Gastric Cancer Surgical Practice Guidelines

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The Society of Surgical Oncology surgical practice guidelines focus on the signs and symptoms of primary cancer, timely evaluation of the symptomatic patient, appropriate preoperative extent of disease evaluation, and role of the surgeon in diagnosis and treatment. Separate sections on adjuvant therapy, follow-up programs, or management of recurrent cancer have been intentionally omitted. Where appropriate, perioperative adjuvant combined-modality therapy is discussed under surgical management. Each guideline is presented in minimal outline form as a delineation of therapeutic options.

Since the development of treatment protocols was not the specific aim of the Society, the extensive development cycle necessary to produce evidence-based practice guidelines did not apply. We used the broad clinical experience residing in the membership of the Society, under the direction of Alfred M. Cohen, MD, Chief, Colorectal Service, Memorial Sloan-Kettering Cancer Center, to produce guidelines that were not likely to result in significant controversy. Following each guideline is a brief narrative highlighting and expanding on selected sections of the guideline document, with a few relevant references. The current staging system for the site and approximate 5-year survival data are also included.

The Society does not suggest that these guidelines replace good medical judgment. That always comes first. We do believe that the family physician, as well as the health maintenance organization director, will appreciate the provision of these guidelines as a reference for better patient care.

Society of Surgical Oncology Practice Guidelines: Gastric Cancer

Symptoms and Signs

Early-stage disease

- No symptoms or signs
- Megaloblastic anemia
- Dyspepsia or mild epigastric or substernal pain
- Early satiety

Advanced-stage disease

- Upper gastrointestinal bleeding
- Anemia, especially microcytic if chronic
- Frank upper gastrointestinal bleeding with hematemesis
- Pain: epigastric "ulcer"-type pain, pain that bores to the back, substernal pain, right or left upper quadrant pain (occasional)
- Obstruction: dysphagia secondary to gastroesophageal junction tumor, difficulty with digesting solids before liquids, nausea and vomiting with return of undigested food, secondary to gastric outlet obstruction
- Weight loss, malaise, fever
- Ascites, abdominal or pelvic masses

Evaluation of the Symptomatic Patient

Upper gastrointestinal barium study
• Appropriate initial assessment

**Endoscopy with biopsy**

• Required for diagnosis since a gastric neoplasm may be an adenocarcinoma, a lymphoma, or, rarely, a gastrointestinal stromal tumor (GIST)

**Digital rectal examination**

• Extremely important not only for the evaluation of blood in the stool but also to rule out the presence of a Blummer’s shelf.

**Thorough physical examination**

• Evaluate supraclavicular nodes to rule out obvious clinical metastasis.

**Appropriate timeliness of surgical referral**

• The evaluation of the patient with gastric carcinoma should proceed with due diligence and rapidity.
• Patients with gastric ulcers that are biopsy-negative should be placed on intensive medical therapy and reevaluated with endoscopy in 6 weeks. If the ulcer is healing, another 6 weeks of medical therapy is appropriate. If the ulcer has not healed completely, surgery is indicated, as antral or lesser curvature ulcers may be malignant.

**Preoperative Evaluation for Extent of Disease**

**Physical examination**

• Assess for lymphadenopathy with careful attention to left supraclavicular fossa.
• Assess for abdominal mass, ascites.
• Assess for blood in stool and Blummer's shelf by digital examination.
• Assess for ovarian or peritoneal metastasis on pelvic examination in women.

**Esophagogastrodenoscopy (EGD) (required)**

• Assess tumor extent.
• Assess tumor location.
• Assess degree of obstruction. EGD may also be utilized with dilation, laser, or electrofulguration to temporarily relieve obstruction due to gastroesophageal junction tumors
• Assess for and control hemorrhage.
• Obtain biopsy, which is essential, as a gastric neoplasm may be an adenocarcinoma, a lymphoma or, rarely, a GIST.

**CT scan of lower chest and abdomen/barium study**

• Assess extent of local disease (barium study may help delineate proximal extent of disease, and therefore, facilitate planning of surgery) and extent of metastatic disease.

**Standard preoperative tests**

• Standard tests, including an ECG, chemistry profile, and electrolytes, are appropriate as warranted for anesthesia.

**Cardiorespiratory assessment**

• In selected patients
Role of the Surgeon in Initial Management

Evaluation of the symptomatic patient

- The surgeon should be involved in the evaluation of the symptomatic patient, especially as it relates to the timing of an operation.
- Patients with gastric outlet obstruction may benefit from a short period of nasogastric intubation to decompress the stomach. Fluid and electrolytes should be corrected during this period of nasogastric suction.
- Similarly, the surgeon may also perform the upper endoscopy to define the extent of disease. Clearly, the surgeon should be involved at an early stage in the evaluation of the extent of the patient’s disease and the assessment of significant comorbid disease.

Diagnostic procedures

- Endoscopy usually provides the biopsy that confirms the diagnosis. Similarly, enlarged left supraclavicular nodes are amenable to biopsy.

Surgical considerations

The options for the management of gastric cancer are diverse. The surgical procedures that may be performed are:

- Diagnostic laparoscopy (to evaluate stage of disease and to provide a histologic diagnosis)
- Palliative distal gastrectomy
- Palliative proximal gastrectomy
- Palliative total gastrectomy
- Curative distal gastrectomy
- Curative proximal gastrectomy
- Curative total gastrectomy
- The role of routine D2 nodal dissection remains controversial.

