Laparoscopy in gastric cancer staging

F. Safarpoor, M.D. *

Abstract

Background: Cancer of the stomach carries poor prognosis. Prediction of survival depends on the time of presentation. Fluoroscopy, sonography, and computerized tomography are used for staging of advanced gastric cancers, but these are not accurate enough for grading of advanced gastric cancers.

Laparoscopic finding in which lesions are directly seen up to 15 times magnified, has been used for gastric cancer staging.

Method: To examine the importance of laparoscopy, we carried out this study over 84 confirmed cases of gastric cancer prior to laparotomy. Results of sonography and computerized tomography were compared with the findings of laparoscopies.

Results: Beside 54 cases that were reported without metastases by sonography and computerized tomography, there were 34 patients with a variety of different metastases found in laparoscopic examinations. The findings were as follow:

- Multiple small foci in a liver lobe (four cases)
- Multiple small foci in two lobes (four cases)
- Characterized metastatic focus in one lobe (10 cases)
- Multiple foci in two lobes with multiple deposits in peritoneum (16 cases).

Out of thirty patients who were suspected to have intra-abdominal metastases or were reported to have some malignant lesions by sonography and computerized tomography, 20 patients (66%) had inoperable advanced lesions.

Conclusion: Laparoscopic examination is a valuable tool for diagnosing metastases and should be used in management of advanced gastric cancers. This study suggests that in terminally ill patients, and in advanced gastric cancer where surgery may be ineffective, laparoscopic examination may predict and avoid unnecessary surgical interventions.

Key words: Cancer staging, laparoscopy, advanced gastric cancer

Introduction

Cancer of the stomach carries poor prognosis. However, long term survival is possible if patients are found at early stages. The disease is incurable in nearly half of the patients at the time of presentation. With regional lymph node metastases, five-year survival after gastrectomy is about 10%. In those with only peri-gastric lymph node involvement survival rises to 30% and in those with gastric carcinoma confined to the stomach five-year survival is about 70%. Only 10% of patients with hepatic
metastases survive a year.

- Nowadays surgery is the best treatment for gastric cancer patients, curative and palliative, but usually such patients were referred late, and may be unresectable or even inoperable. Some patients with distant metastases are undergone by-pass procedures, because it has palliative effect and prevents further obstruction.

- Prediction of survival depends on the stage at the time of presentation. Fluoroscopy, sonography, and computerized tomography are used for advanced gastric cancers staging. The classification is based on liver metastases, lymph node involvement, and ascites but these are not accurate for grading of advanced gastric cancers.

- Sometimes patients undergo unnecessary surgical operations and suffer intensified pain and laparotomy complications. This can be avoided with the help of pre-operative laparoscopic examinations.

- Laparoscopic examinations for advanced cancers staging have been used since 1911. Cuschier (1973) recommended laparoscopy for liver metastases and ascites. Because computerized tomography may not recognize small liver metastases, small peritoneal involvement, and lymph node involvement, accurate staging of advanced gastric cancers by CT scanning may results in failure.

- Laparoscopic examination, in which lesions are directly seen up to 15 times magnification, enables us recognize small liver metastases and lymph node involvement easily. It may also find remote metastases.

- During the past two decades increased videoscopic abilities and advanced technology in better insufflations, and broadening visual accuracy with new video cameras, in addition to surgeons experience for cancer staging encouraged diagnostic videoscopy. It has been reported that Diagnostic Videoscopy can decreases unnecessary procedures up to 67%. To demonstrate the importance of laparoscopy, we carried out this study on 84 confirmed cases of gastric cancer prior to laparotomy.

**Patients and methods**

During a seven year period, from October 1994 to October 2001 we examined 318 patients by laparoscopy, being referred from Internal Medicine and Infectious Diseases Departments due to abdominal ascites with unknown etiology, abdominal malignancies, vague abdominal pain and abdominal masses. Those with prior abdominal operations and previous gynaecologic procedure were excluded.

- Eighty-four patients with stage two or more gastric cancer were selected for laparoscopic cancer staging. We also conducted fluoroscopy, sonography, barium swallow radiography, and computerized tomography for patients. Results of sonography and computerized tomography were compared with the findings of laparoscopies.

- We observed first anterior and posterior surface of stomach for tumors localization and their staging, and then explored liver and sub-diaphragmatic regions, and finally we explored visceral and parietal peritoneum. In suspected ascites cases we injected approximately 150cc fluid in the abdominal cavity and then collected it and examined for any cytological changes (only 2 cases). For all patients we performed laparotomy after laparoscopy.

