

LAPAROSCOPIC GASTRECTOMY WITH D2 LYMPHADENECTOMY FOR PT1A ADENOCARCINOMA: CASE REPORT AND LITERATURE REVIEW

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ABSTRACT

Gastric cancer is one of the most common malignancies, associated with a high mortality and morbidity rate, especially in the elderly, the fourth leading cause of cancer mortality in Europe. Although the rate of diagnosis has declined in recent years, the prognosis of the disease and the mortality rate is still quite high. Laparoscopic surgery, accompanied by lymphadenectomy, is a curative method of treatment, used more and more frequently, especially in Eastern countries, both in the incipient disease and in advanced stages of the disease, which has many advantages over classical surgery.

We report the case of an 86-year-old man, who presented for marked physical asthenia, weight loss and severe anemia, in whom we performed laparoscopic distal radical gastrectomy with D2 lymphadenectomy and Roux-en-Y reconstruction. Histopathological examination established the diagnosis of low-grade / well-differentiated tubular adenocarcinoma G1 (WHO) / intestinal carcinoma (Lauren), with invasion in the lamina propria, developed on an intestinal-type adenoma. 21 lymph nodes were taken without tumor invasion.

This case highlights the complexity of laparoscopic intervention, with the proven advantages for the patient, like reduced surgical trauma and pain, with the decrease of postoperative complications, but also the difficulty of the surgical technique which requires advanced laparoscopic skills. Thus, in addition to its proven efficacy in cases of early gastric cancer, the technique can be extended to advanced malignancies, without affecting the oncological safety limit.

Keywords: gastric cancer, laparoscopic intervention, advances malignancy

Introduction

Gastric cancer is one of the most common malignancies, associated with a high rate of mortality and morbidity, especially in the elderly population. In this sense, it is on the 5th place as incidence and on the 3rd place as the mortality rate in the world (1,2) and, at the same time, gastric cancer represents the fourth cause of cancer mortality in Europe (3). Although the rate of diagnosis has declined in recent years, the prognosis of the disease and the mortality rate is still quite high, surpassing even that found in lung cancer (4). Laparoscopic surgery, accompanied by lymphadenectomy, is a curative method

of treatment, used more and more frequently, especially in Eastern countries, both in the early stages and in advanced stages of the disease (5).

Case report, material si method

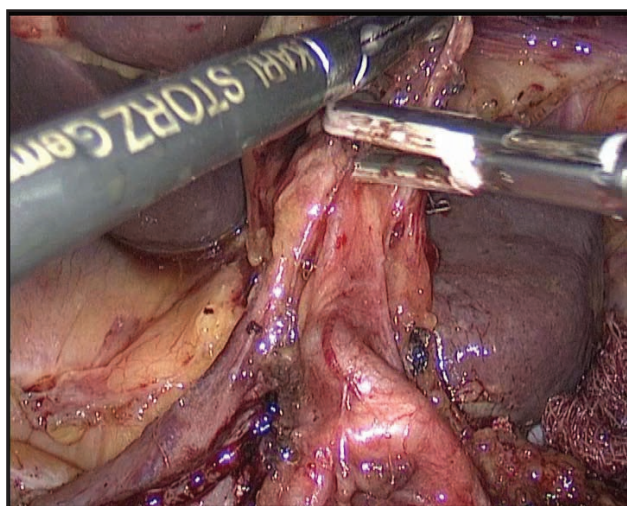
We present the case of a male patient, 86 years old, with a representative personal pathological history (grade III hypertension, hypertensive cardiomyopathy, chronic renal failure, vascular dementia and depressive disorder), who presented to the Gastroenterology Department of the Hospital for marked physical asthenia, weight loss (approximately 8 kg in two months) and severe anemia Hb (8.3 g/

dl). Following the imaging investigations and superior digestive endoscopy, an antral gastric formation with exophytic appearance was discovered, with dimensions of 32/23/15 mm, without serous invasion, reason for which it was addressed to the Surgery department, for surgery.

After hydroelectrolytic and blood rebalancing, repeated blood transfusions, with blood and iron preparations, laparoscopic distal radical gastrectomy was performed with D2 lymphadenectomy and gastrointestinal Roux-en-Y anastomosis.

