

Incidentally Discovered Gastric Schwannoma in the Setting of Atypical Chest Pain and Workup for Pulmonary Embolus

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Background	Gastric schwannomas (GSs) are rare benign tumors of mesenchymal origin that tend to present with varied clinical complaints or are found incidentally on imaging. They are commonly mistaken for gastrointestinal stromal tumors initially and immunohistochemically stain positive for nerve sheath differentiation.
Summary	A 50-year-old male presented to the emergency department with left-sided chest pain. His workup included a computed tomography (CT) chest angiography that revealed an incidental 4.7 cm exophytic distal gastric mass. Completion imaging and endoscopic biopsy revealed a gastric epithelial lesion with peripheral nerve sheath tumor of spindle cell morphology consistent with a GS. The patient underwent laparoscopic partial gastrectomy without complication. He was discharged home on postoperative day two. He was seen in clinic at a two-week follow-up recovering well, and he has no symptoms of bloating or heartburn. His final pathology and immunohistochemical staining were consistent with a GS and a negative margin.
Conclusion	GSs are rare, but should be removed even if asymptomatic. These masses, if in an appropriate location, can be amenable to laparoscopic partial gastrectomy. Their benign nature portends an excellent prognosis.
Keywords	Schwannoma, gastric laparoscopic, gastrectomy

DISCLOSURE STATEMENT:

Dr. Higgins has disclosed the following conflicts of interest:

- Speaker for W.L. Gore & Associates
- Proctor for Intuitive Surgical

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Case Description

Gastric schwannomas (GSs) are rare tumors that are reported to comprise 0.2 percent of all gastric tumors.^{1,2} GSs fall within the category of non-epithelial or mesenchymal tumors³. Compared to the more common category of epithelial gastric tumors, mesenchymal tumors comprise approximately 0.1 to 3.0 percent of all gastrointestinal tumors, with gastrointestinal stromal tumors (GISTs) representing 80 percent of those cases.^{4,5} Schwannomas of the gastrointestinal tract are reported to represent 3 percent of all gastrointestinal mesenchymal tumors found most commonly in the stomach.^{3,6,7} The clinical presentation of GS varies, with symptoms of gastrointestinal bleeding, epigastric pain, weight loss due to gastric outlet obstruction, and asymptomatic.⁸

A 50-year-old male with a past medical history of gastroesophageal reflux disease, chronic back pain, and migraines presented to the emergency department with atypical left-sided chest pain. A computed tomography (CT) chest angiography was performed that identified an incidental 4.7 cm exophytic distal gastric mass. Completion workup included a CT abdomen and pelvis with contrast confirming the location of this distal gastric mass on the greater curvature (Figure 1).

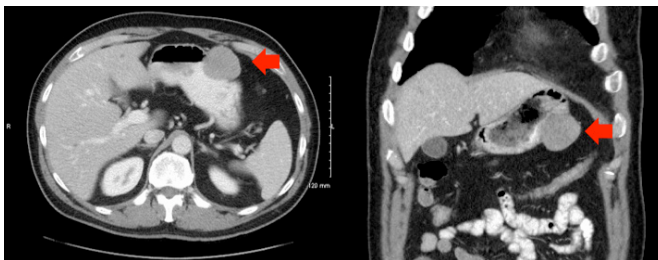


Figure 1. Axial and coronal CT imaging showing the exophytic gastric mass

He subsequently underwent an endoscopic ultrasound confirming a 3.2 x 3.5 cm subepithelial lesion arising from the muscularis propria with remote vascular involvement (Figure 2A). Endoscopy revealed a 3.5 cm gastric epithelial lesion on the greater curvature (Figure 2B); biopsy showed a peripheral nerve sheath tumor with bland spindle cell morphology consistent with a GS.

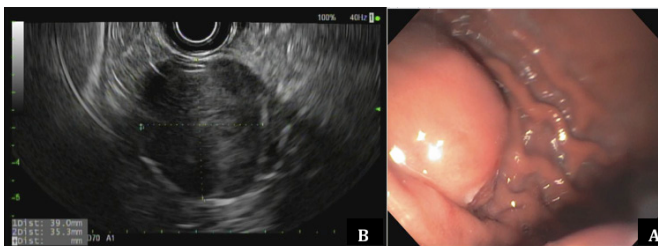


Figure 2. Images representing **A:** endoscopic ultrasound and **B:** endoscopy image of epithelial mass on greater curvature of stomach

Given the size of the mass, the patient was referred for surgery. Although he was asymptomatic, given the location and size of the mass, as well as the importance of definitively ruling out a GIST, a partial gastrectomy was recommended. He underwent a laparoscopic partial gastrectomy and esophagogastroduodenoscopy. Intraoperatively, a gastric mass was identified on the greater curvature of the gastric body that was resected laparoscopically without complication (Figure 3).

