Saline-immersion endoscopic submucosal dissection using pocket-creation method

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A 71-year-old man with history of atrial fibrillation on anticoagulation and obesity (body mass index = 42) was referred for removal of a large cecal polyp that was discovered on a surveillance colonoscopy examination. There was some degree of looping noted upon insertion of the pediatric colonoscope (PCF-190; Olympus, Tokyo, Japan); therefore, we decided to carry out the entire procedure using the underwater technique to avoid excessive looping that can happen with carbon dioxide insufflation.[1]

General anesthesia was used. The polyp appeared to be a granular-type polyp without obvious nodules. The vascular pattern and surface pattern appeared to be regular (Japan NBI Expert team (JNET) classification IIa; Fig. 1; Video 1, available online at www.videogie.org). We decided to proceed with saline-immersion endoscopic submucosal dissection (ESD) using the pocket-creation method.[2-5] We use 0.9% normal saline instead of water for 3 reasons: it conducts electrocautery current better than water; it is better to have normal saline instead of water in case of a perforation adverse event; and to avoid the theoretical risk of hyponatremia.

First, a 15- to 20-mm mucosal incision was created distal to the lesion, and then the pocket was created underneath the lesion (Figs. 2 and 3). Once the pocket was extended underneath the entire polyp, we opened the pocket along one of the lateral margins. Then, submucosal dissection was carried out underneath. Next, we performed a mucosal incision and submucosal dissection proximally and then along the other lateral margin. ESD was completed in 90 minutes (Fig. 4).

Defect closure was achieved with hemostatic clips. First, we used a rat-tooth-type hemostatic clip with anchor prongs. Once both edges were approximated, regular hemostatic clips were used to close the defect entirely. A total of 9 hemostatic clips were used to close the defect. Clip closure was done using saline immersion as well, which kept the defect smaller for more effective closure.[6] Avoiding air insufflation allowed prevention of excessive looping, which can happen with prolonged procedure times when using carbon dioxide insufflation.[1] It also allowed completion of the procedure without using any overtube-type accessory or additional traction devices. The saline-immersion technique with the

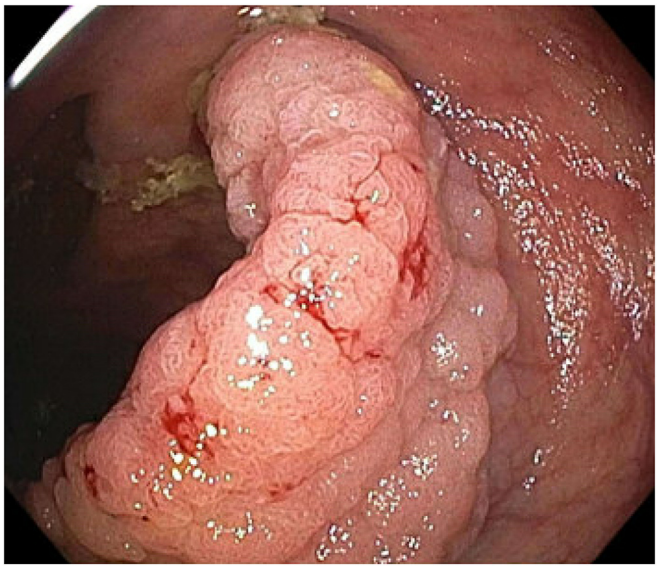

Figure 1. Cecal polyp.

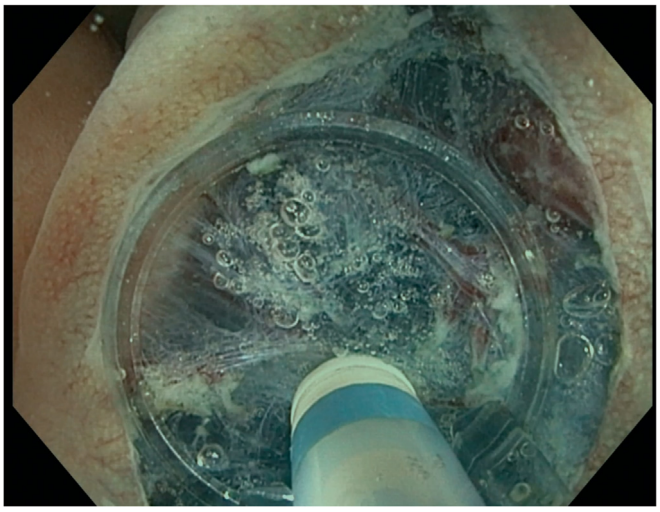

Figure 2. Saline-immersion pocket opening.

