



Underwater EMR in the reconstructed gastric conduit after esophagectomy

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BACKGROUND

In the patient who has undergone esophagectomy, additional surgery for lesions in the reconstructed gastric conduit is challenging and carries significant morbidity and mortality. For these lesions, endoscopic treatment including EMR and endoscopic submucosal dissection (ESD) is far less invasive as a treatment, which of course should be premised on the early detection of the malignant lesions. Endoscopic treatment, such as conventional EMR and ESD, for lesions in the reconstructed gastric conduit after esophagectomy is often challenging due to narrower lumen and vulnerable mucosa at the lesion site.^{1,2} Underwater EMR has been developed by Binmoller et al³ and Garg et al⁴ and has been established to be safe and effective for treatment in the colon and the duodenum. We have previously reported the efficacy of underwater EMR in the stomach (G-UEMR) and hypothesized that it may serve as a novel alternative for removal of small lesions in the reconstructed gastric conduit after esophagectomy.⁵

DETAILS OF THE PROCEDURE

The procedure was performed in the left lateral position of the patient under sedation with midazolam. Endotracheal tube intubation should be considered at least in high-risk patients such as older patients. Marking was performed using the tip of the snare. The lesion with a sufficient margin was grasped with a snare 10 mm in size (Olympus, Tokyo, Japan) and cut using Endocut Q mode 30W and Forced Coag mode 20W with an electrosurgical unit (ERBE, Tübingen, Germany). It is not necessary to use a large amount of water. Most important is

to sufficiently de-aerate the lumen before infusing the water to let the mucosa float by the water. The size of the snare should be as small as possible, enough to cover the margin of the lesion. A larger snare can be difficult to manipulate when grasping the lesion. A stiff and thick snare may not be suitable for this procedure, as it can slip on the mucosa. Conversely, placing the soft and thin snare gently onto the mucosa without too much pressure is essential to avoid undesirable perforation. The position of the lesion should be at 6 o'clock or at least on the lower side of the endoscopic view. The timing of the suction of the water should be after completing the removal, considering that the endoscopic view is clearer under the water. We close the defect to protect it when we recognize the duodenal juice naturally flowing into the operated stomach, which might be risky for bleeding and delay perforation.

A cold snare is not recommended for colonic polyp with suspected adenocarcinoma due to the fact that the margin can be uncertain compared with injection-based EMR. We considered that this may theoretically be similar in the stomach; thus, we did not apply cold snare resection for the gastric neoplastic lesion. In conventional EMR and ESD, injection is



Figure 1. Underwater EMR in the reconstructed gastric conduit after esophagectomy.

Abbreviations: ESD, endoscopic submucosal dissection; G-UEMR, gastric underwater EMR.

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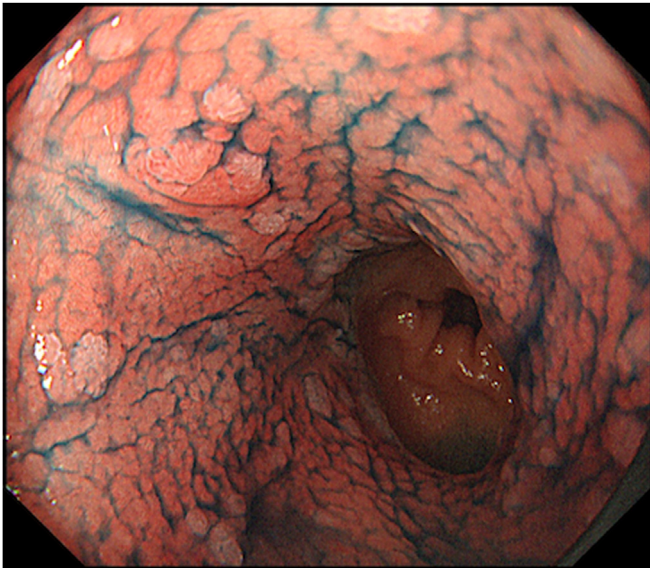


Figure 2. A reddish, 5-mm-sized, slightly elevated lesion in the reconstructed gastric conduit after esophagectomy.

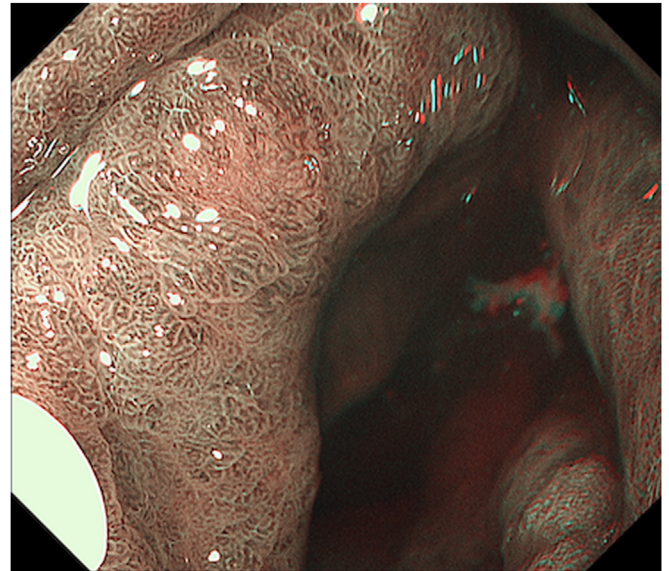


Figure 4. Narrow-band imaging shows a slightly depressed lesion 2 mm in size.