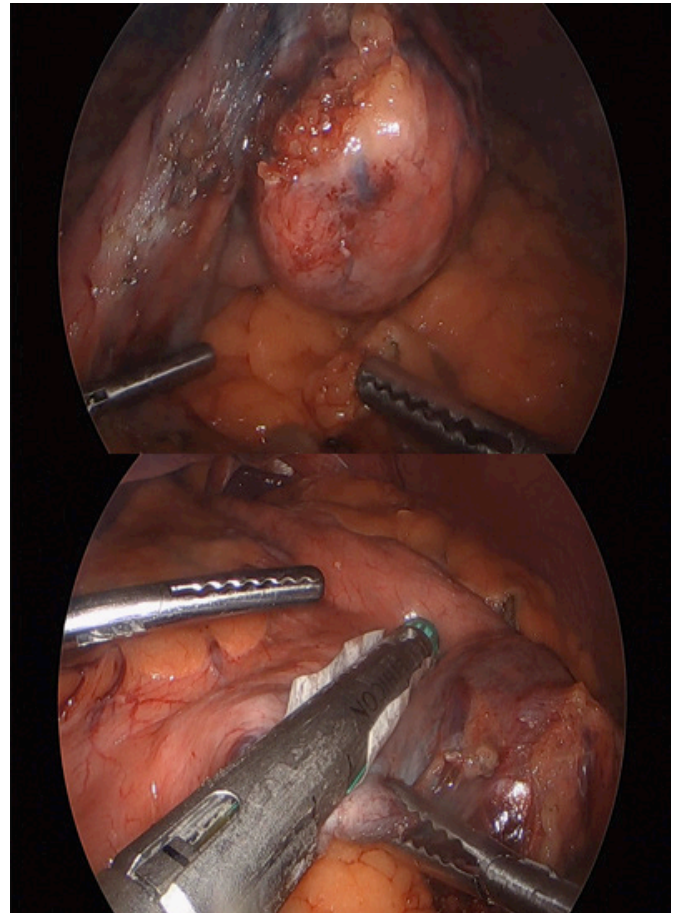


Figure 3. Intraoperative images showing the exophytic mass identified and stapled along the greater curvature of the stomach

The branches of the gastroepiploic within the greater omentum were dissected off the greater curvature with a harmonic scalpel to normal tissue both above and below the mass. Three 60 mm endoscopic linear staple loads with staple line reinforcement were used to perform a wedge resection around the mass. An endoscopy was performed with a negative leak test to confirm there was no significant gastric intraluminal narrowing. The patient was admitted postoperatively and started on a soft diet. He was discharged home on postoperative day two. At his

two week clinic follow-up, he was recovering well, denying any significant heartburn or early satiety. Pathology grossly described a 5.5 x 3.5 x 3.0 cm yellow-tan mass involving the submucosa and muscularis propria with a negative margin of resection. Sections showed a low-grade spindle cell proliferation with immunohistochemical stain all consistent with GS.

Discussion

Schwannomas of the gastrointestinal tract are rare; when discovered, they are most commonly found in the stomach.^{3,7} If associated with other findings, such as vestibular schwannomas, cutaneous schwannomas, multiple spinal tumors, or first-degree relatives with the disease, patients with gastrointestinal tract schwannomas should be assessed for neurofibromatosis.⁸ The clinical presentation of GS varies: reported complaints include epigastric pain, gastrointestinal bleeding, and chest pain as well as asymptomatic, incidentally discovered masses.⁹ Workup of a mass concerning for GS typically involves CT imaging and endoscopic ultrasound with biopsy. These masses have been described as ovoid, well-defined, and of exophytic or mixed-growth, with homogenous progressive enhancement on CT that is commonly mistaken for GIST preoperatively.¹⁰ This homogeneity is one possible distinguishing mechanism from GISTs, which typically have hemorrhage, cystic changes, and necrosis also present.¹¹

Histologically, GSs are described as bundles of spindles cells woven within loose myxoid areas that align in their orientation.¹ GSs can be accurately distinguished from GIST based on their immunohistochemical profile after endoscopic biopsy or resection; however, if GIST is suspected and the tumor is deemed resectable, pre-resection biopsy is not recommended due to risk of hemorrhage;¹² GS stain S100 and GFAP positive indicating evidence of nerve sheath differentiation, but CD117, CD34, desmin, and smooth muscle actin negative. GISTs stain S100 negative but CD117, DOG-1, and CD34 positive.^{7,9}

Surgical resection of GS portends an excellent prognosis as these tumors are almost always benign.¹³ Resection is viewed as the current choice of treatment, and postoperatively distinguishing these masses from GISTs histochemically is important, particularly due to their similarity in preoperative presentation and the risk of recurrence in GISTs. Resection options include endoscopic, laparoscopic, hybrid, and open removal techniques.¹⁴ Endoscopic

removal has been described for smaller non-exophytic tumors, and laparoscopic resection has been demonstrated to be safe and effective for tumors up to 10 cm.^{14,15} In the setting of being unable to rule out GIST, open removal should also be considered in cases where manipulation of the specimen would risk rupturing or seeding the tumor.¹⁴

Conclusion

GSs are rare, but should be removed—even if asymptomatic. These masses, if in an appropriate location, can be amenable to laparoscopic partial gastrectomy. Their benign nature portends an excellent prognosis.

Lessons Learned

GSs are discovered with a variety of clinical presentations and should be properly distinguished from the more common gastrointestinal stromal tumor. The mainstay of treatment is local resection with negative margins.

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