



# Hybrid endoscopic resection combining underwater endoscopic mucosal resection and over-the-scope clip–assisted snare polypectomy for a recurrent colonic tumor with a hidden diverticulum

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## INTRODUCTION

Endoscopic treatment of recurrent or residual lesions after endoscopic resection is challenging because severe fibrosis causes their lack of elevation.<sup>1,2</sup> Complete resection via conventional EMR is often difficult; furthermore, although endoscopic submucosal dissection is useful, it requires advanced techniques and long procedure times and entails the risk of perforation.<sup>3</sup> Recently, over-the-scope clip (OTSC)-assisted snare polypectomy and full-thickness resection devices have been developed to treat these lesions.<sup>4,5</sup> However, because of the characteristics of each device, OTSC-assisted snare polypectomy is limited to small lesions, and full-thickness resection devices have a large cap that can cause difficulty when advancing to the deep colon.<sup>6</sup> In contrast, underwater EMR (UEMR) requires no special devices and is simple, versatile, and useful for treating recurrent or residual lesions.<sup>7-9</sup> In a previous study, en bloc and complete resection rates of UEMR for recurrent lesions after endoscopic treatment were 43% and 89%, respectively,<sup>10</sup> thus making treatment innovations challenging. We describe the successful resection of a recurrent tumor in the ascending colon with a hidden diverticulum using a hybrid technique combining UEMR and OTSC-assisted snare polypectomy (Video 1, available online at [www.videogie.org](http://www.videogie.org)).

## CASE REPORT

An 80-year-old man had undergone piecemeal EMR for a lesion that extended into the colonic diverticulum in the

ascending colon 18 months previously. The pathologic diagnosis was intramucosal carcinoma with an inconclusive horizontal margin. Follow-up including endoscopy every 6 months did not indicate recurrence; however, the most recent examination revealed a recurrent colonic tumor (15 mm, type 0-Is) located on a post-EMR scar (Fig. 1AC). On the basis of both white-light imaging and narrow-band imaging, the lesion was considered a high-grade adenoma or intramucosal carcinoma.

## PROCEDURE

Because of poor insertion and maneuverability attributable to multiple diverticula, lesion resection via OTSC-assisted snare polypectomy was planned. The bowel flexure was strong and the 14/6t OTSC was not passed; therefore, a 12/6t OTSC was attached. The endoscope reached the lesion and OTSC-assisted snare polypectomy was attempted; however, the lesion was not fully aspirated into the cap of the OTSC because of severe fibrosis. Therefore, the plan was changed to resection of the lesion on the scar with UEMR and additional OTSC-assisted snare polypectomy to ensure no residual tumor on the resection surface. After we performed UEMR, a depression thought to be a diverticulum that had not been visible before resection was observed on the resection surface (Fig. 1D and E). Perforation was also a concern; therefore, the mucosal defect was closed rapidly with an OTSC before the next planned OTSC-assisted snare polypectomy. A polyp-like elevation appeared on the OTSC (Fig. 1F). Because of the possibility of a residual tumor in the diverticulum, snaring resection was performed above the clip (Fig. 1G).

