Laparoscopic resection of gastric leiomyoblastoma

N. Di Lorenzo, G. S. Sica, A. L. Gaspari

Cattedra di Chirurgia Generale, Universita' Tor Vergata-Roma V.O. Raimondo - 00173 Roma, Italy

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Abstract. Smooth muscle gastric tumors represent 2% of resected neoplasms of the stomach. Clinically, they are often silent and incidentally found at endoscopy or radiologic examination. These tumors can be histologically classified as benign (leiomyoma) or malignant (leiomyoblastoma), but clinical behavior is not strictly related to this classification. When symptomatic, they are present with anemia in 50% of cases due to mucosal ulceration. Surgical removal of the tumor is the accepted therapy, leaving a margin of surrounding free tissue: this treatment can be performed by laparoscopy, usefully associated with gastroscopy. We present one case of a patient with severe anemia due to bleeding from an ulcerated leiomyoblastoma 5 cm in diameter that we resected with combined gastroscopic-laparoscopic technique. We isolated the portion of gastric wall where the mass was located and resected the specimen under gastroscopic control. The postoperative period was uneventful, and the patient recovered promptly with minimal pain and discomfort.

Key words: Laparoscopy — Video surgery — Leiomyoblastoma — Gastric neoplasm

The introduction of video cameras has greatly widened the field of laparoscopic surgery and greatly facilitated gastrointestinal endoscopy. Many operations on the esophagus and stomach have been reported using a simultaneous combined laparoscopic-endoscopic approach. [7, 9, 17]. Here, we report the use of this technique for resection of a gastric smooth muscle tumor, histologically classified as leiomyoblastoma.

Materials and methods

The patient was a 74-year-old male suffering from severe sideropenic anemia (RBC 2.500.000, HB 8 g/dl) associated with low-output severe cardiac insufficiency due to congestive hypokinetic cardiomyopathy.

Upper GI tract radiologic examination (Fig. 1) showed the presence of a gastric intramural mass, about 5 cm in diameter, located in the proximal antrum. Videoendoscopy (Fig. 2) revealed central mucosal ulceration in a mass arising submucosally, with a large implant base.

Biopsies were not diagnostic, and a presumptive diagnosis of leiomyoma was entertained. Considering potential malignancy, laparoscopic resection excising the tumor with a free margin of 2-3 cm of surrounding gastric wall was planned and discussed with the patient, and he consented to the operation. The man had had, many years before, previous surgery for a right subphrenic abscess of unknown etiology.

After some days of therapy to improve cardiac output and tissue oxygenation, the patient was placed, under general endotracheal anesthesia, in the supine position. The first 10-mm Hasson trocar was introduced through a small skin incision in the supraumbilical area because of potential risks due to previous operations, and a forward-view laparoscope was used. Three other trocars were introduced under vision: one 5-mm epigastric at the midline, one 12-mm in the left hypocondrium and one 5-mm in the right hypocondrum. Diffuse adhesions of the omentum to the midline were severed with scissors.

The liver was adherent to the diaphragm, and this situation "suspended" it and opened the subhepatic space, facilitating the exposure of the antrum and the gastrohepatic ligament.

Gastroscopic examination with transillumination facilitated location of the mass on the greater curvature covered by the omentum. No sign of invasion of surrounding structures or metastases was evident. The stomach was grasped with Babcock forceps and the omentum was detached using electrocautery hook, scissors, and different kinds of clips (Fig. 3). This procedure exposed the posterior wall of the stomach and allowed grasping of the neoplasm (Fig. 4) and encircling of its perimeter.

An endoscopic stapler was placed across the stomach (Fig. 5) and five cartridges were required to achieve complete resection. Performing simultaneous endoscopic examination, we carefully monitored patency of the gastric lumen, keeping the suturing line parallel to it and thus avoiding cross clamping of the antrum. The suture line was laparoscopically and endoscopically inspected for hemostasis, and insufflation after irrigation of the subhepatic space was performed to ensure hemostasis. The stomach was retracted in a bag. Pneumoperitoneum was deflated and the trocar was repositioned. After some days of therapy to improve cardiac output, the patient was discharged on postoperative day 5 on a normal diet.

Pathologic examination (Fig. 7) revealed the presence of a leiomyoblastoma with an adequate margin of free tissue.

Results

X-ray control 15 and 45 days after surgery (Fig. 8) showed a moderate grade of stenosis of the prepyloric region without functional impairment. These data were confirmed by...
endoscopy. The patient is doing well 1 year after the operation without signs of recurrence or bleeding, and his anemia and cardiac output have greatly improved. He is asymptomatic, without dietary restrictions.

Discussion

Gastric smooth muscle tumors, first described by Morgagni in 1762 [4], are not frequent; they comprise 2% of all resected neoplasms of the stomach [2, 10]. They are often clinically silent, found incidentally at autopsy, laparatomy, endoscopy, or radiologic examination.

They arise from muscular tissue [11] and grow either submucosally (60% of cases) or exogastrically [1, 6]; sometimes they present as a dumbbell tumor. They are usually located in the corpus (40% of cases) or in the antrum (25%). These tumors can be classified as benign (leiomyomas) or malignant (leiomyosarcomas, leiomyoblastomas) according to their histological behavior [5].

They are not capsulated, and this is one of the factors leading to difficulties in distinguishing benign from malignant lesions.

High cellularity, atypia, tumor cell necrosis, and more than five mitoses per high-power field are considered histological criteria of malignancy, as are: tumor 5 cm in diameter, symptoms (Table 1) lasting for more than 6 months, large implant base, necrosis, and ulceration [15, 16].

Multiple malignant leiomyoblastomas are associated with pulmonary chondromas and functioning extra adrenal paragangliomas in the so-called Carney triad [3, 10] when causing symptoms (Table 1) 50% of cases occur with bleeding due to central ulceration of the overlying mucosa.

Antral tumors can sometimes lead to gastric obstruction and occasionally pedunculated forms can prolapse through the pylorus [1].

The usual diagnostic procedures are barium meal study, gastroscopy, and ultrasound [14], although most invasive techniques are sometimes requested [12, 13]. However, correlation between histological criteria of malignancy and clinical behavior is not obvious: leiomyomas can metastasize and leiomyoblastomas are frequently clinically benign.

Because metastases or invasion of surrounding organs is the only clear sign of malignancy, enucleation of these tumors is not appropriate; in addition, evaluation of frozen section is also not easy. Neither lymphadenectomy nor wide resections has demonstrated a better result; therefore resection of the neoplasm with a margin of surrounding gastric

Fig. 1. X-ray shows antral localization of the mass.
Fig. 2. Endoscopic view of the submucosal mass: central ulceration is evident.
Fig. 3. The omentum is detached from the greater curvature.
Fig. 4. Posterior wall of the stomach is exposed and the tumor is grasped.