Laparoscopic gastrectomy was performed under general anesthesia, in French position, using 5 ports. The gastrocolic ligament was divided up to the level of the short gastric vessels using a laparoscopic vessel sealing device (LigaSure). The dissection continued toward the pylorus, including the infrapyloric lymph nodes (no. 6). The right gastroepiploic vessels were divided at their origins.

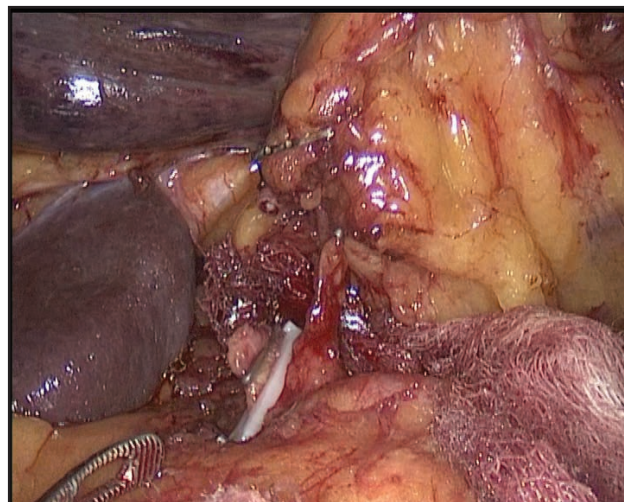
The lesser omentum was opened and the right gastric artery was identified and clipped at its origin. The duodenum was transected with a linear stapler. A D2 lymphadenectomy was performed including the left gastric artery, celiac trunk and the common and proximal hepatic artery (no. 7, 8, 9, 12) lymph nodes (figure 1).



*Figure 1 – lymphadenectomy station no. 12
hepatoduodenal ligament*

The left gastric artery was divided at its origin from celiac trunk (figure 2). The lesser curve lymph nodes (stations 1 and 3) were resected up to the level of gastric transection. The stomach was stapled with a linear stapler (EndoGIA)

(figure 3) with Roux-en-Y gastrojejunostomy type of reconstruction (figure 4). The operative time was 320 min.



*Figure 2 – lymphadenectomy station no. 7 left gastric
artery*

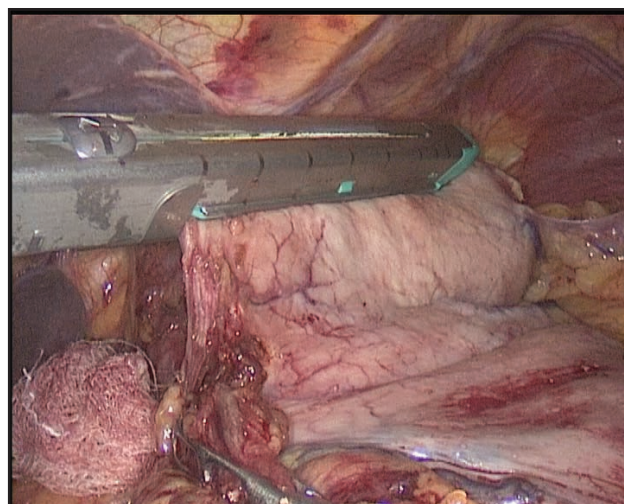


Figure 3 – transection of the stomach

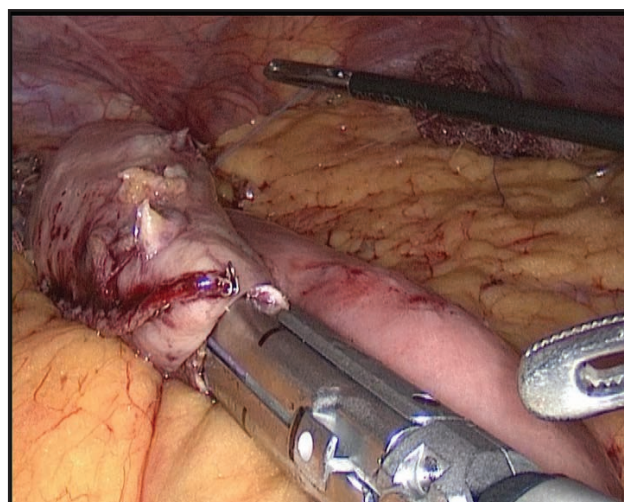


Figure 4 – gastrojejunal anastomosis

The postoperative evolution was uneventful, without postoperative complications and discharge at 6 days, the patient being registered by the Oncology department for specialized treatment.

