



A successful case of an endoscopic submucosal dissection using a combination of the pocket-creation method and traction with a spring-and-loop with clip for early gastric cancer with severe ulcer scarring

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The pocket-creation method (PCM) has been reported as a useful method in colorectal endoscopic submucosal dissection (ESD).¹ The PCM can prevent the leakage of infusion through a minimal incision, thus maintaining a thick submucosal layer during ESD procedures.² However, sometimes there is difficulty in opening the pocket after dissection of the submucosal layer. On the other hand, the spring-and-loop with clip (S-O clip; Zeon Medical, Tokyo, Japan) (Fig. 1) is a traction device for ESD and has been reported to be useful not only for colorectal ESD³ but also for gastric ESD.⁴ However, when there is advanced fibrosis in the submucosal layer, there is a risk of muscle-layer injury and perforation because the muscle layer is also included in the traction. In this study, we report a case of early gastric cancer with severe ulcer scarring, in which ESD using a combination of the PCM and S-O clip was useful (Video 1, available online at www.videogie.org).

A 63-year-old man had been attending our hospital for follow-up for 2 years after being treated for early gastric cancer. The initial cancer was an intramucosal cancer of the upper gastric lesser curvature, with negative margins and lymphovascular invasion. Since that time, severe deformity because of a gastric ulcer scar was observed in the greater curvature of the gastric body (Fig. 2). This time, a 50-mm lesion of early gastric cancer was found on the gastric ulcer scar (Figs. 2 and 3). The patient was sedated under general anesthesia, and a therapeutic endoscope with water jet function (GIF-H290T; Olympus, Tokyo, Japan) was used. A small-caliber-tip transparent hood (ST Hood; Fujifilm, Tokyo, Japan) was placed onto the tip of the endoscope. Submucosal injections of 10% glycerin

solution (Glyceol; Chugai Pharmaceutical Co, Ltd, Tokyo, Japan) and hyaluronic acid (k-smart, Olympus) were administered using a 23-gauge sharp needle (ICHIBANYARI; KANEKA, Tokyo, Japan). The energy device was a high-frequency electrosurgical machine (VIO 3; ERBE Elektromedizin, Tübingen, Germany). A 2-mm needle knife with injection function (Dual Knife J; Olympus) was used for lesion marking (soft coagulation, effect 3.0), mucosal incision (Endo cut function, 1-3-1; Endo Cut, ERBE, Stuttgart, Germany), and submucosal dissection (Swift coagulation, effect 3.0).

The lesion was identified by magnifying endoscopy with narrow-band imaging (Fig. 3), and markings were placed around the lesion (Fig. 4A). The initial mucosal incision was made on the oral side of the tumor after the injection of the solution into the submucosal layer (Fig. 4B). Submucosal dissection was performed to form a pocket in the submucosal layer by inserting the tip of the endoscope under the gastric tumor. After dissecting as much area as possible around the scar, we dissected the area of high fibrosis and created a large pocket in the submucosal layer.

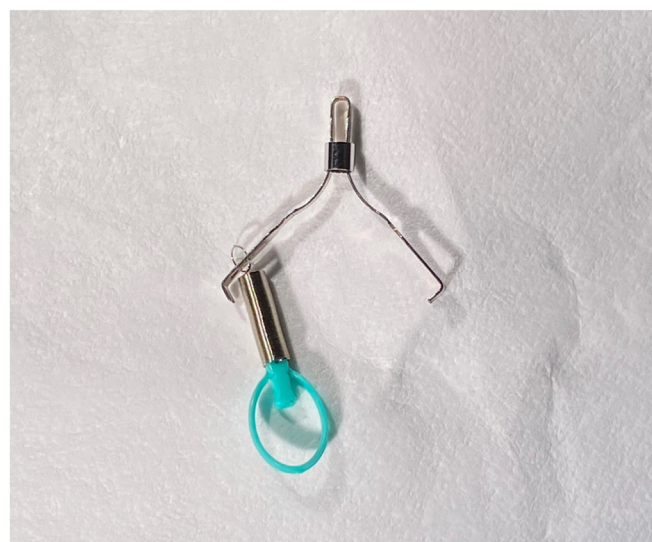


Figure 1. The spring-and-loop with clip (S-O clip; ZEON Medical, Tokyo, Japan).

Abbreviations: ESD, endoscopic submucosal dissection; PCM, pocket-creation method.

