ORIGINAL ARTICLE

A pure endoscopic full-thickness resection of a large nonmetastatic GI stromal tumor >5 cm of the stomach after neoadjuvant imatinib therapy



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An endoscopic full-thickness resection (EFTR) without laparoscopic assistance for large nonmetastatic gastric gastrointestinal stromal tumors (GISTs) after neoadjuvant imatinib therapy surgery was the first-line treatment for nonmetastatic gastric GISTs. Patients with large (>5 cm) gastric GISTs usually require gastrectomy surgery with relatively large trauma. However, nonmetastatic GISTs <35 mm could be removed by EFTR or submucosal tunneling endoscopic resection.¹ For localized GISTs with high-risk features, neoadjuvant imatinib therapy was recommended with better oncologic outcomes compared with surgery alone.^{2,3} Neoadjuvant imatinib therapy allowed better stomach preservation and excellent recurrence-free survival in surgery.⁴ Therefore, in this article, our team explored pure EFTR (EFTR without laparoscopic assistance) of a GIST after neoadjuvant imatinib therapy.

A 42-year-old male with a GIST confirmed by preoperative biopsy was referred to our hospital for treatment. Neoadjuvant therapy with 400 mg imatinib mesylate daily was started. Six months later, the maximum diameter of the GIST shrank from 5.2 cm to 3.7 cm, and ulcer cavity in the middle of the tumor healed (before neoadjuvant imatinib therapy: Figs. 1A and B; after neoadjuvant imatinib therapy: Figs. 1A and B; after neoadjuvant imatinib therapy: Fig. 1C and D). No metastasis was suggested by positron emission tomography–CT or contrast-enhanced CT. EUS evaluation showed a hypoechoic solid mass originated from the muscularis propria outside the wall (Fig. 1E). Preoperative 3dimensional CT vascular reconstruction was performed to observe whether there were large blood vessels around the tumor, so as to ensure the safety of the operation (Fig. 1F). Pure EFTR was performed after 6 months (Video 1, available online at www.videogie.org). Dual knife and insulated-tip knife were used for EFTR of the GIST, and the floss traction method made the whole endoscopic separation process easy (Fig. 1G). The tumor capsule membrane remained intact. Clips were used to accurately close the full-thickness perforated gastric wall (Fig. 1H). The total procedure duration time including tumor resection and wound closure was 96 minutes. Histology revealed complete removal of a $4.0 - \times 3.1$ -cm GIST with mitotic index < 5 per 50 high-powered fields. (Fig. 1I). After neoadjuvant imatinib therapy, the GIST became softer and smaller, which could easily be removed from the digestive tract. Immunohistochemical analysis demonstrated Ki-67(+15%), CD34(+), CD117(+), PDGFRα(+), SDHB(+), DOG-1(+), SMA(-), and S-100(-) (Fig. 1J). There were still spindle-shaped cells in the middle of tumor. Tumor resection margins were negative. Imatinib therapy was continued for 6 months after EFTR, and the patient remained alive without recurrence and metastasis 12 months after endoscopic resection.

Our study explored a new endoscopic treatment path with neoadjuvant imatinib therapy for a large gastric GIST. In this way, the GIST became softer and smaller after 6 months of neoadjuvant imatinib therapy and could therefore be removed from the digestive tract after EFTR. In the future, we will further research more cases of large gastric GISTs to assess long-term efficacy.

Abbreviations: EFTR, endoscopic full-thickness resection; GIST, gastrointestinal stromal tumor.

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Figure 1. A, Before neoadjuvant imatinib therapy, CT showed that a 5.2-cm gastrointestinal stromal tumor with ulcer cavity was convex into the stomach fundus cavity. **B**, Before neoadjuvant imatinib therapy, ulcerative and inflammatory-like manifestations could be seen on the mucosa of gastrointestinal stromal tumor under endoscope. **C**, After neoadjuvant imatinib therapy, the gastrointestinal stromal tumor diminished to 3.7 cm without ulcer cavity and showed lower CT density than before. **D**, After neoadjuvant imatinib therapy, the gastrointestinal stromal tumor shrunk and ulcer was healed under endoscope. **E**, EUS evaluation showed a hypoechoic solid mass originated with the muscularis propria outside the wall. **F**, Preoperative 3-dimensional vascular reconstruction of gastrointestinal stromal tumor observed whether there were large blood vessels around the tumor, so as to ensure the safety of the operation. **G**, Dual knife and insulated-tip knife were used for endoscopic full-thickness resection of gastrointestinal stromal tumor, and the floss traction method made the whole endoscopic separation process easy. **H**, Clips were used to accurately close the full-thickness perforated gastric wall. **I**, Gastrointestinal stromal tumor 4.0*3.1 cm with R0 resection. **J**, Immunohistochemical analysis demonstrated Ki-67(+15%), CD34(+), CD117(+), PDGFR- α (+), SDHB(+), DOG-1(+), SMA(-), and S-100(-) (H&E stain ×40).

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