The histopathological examination was performed within the Clinical Service of Pathological Anatomy SCJU "St. Andrew" Constanta. On macroscopic examination, a sessile polypoid tumor formation of 4.5/3/2 cm was described (figure 5), located in the middle third of the posterior face (figure 6), which remains at a distance of 7 cm from the proximal edge and 6 cm from the distal edge. Great omentum with dimensions of 40/5/ 0.7 cm and adipose tissue from the great curvature were examined with the presence of 21 gray-pink, elastic nodules. The specimen was fixed in 10% formaldehyde solution, and the sampled material was included in paraffin blocks.

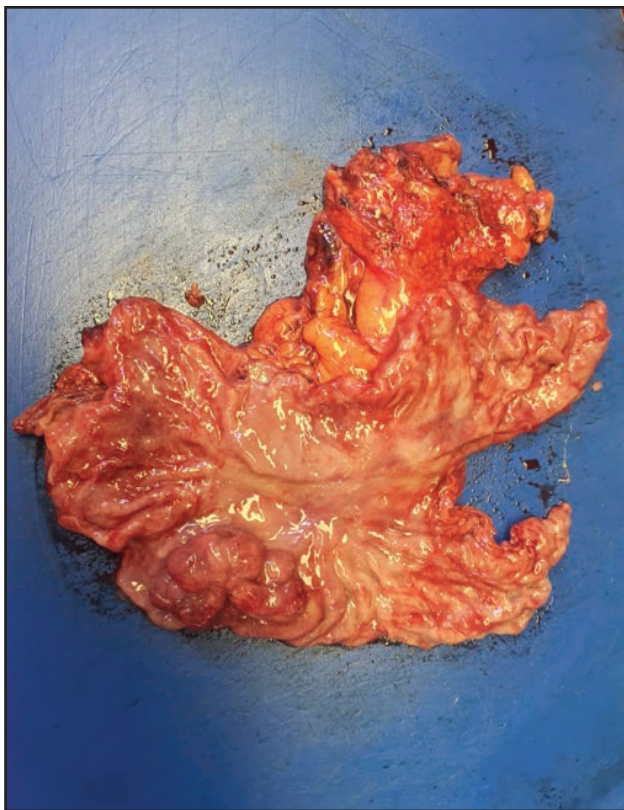


Figure 5 - exophytic tumor of 4.5 / 3/2 cm



Figure 6 - tumor located in the middle third of the posterior face

Serial sections of 5 μ m were made, which were spread on the blade and stained automatically with Hematoxylin-Eosin. Histopathological examination established the diagnosis of low-grade / well-differentiated tubular adenocarcinoma G1 (WHO) / intestinal carcinoma (Lauren), with invasion in the lamina propria (pT1a stage), developed in an intestinal-type adenoma (figure 7, 8).

