

Endoscopic full-thickness resection of gastric stromal tumor: one and done



► **Fig. 1** Endoscopic exposure of a gastrointestinal stromal tumor during endoscopic dissection.

An 82-year-old woman with multiple comorbidities underwent upper endoscopy, which showed a 25 mm subepithelial lesion in the gastric fundus. Gastric biopsies of the antrum and body were unremarkable.

Upper endoscopic ultrasound showed a nonbleeding, hypoechoic, submucosal mass, measuring 24 mm × 17 mm in diameter, arising from layer 3 and extending to the muscularis propria (layer 4). Fine-needle core biopsy was performed with a 22 gauge needle. Pathology revealed epithelioid stromal cells consistent with gastrointestinal stromal tumor (GIST).

The patient was referred for endoscopic submucosal dissection of the GIST (► **Video 1**). A multipurpose knife (Erbe Elektromedizin GmbH, Tübingen, Germany) was used to mark the borders of the lesion, with a 1–2 mm margin of normal mucosa, using soft coagulation setting. The lesion was lifted with a solution consisting of 0.9% normal saline, methylene blue, and hextan. After adequate expansion of the submucosal space, the mucosa was incised with the multipurpose knife. Using repeated submucosal injections followed by short bursts of needle-knife dissection, the submucosal space beneath the lesion was carefully dissected until the proximal edge of the GIST was seen (► **Fig. 1**). Further dissec-



► **Video 1** Step-by-step full-thickness resection of a gastrointestinal stromal tumor, followed by suturing.

tion was carried out to better expose the GIST along the semi-circumferential borders until the lesion was well exposed on its proximal side. An insulated-tip knife (IT2; Olympus, Tokyo, Japan) was then used to dissect underneath the lesion until it was completely freed from the muscularis propria on the distal side, and the lesion was released in a flap-like fashion. The lesion was removed en bloc with no defect seen in the resection bed of the muscularis propria. The resection bed was closed with an endoscopic suturing device (Overstitch; Apollo Endosurgery Inc., Austin, Texas, USA) using three sutures.

Final pathology demonstrated a 2.4 cm × 2.4 cm × 1.7 cm low grade GIST with negative margins. At 6 month follow-up, the patient had no symptoms, and repeat upper endoscopy did not show any residual lesion.

Gastric GISTs account for about 55% of all GISTs and can become symptomatic due to bleeding or pain [1]. The National Institutes of Health classifies the malignant potential of GIST based on size and mitotic index, with a tumor size >2 cm considered a higher risk feature [2]. En-

doscopic submucosal dissection and endoscopic full-thickness resection techniques have been successfully described, mostly in the Eastern literature, with high success rates and low rates of complications for en bloc curative resection without the need for traditional surgery [3–5]. However, the closure technique used in most of these cases involved hemostatic clips or over-the-scope clips. We describe successful endoscopic full-thickness resection of a medium-sized gastric GIST using hemi-circumferential opening followed by endoscopic suturing of the large resection defect.

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Competing interests

Professor Kahaleh has received grant support from Boston Scientific, Fujinon, EMcison, Xlumena Inc., W.L. Gore, MaunaKea, Apollo Endosurgery, Cook Endoscopy, ASPIRE Bariatrics, GI Dynamics, NinePoint Medical, Merit Medical, Olympus and MI Tech. He is a consultant for Boston Scientific, Xlumena Inc., Concordia Laboratories Inc, ABBvie, and MaunaKea Tech.

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