



Immersion endoscopic submucosal dissection with saline pressure method for duodenal sessile serrated lesion with severe surgical scar fibrosis

Wei-Wei Lee, MD, Chen-Shuan Chung, MD, MSc

INTRODUCTION

Endoscopic submucosal dissection (ESD) has been widely used in the removal of precancerous and cancerous lesions in the GI tract. It remains challenging for novice endoscopists, especially when encountering lesions with severe fibrosis. The saline pressure method is a technique that uses the saline jet function of an endoscope to improve visualization, widen the submucosal layer, and overcome difficult situations of severe fibrosis.^{1,2} Here, we report a case of a duodenal sessile serrated lesion with severe fibrosis successfully treated by the saline pressure method.

CASE PRESENTATION AND PROCEDURE

A 77-year-old woman with a history of right intrahepatic stones, status post-right hepatectomy with anastomosis of the left intrahepatic duct and the duodenum, presented with epigastric pain of several days' duration. EGD showed a single 2.5-cm 0-IIa polypoid lesion at the anterior wall of the duodenal bulb (Fig. 1). ESD with a gastroscope (EG-760Z; Fujifilm, Tokyo, Japan) equipped with small-caliber-tip transparent hood (ST Hood, DH-28 GR; Fujifilm) was performed with a DualKnifeJ (Olympus Medical Systems, Tokyo, Japan) and glycerol solution mixed with indigo carmine for submucosal dissection and injection, respectively (Video 1, available online at www.videogie.org). We used the DH-28 GR ST Hood (11.5-mm outer diameter, 8-mm inner diameter) during the procedure; a smaller ST Hood, such as the DH-33 GR (7-mm inner diameter) also could be considered for severe submucosal fibrosis ESD or difficult cases. We used an electrosurgical generator (VIO 300D; Erbe, Tübingen, Germany), which supported lesion



Figure 1. One 2.5-cm 0-IIa polypoid lesion at the anterior wall of the duodenal bulb was found.

marking (forced coagulation, effect 1, 20 W) (Fig. 2A), hemostasis with the knife tip (forced coagulation, effect 2, 45 W), mucosal incision (Endo cut I, E1 D4 I1), and submucosal dissection (forced coagulation, effect 2, 45 W). The incision into the mucosa initially was made on the anal side of the lesion (Fig. 2B), followed by incision on the oral side (Fig. 2C). Severe fibrotic changes, with difficulty in lifting the submucosa, were noted during dissection (Fig. 3A). Using the waterjet function of the irrigation pump (EIP2; Erbe), we performed a saline pressure method ESD. We intentionally filled the duodenum with saline solution. Under the saline immersion pressure, we could visualize the submucosal layer broadly, which helped us to identify the incision edge more clearly (Fig. 3B and C). The previous surgical suture stitch was noted in the muscle layer underneath the lesion after we completed the en bloc resection (Fig. 4). The en bloc resection was achieved in 68 minutes (Fig. 5A). Finally, the duodenal wall defect was closed by clips (SureClip; Micro-Tech Corporation, Nanjing, China) without immediate adverse events (Fig. 5B).

Abbreviation: ESD, endoscopic submucosal dissection.

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Division of Gastroenterology and Hepatology, Department of Internal Medicine, Far Eastern Memorial Hospital, New Taipei City, Taiwan.