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Gastric adenocarcinoma has declined in frequency by more than 40% over the last 3 decades but is still the eighth most common cause of cancer-related deaths in the United States.[1] It remains a difficult cancer to treat, with overall 5-year survival rates of 5% to 15% in the United States, largely due to the advanced stage of disease at the time of diagnosis.[2] The incidence of proximal gastric carcinoma is also increasing in western Europe and the United States.[3,4]

Adjuvant therapy has not improved survival in patients who have undergone a potentially curative resection in eight of nine prospective, randomized trials,[5-13] and the only trial that demonstrated a significant positive effect[8] has not been confirmed by subsequent trials. In a current adjuvant therapy trial, the addition of chemoradiation to potentially curative surgery is being compared to surgery alone. However, this trial has not yet been completed. The lack of efficacy of current multimodality treatment may be due to both imprecise staging of gastric cancer and regimens that are not sufficiently active. To demonstrate a survival benefit for the use of multimodality therapy requires either a minor treatment effect of combination therapy in a disease that is uniformly fatal, such as pancreatic cancer, or a major effect in a disease that is slightly less aggressive (eg, testicular cancer[14]). Thus, determination of the effect of adjuvant therapy in gastric cancer awaits improvements in both staging and combination therapy.

Staging

The TNM classification[15] is used to stage gastric carcinoma. This staging system (Table 1) is based largely on the recommendations of the Japanese Surgical Society,[16] which identified different combinations of pathologic T- and N-stages that have similar clinical outcomes. The N1 lymph nodes are those within 3 cm of the primary tumor, while the N2 nodes are those that are more than 3 cm from the primary tumor and include the celiac, splenic, common hepatic, and left gastric nodes. The
N3 and N4 nodes include the periportal, retropancreatic, and para-aortic nodes. Five-year survival data from Maruyama[17] demonstrate the interaction between T- and N-staging to produce substages (Table 1). In this study, all patients had N2 nodes removed, so that patients whose disease was classified as either N0 or N1 were not likely to have undocumented involvement of N2 nodes. These data also indicated that involvement of N3 or N4 nodes has the same impact on survival as does the presence of distant metastases. These findings may explain why the survival of American and European patients appears to be worse than that of Japanese patients.[2] However, survival of Western patients with early gastric cancer may be similar to that of Japanese patients if they undergo removal of nodes to ensure adequate staging.

Node Dissections

Node dissections are termed D1, D2, or D3 depending on whether only the N1 nodes, the N1 and N2 nodes, or the N1, N2, and N3 nodes are removed, respectively. In patients with stage IB gastric cancer, 5-year disease-free survival rates have ranged from 0% to 85%. [3,18-21] The worst survival was observed in the series that performed predominantly D1 node dissections. When D2 dissections were performed routinely, survival was as high as 85%. [19] Similarly, survival rates in patients with stage II or III disease treated with D2 dissections by Gall and Hermanek[22] were 70% and 30%, respectively. These survival rates compare favorably with the 66% and 48% to 56% rates observed by Abe et al[23] for the same disease stages. Rohde et al[18] also achieved similar results for stage IIIA and IIIB disease in a series in which there was a high frequency of D2 node dissections.

Thus, it is possible, with careful staging, to achieve 5-year survival rates similar to those reported by the Japanese. However, as Shiu et al[24] demonstrated, the node dissection must be one level greater than the level of pathologically involved nodes in order to improve outcome. This suggests that micrometastatic disease may be left behind in second-echelon nodes if a D1 dissection is performed, or that metastases can occur in second-level nodes without involving the first-level nodes. Either situation will obfuscate differences in survival that may be observed in adjuvant trials because the histologic status of the regional lymph nodes will not be accurately defined. Finally, recent data suggest that routine performance of a D2 node dissection may not improve overall survival of gastric cancer patients but may improve stage-specific survival.[25,26] Previous attempts to perform randomized prospective trials of node dissections have failed to identify a significant survival benefit for wider nodal dissections. For example, a study by Robertson et al[27], in which patients were randomized between perigastric D1 lymph node dissection and D3 node dissection, showed no survival benefit for extended lymphadenectomy. In fact, patients in the D1 node dissection group had a significantly improved overall survival compared with patients in the D3 node dissection group. Moreover, extended lymphadenectomy increased the morbidity of surgical resection but did not significantly increase perioperative mortality.

Another randomized prospective trial by Dent et al from South Africa[28] demonstrated that D2 dissection resulted in a much longer operating time and greater morbidity without improving overall survival. However, the number of patients randomized represented only a small subset of the overall study. This study demonstrates the problem with this type of surgical trial; namely, the failure to perform a wider specified node dissection in patients who were supposed to undergo such a dissection. This issue was also addressed in a study by Bunt et al from Leiden.[29] In a very carefully performed prospective trial, these surgeons showed that while stage-specific survival is improved in patients who undergo D2 node dissections, this is due to the Will Rogers' effect (stage migration). The overall survival of patients who had a D2 node dissection was no better than the overall survival of patients who underwent the less extensive node dissection.

Summary

The data described above suggest that the current management of gastric carcinoma requires a surgical resection. Identification of the number of lymph nodes that may be involved with cancer is an important prognosticator. Resection of involved lymph nodes is likely to decrease the morbidity of locoregional recurrence. However, this has not been adequately addressed in the studies performed to date. Nonetheless, accurate staging is an essential goal of the primary therapy of gastric carcinoma.

The limits of resection for a gastric cancer are outlined in the guidelines. Administration of adjuvant therapy, such as chemotherapy or radiation therapy, remains controversial and is the subject of
ongoing clinical research. Until a prospective, randomized trial demonstrates a significant improvement in survival, there remains little or no basis for the addition of adjuvant therapy outside the context of a clinical trial.

**References:**


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