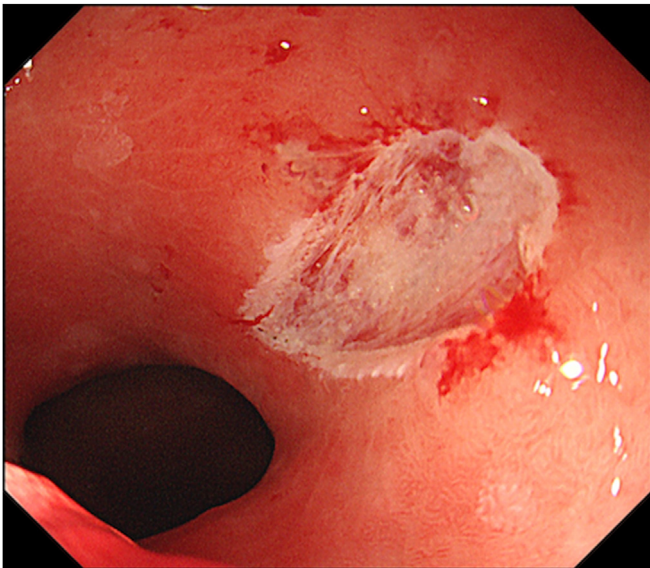


Figure 3. After complete removal of the lesion with gastric underwater EMR.

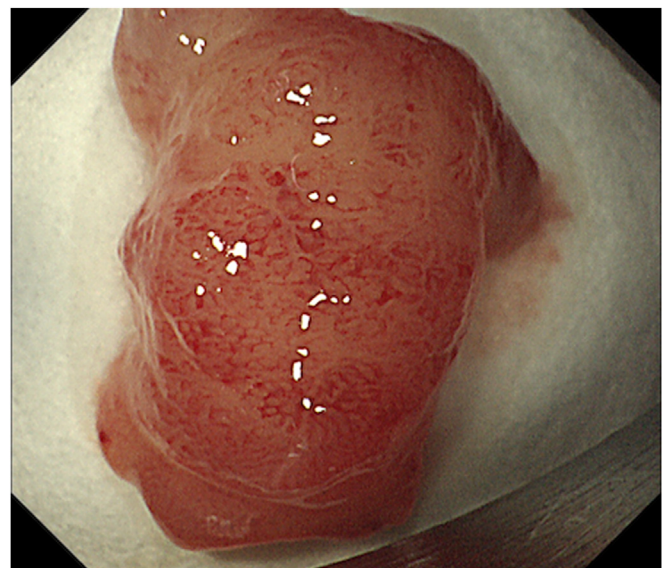


Figure 5. Confirmation of complete removal of the lesion.

indispensable; nevertheless, the gastric mucosa in the reconstructed stomach after esophagectomy is often vulnerable and the bleeding is easily caused by injection needle, which makes further procedure difficult. Moreover, fibrosis in the submucosal layer is often seen in the reconstructed stomach. For these reasons, we attempted underwater EMR in the reconstructed stomach. Especially when the lesion is small, when the location of the tumor is difficult in controlling the scope, or when the condition of the patient necessitates a shorter procedure time, underwater EMR would be beneficial over conventional EMR and ESD.

CASES

We present 3 cases of G-UEMR in patients with a reconstructed stomach after esophagectomy (Fig. 1; Video 1, available online at www.videogie.org). The first case is a 66-year-old woman. A reddish, slightly elevated lesion 5 mm in size was found in the lower part of the reconstructed gastric conduit (Fig. 2). Although the pathology of the biopsy did not show distinct malignancy, it consisted of slight atypia of the epithelium, and the patient desired treatment. G-UEMR was performed to successfully remove the whole lesion

