Novel thin endoscope enables endoscopic submucosal dissection without retroflexion for tumor involving the whole pyloric ring

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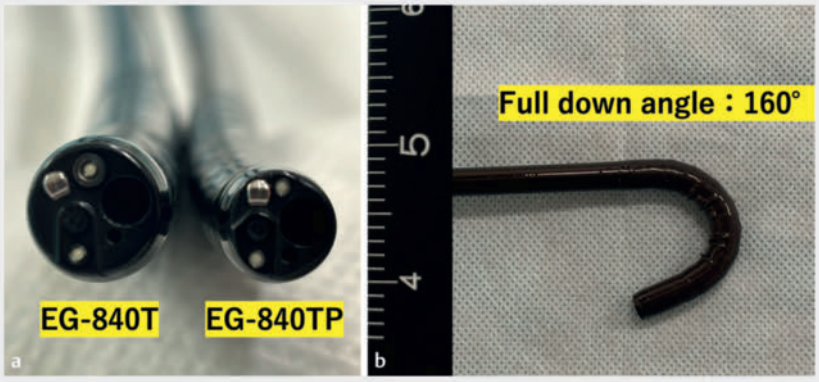
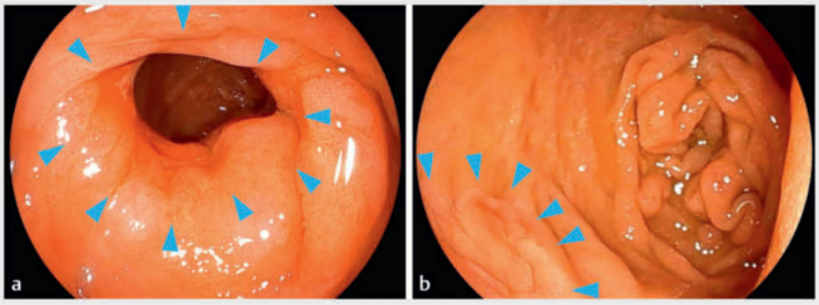
Video 1 Endoscopic submucosal dissection without retroflexion using a novel thin therapeutic endoscope for gastric cancer extending from the pyloric ring to the duodenal bulb.



▶ **Fig. 1 a** Comparison of the novel thin therapeutic endoscope and normal-diameter therapeutic endoscope. Right: Novel thin therapeutic endoscope has a 7.9-mm outer diameter and 3.2-mm working channel diameter. Left: Normal-diameter therapeutic endoscope with a 9.8-mm outer diameter. **b** Novel thin therapeutic endoscope has a downward angle of 160°.



▶ **Fig. 2** Case description. **a** The lesion was 75 mm in size and involved the entire pyloric ring. **b** The lesion extended towards the duodenal bulb.

The narrow lumen of the pyloric ring and the duodenal bulb greatly restrict the maneuverability of an endoscope. In the forward view, the steep angle of the back side of the pyloric ring makes it difficult to approach the lesion extending to the back side of the pyloric ring [1–3]. Thus, retroflexion is often used during endoscopic submucosal dissection (ESD) for the lesions located there. However, it is difficult to handle the endoscope in retroflexion due to the narrow space. The recently developed therapeutic endoscope, the EG-840TP (Fujifilm, Tokyo, Japan), has the outer diameter to 7.9 mm with a downward angle of 160° (▶ **Fig. 1 a, b**). Herein, we report a successful case of ESD for gastric cancer surrounding the entire pyloric ring employing this endoscope with a novel strategy (▶ **Video 1**).

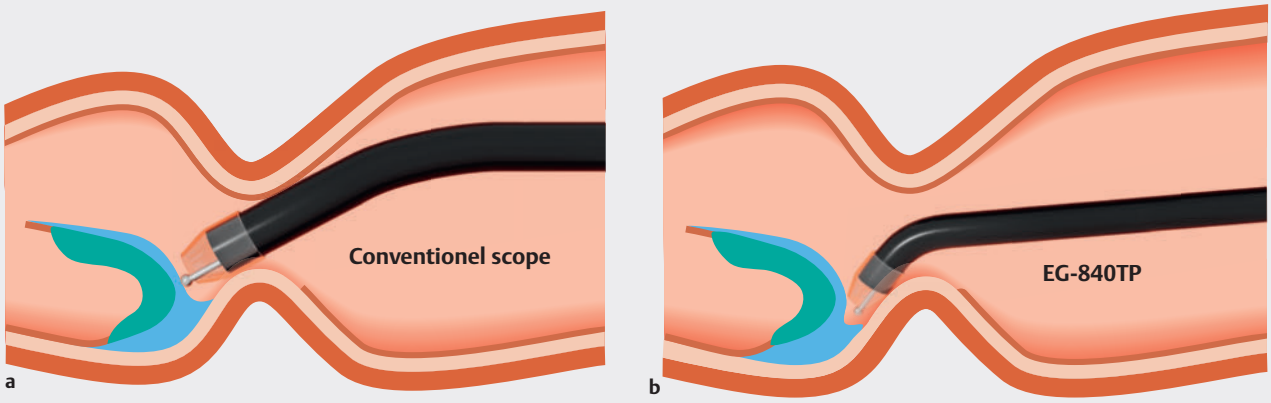
A 74-year-old man was referred to our hospital for endoscopic treatment. A 75-mm lesion fully encircled the pyloric ring and extended towards the duodenal bulb (▶ **Fig. 2 a, b**). We used the EG-840TP and DualKnife J (Olympus Medical Systems, Tokyo, Japan). ESD was performed according to the following procedure: 1) an entire circumferential mucosal incision of the duodenal side in the forward view, 2) mucosal incision of half circumference on the lesser curvature side of the oral side, 3) creation of a submucosal tunnel penetrating from the oral side to distal side on the lesser curvature side, 4) similar creation of a tunnel on the greater curvature side. Finally, the tunnels were connected and en bloc resection was accomplished in 127 minutes without any adverse events.

The thinness of this endoscope reduces the maximum angle in retroflexion when the device is inserted into the endoscope. Therefore, the thinness and sharp downward angle of this endoscope provides good maneuverability and approachability in the forward view for lesions located in steep angulated and narrow spaces (▶ **Fig. 3**).

Endoscopy_UCTN_Code_TTT_1AO_2AG_3AD

Conflict of Interest

Motohiko Kato received lecture fees and clinical research fees from Fujifilm. The other authors declare no conflicts of interest.



▶ **Fig. 3** Illustration of the difference between endoscopic submucosal dissection with a conventional scope and with the novel thin therapeutic endoscope. Thanks to the sharp downward angle, retroflexion is not required during the incision and dissection from the pyloric ring to the duodenal bulb.

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Endoscopy 2024; 56: E681–E682
DOI 10.1055/a-2344-8407
ISSN 0013-726X

Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany