ORIGINAL ARTICLE

Endoscopic full-thickness resection with retroperitoneal dissection for duodenal myogenic cyst with adjustable traction from an independently controlled snare

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A 58-year-old man was coincidentally found to have a duodenal subepithelial lesion in the bulb. Endoscopic ultrasonography revealed a 20-mm anechoic lesion with suspicious echogenic content or a hypoechoic lesion from the muscular propria (Figs. 1 and 2; Video 1, available online at www.giejournal.org). Computed tomography revealed a lesion close to the hepatic hilum (Fig. 3). After a multidisciplinary discussion with endoscopists and surgeons, we decided to perform endoscopic full-thickness resection (EFTR) of the lesion with acceptable risk. Fine-needle aspiration or incisional biopsy was not performed because of the possibility of tissue scaring and difficulty in mucosal flap creation during EFTR. The surgical approach required dissection of the retroperitoneum at the hepatic hilum and peripancreatic area, which was a concern. Nevertheless, with the patient's consent, we decided to perform diagnostic and curative EFTR.

The procedure was performed with the patient under general anesthesia with intubation. Positive pressure ventilation was used, and airway pressure was monitored to prevent lung collapse after possible pneumoperitoneum without any abdominal pressure sensor placement. The patient was positioned in the left lateral decubitus position. Prophylactic antibiotics including cefazolin (1 g) were administered before EFTR.

To facilitate EFTR, we used snare-based traction. The process of traction building was as follows: The dissection scope was removed, and an additional gastroscope was used to snare the lesion for traction (Captivator II 27-mm snare, 240 cm in length; Boston Scientific, Marlborough, Mass). The traction gastroscope was retracted after placing the snare, and an assistant held the snare (Fig. 4). Then, the dissection scope could be advanced along the snare. We could apply bidirectional and adjustable traction by adjusting the pulling or pushing forces on the snare. The snare could also be released and placed at a different area if required.

We first dissected and exposed the tumor. Thereafter, we started EFTR via the submucosal injection of normal saline without any dye; no mucosal marking was done. We incised the oral site mucosa with DualKnife J (Olympus,

Abbreviation: EFTR, endoscopic full-thickness resection.

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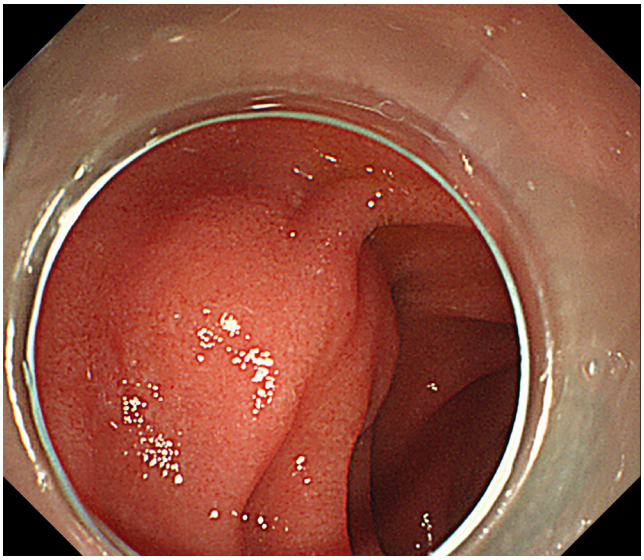

Figure 1. The tumor was located in the duodenal bulb.

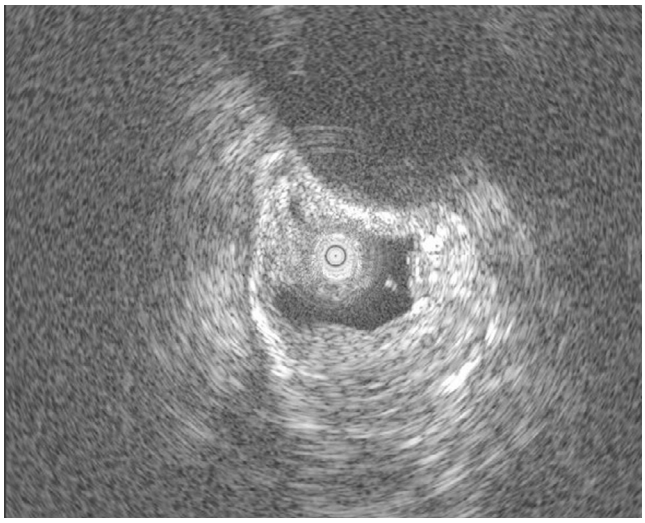

Figure 2. EUS revealed anechoic with suspicious echogenic content or hypoechoic lesion from muscular propria.

