Case Report:
Incidental Gastrointestinal Stromal Tumor Discovered after Laparoscopic Sleeve Gastrectomy

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Abstract

Objective: To report a case of gastric Gastrointestinal Stromal Tumor (GIST) that was incidentally discovered after Laparoscopic Sleeve Gastrectomy (LSG).

Case Report: In November 2015, a 43-years old Saudi female, presented to the General Surgery Clinic of Aseer Central Hospital, Abha City, Saudi Arabia for management of her morbidly obese (body mass index=41kg/m²). She was admitted to the General Surgery Department and was prepared for LSG, which ran smoothly. The removed part of the stomach showed a small grayish white soft-to-firm nodule attached to the wall from outside, measuring 1cm in diameter. The histopathological features of the nodule and immunohistochemical results were consistent with benign spindle cell GIST. One year after surgery, the patient's BMI reached 29kg/m², and she was free of GIST.

Conclusions: Histopathologic examination of LSG specimens is necessary as it might reveal significant incidental findings.

Key Words: Obesity – Bariatric surgery – Laparoscopic sleeve gastrectomy – Gastric gastrointestinal stromal tumors.

Introduction

THE incidence of obesity has been increasing both in developing and developed countries. One billion people in the world are overweight with a Body Mass Index (BMI) between 25 and 30kg/m², and 300 million people are obese (BMI >30kg/m²). In the Kingdom of Saudi Arabia, prevalence of obesity is rising among adults, comprising 30.7% of Saudi males and 28.4% of females between the age of 18 and 60 years who are overweight, and 14.2% of males and 23.6% of females who are obese [1].

Laparoscopic Sleeve Gastrectomy (LSG) is a common surgical therapeutic option for morbidly obese patients [2]. It restricts the stomach's size to induce satiety and resects fundal ghrelin-producing cells to decrease appetite [3].

Since 2004, LSG was reported as the standalone safe bariatric procedure it has recently acquired its place in bariatric surgery as a viable alternative to other restrictive and malabsorptive procedures [4].

The frequency of finding an incidental pathology during laparoscopic bariatric surgeries has been estimated to be around 2%. Gastric Gastrointestinal Stromal Tumors (GISTs) have been reported in 0.8% of patients, constituting a rather uncommon finding. Safe laparoscopic resection of GISTs is an established procedure and has been described associated to bariatric surgery for morbid obesity [5].

Therefore, we aim to report a case of gastric GIST that was incidentally discovered after LSG.

Case Presentation

A 43-year old Saudi female, presented to the General Surgery Clinic of Aseer Central Hospital, Abha City, Saudi Arabia on November 8th, 2015 for management of her morbid obesity.

The patient mentioned that she occasionally had vague symptoms, e.g., dyspnea, fatigue, abdominal pain and dyspepsia. She had no history of heartburn, vomiting, constipation, diarrhea or urinary symptoms.

On examination, the patient's blood pressure was 150/100mmHg. She was conscious, oriented,
obese, lying comfortably in bed, clear chest, soft and lax abdomen, with no tenderness or palpable masses. Her weight was 92kg, her height was 150cm, and her Body Mass Index (BMI) was 41 kg/m$^2$.

Laboratory investigations showed that the patient's complete blood count, hemoglobin, hematocrit and serum electrolytes were within normal limits. Her fasting blood glucose was 129mg/dL. Results of liver, renal and thyroid function tests were all within normal levels. She was negative for viral hepatitis antigens and antibodies.

Our patient was admitted as a case of morbid obesity, and was prepared for Laparoscopic Sleeve Gastrectomy (LSG). Pre-operatively, the patient underwent upper gastrointestinal endoscopy which revealed normal findings. Abdominal ultrasonography showed that the liver was slightly enlarged in size, with homogenous bright texture. No focal lesions or dilated intrahepatic biliary radicles. The gallbladder, portal vein, common bile duct, spleen and both kidneys were normal. There was no free intraperitoneal fluid.

LSG ran smoothly. On the next day, the gastrografin swallow meal showed good passage of contrast from the esophagus into the stomach and onwards into the duodenum. No evidence of any leakage was noted.

Post-operatively, our patient tolerated the procedure without complications or complaints and had an uneventful hospital course. On postoperative day 0, she received nothing by mouth, on post-operative day one and thereafter, she was begun on clear liquids.

Histopathology report showed a part of stomach, measuring 21cm long and 6cm in circumference. Cut section showed congested mucosa without polyp or mass. There was a small grayish white soft-to-firm nodule attached to the wall from outside, measuring 1cm in diameter. Sections from the outer surface nodule showed intramuscular cellular proliferation of bland spindle cells with pale to eosinophilic fibrillar cytoplasm. These cells were arranged in whorls and intersecting fascicles, nuclear palisading, perinuclear vacuoles, minimal pleomorphism, about 2 mitotic figures 50/HPF with foci of stromal hyalinization Fig. (1). Sections from the gastric tissue showed mild increase in the submucosal chronic inflammatory cell infiltrate.

