the horizontal part of the duodenum, and the Endoscopic Catheter (Barrx Channel; Medtronic, Minneapolis, USA) was inserted into the biopsy channel of the endoscope (► Fig. 1). Radiofrequency ablation of the duodenal mucosa was performed, starting from the horizontal part of the duodenum, while the endoscope was gradually withdrawn (► Fig. 2). By rotating the endoscope and the catheter, all four quadrants of the duodenal mucosa were ablated (► Fig. 3). Overall, a 13-cm length of duodenal mucosa was ablated without bleeding or perforation (► Fig. 4, ► Video 1).

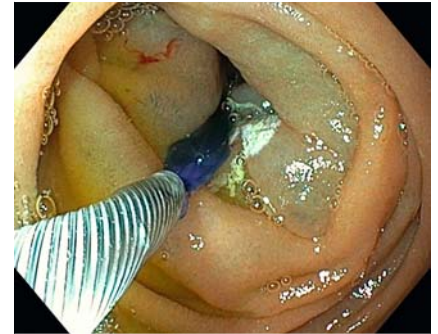
The key points of this operation were: 1) the planned radiofrequency ablation sessions targeted the descending and horizontal parts of the duodenum; 2) the power used was 12 J/cm², 48 W; 3) possible adverse events were hemorrhage and perforation; 4) the sedation was general anesthesia (tracheal intubation); 5) the duration of the procedure was 92 minutes.

During the follow-up period of 1 month, the patient stopped taking hypoglycemic drugs, fasting blood glucose decreased to 6.0 mmol/L (11.8 mmol/L 2 hours after a meal), and glycosylated hemoglobin was 6.2%. The patient did not experience any discomfort.

Duodenal mucosal reconstruction is a catheter-based endoscopic procedure designed to lower blood sugar by altering the surface of the duodenal mucosa [1, 2]. The characteristics of the radiofrequency ablation system are: 1) precise



► Fig. 1 The endoscopic catheter was inserted into the biopsy channel of the endoscope.



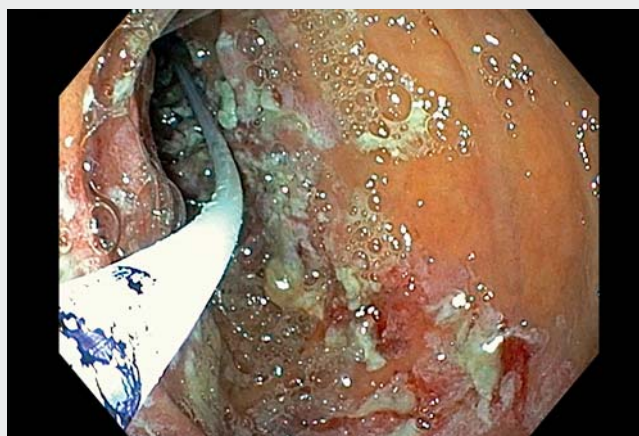
► Fig. 2 Radiofrequency ablation of the duodenal mucosa was performed from the horizontal part of the duodenum.



► Fig. 3 By rotating the endoscope and the catheter, all four quadrants of the duodenal mucosa were ablated.



► Fig. 4 A 13-cm length of duodenal mucosa was ablated without bleeding or perforation.



► Video 1 Application of radiofrequency ablation in duodenal mucosa reconstruction.

ablation control, which effectively reduces the risk of complications; 2) prediction of treatment effect, which limits damage to normal tissues [3, 4]. We therefore applied this system to the duodenum to achieve a surgical effect similar to that of duodenal mucosal reconstruction.

Endoscopy_UCTN_Code_TTT_1AO_2AN

Acknowledgments

The authors would like to thank the China–Japan Friendship Hospital (2018-RC-1) and the Beijing Municipal Commission of Science and Technology (Z151100004015065).

Funding

The Beijing Municipal Commission of Science and Technology Z151100004015065
the China-Japan Friendship Hospital 2018-RC-1

Competing interests

The authors declare that they have no conflict of interest.

The authors

Zhengqi Li, Biao Zhou, Nianrong Zhang, Siqi Wang, Hua Meng

Department of General Surgery and Obesity and Metabolic Disease Center, China-Japan Friendship Hospital, Beijing, China

Corresponding author

Hua Meng, MD

Department of General Surgery and Obesity and Metabolic Disease Center, China-Japan Friendship Hospital, 47 Wenxueguan, Beijing 100021, China
menghuade@hotmail.com

References

- [1] Hadeji A, Huberty V, Lemmers A et al. Endoscopic duodenal mucosal resurfacing for the treatment of type 2 diabetes. *Digest Dis* 2018; 36: 322–324
- [2] Mingrone G, van Baar AC, Devière J et al. Safety and efficacy of hydrothermal duodenal mucosal resurfacing in patients with type 2 diabetes: the randomised, double-blind, sham-controlled, multicentre REVITA-2 feasibility trial. *Gut* 2022; 71: 254–264
- [3] Magee CG, Graham D, Gordon C et al. Radiofrequency ablation for Barrett's oesophagus related neoplasia with the 360 Express catheter: initial experience from the United Kingdom and Ireland-preliminary results. *Surg Endosc* 2022; 36: 598–606
- [4] Yu X, van Munster SN, Zhang Y et al. Durability of radiofrequency ablation for treatment of esophageal squamous cell neoplasia: 5-year follow-up of a treated cohort in China. *Gastrointest Endosc* 2019; 89: 736–748

Bibliography

Endoscopy 2023; 55: E959–E960

DOI 10.1055/a-2134-7209

ISSN 0013-726X

© 2023. 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>