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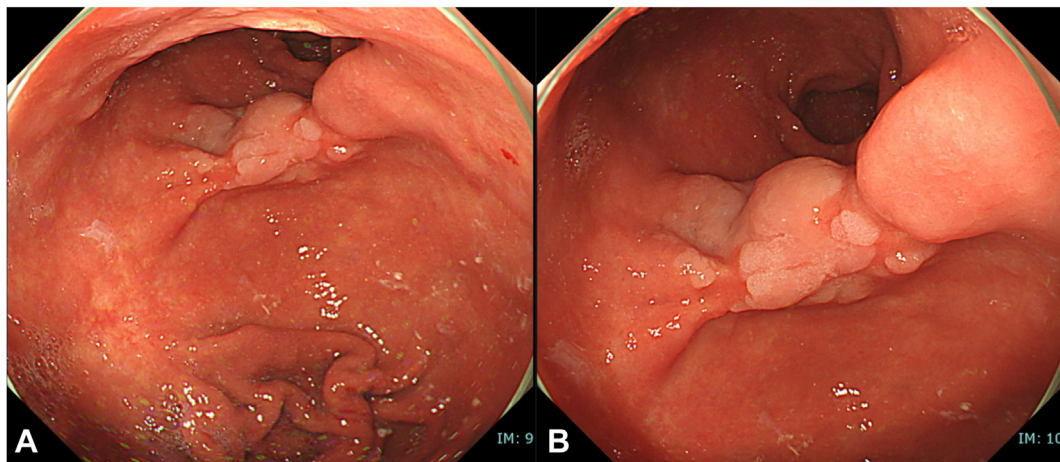


Figure 2. The white-light image of the lesion and the deformity with scarring because of a previous gastric ulcer. An image viewed from **A**, the far side, and **B**, the near side.



Figure 3. The narrow-band image of the lesion. Magnifying endoscopy with narrow-band image shows **A**, the lesion as a whitish area, and **B**, an irregular white opaque substance.

The submucosal layer of the scar was severely fibrotic, making it difficult to identify the submucosal and muscular layers; however, the dissection layer could be clearly identified using the PCM (Fig. 4C and D). After creating a large pocket in the submucosa, a circumferential incision was made outside of the markings in the same manner as a normal ESD.

After creating a full circumferential incision, an effective counter-traction was obtained by attaching an S-O clip to the oral side of the lesion and attaching the spring tip to the lesser curvature of the esophagogastric junction. By

using an S-O clip, we maintained a clear view of the dissecting layer (Fig. 5). Although the lesion was relatively large, en bloc resection was achieved in 140 minutes without any adverse events (Fig. 6).

After ESD, the patient was hospitalized for 5 days as originally planned for a standard patient in Japan. The final pathology result was well-differentiated intramucosal adenocarcinoma, with negative horizontal and vertical margins and no lymphatic invasion (Fig. 7). Thus, ESD using a combination of the PCM and S-O clip was useful for a case of early gastric cancer with severe ulcer scarring.

