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Case Series

"Surgical Approaches to Gastric Subepithelial Masses: an Eight-Case Series of Minimally Invasive Resections"

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Abstract

Background: Gastric subepithelial tumors represent a heterogeneous group of lesions ranging from benign smooth-muscle neoplasms to Gastrointestinal Stromal Tumors (GISTs) with malignant potential. Despite advances in imaging and endoscopic evaluation, distinguishing these entities preoperatively remains challenging. Minimally invasive resection has become increasingly favored due to its safety profile and favorable postoperative outcomes.

Methods: We describe a consecutive series of eight patients presenting with gastric subepithelial masses at a secondary care center. Demographic characteristics, presenting symptoms, diagnostic evaluations, operative strategies, histopathologic findings, and postoperative outcomes were retrospectively reviewed. All patients underwent laparoscopic resection tailored to tumor size, location, and preoperative suspicion for malignancy.

Results: Five patients were diagnosed with GISTs, two with benign gastric leiomyomas, and one with an inflammatory fibroid polyp. Tumor sizes ranged from 0.5 to 9.5 cm and were located across the gastric fundus, body, antrum, and gastroesophageal junction. Diagnostic modalities-including Computed Tomography (CT), Endoscopic Ultrasound (EUS), and Fine-Needle Aspiration (FNA)-were informative but sometimes inconclusive, with several lesions demonstrating diagnostic uncertainty before definitive histopathological examination. All procedures were completed laparoscopically using wedge resections, intraluminal stapled techniques, or gastrotomy-assisted resections depending on anatomic constraints. No major intraoperative complications occurred. Two patients received adjuvant imatinib following multidisciplinary team review, while the remaining patients were managed with surveillance according to pathological risk and final diagnosis. All patients recovered uneventfully, and no disease recurrence was detected during the documented follow-up period.

Conclusion: This case series underscores the diagnostic uncertainty and anatomic variability commonly encountered in gastric subepithelial tumors. Laparoscopic resection proved safe and effective across a spectrum of lesion types and locations, providing both definitive diagnosis and symptom resolution. These findings support the continued use of minimally invasive surgery as a central component in managing gastric subepithelial tumors within a multidisciplinary framework.

Keywords: Gastric Subepithelial Tumor; Gastrointestinal Stromal Tumor; Inflammatory Fibroid Polyp; Leiomyoma; Laparoscopy; Wedge Resection

Introduction

Gastric Subepithelial Tumors (SETs) represent a diverse group of lesions arising from the muscularis propria or submucosa and are increasingly detected due to the widespread use of cross-sectional imaging and endoscopy. Gastrointestinal Stromal Tumors (GISTs) are the most common mesenchymal neoplasms of the gastrointestinal tract and account for approximately 60–70% of gastric SETs [1]. Their clinical behavior ranges from indolent to highly aggressive, with prognosis influenced primarily by tumor size, mitotic activity, and anatomic location [2,3].

Despite advances in diagnostic modalities-particularly Endoscopic Ultrasound (EUS)-accurately distinguishing GISTs from benign entities such as leiomyomas, schwannomas, or glomus tumors remains difficult. Eus-Guided Fine-Needle Aspiration (FNA) improves diagnostic yield but remains limited by sampling variability and difficulty assessing mitotic index preoperatively [4,5]. Consequently, many patients undergo surgical resection for symptomatic relief, increasing size, or uncertainty regarding malignant potential. Laparoscopic surgery has emerged as the preferred approach for removing gastric SETs due to its safety, reduced postoperative pain, short hospitalization, and reliable oncologic outcomes when performed with adequate margins [6,7]. Operative strategies vary depending on tumor size, morphology, and location-particularly for lesions near the Gastroesophageal Junction (GEJ) or pylorus, where functional preservation is paramount. Multidisciplinary TEAM (MDT) evaluation plays a pivotal role in optimizing treatment decisions and surveillance planning [8]. In this case series, we present eight patients with gastric subepithelial tumors-including both GISTs and leiomyomas-managed using tailored laparoscopic techniques at a secondary care center. This report highlights real-world diagnostic challenges, operative strategies, and postoperative outcomes, emphasizing the central role of minimally invasive surgery in the management of gastric SETs.

