

Gastric leiomyoma. Is there an association with *Helicobacter pylori*?

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Gastric leiomyoma is the most common benign smooth muscle tumor affecting the stomach. It is well-circumscribed but nonencapsulated connective tissue lesion that may arise from any smooth muscle component of the muscular layer of the stomach wall and projects into the lumen.¹ It may erode the covering mucosa producing a punched-out ulcer that may produce very brisk bleeding. Leiomyoma can also cause symptoms by obstruction, ulceration, and chronic blood loss or by compressing adjacent organs.¹ Endoscopically, it appears as a large submucosal lesion, and invariably endoscopic biopsies are not deep enough to be of any diagnostic value. As leiomyoma lacks a capsule, enucleation is seldom adequate and often leaves tumor cells behind, which may lead to future recurrence. Hence, the recommended treatment is wide local excision of the surrounding stomach wall.

We report 3 cases of gastric leiomyomas that were encountered and treated over 5 years of surgical practice from 1993 to 1997 at Dammam Central Hospital, Dammam, Kingdom of Saudi Arabia and raised the question of a possible association with *Helicobacter pylori* (*H. pylori*). Summary of the 3 cases is listed in Table 1. The first case was that of a 25-year-old Saudi male who presented to another hospital with 5-month history of dizziness, fatigue, palpitation and melena. There was no history of epigastric pain or weight loss. He denied any history of smoking, alcohol consumption or ingestion of any non-steroidal anti inflammatory drugs. On examination, he looked pale, well nourished, not jaundiced with normal vital signs and unremarkable abdominal examination. Blood investigations revealed iron-deficiency anemia with hemoglobin of 6g/dl. Gastroscopy revealed 2x3cm smooth-surfaced circular mass at the junction of the body and antrum. Biopsy showed mild gastritis of *H. pylori*. Ultrasonography showed a 3cm round solid mass to the left of the epigastric area. Diagnosis of gastric leiomyoma was suspected and hence a limited resection of the mass was performed. Histopathology confirmed presence of a gastric leiomyoma with ulceration and inflammation of covering epithelium. He was discharged 6 days later and remained well with no recurrence at 4-year follow-up.

The second was a 50-year-old Saudi male presented with a history of 2 episodes of hematemesis that was associated with dizziness, palpitation and melena but no history of epigastric pain, anorexia or weight loss. He was known to have insulin-dependent diabetes and ischemic heart disease and was waiting to undergo cardiac catheterization and balloon-dilatation for a single

vessel disease. He was investigated at another hospital and found to have anemia, which was corrected by blood transfusion. On admission, his vital signs were normal and he looked generally well, not pale, jaundiced or cyanosed. Gastroscopy showed a fungating 2.8x3cm gastric tumor at the junction of the fundus and the greater curvature with 2 areas of necrosis on its summit, consistent with leiomyoma. Endoscopic biopsy showed chronic active gastritis of *H. pylori* type. He underwent laparotomy, which revealed a 3x3cm leiomyoma lying at the proximal greater curvature near the fundus and another small extramural leiomyoma at the posterior surface of the stomach. Wedge excision of both leiomyomas was performed. He was discharged 5 days later in good health. He was re-admitted 3 days later with infection of the upper third of the wound. Wound swab demonstrated diphtheroids wound infection. This was treated with antibiotics and continuous dressing. Follow-up endoscopies were normal with no tumor recurrence. He remained well with no recurrence at 6-year follow-up.

The third case was that of a 26-year-old Saudi lady who presented to a nearby hospital with prolonged history of recurrent epigastric pain, which became severe and was associated with melena 2 weeks prior to presentation. She had appendectomy at the age of one year. On presentation, she was anemic with hemoglobin of 5g/dl with unremarkable abdominal examination. She was given repeated blood transfusions. Gastroscopy revealed a 4x5cm lesion at the junction of the body and the antrum. Biopsy showed chronic gastritis with *H. pylori* infection. Computed tomography scan confirmed this finding and raised the possibility of a gastric leiomyoma. Wedge resection of the lesion was undertaken and the histology confirmed the diagnosis. Her postoperative recovery was uneventful and gastroscopy 3 months later showed a normal operative scar, biopsy of which revealed active

Table 1 - Summary of the 3 gastric leiomyoma cases.