Abbreviation: ESD, endoscopic submucosal dissection.

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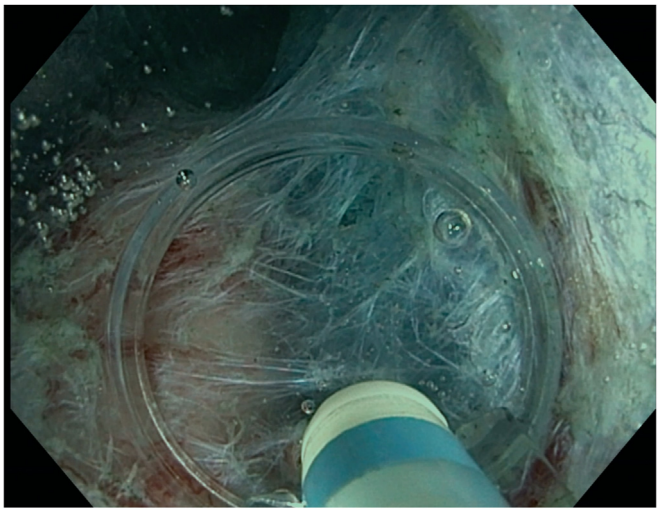

Figure 3. Traction provided by the saline-immersion and pocket-creation method.

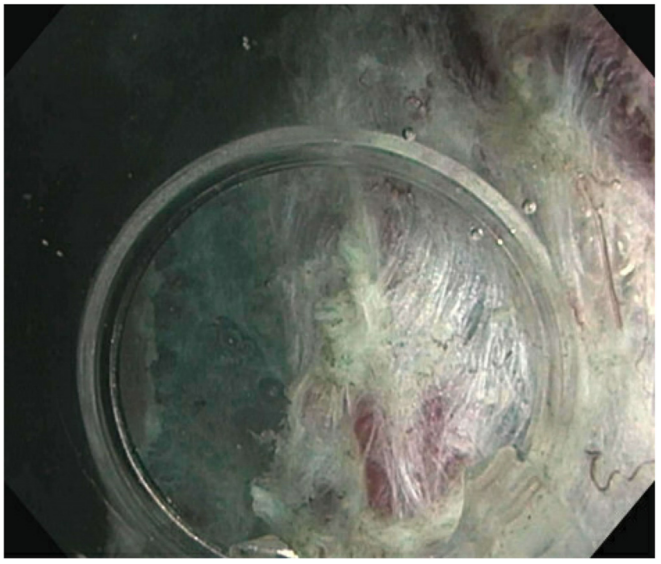

Figure 4. Post–endoscopic submucosal dissection appearance.

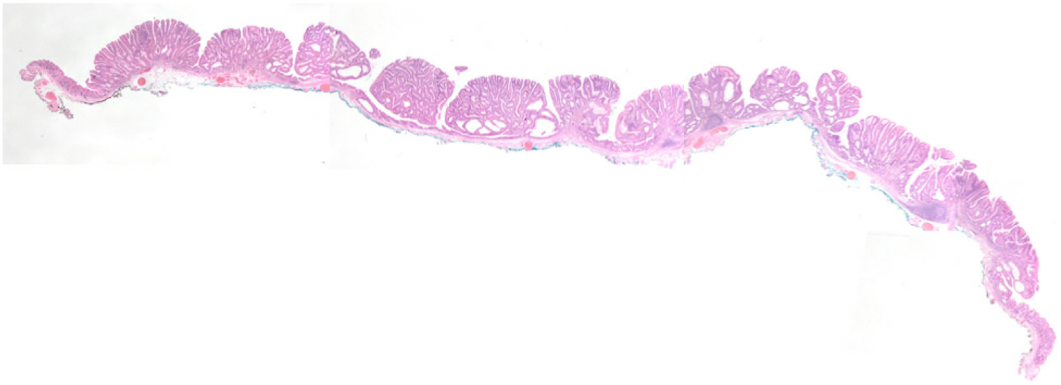

Figure 5. Endoscopic submucosal dissection specimen: tubular adenoma with normal colonic mucosa at the periphery (H&E, orig. mag. ×1.25).