Case 1

Case Presentation

A 42-year-old male with a history of Crohn's disease presented to the Emergency Department with progressively worsening epigastric abdominal pain and unintentional weight loss. He denied nausea, vomiting, hematemesis, or changes in bowel habits beyond his baseline Crohn's symptoms. Physical examination was unremarkable except for mild epigastric tenderness. Computed Tomography (CT) demonstrated features of active terminal ileitis with multiple segments of distal ileal luminal narrowing. An incidental 4 × 3 cm hypodense lesion was identified along the lesser curvature of the stomach. Subsequent upper endoscopy (Figure 1) revealed no mucosal abnormality. Endoscopic Ultrasound (EUS) demonstrated a 5 × 4 cm hypoechoic lesion with irregular borders arising from the gastric wall along the lesser curvature, as shown in Figures 1 and 2. Fine-needle aspiration confirmed a spindle-cell neoplasm positive for DOG-1 and negative for SMA, consistent with a Gastrointestinal Stromal Tumor (GIST). The patient commenced neoadjuvant oral imatinib at a dose of 400 mg/day on January 22, 2024. Treatment was discontinued 10 days before surgery, which was performed on May 5, 2024.



Figure 1

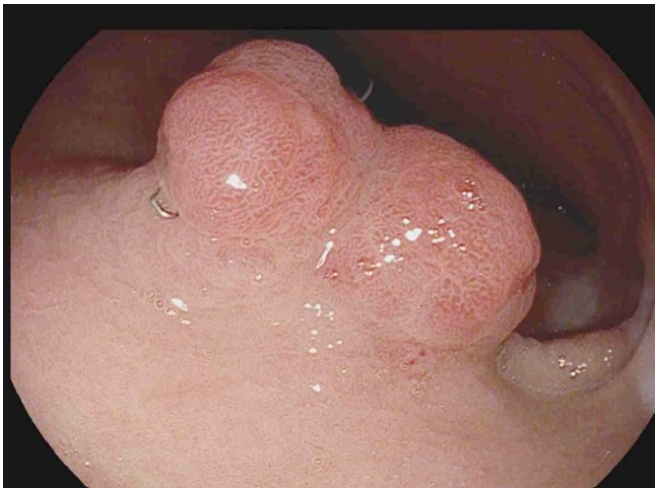


Figure 2

Operative Management

Laparoscopic resection was performed. A window was created

along the greater curvature, followed by a 5 cm gastrotomy for intraluminal assessment. A 3 × 4 cm mass proximal to the pylorus was resected using linear staplers. The gastrotomy was closed with interrupted sutures and reinforced with additional stapler firings. A leak test was negative, and the specimen was retrieved in a specimen retrieval bag.

Histopathology

Histopathological examination confirmed a 3.5 cm spindle-cell GIST with a mitotic rate of 2 mitoses per 5 mm², classified as G1 (low grade) and very low risk. Treatment effect following neoadjuvant imatinib was present as hypocellularity and fibrosis, with 80–90% viable tumor cells. The tumor was positive for DOG-1, CD34, CD117, and patchy SMA, and negative for S100. The tumor extended to the inked outer surface, consistent with a positive margin, and was staged as ypT2.

Postoperative Course

The postoperative recovery was uneventful. Following MDT review, the tumor was considered high risk based on its pretreatment size, and three years of adjuvant imatinib was recommended. The patient resumed imatinib at 400 mg/day and remained on treatment at the latest follow-up in June 2026. Surveillance imaging showed no evidence of local recurrence or abdominopelvic metastatic disease.

