

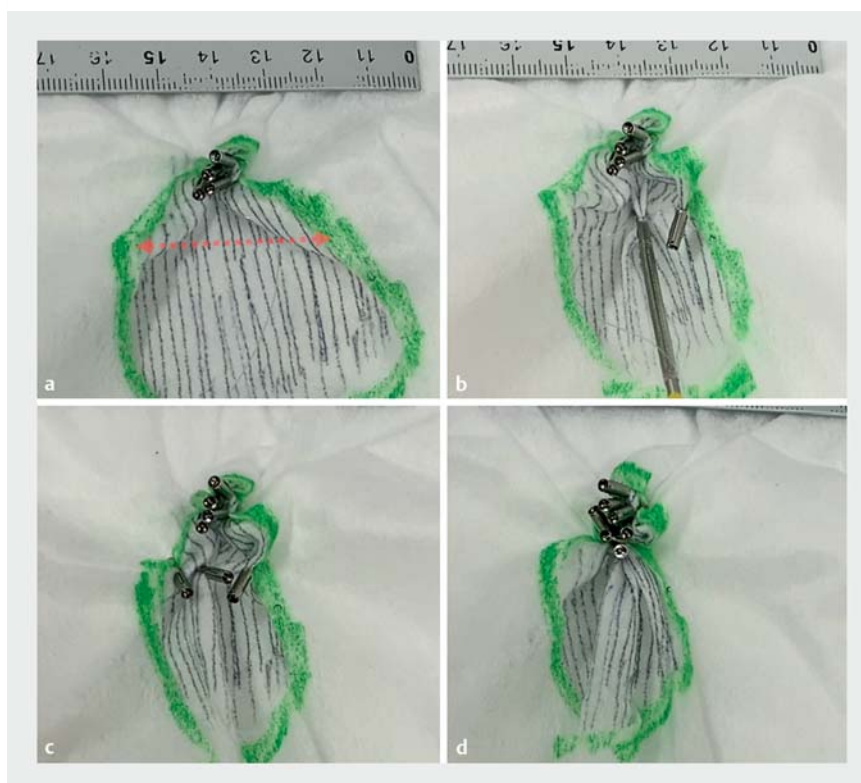
Reopenable clip over-the-line method with muscle layer grasping clips for large duodenal post-endoscopic submucosal dissection defects

OPEN
ACCESS

Postoperative perforation and bleeding are serious complications of duodenal endoscopic submucosal dissection (ESD) [1]. We previously described the reopenable clip over-the-line method (ROLM), a technique used to close mucosal defects after ESD using a line and a reopenable clip [2–4]. However, large mucosal defects remain incompletely closed even after ROLM, as complete closure is difficult to achieve. Therefore, we devised ROLM with muscle layer grasping clips (ROLM-M), which completely closes the mucosal defect and muscle layer without any dead space between the mucosa and muscle layers.

ROLM is a mucosal defect closure method that uses reopenable clips (Sureclip 8 mm; Micro-Tech Co. Ltd., Nan Jing, China) and a line (nylon line, 0.22 mm). First, a reopenable clip with a line is inserted through the accessory channel and attached to the distal mucosal defect edges and muscles (► Fig. 1, ► Video 1). Next, the line is passed through the tooth hole of a second reopenable clip, which is also used to grasp the muscle layer together with the contralateral defect edge. This process is repeated to close the defect. In the case of a large defect, ROLM placement of a reopenable clip only on the muscle layer at the base of the ulcer will eliminate the dead space and firmly fix the defect edge and muscle layer of the defect.

The patient was a 67-year-old man with a 60-mm early duodenal cancer in the descending duodenum (► Fig. 2). We resected the tumor completely by ESD using a pocket creation method with a calibrated, small-caliber tip, transparent hood [5]. The mucosal defect measured 80 mm in size. We used ROLM-M for complete closure. The remaining line was fixed to the normal mucosa using



► **Fig. 1** Schema of the reopenable clip over-the-line method with muscle layer grasping clips (ROLM-M). **a** A large mucosal defect (red arrow) after multiple ROLM closure. **b** ROLM placement of the reopenable clip on the central muscle layer of the mucosal defect. **c** ROLM placement of the reopenable clip on the contralateral mucosal defect and the nearby muscle layer. **d** Gradual closure of the mucosal defect by pulling the line, with no dead space between the mucosa and muscle layers.


the modified locking clip technique, and the line was cut [4]. The patient was discharged without any adverse events.

Endoscopy_UCTN_Code_TTT_1AO_2AI

Competing interests

The authors declare that they have no conflict of interest.

