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Case report

LAPAROSCOPIC RESECTION OF GASTROINTESTINAL STROMAL TUMOR OF THE STOMACH - CASE REPORT AND CONCISE LITERATURE REVIEW

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ABSTRACT

Purpose: To describe the effectiveness of laparoscopic partial gastric resection for small GIST of the stomach.

Case presentation: We present a 69-year-old woman with gastric GIST, diagnosed by ultrasound measuring about 3 cm/d on CT. Laparoscopic gastric resection was performed using Endo-GIA. GIST was proven immunophenotypically based on co-expression of CD 117+low (membrane and cytoplasmic expression) and membranous expression of CD34 with lines free from tumor infiltration.

Conclusion: Laparoscopic resection is a safe procedure, oncologically and technically feasible, when in the hands of an experienced surgeon.

Keywords: Gastrointestinal stromal tumors (GIST), gastric GIST, stomach,

INTRODUCTION

Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal neoplasms of the gastrointestinal tract [1]. Tumor cells have characteristics similar to those of cells of Cajal, "pacemaker" cells that participate in normal neuromotor function of the gut [2]. The main pathological mechanism is tyrosine kinase inhibitors (KIT) - gene activation, less often platelet- derived growth factor receptor alpha (PDGFRA)- gene mutation, followed by tyrosine kinase activation [3]. With the help of KIT, targeted therapy is performed in these tumors [4].

GISTs can arise anywhere in the gastrointestinal tract: from the esophagus to the rectum, with 56% of tumors located in the stomach, 32% in the small intestine, 6 % in the colon and rectum, 0.7% in the esophagus, and 5.5 % in the other locations [5]. Ten to thirty percent of GISTs progress to malignancy, with those with a location outside the stomach being associated with a higher malignant potential [6]. The most common symptoms of gastric GIST are gastrointestinal bleeding (28.4 %) and abdominal pain (39.5 %), according to a multi-institutional analysis of minimally invasive series performed by Ceccarelli et al. [7], with most of the patients- 53% being asymptomatic and diagnosed incidentally.

Surgical treatment is the method of choice for non-metastatic GIST when Ro resection (clear resection margins) can be achieved. GISTs smaller than 5 cm can be treated by experienced surgeons with laparoscopic resection if the tumor capsule is preserved. Although the results between laparoscopic and open operations are comparable in terms of operative time and complication rates, the laparoscopic method is preferred due to faster recovery, less blood loss, earlier oral intake and mobilization resumption, and shorter hospital stays [8]. We present a 69-year-old woman with a gastric GIST without complaints, diagnosed as an incidental finding on an ultrasound examination.

CASE

We present a 69-year-old woman with gastric GIST, diagnosed by ultrasound on another occasion without complaints. Computed tomography shows a spherical formation of the pylorus along a large curvature measuring about 3 cm/d, which strongly captures the contrast agent. Distant metastases are not presented. On gastroscopy, the tumor is seen as dense, rounded submucosal, covered with normal mucosa. An elective laparoscopic wedge resection of the stomach was performed using a four-trocar technique (two 10mm and two 5mm). Intraoperatively, the gastric tumor was visualized, well encapsulated, with intact

mucosa and serosa, located in the pyloro- antral part (Fig.1). Gastric resection was performed using Endo- GIA stapler within ablastic margins of the tumor formation. The intraoperative blood loss was àbout 50 ml. The macroscopic material is a prominent tumor formation measuring 3/2.8cm (Fig. 2), located in the submucosa, without infiltration into the overlying lamina muscularis propria. The resection lines were free of tumor infiltration. GIST was proven based on co-expression of CD 117+low (membrane and cytoplasmic expression) and membranous expression of CD34. There is a predominant spindle-cell histological type, occupying more than 70% of the tissue volume with an intact serosa without rupture without mucosal ulcerative defects. No evidence of vascular invasion was found, coagulation tumor necrosis was absent. Mitoses were n=2/50 HPF, WHO prognostic group 1. The hospital stay was 5 days without intra- and postoperative complications.

Fig. 1. Laparoscopic resection of the stomach.