Case 2

Case Presentation

A 60-year-old male with type 2 diabetes mellitus presented with a three-month history of chronic epigastric pain and progressive unintentional weight loss. He denied nausea, vomiting, early satiety, hematemesis, or melena. Physical examination revealed mild epigastric discomfort without guarding or rebound. Computed tomography (CT) demonstrated a distal gastric polypoid mass measuring 4.3 × 3.3 cm. Esophagogastroduodenoscopy (EGD) (Figure 3) revealed an approximately 5 cm non-obstructing mass protruding from the anterior wall of the antrum with erythematous overlying mucosa, as shown in Figure 3. Initial mucosal biopsies were nondiagnostic, demonstrating chronic gastritis with intestinal metaplasia and reactive epithelial changes. Subsequent Endoscopic Ultrasound (EUS) demonstrated a hypoechoic lesion arising from the muscularis propria with a hyperechoic component suggestive of intralesional bleeding and radiological features suspicious for GIST. Surgical resection was therefore planned.



Figure 3

Operative Management

The patient underwent laparoscopic intraluminal gastric mass excision. Following gastric mobilization, a 5 cm full-thickness gastrotomy was created for intraluminal exploration. A 3 × 4 cm mass proximal to the pylorus and attached to the mucosa was identified and resected using linear staplers. The gastrotomy was closed and reinforced with additional stapler firings. Hemostasis was achieved, the specimen was retrieved in a specimen retrieval bag, and a methylene blue leak test was negative. The procedure was completed without complications.

Histopathology

Histopathological examination confirmed a 4.5 cm benign inflammatory fibroid polyp composed of spindle cells within an eosinophil-rich inflammatory background, without atypia or mitotic activity. The lesion showed diffuse CD34 and focal patchy SMA positivity and was negative for desmin, CD117, DOG-1, S100, β-catenin, and CK AE1/AE3. The stapled gastric antrum also showed chronic inactive gastritis with focal neuroendocrine cell hyperplasia, without Helicobacter pylori or malignancy.

Postoperative Course

Following Multidisciplinary Team (MDT) review, surveillance with upper gastrointestinal endoscopy and computed tomography at 6 months and 1 year was recommended. Follow-up endoscopy demonstrated a persistent polypoidal lesion at the previous resection site, and repeat MDT discussion recommended

endoscopic resection. An approximately 3 cm lesion was subsequently removed using hybrid Endoscopic Submucosal Dissection (ESD). Histopathology demonstrated reactive gastropathy and postoperative changes, with no evidence of recurrent inflammatory fibroid polyp, neuroendocrine hyperplasia, dysplasia, or malignancy. Recovery was uneventful.

Case 3

Case Presentation

A 57-year-old male with a history of hypertension and diabetes mellitus was referred for evaluation of a suspected gastric mass. His past surgical history was significant for laparoscopic cholecystectomy complicated by a postoperative bile leak requiring endoscopic stent placement in 2020. The patient reported nonspecific upper abdominal discomfort but denied weight loss, gastrointestinal bleeding, or constitutional symptoms. EGD demonstrated a small hiatal hernia, mild nodular erythema of the gastric mucosa, and an approximately 2 cm subepithelial bulge in the gastric fundus, as shown in Figure 4. The duodenum was normal. Cross-sectional imaging demonstrated a small, well-circumscribed gastric lesion, and the patient was referred for surgical management.

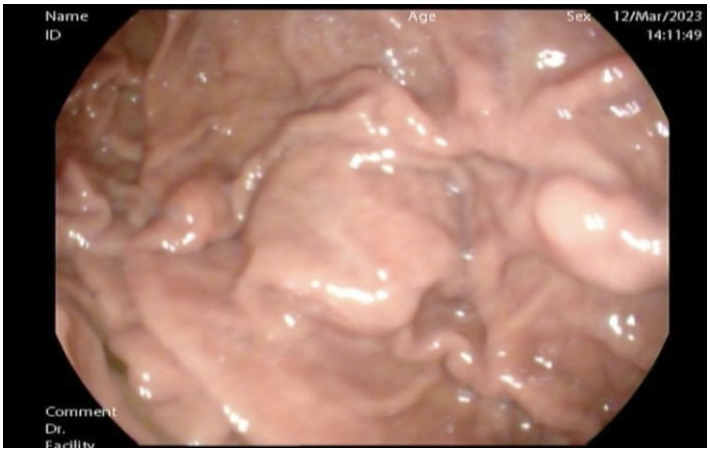


Figure 4

Operative Management

The patient underwent laparoscopic wedge resection. Intraoperatively, a 2 × 2 cm exophytic lesion was identified in the gastric fundus and adequately mobilized. Full-thickness wedge resection was performed using linear staplers while preserving the gastric contour. The specimen was retrieved in an endobag, and the procedure was completed without complications.

