ORIGINAL ARTICLE

Endoscopic submuscular dissection as a rescue for severe fibrosis after incomplete polypectomy

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BACKGROUND

Laterally spreading tumors in the colon are challenging to manage after previous incomplete attempts at EMR. The use of cautery during EMR can lead to severe submucosal fibrosis.[1-3] Definitive management of laterally spreading tumors after incomplete EMR often involves surgical resection. Endoscopic submucosal dissection (ESD) and endoscopic full-thickness resection have emerged as options for resection of such lesions.[4-6] In this video (Video 1, available online at www.videogie.org), we present a case of endoscopic submuscular dissection (ESmD) as a rescue for severe fibrosis following incomplete polypectomy.

CASE PRESENTATION

A 68-year-old man with a history of type 2 diabetes presented for a screening colonoscopy. His last colonoscopy was 10 years ago.

The initial colonoscopy by a referring provider revealed a 25-mm granular laterally spreading tumor in the ascending colon. The tumor was injected with a lifting agent, and a hot snare was used to attempt piecemeal resection. After the initial resection was performed, there was residual polyp tissue. Despite repeated attempts, the remnant polyp could not be successfully removed. Because of the focal areas of bleeding, snare tip soft coagulation was performed in the residual defect.

The patient was referred for ESD 3 months later. A 10-mm residual polyp with an area of central depression was identified (Fig. 1). An attempt at lifting the lesion with a saline/methylene blue solution was unsuccessful because of the non-lifting of the center of the polyp. Endoscopic full-

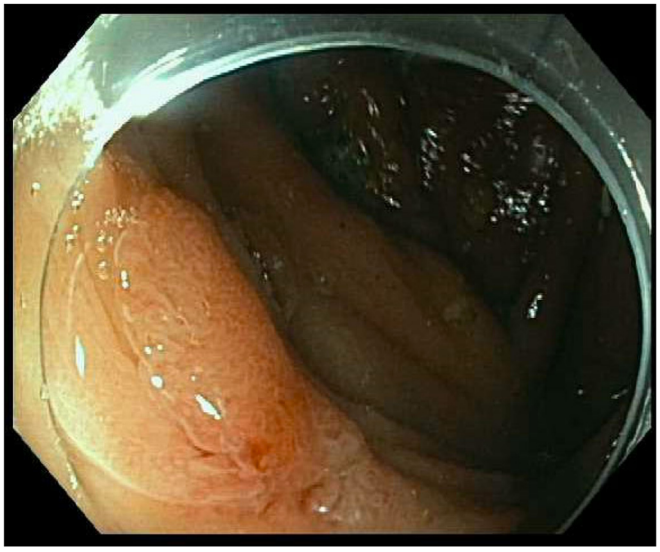

Figure 1. Residual polyp on repeat colonoscopy.

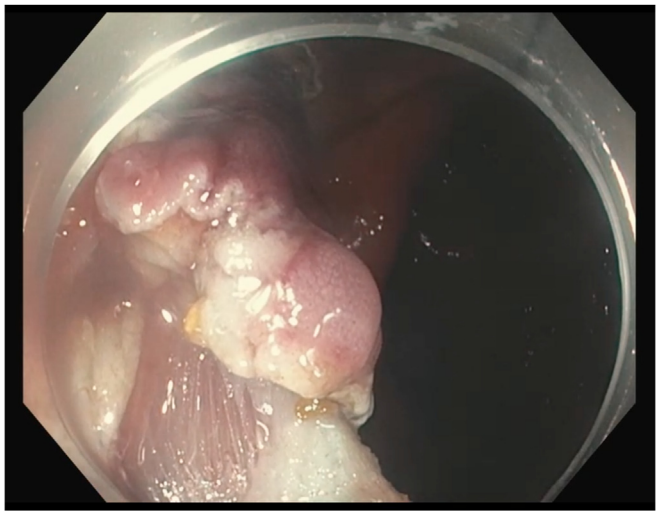

Figure 2. Identification of serosa during dissection.

Abbreviations: ESD, endoscopic submucosal dissection; ESmD, endoscopic submuscular dissection.

2468-4481
https://doi.org/10.1016/j.vgie.2023.09.023

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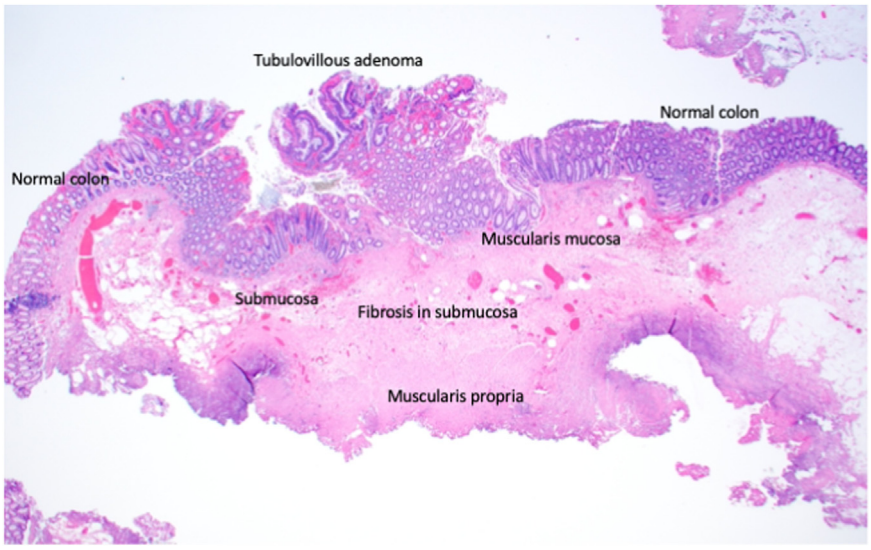

