Absence of port-site metastases following staging laparoscopy for gastric carcinoma

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ABSTRACT

Background: port-site metastases (PSM) have been reported following oncological laparoscopic surgery. However, their frequency after laparoscopic examination in gastric cancer has not been well established.

Material and methods: prospective follow-up of 41 patients having had a staging laparoscopy and a follow-up longer than 12 months. Mean age was 65 years (29-89). After staging, an open gastrectomy was performed in 33 cases. Mean follow-up was 21.4 (12-66) months. PSM was defined as a node in the former port-site wound with adenocarcinoma histology at biopsy.

Results: no patient showed clinical signs of PSM or port-site recurrence, even in advanced stages. We had no morbidity or postoperative mortality attributable to laparoscopic manoeuvres, and no need for laparotomy in cases without a gastrectomy indication.

Conclusions: our results suggest that staging laparoscopy is a safe procedure in gastric carcinoma, as it is not associated with PSM after even considerable follow-up, and has a very low complication rate.

Key words: Staging laparoscopy. Gastric cancer. Port-site metastasis.

INTRODUCTION

Laparoscopy as a tumor staging procedure is increasingly used for gastric carcinoma (1-6). Port-site metastases (PSM) have been reported, however, following laparoscopic surgery in patients with cancer of the uterus (7), ovary (8), colon (9-11), gallbladder (12), pancreas, esophagus (6), kidney (13) or prostatic gland (14), a fact that raises some concern about the safety of laparoscopic surgery for malignancies. Other works, on the contrary, have found low port-site metastasis rates (15). As a result, studies have been addressed concerning the influence of laparoscopy on tumor spreading and patient survival. They suggest a role for CO₂ diffusion (16-22), limited surgeon experience and consequent tumor handling (21,23), direct cell adhesion to ports (24), trocar material composition (25), and hematogenous spread (26,27). At present controversy persists.

Only anecdotal cases of patients having a gastric carcinoma –with peritoneal spreading– and PSM have been published. Also, there are few papers reporting an absence of such PSM, one with virtually no follow-up (2) and one monitored for more than 5 years (28). We report our experience with the laparoscopic staging of gastric carcinomas with the aim of assessing the PSM rate.

MATERIAL AND METHODS

The clinical data of patients operated on for gastric carcinoma in the Esophageal-Gastric Unit of University “Hospital Marqués de Valdecilla”, Santander, Spain, are prospectively included in a database. We report the data from 41 patients having had a staging laparoscopy and a follow-up longer than 12 months. Mean age was 65 years (29-89). The staging laparoscopic technique was as follows: under general anesthesia three 10-mm trocars were placed with no special protective measure in the umbili-

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cus (Hasson's trocar), right upper quadrant, and left upper quadrant, respectively. Using a 30-degree laparoscope the primary tumor was assessed, including an exploration of the lesser sac, and the spread to peritoneal surfaces or the liver as well. The patient is put in reverse Trendelenburg position to assess Douglas' cul-de-sac. A cytology sampling was obtained, which did not influence therapeutic decisions. Mean exploration time was 22 minutes (15-31). If the tumor was considered curable, the trocars were withdrawn and a laparotomy and radical gastrectomy were performed. In incurable cases the trocars were withdrawn and the procedure finished.

The classification according to pathological stages is shown in table I. Open gastrectomy was performed for 36 patients after staging laparoscopy. The remaining 5 patients were not classified as their tumors were not resected because of distant metastases.

Table I

I	II	III	IV	Not resected
17	7	8	4	5
42.5%	17.5%	20%	10%	12%

Follow-up consisted of interview, physical exam, and CEA measurement every three months, with abdominal computed tomography scanning in case of abnormal data and a yearly gastroscopy. PSM was defined as a node in the former port-site wound with histology of adenocarcinoma in biopsy samples. Mean follow-up was 21.4 (12-66) months. Forty-one patients survived at least one year. Of these, 21 (51%) were followed up for 1 to 2 years, 10 (25%) for 2 to 3 years, 4 (10%) for 3 to 4 years, 5 (12.5%) for 4 to 5 years, and one patient for more than 5 years (66 months).

The statistical analysis was made using a Kaplan-Meier curve. Results are listed in figure 1.

RESULTS

During follow-up no patient showed clinical signs of PSM or port-site recurrent carcinoma with a follow-up of 1 year at least and 5 years at most, even in advanced stages. Nine patients died because of tumor progression, 5 are alive with locoregional recurrence or distant metastatic disease, and currently 27 patients survive and are clinically tumor-free. The survival curve is shown in figure 1. We had no morbidity or postoperative mortality attributable to laparoscopic maneuvers, and needed no laparotomy for cases without a gastrectomy indication.

Fig. 1.

DISCUSSION

PSM have been related to CO₂ insufflation and its metabolic and immunosuppressive effects, as well as to metallic ports (21), hematogenous spread, tumor cell aerosolization, and electrostatic adhesion of tumor cells (21). Of note, the excision of port sites in rats increased the likelihood of PSM in an experimental model (WATSON). Other investigators have applied some preventive measures, including peritoneal irrigation with povidone-iodine solution, in a murine model, as well as port-site protection with bio-reabsorbable materials (27,29,30). However, none could establish a firm relationship between laparoscopy and increased or decreased PSM frequency.

Staging laparoscopy is increasingly used for abdominal tumors, especially for gastric carcinoma, as fairly common understaging by radiological methods may lead to non-therapeutic laparotomies. In addition to the avoidance of unnecessary laparotomies, staging laparoscopy can select candidates for neoadjuvant chemotherapy or chemo-radiotherapy, should such therapy be available and indicated. The procedure is well tolerated, even by elderly patients, and is associated with a low rate of complications. It is also possible to perform palliative procedures, and even radical gastrectomies through a laparoscope (31,32), even though any such advantages would be cancelled out should PSM frequency be significant, as cases with a high probability of cure could recur at the port site. Tumors with a higher PSM rate include ovary, Fallopian tube, endometrium, uterine cervix, breast, and colon cancer, with all these rates being lower than 1% (this percentage varies among studies) (33). Most PSM are related to laparoscopic resection because of tumor manipulation. A lower PSM rate would be expected for

only staging laparoscopy, but not many papers focus on this issue. There is one reported case of PSM after the staging laparoscopy of a stage-IVB gastric carcinoma (34). Another paper reported no cases of PSM, but follow-up was short. Our results suggest that staging laparoscopy is a safe procedure for gastric carcinoma as it is not associated with PSM after a considerable follow-up, and has a very low complication rate.

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