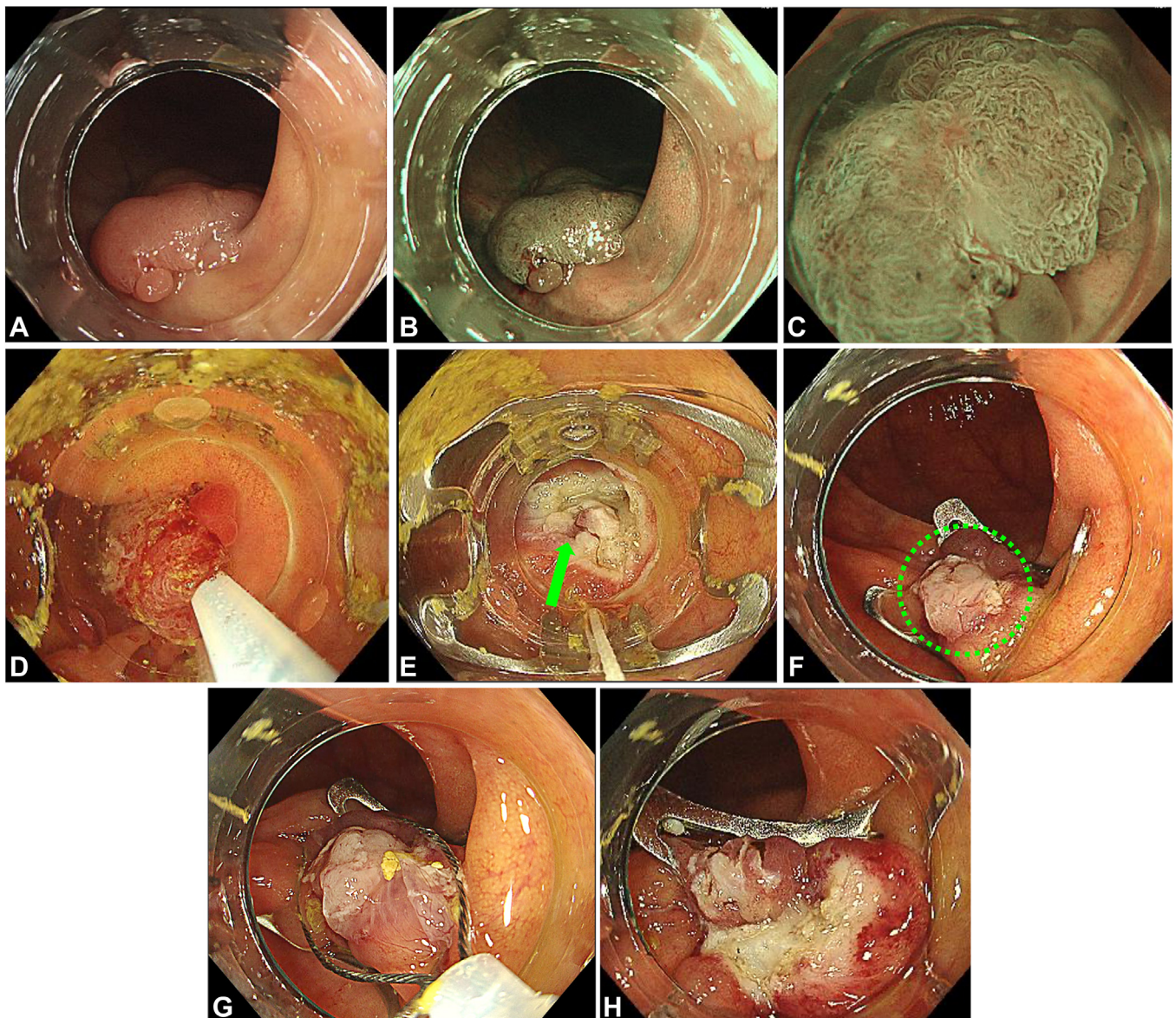
## OUTCOME

Pathologic examination of tissue resected via UEMR indicated intramucosal carcinoma without lymphovascular invasion. The horizontal margin was diagnosed as inconclusive, and the vertical margin was diagnosed as negative. No residual tumor was observed in the lesion additionally resected via OTSC-assisted snare polypectomy (Fig. 2).

*Abbreviations:* OTSC, over-the-scope clip; UEMR, underwater EMR.

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**Figure 1.** Endoscopic images. **A**, White-light image. A protruding lesion was located on a post-EMR scar of the ascending colon (diameter, 15 mm). **B**, Endoscopic image obtained with narrow-band imaging. **C**, Magnified narrow-band imaging depicted irregular microvessel and surface patterns. **D**, Underwater EMR (UEMR) with a preattached over-the-scope clip (OTSC). **E**, After we performed UEMR, a diverticulum was observed on the resection surface (green arrow). **F**, The diverticulum was inverted and a polyp-like elevation was detected above the clip after closure of the mucosal defect using an OTSC. The green dotted line indicates the elevation. **G**, The snaring resection was performed above the clip. **H**, After OTSC-assisted snare polypectomy, no tumor remnant was detected endoscopically.