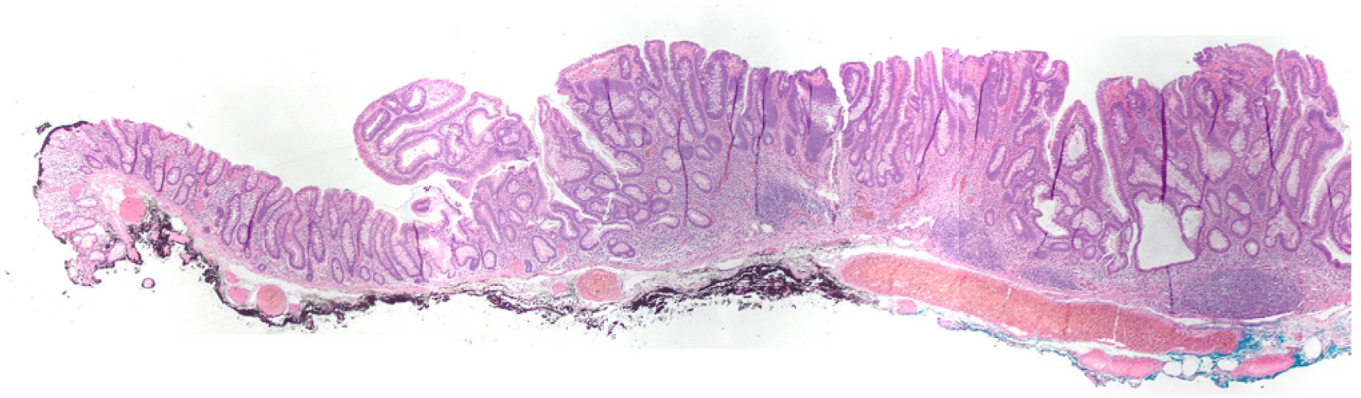

Figure 6. Tubular adenoma with normal mucosa at lateral margin inked black and deep margin inked blue (H&E, orig. mag. ×4).

pocket-creation method allowed natural traction (Fig. 3) by floatation of the mucosal flap that negated the need for the patient turning or using additional traction devices. Saline pressure created by irrigation from the water jet channel along with the buoyancy effect of saline immersion helped open the pocket. A hood-type distal attachment also allowed easier opening of the pocket (Fig. 2). The patient was discharged on the same day without any postprocedure adverse events.

Final pathology showed tubular adenoma with negative margins (Figs. 5 and 6). The patient was recommended to undergo surveillance colonoscopy in 1 year. This case demonstrates that saline immersion and the pocket-creation method can not only overcome difficulties of looping but also decrease expenses associated with additional devices needed for completion of ESD in the right side of the colon.

DISCLOSURE

The authors did not disclose any financial relationships.

REFERENCES

1. Asai S, Fujimoto N, Tanoue K, et al. Water immersion colonoscopy facilitates straight passage of the colonoscope through the sigmoid colon without loop formation: randomized controlled trial. Dig Endosc 2015;27:345-53.
2. Iacopini F, Gotoda T, Montagnese F, et al. Underwater endoscopic submucosal dissection of a nonpolypoid superficial tumor spreading into the appendix. VideoGIE 2017;2:82-4.
3. Yamamoto H, Hayashi Y, Despott EJ. The pocket-creation method for endoscopic submucosal dissection combined with saline-immersion: another potential option to overcome challenges in colorectal endoscopic submucosal dissection. Gastrointest Endosc 2019;90:288-9.
4. 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.
5. Despott EJ, Murino A. Saline-immersion therapeutic endoscopy (SITE): an evolution of underwater endoscopic lesion resection. Dig Liver Dis 2017;49:1376.
6. Yamamoto S, Parra-Blanco A. Underwater clipping in the colon. Endoscopy 2023;55:E422-3.