Histopathology

Histopathological examination confirmed a unifocal spindle-cell Gastrointestinal Stromal Tumor (GIST) measuring 3 cm in greatest dimension. The mitotic index was 7 mitoses per 5 mm², consistent with a high-risk lesion.

Postoperative Course

The postoperative recovery was uneventful. Following Multidisciplinary Team (MDT) review, adjuvant imatinib therapy was initiated, with continued follow-up by the oncology and general surgery teams. The patient was followed every two months for one year and remained asymptomatic. Serial Computed Tomography (CT) imaging showed no evidence of local recurrence, while a pulmonary micronodule remained stable without interval progression. Follow-up EGD was unremarkable. A separate colonoscopic evaluation identified a small area of mucosal change in the transverse colon, with biopsy demonstrating a tubular adenoma.

Case 4

Case Presentation

A 60-year-old male with a history of ischemic heart disease was referred for elective management of a gastric subepithelial lesion. His past surgical history was significant for laparotomy and splenectomy following a road traffic accident and a previous open cholecystectomy. He denied abdominal pain, gastrointestinal bleeding, weight loss, or other gastrointestinal symptoms. EGD was unremarkable. Computed Tomography (CT) of the chest, abdomen, and pelvis demonstrated a 1.5 cm exophytic enhancing mass arising from the posterior gastric wall, suspicious for a Gastrointestinal Stromal Tumor (GIST), with a few indeterminate pulmonary nodules and osseous lesions identified during staging evaluation.

Operative Management

The patient underwent laparoscopic resection. Intraoperatively, adhesions involving the small bowel, omentum, and posterior gastric wall were encountered and carefully released. Two small exophytic lesions were identified: one on the posterior gastric wall at the upper greater curvature and another on the anterior aspect of the fundus. Both lesions were resected laparoscopically using stapled wedge resection techniques, with reinforcement of the staple line. The specimen was retrieved in a specimen retrieval bag, and the procedure was completed without major complications.

Histopathology

Histopathological examination confirmed a 0.5 cm Gastrointestinal Stromal Tumor (GIST), confined to the muscularis propria, with a mitotic rate of 1 mitosis per 5 mm² and no necrosis. The tumor was classified as having no risk of progressive disease and was located 1 mm from the serosal surface. The second excised lesion

was confirmed to be a splenule..

Postoperative Course

The postoperative recovery was uneventful. Following MDT review, surveillance was recommended. An indeterminate left iliac bone lesion showed suspicious uptake on bone scintigraphy; however, subsequent biopsy revealed reactive changes without malignancy, and serial imaging showed no convincing evidence of metastatic disease. Follow-up imaging and EGD demonstrated no local recurrence or disease progression. The patient died in December 2025 from stroke and refractory shock, unrelated to his gastric GIST.

Case 5

Case Presentation

A 69-year-old male, an ex-smoker with a medical history significant for diabetes mellitus, hypertension, and dyslipidemia, presented to the Emergency Department with a one-month history of retrosternal exertional chest pain. The pain was described as compressive in nature, radiating to both shoulders, relieved by rest, and not associated with palpitations, diaphoresis, or shortness of breath. Further history revealed intermittent heartburn and episodes of black tarry stools. He denied any family history of cardiovascular disease or colorectal cancer. Physical examination was unremarkable. Computed Tomography (CT) imaging demonstrated hyperdense material within the dependent portion of the stomach, likely related to ingested material or hemostatic agents, without convincing evidence of active gastrointestinal bleeding. In addition, a large exophytic gastric mass measuring approximately 4.9 × 9.0 × 9.3 cm was identified, highly suspicious for a Gastrointestinal Stromal Tumor (GIST). Subsequent upper gastrointestinal endoscopy (Figure 5) revealed a large protruding subepithelial lesion involving the gastric body and fundus with central deep ulceration. Endoscopic Ultrasound (EUS) demonstrated a large (~7 cm) hypoechoic hypervascular lesion arising from the fourth layer of the gastric wall, highly suggestive of GIST. Active bleeding from the lesion was noted, prompting consideration of urgent surgical intervention. Fine-needle biopsy was attempted using a 22-gauge needle; however, no diagnostic tissue was obtained. The case was subsequently discussed at the Multidisciplinary Team (MDT) meeting involving the oncology and upper gastrointestinal surgery teams. Given the lesion's size, imaging characteristics, active bleeding, and high clinical suspicion for GIST, a decision was made to proceed with upfront surgical resection without a preoperative tissue diagnosis.