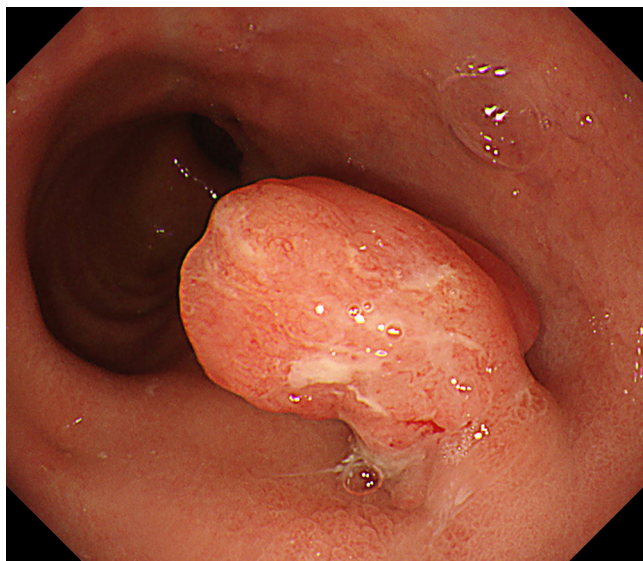


Figure 6. A 5-mm-sized polypoid lesion in the reconstructed gastric conduit after esophagectomy.

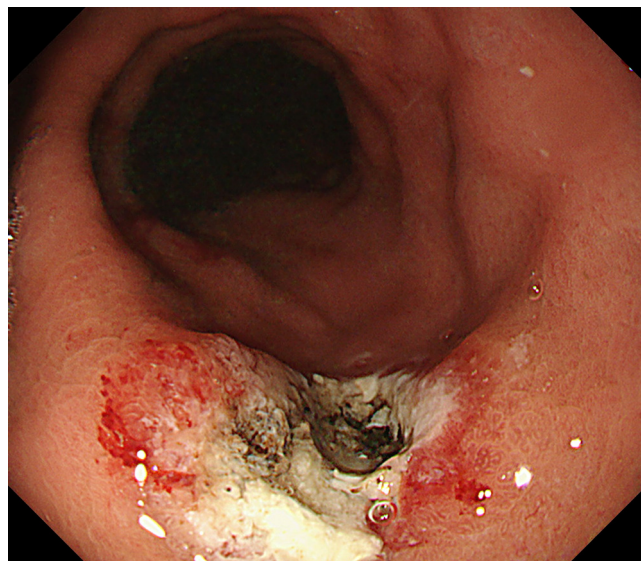


Figure 7. After endoscopic complete removal of the lesion with piecemeal gastric underwater EMR.

(Fig. 3). Pathological investigation revealed minute neoplastic mucosal ducts without definite malignancy. The second case was a slightly depressed lesion 2 mm in size in the middle part of the reconstructed gastric conduit of a 74-year-old male patient (Fig. 4). The pathology of the biopsy showed atypical epithelium without definite evidence; however, neoplasia was suspected. We recommended that the patient agree to have the lesion removed. G-UEMR was performed to remove the complete lesion (Fig. 5). Pathological investigation showed intramucosal gastric cancer, which was completely resected (type 0-IIc, 2 mm, tub1, pT1a[M], UL0, LY0, V0, HM0, VM0). The third case was an 8-mm-sized polypoid lesion at the upper part of the reconstructed gastric conduit of a 74-year-old female patient (Fig. 6). The pathology of the biopsy showed moderate- to well-differentiated adenocarcinoma. The lesion was situated close to the oral-side anastomosis, and it was difficult to keep aeration for endoscopic resection. The lesion turned out to be composed of a pedunculated part and a flat-elevated part; however, the latter part had not been recognized before treatment. As a result, piecemeal G-UEMR was performed for endoscopic complete lesion removal (Fig. 7). Although we failed to remove en bloc, we confirmed that the tumor was endoscopically completely resected. Pathological investigation showed submucosal invasive gastric cancer (type 0-I, 5 mm, tub2 > tub2, tub1, pT1b [SM1] 0.3 mm, UL0, LY0, V0, HMX, VM0). Although it was not an en bloc resection, we have confirmed that the submucosal invasion was only in the middle of the first piece of the resected specimens. We consider that careful surveillance would be suitable for this patient, and there was no recurrence at 3 months after the therapy. Case 1 showed no recurrence for 2 years. Case 2 showed no recurrence for 11 months.

We had no adverse events in all 3 cases. Underwater EMR was easy and fast even in the reconstructed gastric conduit. In the present cases, the procedural time (from filling the lumen with saline until resection) was 1 minutes and 10 seconds in case 1, 4 minutes and 10 seconds in case 2, and 10 minutes and 36 seconds in case 3.

CONCLUSION

Previous concern exists that water filling the lumen may back flow in patients with a reconstructed gastric conduit after esophagectomy, but such a scenario was not observed for the present cases. G-UEMR could serve as an easier alternative for removing small lesions in the narrow reconstructed gastric conduit.

DISCLOSURE

Dr Takeuchi received honoraria for his lectures from Olympus, Boston Scientific (Japan), Daiichi-Sankyo, Miyarisan Pharmaceutical, Asuka Pharmaceutical, AstraZeneca, EA Pharma, Zeria Pharmaceutical, Fujifilm, Kaneka Medix, and Kyorin Pharmaceutical. All other authors disclosed no financial relationships relevant to this publication.

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