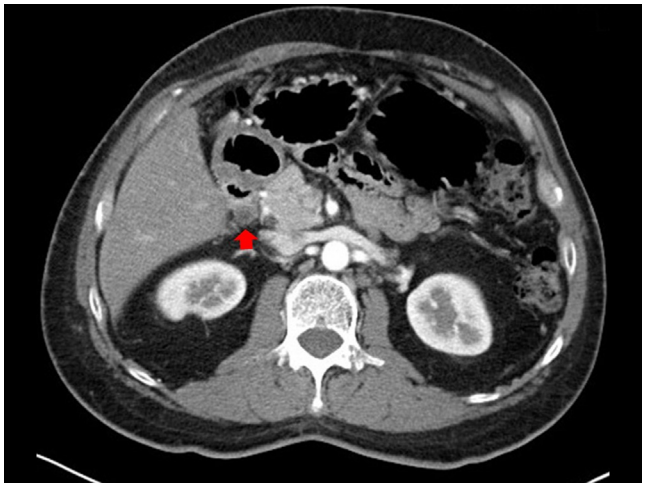

Figure 3. CT scan showed the tumor was close to the hepatic hilum (*red arrow*).

Figure 4. The view of the snare traction outside of the patient.

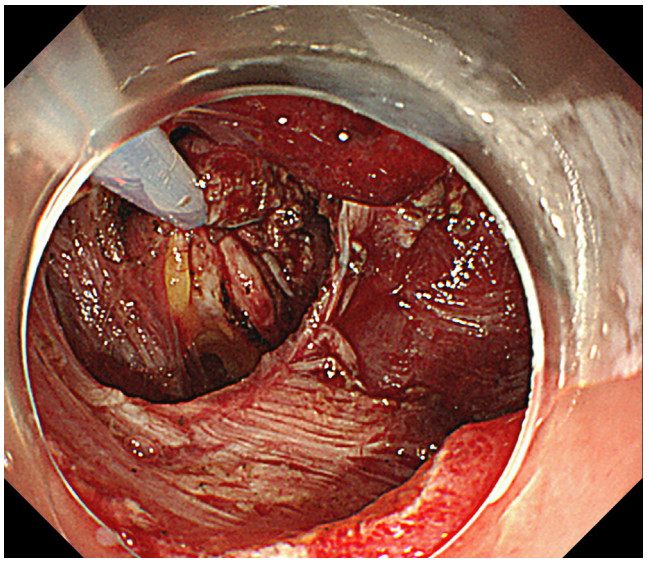

Figure 5. View from the endoscopic submucosal dissection scope: the snare from the traction scope grasped the tumor, which dropped into the retroperitoneum.

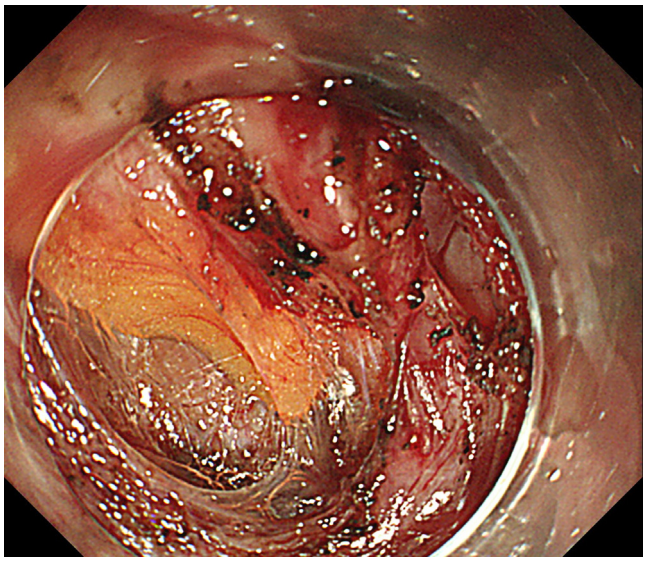

Figure 6. The tumor was pulled out for better dissection between the tumor and retroperitoneal fat.