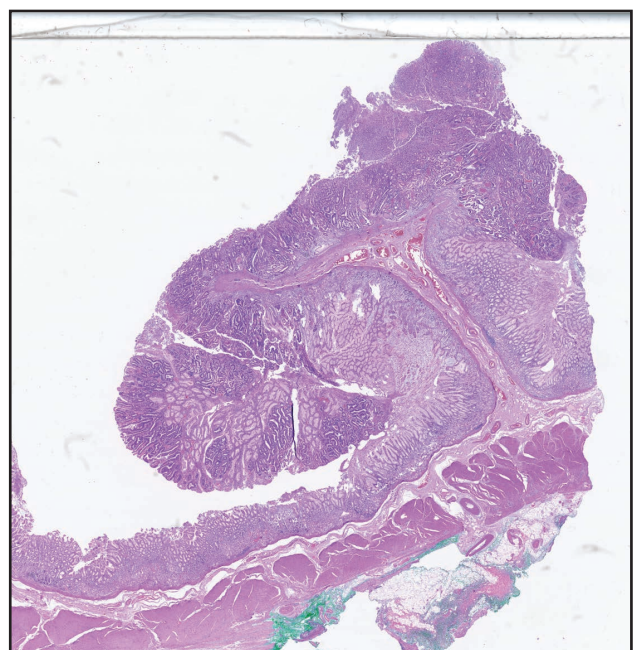


Figure 7 -aspects of well-differentiated tubular adenocarcinoma G1

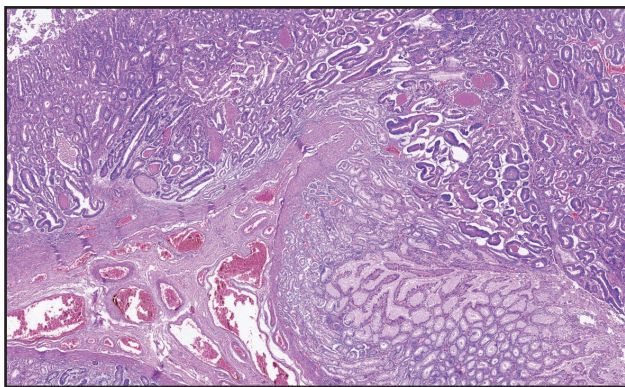


Figure 8 - neoplastic proliferation of glands in gastric lamina propria

21 non-invasive lymph nodes were examined (figure 9, 10). Also, the omentum did not show tumoral invasion. No vascular or perineural invasion was detected. Associated lesions of chronic active gastritis *Helicobacter pylori* (Sydney system) / stage 0 atrophy (OLGA system), stage I intestinal metaplasia (OLGIM system) has been identified.

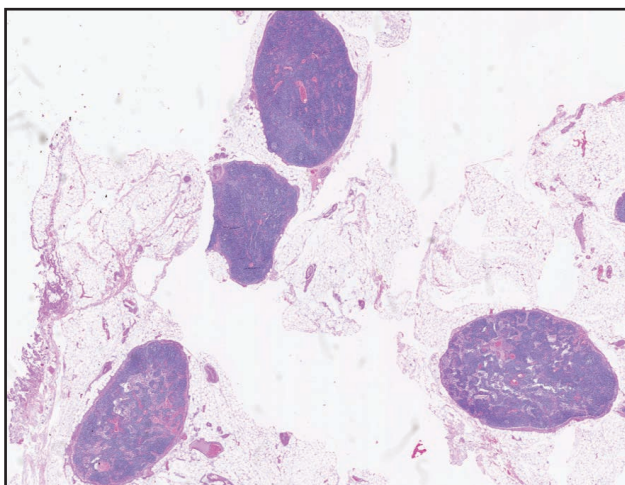


Figure 9 – lymph nodes from D2 lymphadenectomy without neoplastic invasion

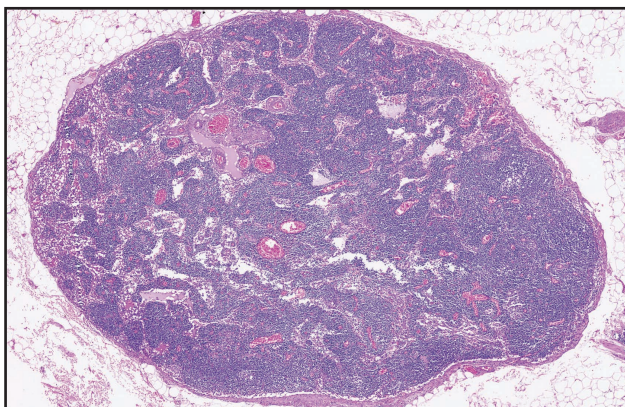


Figure 10 – reactive lymph node aspects

Discussions

As treatment principles, gastrectomy with D2 lymphadenectomy is currently considered the therapy of choice, the gold standard for potentially curable gastric malignancies (6). Surgical options for early gastric cancer range from endoscopic mucosal resection to endoscopic submucosal dissection, to open distal gastric resection and laparoscopic excision with lymphadenectomy.