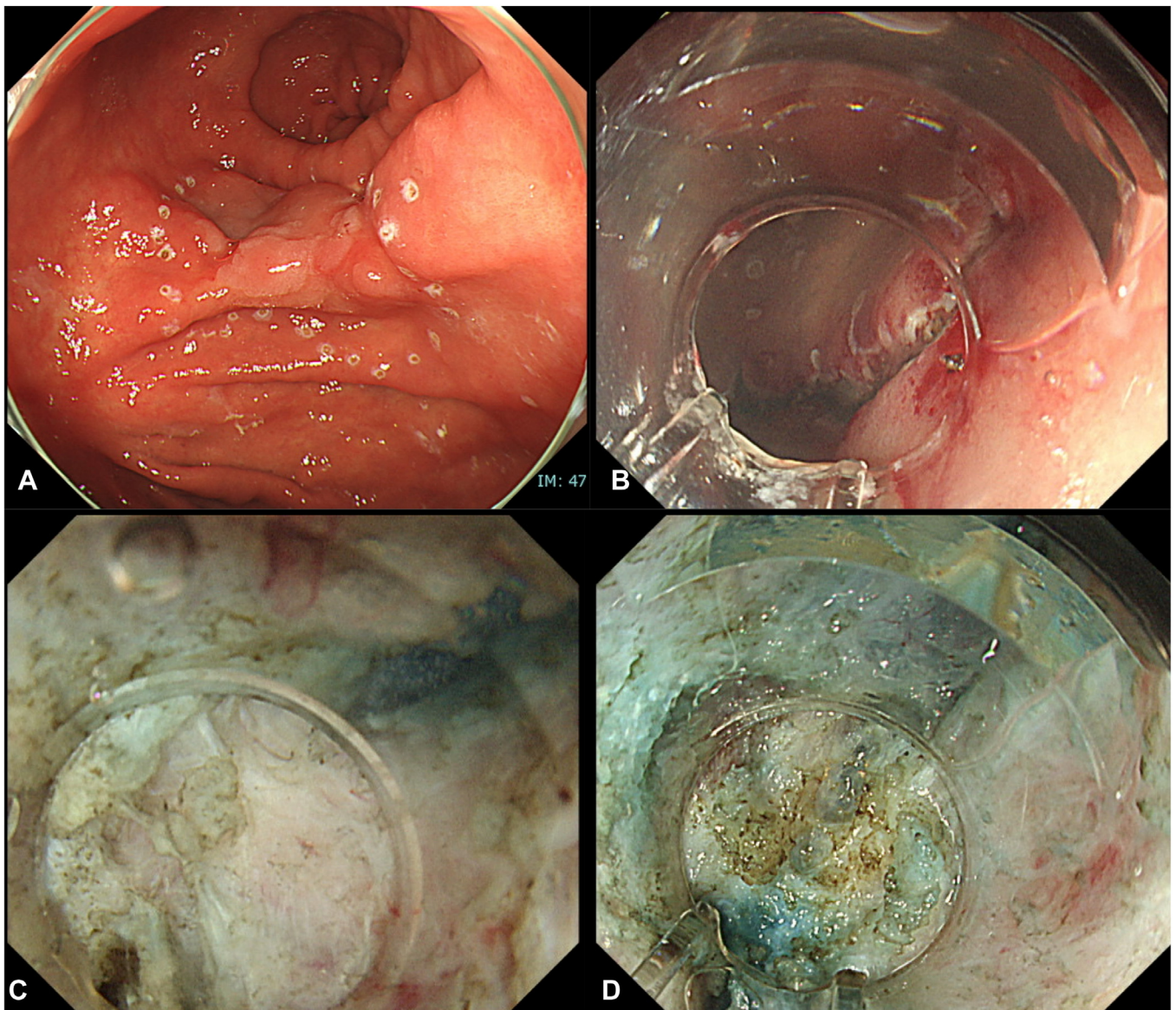


Figure 4. Endoscopic submucosal dissection is initiated using the pocket-creation method. **A**, Markings are placed around the lesion. **B**, Initial mucosal incision is made at the oral side of the tumor. **C**, Severe fibrosis is observed in the submucosal layer. **D**, After dissecting as much area as possible around the scar, the area of severe fibrosis is dissected, and a large pocket is created in the submucosa.