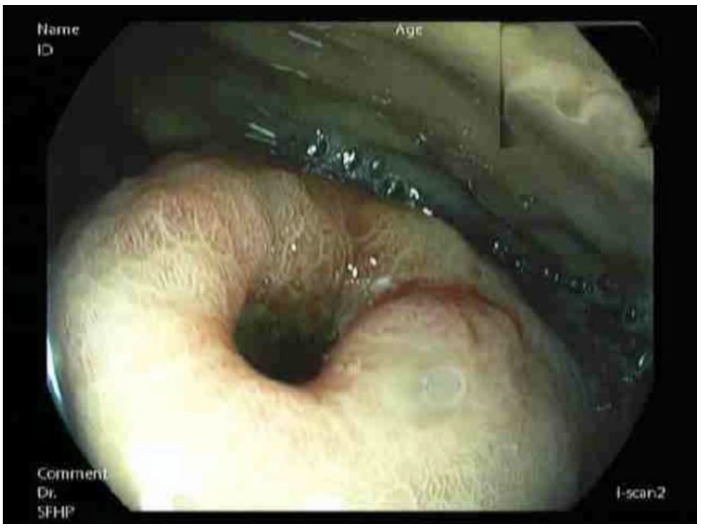


Figure 5

Operative Management

The patient underwent laparoscopic resection of the gastric mass. Intraoperatively, a large gastric tumor measuring approximately 10 × 10 cm was identified, located approximately 4 cm distal to the gastroesophageal junction. No active bleeding was observed at the time of surgery. The greater curvature was devascularized from the mid-body of the stomach up to the gastroesophageal junction using ultrasonic energy devices. A 36-French bougie was inserted and positioned along the lesser curvature to maintain luminal patency and guide resection. The tumor, along with the involved portion of the stomach, was resected using three black Signia stapler cartridges. The specimen was retrieved in an endobag through an enlarged left trocar site. Fascial closure was performed using an EndoClose device. An intraoperative methylene blue test demonstrated no evidence of leakage or gastric outlet distortion. The procedure was completed without complications.

Histopathology

Histopathological examination confirmed a unifocal 9.5 cm spindle-cell Gastrointestinal Stromal Tumor (GIST) with a mitotic rate of 3 mitoses per 5 mm^2, classified as G1 (low grade). No tumor necrosis was identified. The tumor was diffusely positive for CD117 and DOG-1 and negative for SMA. The mucosal margins were negative, although the tumor abutted the serosal surface. Pathological staging was pT3 Nx.

Postoperative Course

The postoperative recovery was uneventful. Following MDT review, the tumor was classified as low risk, and no adjuvant systemic therapy was recommended. The patient was discharged from oncology follow-up and continued annual CT surveillance under the upper gastrointestinal surgery service. At two months post-resection, imaging showed a stable postoperative gastric bed with no evidence of local recurrence or abdominopelvic metastatic disease.

