



Laparoscopic Trans Gastric Resection of a Large Posterior Gastric GIST Near the Gastroesophageal Junction: A Case Report

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Abstract

Background: Gastrointestinal Stromal Tumors (GISTs) are the most common mesenchymal neoplasms of the gastrointestinal tract. Complete surgical resection with negative margins (R0) remains the standard of care for localized disease. However, GISTs arising near the Gastroesophageal Junction (GEJ) present a significant technical. Challenge: Conventional wedge resection may compromise gastric anatomy and function, or necessitate extended gastric resection.

Case Presentation: A 53-year-old woman presented with melena and anemia due to a 9 cm × 10 cm posterior gastric wall GIST located at the lesser curvature near the GEJ. Following a lack of response to neoadjuvant imatinib therapy, she underwent laparoscopic trans gastric resection. After anterior gastrotomy, the tumor was everted and resected using a laparoscopic linear stapler, preserving uninvolved gastric tissue. The postoperative course was uneventful, and histopathological examination confirmed R0 resection of a low-risk GIST.

Conclusion: Laparoscopic trans gastric resection is a safe and organ-preserving approach for large posterior gastric GISTs near the GEJ. This technique provides adequate oncologic resection while minimizing gastric deformity and preserving physiological function.

Keywords: Laparoscopic; Submucosa; Gastrointestinal

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Received Date: 27 Aug 2026

Accepted Date: 10 Sep 2026

Published Date: 12 Sep 2026

Citation:

Maglio R, Del Coco F, Fracasso M, Fracasso LA. Laparoscopic Trans Gastric Resection of a Large Posterior Gastric GIST Near the Gastroesophageal Junction: A Case Report. *Clin Case Rep Int.* 2026; 10: 1789.

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Introduction

Gastrointestinal Stromal Tumors (GISTs) are the most common mesenchymal neoplasms of the gastrointestinal tract. They originate from the Interstitial Cells of Cajal (ICC), which function as pacemaker cells regulating gastrointestinal motility. GISTs can arise anywhere along the gastrointestinal tract; however, the stomach is the most frequent site (56%), followed by the small intestine (32%) and the colorectum (6%) [1].

Immunohistochemical analysis has established the cellular origin of GISTs through expression of CD117 (the c-kit proto-oncogene product) and CD34. ICC are distributed within the myenteric plexus, submucosa, and muscularis propria [2,3]. Gain-of-function mutations in KIT result in constitutive receptor activation and uncontrolled cellular proliferation, providing the rationale for Tyrosine Kinase Inhibitors (TKIs) as a cornerstone of treatment for advanced and metastatic disease.

Complete surgical excision with negative margins (R0 resection) remains the gold standard for localized, non-metastatic GISTs [4]. Routine lymphadenectomy is not recommended, as lymphatic dissemination is uncommon, occurring in only 1% to 4% of cases [5,6]. GISTs primarily metastasize via direct extension or hematogenous spread.

Meticulous surgical technique is essential to prevent intraoperative tumor rupture, which is associated with an increased risk of local recurrence and peritoneal dissemination [7]. While open surgery has historically been the standard approach, minimally invasive techniques have demonstrated comparable safety and efficacy in appropriately selected patients.

We report a case of a large posterior gastric GIST located near the GEJ along the lesser curvature, successfully managed with a laparoscopic trans gastric organ-preserving approach.

Case Presentation

A 53-year-old woman presented with a 3-month history of fatigue and melena. Physical examination was unremarkable except for melena on digital rectal examination. The patient had no significant past medical or surgical history and no family history of malignancy.

Upper gastrointestinal endoscopy with endoscopic ultrasound revealed a large intraluminal mass arising from the posterior gastric wall. Endoscopic biopsy demonstrated stromal cell proliferation consistent with GIST. Contrast-enhanced Computed Tomography (CT) with three-dimensional reconstruction (Figure 1) showed a well-circumscribed intramural lesion measuring 9 cm × 10 cm, originating from the lesser curvature in close proximity to the GEJ. Following multidisciplinary tumor board discussion, neoadjuvant imatinib was initiated to reduce tumor bulk. However, after three months of treatment, the patient demonstrated poor radiological and clinical response. Surgical resection was therefore indicated after reassessment by the multidisciplinary team. 3D model reconstruction is showed in (Figure 2).

Surgical Technique

Under general anesthesia, the patient was positioned supine in the split-leg (French) position. Laparoscopic trocars were inserted as illustrated in (Figure 3). Initial diagnostic laparoscopy confirmed the absence of peritoneal dissemination.

The lesser sac was entered via division of the gastrocolic ligament and posterior gastric attachments. Gastric mobilization and retraction were technically challenging owing to tumor size. The lesion arose from the posterior gastric wall and exhibited marked vascularity

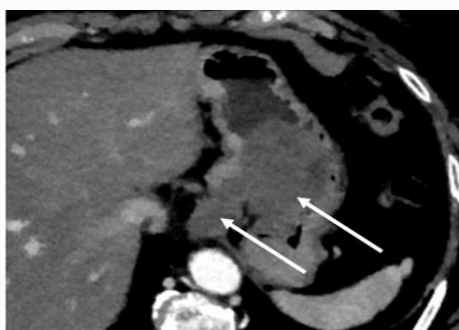


Figure 1: Contrast enhanced CT scan of the abdomen showed a huge posterior gastric GIST measuring 9 cm x 10 cm with an intraluminal growth.