Tokyo, Japan) to create a mucosal flap for further wound closure. Snare-based traction was applied to the mucosa for better submucosal dissection and tumor exposure. Submucosal injection was performed as needed using DualKnife J. We located the tumor by touching the mucosa and muscle layer with DualKnife J. The tumor was gradually exposed.

We then dissected the tumor from the muscle and entered the retroperitoneum using ITknife nano (Olympus). No injection was performed in the muscle layer and retroperitoneum. After dissection, most of the tumor dropped into the extraluminal space. Traction was shifted to the

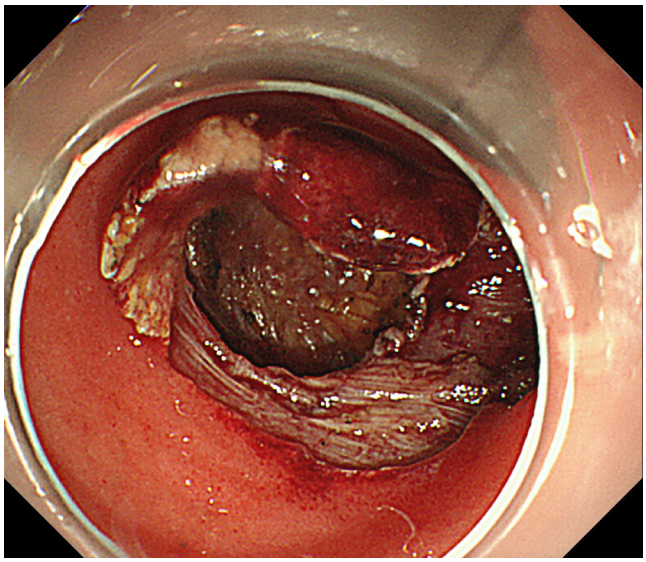

Figure 7. The final wound confirmed whole-layer resection with the mucosal flap spared.

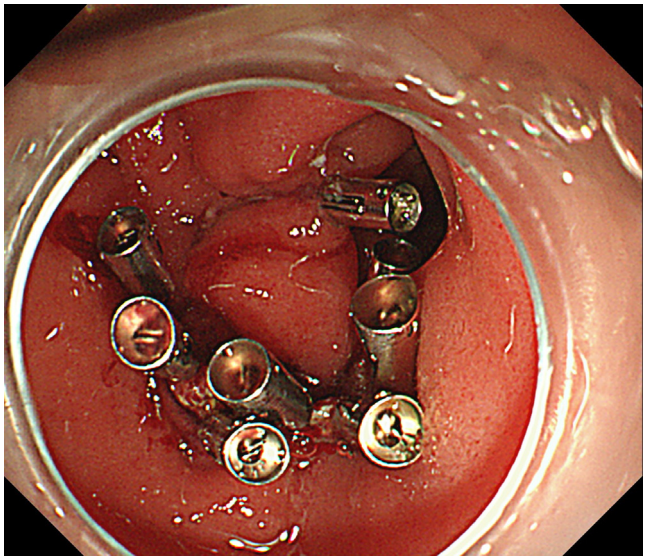

Figure 8. The wound was closed by hemostatic clips.

tumor by releasing the snare, removing the dissection scope, inserting the traction gastroscope, snaring the tumor again, and withdrawing the traction gastroscope. After advancing the dissection scope, we carefully dissected the tumor from the extraluminal fat while applying traction (Video 1, Figs. 5 and 6). We applied the desirable traction force by pushing or pulling the snare (Video 1). After removing the lesion, the wound was closed with hemostatic clips (Figs. 7 and 8).

The patient resumed a normal diet 2 days after EFTR and was discharged 5 days after the procedure. Antibiotics, including cefuroxime, were prescribed for a week. The patient's postprocedural course was uneventful, with no adverse events. Pathological analysis confirmed a duplication cyst.

Duodenal EFTR is technically challenging and risky because of limited maneuverability and delayed adverse events.[1,2] EFTR has been used for duodenal subepithelial lesions[3] via traction modifications.[4,5] Our findings suggest the feasibility of EFTR with snare-based traction for duodenal myogenic lesions. The technique offers strong traction for grasping more tissue, allows the application of pulling and minimal pushing forces, and enables changing the traction areas as required.

DISCLOSURE

The authors disclosed no financial relationships.

INFORMED CONSENT

Informed consent was obtained from the patient to publish these images.

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