Case 6

Case Presentation

A 64-year-old female with a medical history significant for diabetes mellitus, hypertension, and cardiac arrhythmia managed with bisoprolol 5 mg daily presented to the Emergency Department with a one-month history of epigastric pain radiating to the right upper quadrant. Her symptoms were predominantly postprandial and were associated with nausea and fatigue. She denied weight loss, vomiting, diarrhea, constipation, or any history of gastrointestinal bleeding. Initial abdominal ultrasonography demonstrated a well-defined heterogeneous soft tissue mass that appeared inseparable from the tail of the pancreas. Further evaluation with Computed Tomography (CT) of the chest, abdomen, and pelvis revealed a large heterogeneous mass arising from the lesser curvature of the stomach, highly suggestive of a Gastrointestinal Stromal Tumor (GIST). EGD demonstrated a large extraluminal compression involving the anterior aspect of the gastric body without evidence of an intraluminal lesion. Endoscopic Ultrasound (EUS) subsequently revealed a well-demarcated hypoechoic mass arising from the fourth layer of the gastric wall. The lesion measured 78 × 72 mm, with the bulk of the tumor occupying the lesser curvature aspect of the stomach. Multiple biopsies were obtained and histopathological examination confirmed a Gastrointestinal Stromal Tumor (GIST). Following Multidisciplinary Team (MDT) discussion, surgical resection was recommended, with final treatment decisions to be guided by postoperative histopathological findings.

Operative Management

The patient underwent laparoscopic resection of the gastric lesion. Intraoperative exploration identified a subepithelial mass arising from the lesser curvature of the stomach. Careful dissection was performed to isolate the lesion while preserving the surrounding vascular supply. The tumor was excised using linear stapling devices and retrieved in an endoscopic specimen retrieval bag. Hemostasis was confirmed, and the procedure was completed without complications.

Histopathology

Histopathological examination confirmed a 9.5 cm spindle-cell Gastrointestinal Stromal Tumor (GIST) with a low mitotic index (≤5 mitoses per 5 mm^2), classified as low risk. The tumor was positive for CD117 and DOG-1 and negative for S100.

Postoperative Course

The patient's postoperative recovery was uneventful. Following review at the Multidisciplinary Team (MDT) meeting, adjuvant imatinib therapy was not recommended. A surveillance strategy consisting of upper gastrointestinal endoscopy and computed tomography imaging at 6 and 12 months following resection was adopted. Follow-up CT scans of the chest, abdomen, and pelvis performed on 12 August 2024 and 25 February 2025 demonstrated a clear postoperative gastric resection bed with no evidence of local recurrence, regional disease, or distant metastatic spread.

Case 7

Case Presentation

A 39-year-old male with a long-standing history of Gastroesophageal Reflux Disease (GERD) presented with chronic heartburn and intermittent epigastric discomfort. He had been taking esomeprazole 40 mg daily for five years. He denied weight loss, gastrointestinal bleeding, dysphagia, nausea, or vomiting. His family history was notable for colonic polyps, and he had no previous surgical history. EGD performed between 2020 and 2023 demonstrated persistent subepithelial lesions near the gastroesophageal junction measuring between 3 and 5 cm. Endoscopic Ultrasound (EUS) performed in 2021 revealed a hypoechoic lesion arising from the third layer of the gastric wall. Fine-needle aspiration (FNA) demonstrated spindle cells positive for Smooth Muscle Actin (SMA) and desmin, while negative for CD117, DOG-1, and CD34, favoring a diagnosis of leiomyoma rather than Gastrointestinal Stromal Tumor (GIST). Computed Tomography (CT) imaging performed in 2020 demonstrated a 6.5 × 5 × 5 cm mass arising from the lesser curvature of the stomach without evidence of regional lymphadenopathy. Given the lesion's progressive size and persistent symptoms, surgical resection was recommended.

Operative Management

The patient underwent laparoscopic resection of a large cardia-based mass extending toward the gastroesophageal junction. A gastrotomy was created to facilitate adequate exposure and controlled stapled resection of the lesion while preserving gastroesophageal junction alignment. The mass was removed

using multiple stapler firings, and the gastrotomy was subsequently closed and reinforced. Hemostasis was achieved using clips and topical hemostatic agents. The specimen was retrieved in an endobag, and the procedure was completed without intraoperative complications.

Histopathology

Histopathological examination confirmed a 9.0 cm gastric leiomyoma composed of bland spindle cells arranged in bundles and fascicles, with no atypia, mitotic activity, or necrosis. The tumor was positive for SMA and focally positive for desmin, while CD34, DOG-1, CD117, and β-catenin were negative. The gastrostomy site showed mild chronic inactive gastritis without Helicobacter pylori, intestinal metaplasia, or malignancy.