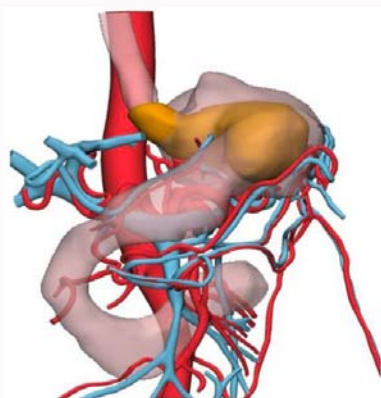


Figure 2: Reconstruction of the tumor with vascular supply mapping.

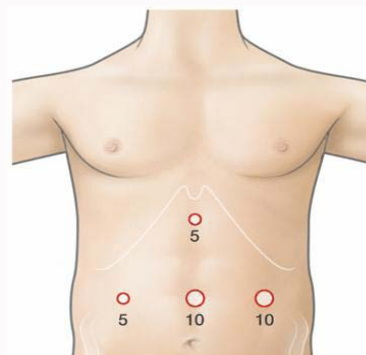


Figure 3: Trocar placement: A 10-mm supraumbilical trocar was initially placed, and the laparoscope was introduced through it. Subsequently, two 5-mm trocars were placed in the epigastric region and right flank, and a 10-mm trocar was placed in the left flank.



Figure 4: Anterior gastric wall opening to evert the tumor.



Figure 5: GIST resection with a linear stapler respecting oncologic margins.

without invasion of adjacent structures.

After repositioning the stomach into its anatomical orientation, a longitudinal anterior gastrotomy was performed over the apex of the lesion using an ultrasonic energy device (Figure 4). The tumor was everted through the gastrotomy and grasped with atraumatic forceps. Trans gastric resection of the tumor base was accomplished using a laparoscopic linear stapler (Figure 5), with sequential firings placed close to the lesion base to maximize preservation of uninvolved posterior gastric wall while ensuring negative margins.

The anterior gastrotomy was closed with a double-layer interrupted hand-sewn technique using 2-0 barbed sutures. Intraoperative endoscopic insufflation and methylene blue testing confirmed the absence of leakage and adequate gastric lumen patency. An intra-abdominal drain was positioned through the right subcostal trocar site.

The specimen was retrieved within an endoscopic retrieval bag

via a Pfannenstiel incision. Gross examination revealed a tumor measuring 9 cm × 10 cm. Total operative time was 195 minutes, with an estimated blood loss of 175 mL.

The postoperative course was uneventful. On postoperative day 5, contrast esophagography demonstrated no stenosis, gastric outlet obstruction, or contrast leakage, and oral intake was progressively resumed.

Frozen-section analysis confirmed complete (R0) resection with negative surgical margins. Final histopathological examination identified a GIST with fewer than 5 mitoses per 50 high-power fields, consistent with low malignant potential. Immunohistochemistry showed positivity for CD117, weak positivity for desmin, a Ki-67 proliferation index of 3%, and negativity for CD34 and S100 protein.

Discussion

GIST is a relatively uncommon neoplasm, with an estimated annual incidence of approximately 0.7 cases per 100,000 individuals in Italy. Most gastric GISTs are asymptomatic and detected incidentally. When symptomatic, patients may present with abdominal pain, gastrointestinal bleeding, anemia, dysphagia (in proximally located lesions), or gastric outlet obstruction (in distal tumors) [8,9].

Complete surgical resection remains the cornerstone of treatment for resectable gastric GISTs. Lesions larger than 2 cm generally warrant excision with negative margins, while tumors with malignant features require resection regardless of size. Adjuvant TKI therapy has significantly improved survival following R0 resection of high-risk GISTs. Routine lymphadenectomy is not indicated given the low incidence of nodal metastases [10].

Management of GISTs arising near the GEJ remains technically demanding due to the risk of injury to the lower esophageal sphincter, vagal nerves, and adjacent structures. In some cases, total gastrectomy may be unavoidable to achieve adequate oncological margins. Several surgical strategies have been described, including open, laparoscopic, endoscopic, and combined laparoendoscopic approaches (Figure 6).

Over the past decade, growing evidence has supported the safety and feasibility of laparoscopic resection for gastric GISTs [11]. In the present case, the tumor's posterior location adjacent to the GEJ made conventional wedge resection unsuitable, as it would have risked gastric deformity, narrowing of the GEJ, or vagal nerve injury with an increased risk of anastomotic leakage.

A laparoscopic trans gastric approach was therefore selected. Although reported only in limited case series, this technique appears safe and effective in carefully selected patients [12,13]. The approach allowed precise tumor localization and controlled resection while preserving uninvolved gastric tissue. Standard wedge resection in this patient would likely have produced significant luminal deformity along the lesser curvature an "hourglass" configuration potentially altering physiological bolus transit.

Multiple meta-analyses have demonstrated the advantages of laparoscopic over open surgery, including shorter hospital stay, faster recovery, reduced postoperative pain, and lower overall morbidity [14,15]. Laparoscopic wedge resection is best suited for anterior wall lesions, whereas posterior wall tumors often necessitate trans gastric or laparoendoscopic approaches [15].

Historically, GISTs at or near the gastric cardia frequently required subtotal or total gastrectomy. Advances in minimally

invasive surgery and laparoscopic instrumentation have, however, enabled increasingly organ-preserving procedures with satisfactory oncologic and functional outcomes.

Conclusion

Laparoscopic trans gastric resection is a safe and feasible approach for posterior gastric GISTs near the GEJ. In experienced hands, this minimally invasive technique enables accurate tumor localization, preservation of gastric anatomy, adequate oncologic margins, and avoidance of injury to adjacent structures.

This approach additionally confers the established benefits of minimally invasive surgery reduced postoperative pain, shorter hospitalization, and faster recovery alongside favorable oncologic outcomes. Further prospective studies are needed to refine patient selection criteria and evaluate tailored organ-preserving strategies that ensure both functional preservation and oncologic radicality.

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