Figure 3. Hematoxylin and eosin stain of the resected specimen (orig. mag. ×20).

thickness resection was considered; however, the sigmoid colon was believed to be too narrow to accommodate the full-thickness resection device. The decision was made to proceed with ESD. An initial mucosal incision was performed with a Boston Scientific ORISE ProKnife (Boston Scientific, Marlborough, Mass, USA). Next, submucosal dissection was performed with an Olympus ITknife Nano (Olympus America, Center Valley, Pa, USA). It then became apparent that the submucosa contained severe fibrosis and the lesion was adherent to the muscularis propria. The decision was made to move forward with ESmD by orienting the insulated tip knife in a plane parallel to the muscularis propria. The knife was used to dissect the muscularis propria to ensure en bloc resection. Dissection was then continued beneath the muscularis propria revealing the underlying serosa (Fig. 2). Careful attention was given to ensure the actual polyp was not being cut with the knife, but rather that muscular dissection was being performed. This technique was done by placing the shaft of the knife directly within the muscularis propria, which ensured the fibrotic portion beneath the polyp was being dissected, with the goal of ensuring a deep negative margin.

Careful inspection of the defect demonstrated intact serosa. The defect was closed with through-the-scope clips. The total procedure time was 55 minutes. The patient was admitted to the hospital for observation. He reported feeling well with no complaints and was discharged the next day on 7 days of prophylactic oral antibiotics.

Pathology revealed residual tubulovillous adenoma with negative lateral and deep margins. The submucosa beneath the adenoma was mostly replaced by severe fibrosis (Fig. 3). The partially dissected muscularis propria is visualized immediately beneath the fibrotic region.

DISCUSSION

In this video, we describe incomplete EMR of a laterally spreading tumor leading to significant fibrosis and fusion of the lesion to the submucosa and muscularis propria. We demonstrate that careful dissection in a plane parallel to the muscularis propria can lead to en bloc resection and a negative deep margin. While similar techniques have been shown within the literature when submucosal fibrosis is encountered during peroral endoscopic myotomy, submuscular dissection has not been widely described as a technique for resection of fibrotic polyps.[7] Although the risk of full-thickness perforation is high, this may be mitigated by ensuring careful dissection is continued within the muscularis propria, while also ensuring the underlying serosa remains intact. Additionally, complete closure of the defect must be undertaken at the conclusion of the procedure. In summary, we demonstrate that ESmD is a novel technique that may allow for en bloc resection of fibrosed lesions and avoid the need for surgical management.

DISCLOSURE

Dr Booth is a consultant and researcher for Ibex Medical Analytics, a speaker for Astellas Pharma, and a consultant for Philips, PathAI, and Diagnexia US. The other authors did not disclose any financial relationships.

REFERENCES

1. Shahidi N, Vosko S, Gupta S, et al. Previously attempted large nonpedunculated colorectal polyps are effectively managed by endoscopic mucosal resection. Amer J Gastroenterol 2021;116:958-66.
2. Tate DJ, Desomer L, Hourigan LF, et al. Two-stage endoscopic mucosal resection is a safe and effective salvage therapy after a failed single-session approach. Endoscopy 2017;49:888-98.
3. Kuroha M, Shiga H, Kanazawa Y, et al. Factors associated with fibrosis during colorectal endoscopic submucosal dissection: does pretreatment biopsy potentially elicit submucosal fibrosis and affect endoscopic submucosal dissection outcomes? Gastroenterologia 2021;102:590-8.
4. Kodashima S, Fujishiro M, Goto O, et al. Endoscopic submucosal dissection for colorectal epithelial neoplasms with submucosal fibrosis [abstract]. Gastrointest Endosc 2008;67:AB306.
5. Matsumoto A, Tanaka S, Oba S, et al. Outcome of endoscopic submucosal dissection for colorectal tumors accompanied by fibrosis. Scand J Gastroenterol 2010;45:1329-37.
6. Trindade AJ, Kumta NA, Bhutani MS, et al. Devices and techniques for endoscopic treatment of residual and fibrotic colorectal polyps (with videos). Gastrointest Endosc 2020;92:474-82.
7. Mavrogenis G, Song LMWK, Bazerbachi F. In the thick of it: peroral endoscopic myotomy with intramuscular tunneling in end-stage achalasia. Ann Gastroenterol 2021;34:756.