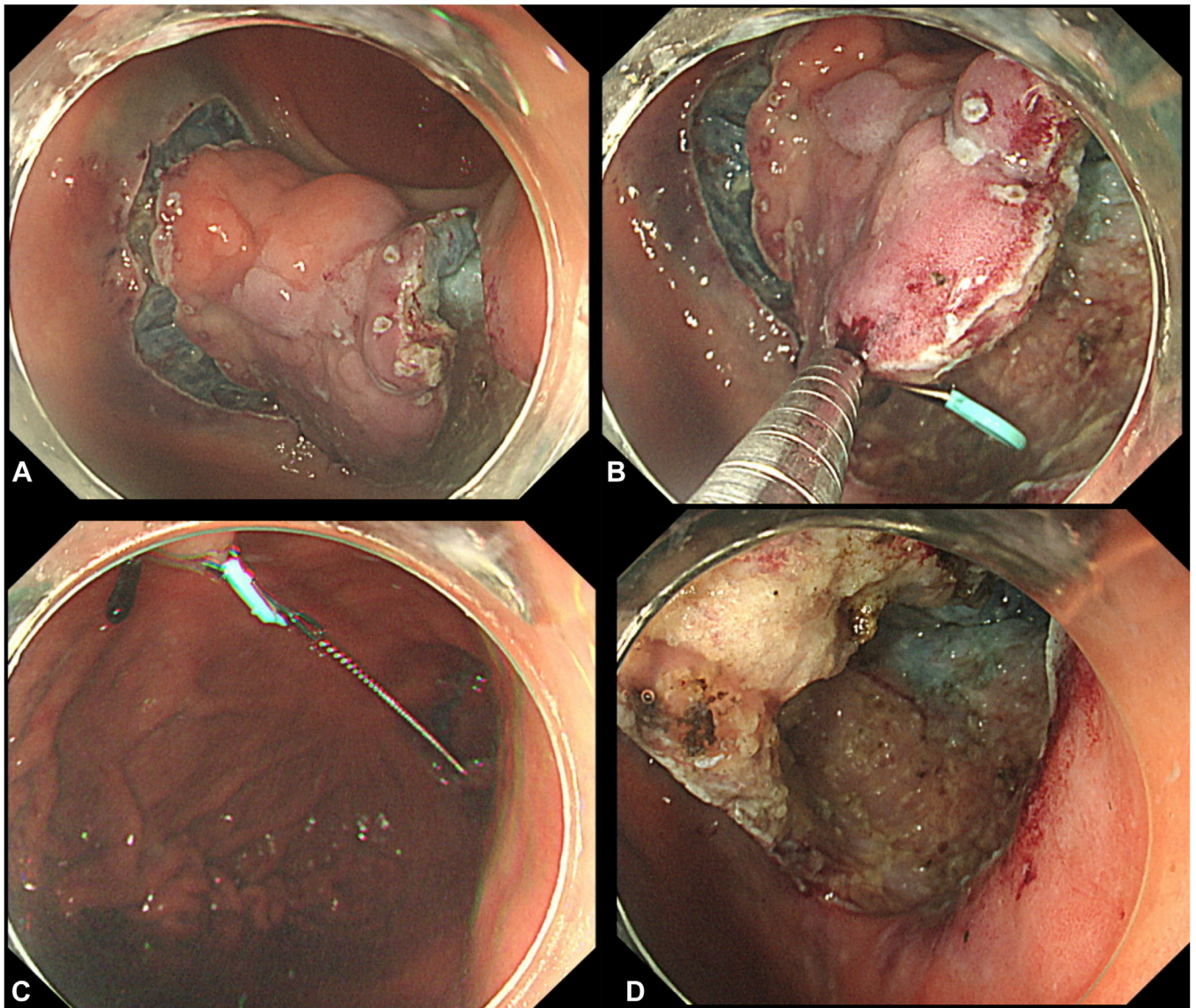


Figure 5. Traction with a spring-and-loop with clip (S-O clip). **A**, A full circumferential incision is created. **B**, The S-O clip is attached to the oral side of the lesion. **C**, The spring tip is attached to a small curvature of the esophagogastric junction. **D**, By using the S-O clip, a clear view of the dissecting layer is maintained.

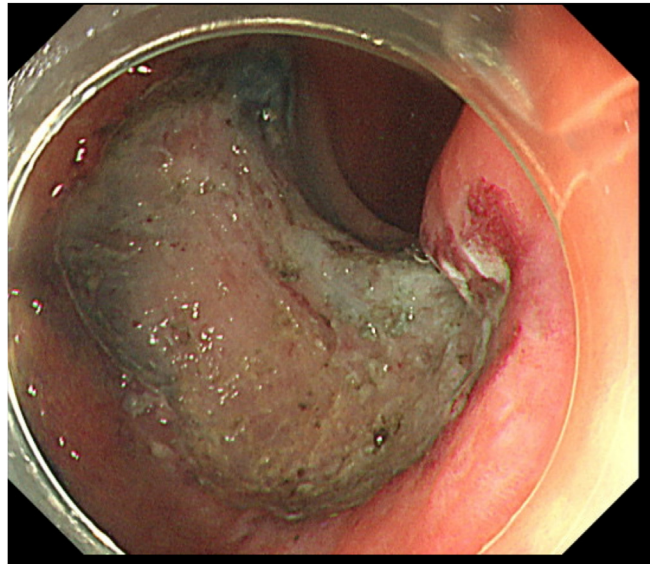


Figure 6. White-light image of the post-endoscopic submucosal dissection ulcer. En bloc resection is achieved without any adverse events.