The authors

Tatsuma Nomura^{1,2}  Shinya Sugimoto¹, Taishi Temma¹, Jun Oyamada¹, Keiichi Ito², Akira Kamei¹

1 Department of Gastroenterology, Ise Red Cross Hospital, Ise, Mie, Japan

2 Department of Gastroenterology, Mie Prefectural Shima Hospital, Shima, Mie, Japan

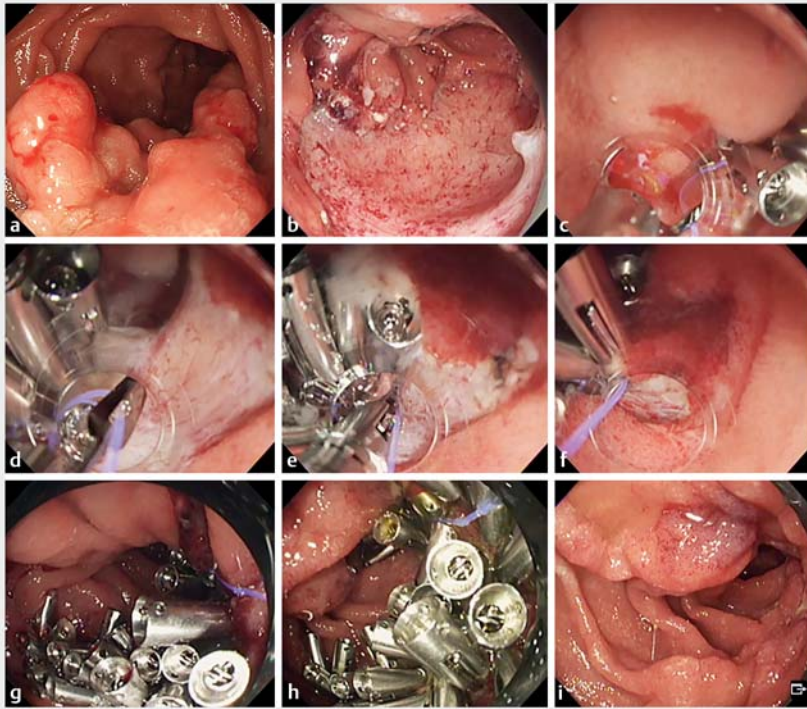
Corresponding author

Tatsuma Nomura, MD

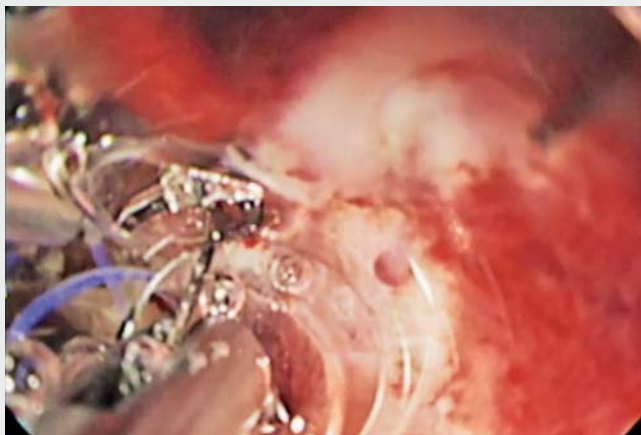
Department of Gastroenterology,
Ise Red Cross Hospital, 1-471-2 Funae, Ise,
Mie 516-8512, Japan
m06076tn@icloud.com

References

- [1] Mizutani M, Kato M, Sasaki M et al. Predictors of technical difficulty for complete closure of mucosal defects after duodenal endoscopic resection. *Gastrointest Endosc* 2021; 94: 786–794
- [2] Nomura T, Sugimoto S, Tsuda N et al. Mucosal defect closure after duodenal endoscopic submucosal dissection using the reopenable-clip over the line method. *JGH Open* 2021; 5: 831–833
- [3] Nomura T, Sugimoto S, Temma T et al. Clip-line closure with the reopenable clip over line method for a large mucosal defect after gastric endoscopic submucosal dissection. *Endoscopy* 2022; 54: E1–E2
- [4] Nomura T, Sugimoto S, Kawabata M et al. Large colorectal mucosal defect closure post-endoscopic submucosal dissection using the reopenable clip over line method and modified locking-clip technique. *Endoscopy* 2022; 54: E63–E64
- [5] Nomura T, Sugimoto S, Oyamada J et al. GI endoscopic submucosal dissection using a calibrated, small-caliber-tip, transparent hood for lesions with fibrosis. *VideoGIE* 2021; 6: 301–304



► **Fig. 2** Closure of a mucosal defect using the reopenable clip over-the-line method with muscle layer grasping clips (ROLM-M). **a** The early duodenal tumor 60 mm in size. **b** The defect, 80 mm in size, after endoscopic submucosal dissection (ESD). **c** Gradual closure of the mucosal defect using ROLM. **d** The mucosal defect before applying muscle layer grasping clips. **e** A muscle layer grasping clip was used to grasp only the muscle layer. **f** The mucosal defect after reduction of the submucosal dead space following the use of muscle layer grasping clips. **g** The completely closed post-ESD duodenal mucosal defect. **h** The mucosal defect 4 days after ESD. **i** The mucosal defect 21 days after ESD.



► **Video 1** Closure of an 80-mm duodenal mucosal defect using the reopenable clip over-the-line method with muscle layer grasping clips.

Bibliography

Endoscopy 2022; 54: E782–E783

DOI 10.1055/a-1810-7024

ISSN 0013-726X

published online 14.4.2022

© 2022. The Author(s).

This is an open access article published by Thieme under the terms of the Creative Commons Attribution-NonDerivative-NonCommercial License, permitting copying and reproduction so long as the original work is given appropriate credit. Contents may not be used for commercial purposes, or adapted, remixed, transformed or built upon. (<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Georg Thieme Verlag KG, Rüdigerstraße 14,
70469 Stuttgart, Germany