Postoperative Course

Following review at the Multidisciplinary Team (MDT) meeting, the diagnosis of gastric leiomyoma was confirmed. Given the benign nature of the lesion and complete surgical excision, no additional treatment was recommended. Surveillance upper gastrointestinal endoscopy performed during follow-up was unremarkable, with no evidence of recurrent disease. The patient remained clinically well and asymptomatic. Further evaluation with computed tomography of the abdomen and upper gastrointestinal endoscopy was advised only in the event of recurrent symptoms.

Case 8

Case Presentation

A 46-year-old male with a medical history significant for hypertension, dyslipidemia, and previous percutaneous coronary intervention maintained on aspirin therapy presented with a three-month history of postprandial epigastric pain, early satiety, and reduced appetite. He also reported longstanding intermittent constipation and occasional night sweats. The patient denied weight loss, fever, vomiting, or gastrointestinal bleeding. He was an active smoker with no known drug allergies and no family history of malignancy. Computed Tomography (CT) of the neck, chest, abdomen, and pelvis demonstrated a mass arising near the stomach and gastroesophageal junction without evidence of metastatic disease. Upper gastrointestinal endoscopy revealed Los Angeles (LA) Grade A reflux esophagitis and a subepithelial lesion measuring greater than 5 cm located just distal to the gastroesophageal junction (Figure 6). Repeat endoscopic evaluation confirmed a 4 × 3 cm lesion arising from the posterior gastric wall. Histopathological examination of gastric biopsies demonstrated mild chronic inactive gastritis and was negative for Helicobacter pylori. Colonoscopy revealed no significant pathology apart from hemorrhoids. Given the lesion's size, location, and associated symptoms, surgical resection was recommended.



Figure 6

Operative Management

The patient underwent laparoscopic resection of the gastric lesion. Intraoperatively, a subepithelial mass was identified adjacent to the gastroesophageal junction. The posterior stomach was mobilized to facilitate adequate exposure, and the lesion was resected using a linear stapling device. The staple line was reinforced with absorbable sutures, and the gastrotomy was closed using additional stapler firings. Hemostasis was secured with clips and topical hemostatic agents. The specimen was retrieved in an endobag, and the procedure was completed uneventfully without intraoperative complications.

Histopathology

Histopathological examination confirmed a 5 cm gastric leiomyoma composed of spindle cells arranged in a fascicular pattern, without cytological atypia or tumor necrosis. The tumor was positive for SMA, desmin, and caldesmon, while S100, CD117, and DOG-1 were negative. Surgical margins were free of tumor.

Postoperative Course

The patient's postoperative recovery was uneventful. Following Multidisciplinary Team (MDT) review, the diagnosis of gastric leiomyoma was confirmed, and no additional therapeutic intervention was recommended. Surveillance esophagogastroduodenoscopy (EGD) performed during follow-up was unremarkable, with no evidence of recurrent disease. Following the initial surveillance endoscopy, the patient did not attend further outpatient follow-up appointments.

Discussion

Gastric Subepithelial Tumors (SETs) encompass a wide pathological spectrum, with Gastrointestinal Stromal Tumors