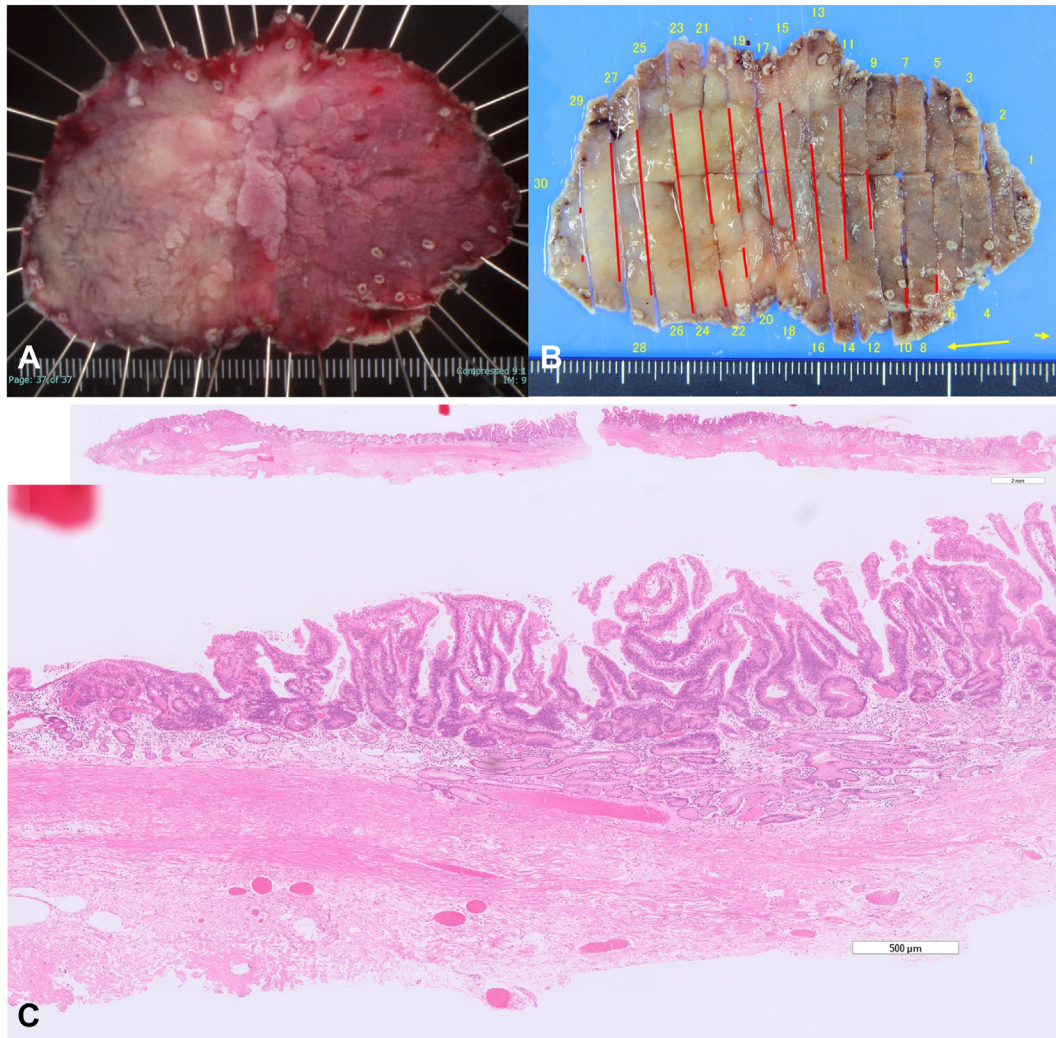


Figure 7. Image of resected specimen and pathologic findings. **A,** En bloc resection is achieved. **B,** Mapping image shows that the horizontal margin is negative. **C,** The final pathology result is a well-differentiated intramucosal adenocarcinoma (H&E, orig. mag. X50).

DISCLOSURE

All authors disclose no financial relationships.

REFERENCES

1. Hayashi Y, Miura Y, Yamamoto H. Pocket-creation method for the safe, reliable, and efficient endoscopic submucosal dissection of colorectal lateral spreading tumors. *Dig Endosc* 2015;27:534-5.
2. Yamashina T, Nemoto D, Hayashi Y, et al. Prospective randomized trial comparing the pocket-creation method and conventional method of colorectal endoscopic submucosal dissection. *Gastrointest Endosc* 2020;92:368-79.
3. Ritsuno H, Sakamoto N, Osada T, et al. Prospective clinical trial of traction device-assisted endoscopic submucosal dissection of large superficial colorectal tumors using the S-O clip. *Surg Endosc* 2014;28:3143-9.
4. Hashimoto R, Hirasawa D, Iwaki T, et al. Usefulness of the S-O clip for gastric endoscopic submucosal dissection (with video). *Surg Endosc* 2018;32:908-14.

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