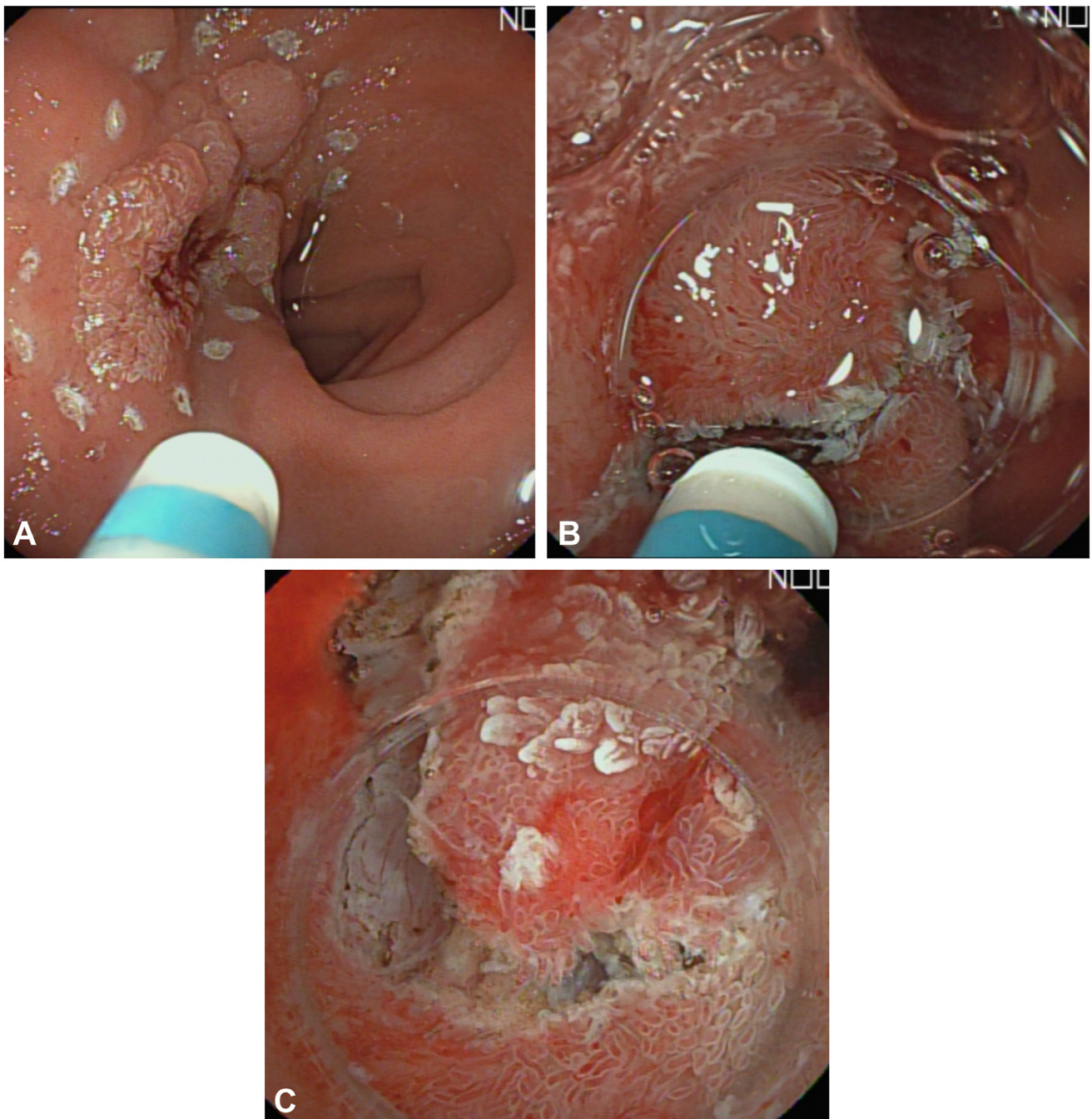


Figure 2. A, White-light image is shown after lesion marking. B, An incision from the anal side, followed by (C) an incision from the oral side.

The pathologic diagnosis was sessile serrated lesion with focal low-grade dysplasia (Fig. 6). The horizontal and vertical resection margins were free of the neoplasm. After ESD, the patient was hospitalized for 3 days as planned, and no delayed bleeding was noted during follow-up.