Among these options, laparoscopic surgery has shown clear advantages over conventional surgery and the number of such surgeries has increased, even being associated with D2 lymphadenectomy (7). Although classical surgery is considered curative for gastric cancer, from the first laparoscopic intervention, which consisted of distal gastric resection with the anastomosis Billroth I, in 1991 by Kitano (8) and Billroth II in 1993 by Azagra (9,10), numerous laparoscopic interventions have been reported in various centers, especially in patients at low risk of lymph node metastasis, as resection within safe oncological limits is still a debated and even controversial topic (11).

Although some studies have not shown a quality of intervention equivalent to the classic ones (12,13,14), there are also studies that have reported that laparoscopic D2 gastrectomy can be performed within safe limits in terms of the outcome of short-term cancer treatment (15). Among the advantages of laparoscopic intervention, we mention a lower blood loss, shorter hospital stay, reduction of the amount of analgesics administered postoperatively, early feeding, resumption of transit earlier, minimal lung damage (16), decrease in postoperative morbidity and complications (16.6%, compared to 24.1% in classical surgery) (17).

Compared to the open classical intervention, the operative time is prolonged (18). Due to the numerous benefits, laparoscopic gastric surgery has found indications even in advanced malignant gastric forms, with good results (19,20,21,22).

The standardized therapy of gastric cancer was established according to the Japanese guide (23), according to which, for lymphadenectomy D2, the 1-6 lymph nodes (perigastric lymph nodes located along the great and the small

curvature), the 7-12 lymph nodes - station 7 (around left gastric artery), station 8 (common hepatic artery), station 9 (celiac trunk), stations 10-11 (splenic artery), and station 12, represented by the hepato-duodenal ligament, stations 13-15, represented by the lymph nodes behind the pancreas, the superior mesenteric artery and the middle colic vessels, as well as station 16, quite controversial, represented by paraaortic nodes.

Regarding the laparoscopic intervention, compared to the open surgery, the number of studies in which laparoscopic intervention with D2 lymphadenectomy was performed is reduced (24,25,26,27). Moreover, extending lymph node excision over D2 is not considered a standard procedure, and this is being evaluated in various studies, such as dissection of the lymph node 14 along the superior mesenteric vein, which has shown an improvement in the survival rate of D2 patients with metastasis at this level without paraaortic metastasis (28).

For such operations, the oncological principles observed must be the same as in the classic interventions: lymphadenectomy, with a minimum number of 15 lymph nodes retrieved and negative excision margins. This is also why laparoscopy is not as widely used as conventional surgery. For subtotal resections, lymphadenectomy D2 and negative distal margins of 5 cm for intestinal adenocarcinoma and 8 cm for diffuse type (29).

Studies with the oncological evaluation of laparoscopic operations for gastric cancer with extensive lymphadenectomy showed that 3-year survival (75.3%) and disease-free survival (69%) were similar to the results obtained from classic interventions (30,31,32).

Regarding the prognosis of the disease, the factors independent of the prognosis are the histopathological type and the depth of the invasion, while the factors associated with a better survival rate are represented by tumor T2 stage, distal location of the tumor, age under 60 years, sampling more than 25 lymph nodes and intestinal tumor type (33).

About histopathological evaluation of surgical specimens, one study has considered cases staged T1 and T2 (34), while other studies have treated all stages of cancer. Although the number of lymph nodes evaluated D2 was

variable and reported in numerous studies, no statistically significant differences were identified between classically operated and laparoscopically operated groups (35).

However, in a retrospective study, the importance of excision of a minimum of 29 lymph nodes was highlighted to improve the survival rate (36).

Conclusions

The presented case highlights the fact that laparoscopic excision is a complex procedure, from the perspective of the numerous proven advantages for the patient, the minimally invasive approach, with the decrease of postoperative complications, but also of the difficulty of the surgical technique which requires high expertise of the surgical team in laparoscopic techniques. Thus, in addition to its proven effectiveness in cases of early gastric cancer, the technique can be extended to advanced malignancies, without affecting the oncological safety limit.

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