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Resection of an Incidental Gist Tumor on the Bypassed Portion of the Stomach

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Background	A 45-year-old female who had a laparoscopic Roux-en-Y gastric bypass in the past and was found to have incidental GIST tumor on her bypassed portion of the stomach during a CT scan of her abdomen for abdominal pain. She was referred to our hospital for resection.
Summary	This patient is a 45-year-old female who presented to us for an elective resection of her gastric tumor found on her bypassed stomach that was incidentally found on a CT scan of the abdomen/pelvis after a history of laparoscopic Roux-en-Y gastric bypass. The patient was taken for laparoscopic gastric wedge resection for this tumor. We found the tumor to have a stalk from the bypassed stomach, and this was removed.
Conclusion	This a unique case study of a gastric gist tumor found on the excluded portion of the stomach in a patient with a history of Roux-en-Y bypass that was incidentally discovered by non-invasive imaging.
Key Words	GIST tumor; stomach; Roux-en-Y; history of bariatric surgery

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Case Description

This patient is a 45-year-old female who presented to another hospital's emergency room complaining of abdominal pain and was initially thought to have kidney stones due to her history of having nephrolithiasis. Then the patient underwent a CT scan of the abdomen/pelvis ,which showed a possible gastrointestinal stromal tumor. She also had a gastric bypass performed at another hospital. She was then seen in the outpatient surgical office and scheduled for elective removal of the tumor. The tumor was removed laparoscopically with no issues. The pathology demonstrated a spindle cell gastrointestinal stromal tumor measuring 6.1 cm x 3.0 cm x 3.9 cm, involving the muscularis proper with the gastric resection margin and circumferential margin of serosa free of any involvement. $CD117^{+}$ was present and the mitotic rate was $1/5mm^2$.

Discussion

Gist tumors are the most common sarcomatous tumors of the GI tract. Most commonly, they are found more in males around the age of 50. The location of GIST tumors are located in the stomach 40 percent to 60 percent, small intestine 30 percent, and colon 15 percent of the time, respectively. Occasionally they can be involved with neurofibromatosis, von Hippel-Lindau, and Carney's triad. GIST tumors are neuroendocrine tumors that are derived from the interstitial cells of Cajal, which are known as the pacemaker cells. Typically, the cells stain positive for cKit/CD117, and over 95 percent of cases show over-expression "and that activating mutations of the KIT or PDGFRA proto-oncogenes are related to the oncogenic development of GIST." CD34 also shows expression in 60 to 70 percent of cases.[1,2] GIST tumors are diagnosed clinically by melena, vague abdominal pain, and can show obstructive symptoms and be incidentally as in our case on CT scans.[3]

Endoscopy can be used to diagnose and obtain the biopsy. However, what will appear as smooth-looking submucosal tumor is low-yield if a mucosal biopsy is done; conversely, an EUS needle biopsy is better with 82 percent sensitivity and 100 percent sensitivity.[4] Staging of GIST tumors is based on a 2005 study that reviewed over 1,765 cases which demonstrated benign/not tumor morality at <2 cm tumor with ≤5 mitoses per HPF; probable benign (<3 percent progressive disease); >2 cm but ≤5 mitoses per HPF, low malignant potential; ≤2 cm but >5 mitoses per HPF, low/moderate malignancy; >10 cm tumor, ≤10 cm and >5 mitoses per HPF=12 percent mortality five years, >2 cm-≤5 cm and > 5 mitoses/HPF=15 percent mortality five years, high malignancy potential: >5 cm to ≤10 cm and >5 mitoses/HPF=49 percent, tumor-related mortality, <10 cm >5 mitoses per HPF 86 percent tumor-related mortality.[3]

Treating these GIST tumors requires resection with negative margins, an R0 resection. If the patient has >3 cm or >5 mitoses per HPF, surgical excision + Gleevec has an 8 percent recurrence vs. 20 percent if no Gleevac. If unresectable on imaging, secondary to local extension, then Gleevac will be given in a neoadjuvant setting then reimage patient to assess resectability again. If metastatic, then Gleevec alone is treatment.[3]

In our case, the patient ended up having a tumor size of 6.1 cm x 3.0 cm x 3.9 cm, involving the muscularis proper, with the gastric resection margin and circumferential margin of serosa free of any involvement. The pathology also showed $CD117^{+}$ and mitotic rate was $1/5mm^2$. This means that our patient had an R0 resection, and due to the tumor being larger than 3 cm, she was placed on Gleevac postoperatively to reduce her recurrence rate. Based on a newer TNM staging system for GIST tumors, the patient would be a T3 (>5 cm), N0 (no LN involved), M0 (no metastatic disease) with a low mitotic index (<5 mitosis per HPF).