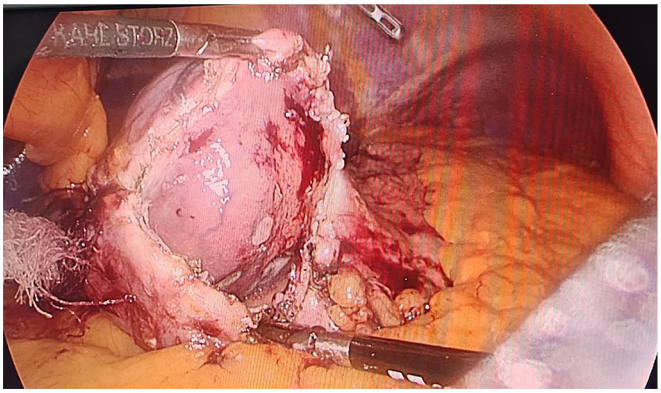
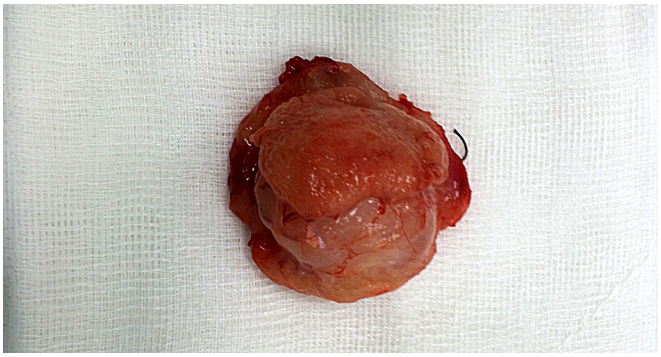


Fig. 2. Macroscopic view of the tumor



DISCUSSION

The standard treatment of localized GIST is complete surgical excision of the tumor with clean resection lines, as in our case, without the need for dissection of clinically negative lymph nodes. Madhavan A, et al. [9] retrospectively analyzed 71 patients divided into three groups- local, anatomical and extended resection. They reported a 5-year survival rate of 92 % and no change in oncological outcomes regardless of the site of local excision. Lymphadenectomy did not affect the results- only one patient from the three groups had positive lymph nodes on pathological analysis.

A prospective analysis of 42 patients who underwent laparoscopic gastric resection for GIST was reported by Parthasarathi et al. [10]. Of these, 39 were followed up for an average of 48 months, and it was found that 92.3% were disease- free and 7.6% had progressive disease. Their univariate analysis showed that four of the tumor characteristics, such as tumor size (p=0.02), high mitotic index (p=0.003), tumor ulceration (p=0.0001) and tumor necrosis (p=0.006), had a statistical significance with disease progression. Patient sex, tumor location, resection margin, and positive immunohistochemical markers were not associated with adverse prognosis. Multivariate analysis by the same authors showed that the presence of >10 mitotic figures/50 HPF was an independent predictor of disease progression (p=0.006). Mitoses in our case were significantly lower: n=2/50 HPF with absent coagulation necrosis and no evidence of mucosal ulcerative defects. Another condition that we have fulfilled for the surgical resection to be radical is to preserve the capsule of the tumor. Rupture of the capsule may lead to peritoneal dissemination, and this may alter the course of further treatment.

Mazer L, et al. [11] compared 53 patients with laparoscopic resection with 24 with open resection, and patients in the second group had significantly larger tumors (4cm vs 7sm, p<0.001). Operative time was not significantly different between the two groups (117 min vs. 104 min, p=0.26). A shorter average length of stay and a lower postoperative complication rate were reported in the laparoscopic group. A meta-analysis involving a larger cohort of patients, including 485 cases divided into two groups (252 underwent open surgery and 233 laparoscopic), was performed by Yang Z, et al. [12] They also reported no difference between the two groups in terms of operative time. Laparoscopic resection resulted in less blood loss (p<0.01), shorter hospital stay (p<0.01), reduced overall complication rate (p=0.01) compared to open.

CONCLUSION

Complete surgical resection with clean resection margins remains the only curative strategy for gastric GIST. Laparoscopic wedge resection is associated with low morbidity and short hospital stay. We have proven that it is a safe procedure, oncologically and technically feasible, when in the hands of an experienced surgeon.

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