CONCLUSIONS

Although our case had no immediate adverse events, it is important to note that duodenal ESD is associated with a greater risk of adverse events compared with other sites. For duodenal ESD, postprocedural bleeding and perforation

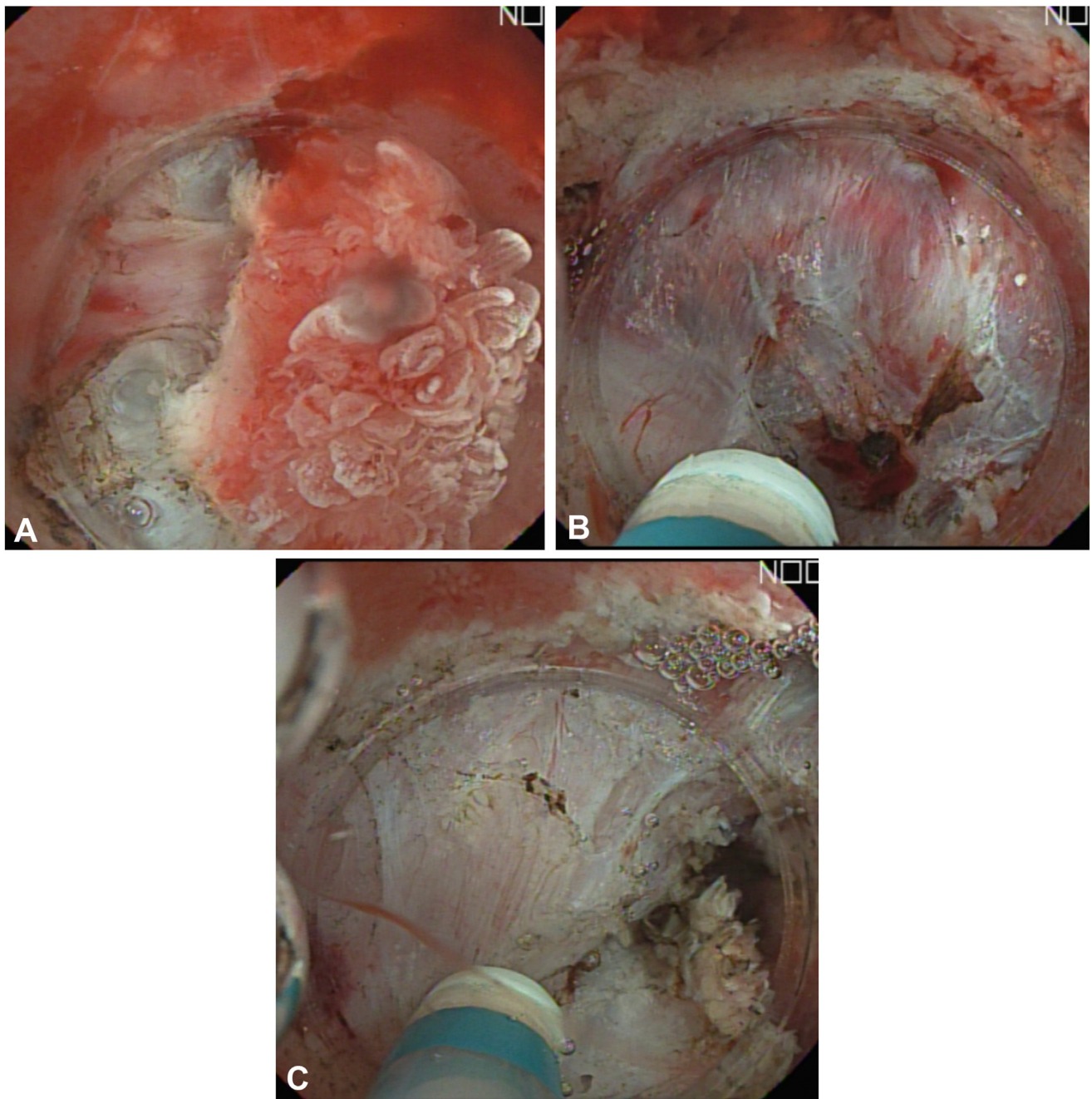


Figure 3. **A**, Severe fibrotic changes, with **(B)** difficulty in lifting the submucosa during dissection, were noted. **C**, Using the saline pressure method to widen the submucosa layer and identify the incision edges.