**Results**

The cases we studied were 56 male and 28 female, their ages ranging from 50 to 79 years with a mean age of 64.2 years. In sonography, and computerized tomography reports there were restricted gastric lesions in 54 patients with no metastatic lesions, and in 30 patients focal metastases were suspected in liver. Among 54 cases reported to have no metastases, there were 34 patients with a variety of different metastases in laparoscopic examination. The findings were as follows:

- Multiple small foci in a liver lobe: (four cases)
- Multiple small foci in two lobe: (four cases)
- Metastatic foci in one lobe: (10 cases)
- Multiple foci in two lobes with multiple deposits in peritoneum: (16 cases)
out of thirty patients who were suspected to have intra-abdominal metastases or reported some malignancy lesions by sonography, and computed tomography reports, following were the laparoscopic findings. In 20 patients there were so advanced lesions that we could not perform any effective surgery. In six cases there were resectable liver metastases. We managed to perform combined stomach and liver resection. Four patients had too advanced lesion in the liver and stomach, which forced us to perform only palliative by-pass operation because of obstruction.

| Table 1: Laparoscopic Findings in Patients with Negative Sonography and CT Scan |
|---------------------------------|-----------------|---------|
| Multiple small foci in one liver lobe | 4               | 7.4%    |
| Multiple small foci in two lobes   | 4               | 7.4%    |
| Metabolic foci in one lobe         | 10              | 18.5%   |
| Multiple foci in two lobes with multiple deposits in peritoneum | 16              | 29.5%   |

Discussion

Considering that surgical procedure is still the best treatment for gastric cancer patients, these patients underwent laparotomy after sonography and fluoroscopy examinations. In some cases laparotomy findings were different from other preclinical findings, and patients sometimes underwent unnecessary harmful surgical procedures. Computerized tomography and sonography compared laparoscopy of process in 71 patients studied by Asencio et al., showed that laparoscopy is a valuable diagnostic tool for distant metastases.

In 63% of patients there was a difference between laparoscopic findings and conventional tools for gastric cancers staging. Computerized tomography cannot demonstrate small lesions; it has low accuracy in detecting less than one-centimetre lesions.

Nowadays, with the availability of laparoscopy and its high diagnostic accuracy, laparoscopy for gastric cancer staging in all gastric cancer patients especially in stage 2 or higher is the best choice.

This benefit is due to magnifying effect of laparoscopy (up to 15 times); which makes the liver metastatic lesions, accurately recognizable. Moreover with laparoscopy and sonography, inter parenchymal lesions of the liver can also be recognized.

Most studies have shown that preoperative laparoscopic examinations for advanced gastric cancers staging have more diagnostic precision and accuracy than preoperative imaging, and for a considerable amount of patients can avoid unnecessary surgery.

The present study in Gilan showed that in 63% of patients there was some difference between laparoscopy and sonography and/or computerized tomography findings. We observed that 66% of patients had no need to surgical operation if they had performed preoperative laparoscopic examination. Lowy et al. reported that they found 16 patients with metastases in laparoscopy. To undergo further laparotomy procedures, 95% escaped from unnecessary laparotomies. In another study 100 patients, candidates for surgery were examined with laparoscopy, computerized tomography, and sonography (Lowy et al. 1997) they found that 21% of patients had distant metastases and 38 other patients were in another gastric cancer stages. There was a significant difference between computerized tomography findings and laparoscopy.

In stages 1 and 2 gastric cancers, laparoscopy may be less informative and less applicable, but in advanced gastric cancers about 40% of the patients escape from unnecessary laparotomies, when reassessed by laparoscopy.

| Table 2: Laparoscopic Findings in Patients With Positive Sonography and CT Scan |
|---------------------------------|-----------------|---------|
| Highly advanced lesions (surgery ineffective) | 20              | 66%     |
| Liver resection combined stomach resection | 6               | 15%     |
| Two advanced lesions in liver and stomach, (only palliative by-pass) | 4               | 13.4%   |

In our study the preoperative imaging of 30 gastric cancer cases, revealed 18 characteristic foci and 12 suspected lesions, while laparoscopic examination detected the metastatic foci in liver, parietal peritoneum, and visceral peritoneum of all 30 cases, among 20 of them, metastases were too extensive and inoperable. In such cases preoperative
laparoscopic assessment could prevent unnecessary and perhaps harmful laparotomy. There was no postoperative complication of laparoscopy in 84 gastric cancer cases of this study. Dugo et al did not find any complication in 100 patients who were undergone laparoscopic examination for advanced gastric cancer staging. Minard et al reported no complication in 90 laparoscopic examinations for pancreatic cancer. Similar result was found in present study.

**Conclusion**

This study suggests that in terminally ill patients, and in advanced gastric cancer patients where surgery may not be helpful, laparoscopic examination may avoid unnecessary surgical interventions.

Laparoscopic examination are a valuable tool for diagnosing metastases and should be routinely used for advanced gastric cancer assessment and treatment.

**References**