According to DeMatteo and coauthors,[5] "for advanced or severely metastasized patients, neoadjuvant therapy commonly enables curative surgical resection. Neoadjuvant therapy with imatinib of malignant GISTs can increase the rate of complete cytoreductive surgery. Even after complete resection of the primary tumor, over 50 percent of cases have recurrent tumors. The first site is usually limited in the abdomen, even though recurrent GISTs have a multifocal nature. Follow up is required even after complete resection to monitor recurrence."

Incidence of other lesions in excluded stomachs has been demonstrated in other case reports. In a case series review by Ali et al.,[7] "the incidence of gastric cancer in the excluded stomach was one case (0.03 percent) in 3,047 patients undergoing bariatric surgery between January 1999 and June 2014 at the surgical department of the São José do Avaí Hospital." According to the authors, establishing methods to surveil or biopsy lesions in the excluded stomach to allow "endoscopic access to the bypassed stomach for diagnostic purposes is difficult. Therefore an alternative approach is to use a pediatric colonoscope or double-balloon enteroscope to enter the biliopancreatic loop of the Roux-en-Y." [6] Other methods also include percutaneous endoscopy, laparoscopic transgastric endoscopy, and EUS.[7]

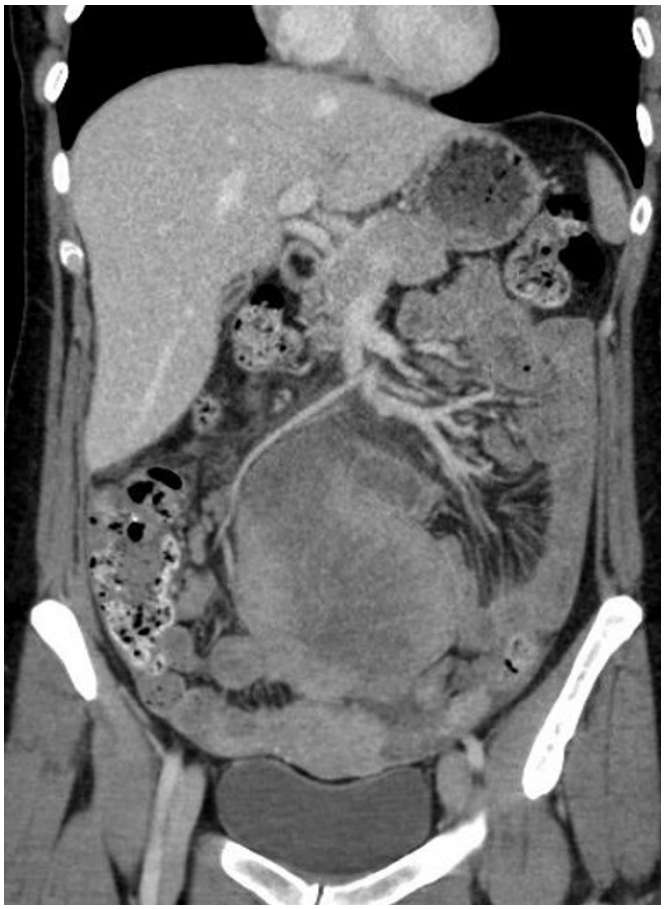

Figure 1. GIST tumor resected with a stalk

Conclusion

Bariatric patients who present with abdominal pain should have a low threshold to obtain a CT scan to rule out obstruction. In our case, we found that the patient had a gist tumor on the bypassed portion of their stomach. This is a rare case of a gist tumor presenting in a previously bypassed remnant stomach of a patient with abdominal pain.

Lessons Learned

The patient had an asymptomatic gist tumor present on their bypassed stomach, and it was found incidentally by CT abdomen/pelvis imaging for a question source of abdominal pain, which was attributed to her kidney stones. A lower threshold to rule out an obstruction in Roux-en-Y gastric bypass patients is recommended.

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