## CONCLUSIONS

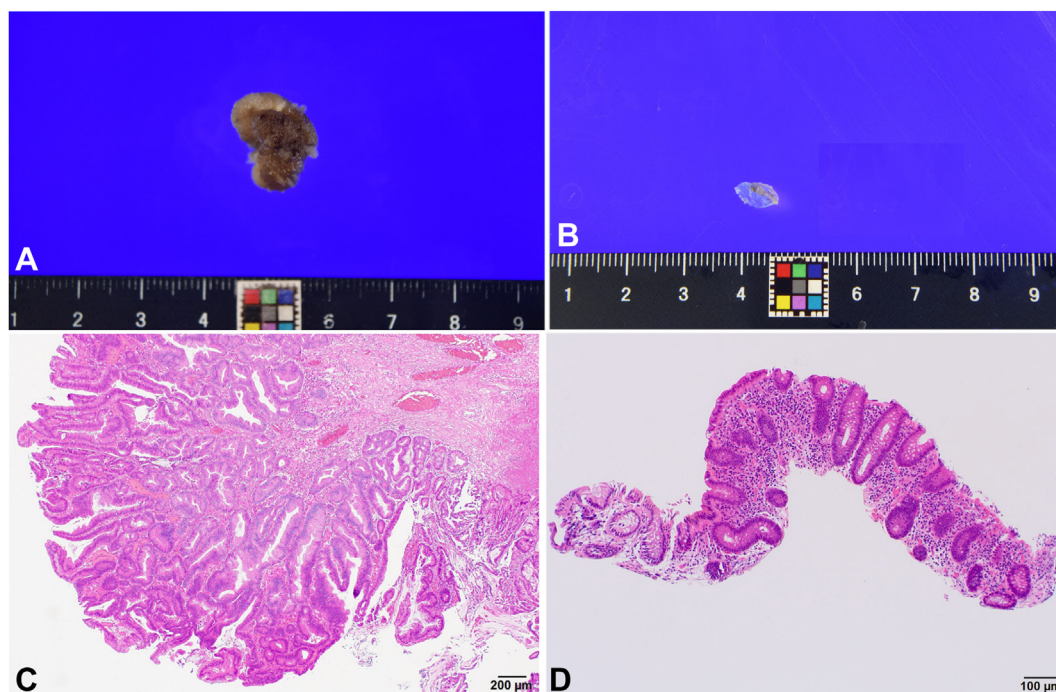
UEMR is one method of managing lesions on a scar; however, deep margins pose a challenge. The combination of UEMR and OTSC-assisted snare polypectomy enables the resection of lesions with deep margins and mucosal defect closure. Because the horizontal margins of the resected specimen in the current case were inconclusive, the patient will undergo careful follow-up. Attention

should be focused on the possibility of a hidden diverticulum under the scar when cases include recurrent lesions involving the diverticulum.

## PATIENT CONSENT

The patient in this article has given written informed consent to publication of the case details.





**Figure 2.** Macroscopic and histopathologic images of the resected specimen. **A**, Macroscopic image of the specimen resected via underwater EMR (UEMR). **B**, Macroscopic image of the specimen resected via over-the-scope clip (OTSC)-assisted snare polypectomy. **C**, Histopathologic image of the specimen resected via UEMR (hematoxylin-eosin staining, orig. mag.  $\times 20$ ). The tumor was diagnosed as an intramucosal adenocarcinoma without lymphovascular invasion. The horizontal margin was considered inconclusive, and the vertical margin was considered negative. **D**, Histopathologic image of the specimen resected via OTSC-assisted snare polypectomy (hematoxylin-eosin staining, orig. mag.  $\times 100$ ). No tumor is observed.

## DISCLOSURE

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