The resected tissues of the nodule were strongly positive to both CD117 and CD34 immunohistochemical stains and were also positive to α-Smooth Muscle Actin (SMA).

Therefore, the histological features of the nodule and immunohistochemical results were consistent with benign spindle cell Gastrointestinal Stromal Tumor (GIST), with mild chronic non-specific inactive gastritis.

The patient was discharged from the General Surgery Department on the third post-operative day. She was followed weekly for a month at the outpatient surgery clinic. The patient's surgical incision healed with no signs of infection or wound breakdown. Despite the histopathologically-proven benign nature of the patient's GIST, she was referred to the Oncology Department for consultation and follow-up of her condition.

One year after surgery, the patient's weight was 66kg, (i.e., her BMI reached 29kg/m$^2$), and she was free of GIST.

![Fig. (1): Histopathological picture of GIST in a nodule within the removed gastric tissue of our case.](image)

**Discussion**

Although GIST accounts for less than 1% of gastrointestinal tumors, it constitutes the most common mesenchymal neoplasm of the gastrointestinal tract. GISTs are usually found in the stomach or small intestine but can occur anywhere along the gastrointestinal tract and rarely have extra-gastrointestinal involvement [6].

Pre-operative endoscopy and abdominal ultrasonography could not reveal the GIST in our case. However, the definitive diagnosis was reached based on histopathological and histochemical investigations. The resected part of the stomach comprised a small grayish white soft-to-firm nodule.
Pre-operative endoscopy has been established and accepted as a routine procedure in the pre-operative evaluation of patients submitted to bariatric surgery in most centers dedicated to the treatment of obese patients around the world [7]. The rationale for performing routine upper endoscopy is to resolve the pathologic condition found before or during the surgical procedure. However, occasionally even with a normal endoscopy, unexpected and incidental pathologic conditions have been found during laparoscopic bariatric procedures, including GISTs [8].

Zhao and Yue [9] noted that up to 75% of GISTs are discovered when they are less than 4 cm in diameter and are either asymptomatic or associated with nonspecific symptoms. They are sometimes diagnosed incidentally during radiologic studies or endoscopic or surgical procedures performed to investigate the gastrointestinal tract disease or to treat an emergent condition. Symptomatic GIST patients generally present with nonspecific symptoms, e.g., abdominal pain, fatigue, dyspepsia, nausea, anorexia, weight loss, fever and obstruction. Some patients with large GISTs may have externally palpable masses.

The diagnosis of GIST in our patient was incidental after LSG, where there was a small nodule measuring 1 cm in diameter attached to the gastric wall from outside. Nevertheless, our morbidly obesity patient did not have a complaint of any major symptoms.

These findings are in accordance with those reported by Miettinen et al. [10], who stated that gastric GISTs are greyish-white sub-mucosal tumors with smooth contours.

Microscopically, sections from the nodule in our case showed intramuscular cellular proliferation of bland spindle cells with pale to eosinophilic fibrillary cytoplasm. These cells were arranged in whorls and intersecting fascicles, nuclear palisading, perinuclear vacuoles, minimal pleomorphism, about 2 mitotic figures 50/HPF with foci of stromal hyalinization.

These findings are in accordance with those noted by Miettinen and Lasota [11], who stated that, microscopically, GISTs have a broad morphological spectrum, of which the spindle cell type is the most common (70%). GISTs have a wide variation ranging from hypocellular to highly cellular with higher mitotic rates. Nuclear pleomorphism is relatively uncommon. The spindle cell type of GIST is composed of cells in short fascicles and whorls. They have pale eosinophilic fibrillary cytoplasm, ovoid nuclei, and ill-defined cell borders. Gastric spindle cell GISTs often reveal extensive perinuclear vacuolization. Nuclear palisading with perinuclear vacuolization is characteristic. There is usually limited atypia with mitotic activity rarely more than 10/50 HPF.

Resected tissues of the nodule in our case were strongly positive to both CD117 and CD34 immunohistochemical stains and were positive to SMA.

Hornick and Fletcher [12] stressed that, immunohistochemically, the vast majority of GISTs are strongly and diffusely positive for CD117, which is a very specific and sensitive marker in the differentiating GIST from other mesenchymal tumors in the gastrointestinal tract. Miettinen et al. [13] added that CD34 is positive in about 80% of gastric GISTs.

In conclusion, histopathologic examination of LSG specimens is necessary as it might reveal significant incident findings.

References


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الهدف: عرض حالة إكتشف عارض لورم لحمي بالعدة (جيست) بعد إجراء جراحة تكميم المعدة بالمنظار.

البِحث: علماً بذلك، تشير الإحصاءات إلى أن هناك حوالي 43 عاماً إلى عيد الجراحة العامة بمستشفى عسير بدمياط أبها بالمملكة العربية السعودية. تتضمن هذه الدراسات عن تحليل خصائص العديد من الأشخاص الذين تمت خلالهم تبديلات معينة في الجهاز الأيضي ونتائج التحليلات المخبرية. وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأيضي، وقد قُدرت تأثيرة المختبرات في الجهاز الأمض.