rates are greater compared with colonic ESD, with an incidence of >10% in different studies, including in superexpert centers, and reaching 15% to 25% in some studies.⁵ Using the saline pressure method, we performed a safe and precise

submucosal dissection of a challenging lesion with severe fibrosis. It significantly reduced the intraprocedural perforation rate and shortened the procedure time for duodenal ESD.⁴ It may improve outcomes in difficult cases, such as

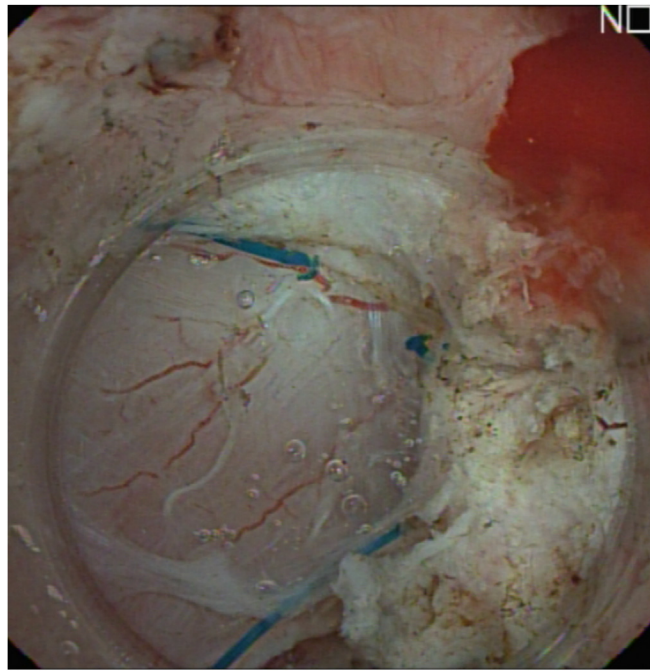


Figure 4. Previous suture stitch underneath the lesion after complete resection.