Case	Age	Sex	Presentation	Gastroscopic biopsy	Outcome
1	25	M	Melena	Gastritis <i>H. pylori</i> positive	No recurrence at 4-year FU
2	50	M	Hematemesis	Gastritis <i>H. pylori</i> positive	No recurrence at 6-year FU
3	26	F	Epigastric pain and melena	Gastritis <i>H. pylori</i> positive	No recurrence at 3.5-year FU
M - male, F - female, <i>H. pylori</i> - <i>Helicobacter pylori</i> , FU - follow-up					

chronic gastritis. She remained well with no recurrence at 3.5-year follow-up.

Leiomyomas are smooth muscle tumors occurring most commonly in the stomach and small bowel. They arise submucosally and majority are small, asymptomatic and benign.¹ Many however, are discovered incidentally at endoscopy. As in our 3 cases, they commonly presented with anemia and bleeding due to ulceration of the overlying mucosa.¹ Gastroscopy is carried out as the first line of investigation for such symptoms, and it identifies the leiomyoma as a submucosal lesion. The overlying mucosal tents normally over the leiomyoma on biopsy. Therefore, the standard small endoscopic forceps are unlikely to reach the tumor layer making preoperative tissue diagnosis impossible. This may create a dilemma as to whether to decide on surgical resection or wait and see policy.

In all the 3 cases, endoscopic biopsies showed chronic gastritis and *H. pylori* were isolated. Whether this is a coexistence or an association is hard to establish. *Helicobacter pylori* have been implicated in the development of gastric mucosa associated lymphoid tissue type lymphomas and probably gastric adenocarcinoma.² There is, however, no reported association between *H. pylori* and gastric leiomyoma. Further studies are warranted to establish whether there is a true association or not.

As other gastrointestinal stromal tumors (GIST), leiomyomas are characterized by a remarkable cellular variability and their malignant potential is sometimes difficult to predict. Recent studies, using mitotic count and tumor size as the best determinants of biological behavior, divide GISTs into 3 groups, benign, borderline and malignant tumors.³ The only reliable indicator of malignancy in these and other GIST is evidence of extra-gastric spread. Lymphatic spread is rare, but hematogenous spread to liver and lungs is more common. Endoscopic ultrasound (EUS) is considered to be the most accurate method of visualizing the submucosal lesions and predicting malignancy with accuracy.⁴ However, this is expensive and not readily available in every endoscopic unit. Presence of 3 EUS features (irregular extraluminal margins, cystic spaces and lymph nodes with malignant pattern) has a 100% positive predictive value for malignancy.⁴ In cases of doubtful malignancy, intra-operative frozen section examination may guide further treatment. Nevertheless, malignancy is a rare finding on frozen section in such a setting and none of our patients was subjected to this. The standard surgical treatment for gastric stromal tumor is, therefore, complete surgical excision with clear margins and without rupture to enable the pathologist to decide regarding the benign nature of the tumor with certainty. Such surgical resection is often considered curative.

Minimally invasive procedures are now advocated for the resection of gastric leiomyomas.

Laparoscopic resection even of large lesions is now technically feasible and can be carried out safely.⁵ Various laparoscopic techniques are readily available in the form of enucleation or resection depending on the site of the lesion.⁵ Due to lack of facilities, none of our patients has had laparoscopic resection. Endoscopic snaring has also been reported for some selected cases.⁶ Yu et al⁶ endoscopically snared a gastric leiomyomas located at the greater curvature near the fundus in a high-risk elderly patient. However, perforation of the stomach has occurred, necessitating laparoscopic repair.

Confirmation of the tumor location by both gastroscopy and laparoscopy is important. Also of importance is proper selection of the trocar site for insertion of the Endo-GIA staplers, and secure grasping and lifting of the gastric wall, including of the tumor. Although endoscopic resection of such gastrointestinal tumors are being performed with increasing frequency, resection of submucosal mass lesions pose a particular problem, due to the risk of malignancy and the risk of complications associated with endoscopic removal. Increased incidences of both perforation and bleeding have been reported.⁷ Therefore, a combined approach that includes gastrointestinal endoscopy, laparoscopy, and laparoscopic ultrasound to resect a gastric leiomyoma has been recommended to enhance diagnostic capabilities and safety of the procedure.^{5,7} This clinical note raises the possibility of an association between *H. pylori* and gastric leiomyoma that needs further substantiation.

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