(GISTs) representing the most clinically significant due to their malignant potential. GISTs arise from the interstitial cells of Cajal and are characterized by activating mutations in *KIT* or *PDGFRA*, which guide both diagnosis and targeted therapy [1]. Leiomyomas, in contrast, are benign smooth-muscle tumors and represent an important non-GIST mesenchymal neoplasm of the stomach [2]. Other benign lesions, including inflammatory fibroid polyps, may also present as gastric subepithelial masses and mimic GISTs during preoperative evaluation. Distinguishing between these lesions remains challenging, as they may share overlapping clinical, endoscopic, and radiological features. Endoscopic Ultrasound (EUS) has become the cornerstone of the diagnostic evaluation of SETs due to its ability to characterize lesion size, layer of origin, and vascularity [3]. However, despite improvements in EUS-guided Fine-Needle Aspiration (FNA), diagnostic accuracy remains variable, especially for spindle-cell lesions and small tumors, where sampling limitations may hinder assessment of mitotic activity-a key prognostic factor for GISTs [4,5]. In our series, two patients were ultimately diagnosed with leiomyomas, while one lesion suspicious for GIST on EUS was confirmed as an inflammatory fibroid polyp, underscoring the diagnostic ambiguity associated with gastric SETs. Surgical resection remains the definitive management for most GISTs ≥2 cm, symptomatic lesions, enlarging tumors, or SETs with indeterminate malignant potential [6]. Minimally invasive techniques, particularly laparoscopic wedge resection, have become widely accepted for gastric GISTs measuring up to 5 cm when safe resection margins can be achieved [7]. Several studies demonstrate that laparoscopic resection yields comparable oncologic outcomes to open surgery, with reduced postoperative pain, shorter hospitalization, and faster return to normal activity [8,9]. In our series, all eight cases were managed laparoscopically, including tumors measuring up to 9.5 cm on final histopathological examination and lesions near anatomically challenging regions such as the gastroesophageal junction. Tumor location played a key role in determining the operative strategy. Lesions near the Gastroesophageal Junction (GEJ) carry a higher risk of postoperative stenosis and may require advanced techniques such as intraluminal stapled excision or gastrotomy-assisted resection [10]. In our cases, approaches were tailored to anatomy: fundal, posterior-wall, and GEJ-proximal lesions required modified stapling angles, bougie-guided resections, or mobilization of surrounding structures. This individualized approach is consistent with recommendations emphasizing the preservation of gastric function while achieving adequate oncologic clearance [11]. Histopathology remains critical for postoperative risk stratification. Tumor size, mitotic index, and location inform recurrence risk and the need for adjuvant therapy. According to the modified NIH criteria, patients with high-risk GISTs may benefit from adjuvant imatinib therapy, which improves recurrence-free survival [12]. In our series, two patients received adjuvant imatinib following MDT review: one based on the pretreatment risk assessment and one following histopathological confirmation of a high-risk GIST. The remaining patients were managed with surveillance according to pathological risk and final diagnosis.

Importantly, this series highlights the value of Multidisciplinary Team (MDT) discussion. MDT input guided decisions regarding surveillance versus systemic therapy and ensured that management aligned with available evidence while considering tumor characteristics and patient comorbidities. This integrated approach continues to be emphasized in contemporary guidelines for GIST care [13].

Overall, our experience reinforces key principles in the management of gastric SETs:

1. Preoperative diagnosis is often uncertain despite modern imaging and endoscopic evaluation.

2. Laparoscopic surgery is safe, feasible, and oncologically sound for appropriately selected tumors.

3. Tailored operative approaches are essential, particularly for tumors near the GEJ or involving anatomically challenging gastric locations.

4. Histopathological assessment and MDT review remain indispensable for guiding postoperative therapy and surveillance.

This case series adds to the growing body of literature supporting minimally invasive surgery as a primary modality for gastric SETs while highlighting the real-world diagnostic ambiguity and anatomical complexity encountered in clinical practice.

Conclusion

Gastric subepithelial tumors remain a diagnostic and therapeutic challenge despite advances in imaging and endoscopic evaluation. This eight-case series demonstrates the significant variability in presentation, pathology, and anatomical complexity associated with these lesions. Our experience highlights that laparoscopic resection, when tailored to tumor size, location, and individual patient factors, is a safe and effective approach that provides both definitive diagnosis and durable symptom resolution. Although most lesions in our series were confirmed as GISTs, two were ultimately identified as benign leiomyomas and one as an inflammatory fibroid polyp, reinforcing the limitations of preoperative characterization of gastric subepithelial lesions. Multidisciplinary collaboration was essential in guiding postoperative decisions, including surveillance strategies and the selective use of adjuvant imatinib following individualized risk assessment. Ultimately, this series supports the expanding role of minimally invasive surgery in the management of gastric subepithelial tumors and underscores the

importance of maintaining a patient-centered, anatomy-preserving approach. Continued accumulation of real-world evidence will further refine operative strategies and optimize outcomes for patients with these uniquely challenging gastric lesions.

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Consent: Written informed consent was obtained from all patients for publication of this case series and any accompanying images.

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