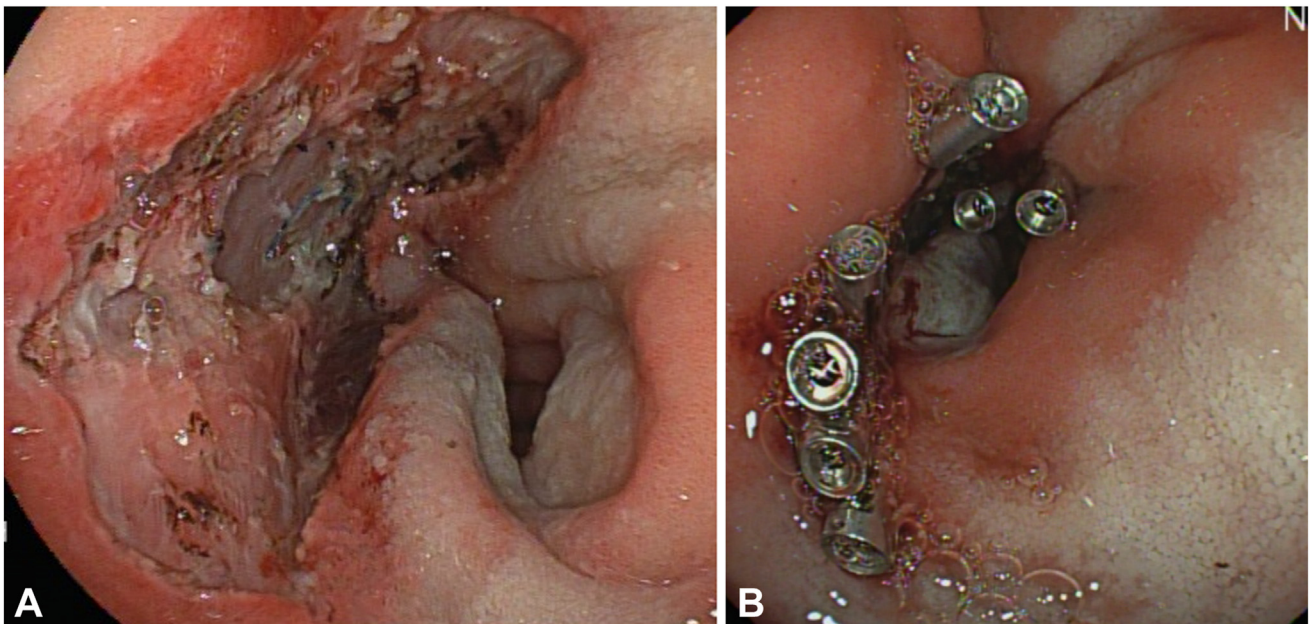


Figure 5. A, White-light image after en bloc resection. **B,** The duodenal wall defect was closed by clips.

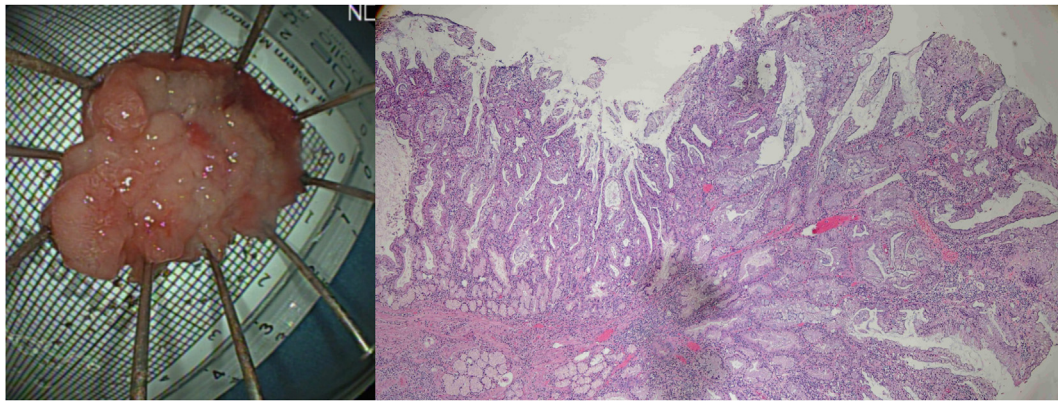


Figure 6. The pathologic diagnosis was sessile serrated lesion with focal low-grade dysplasia (H&E, orig. mag. $\times 40$).

gravitational obstacles,⁵ or fibrosis after previous endoscopic or surgical treatment.

DISCLOSURE

All authors disclosed no financial relationships.

REFERENCES

1. Yahagi N, Nishizawa T, Sasaki M, Ochiai Y, Uraoka T. Water pressure method for duodenal endoscopic submucosal dissection. *Endoscopy* 2017;49:E227-8.
2. Miyazaki K, Kato M, Kanai T, Yahagi N. A successful case of endoscopic submucosal dissection using the water pressure method for early gastric cancer with severe fibrosis. *VideoGIE* 2022;7:219-22.
3. Libânio D, Pimentel-Nunes P, Bastiaansen B, et al. Endoscopic submucosal dissection techniques and technology: European Society of Gastrointestinal Endoscopy (ESGE) technical review. *Endoscopy* 2023;55:361-89.
4. Kato M, Takatori Y, Sasaki M, et al. Water pressure method for duodenal endoscopic submucosal dissection (with video). *Gastrointest Endosc* 2021;93:942-9.
5. Masunaga T, Kato M, Yahagi N. Water pressure method overcomes the gravitational side in endoscopic submucosal dissection for gastric cancer. *VideoGIE* 2021;6:457-9.