Colorectal 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 evaluation for extent of disease, 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: Colorectal Cancer

Symptoms and Signs

Early-stage disease

- Change in frequency, consistency, and shape of bowel movements
- Bleeding: overt or occult

Advanced-stage disease

- For colon carcinoma:
  1. Colicky abdominal pain
  2. Abdominal distention, nausea, vomiting
  3. Obstruction/perforation
  4. Palpable or visible mass
  5. Weight loss
  6. Anemia

For rectal carcinoma:

1. Rectal bleeding, mucus discharge
2. Tenesmus
3. Rectal pain
4. Weight loss
5. Constipation
6. Diarrhea
7. Anemia

**Evaluation of the Symptomatic Patient**

**Work-up**

- If the patient presents with one episode of bright red blood on toilet paper, a rectal examination, proctosigmoidoscopy, and reassurance are all that are needed.
- If the patient has had more than one episode of bleeding, is older than age 30, has a family history of colon cancer, has a diagnosis of inflammatory bowel disease, has other gastrointestinal symptoms or a change in bowel habits, or is anemic, the following examinations should be performed in sequence until a diagnosis is reached:
  1. Rectal examination
  2. Proctosigmoidoscopy and/or flexible sigmoidoscopy with biopsy
  3. Colonoscopy with biopsy (preferred) or double-contrast barium enema

If the patient presents with occult bleeding or overt bleeding mixed with stools; a change in the frequency, consistency, and shape of bowel movements; any of the symptoms of advanced-stage disease, with the exception of obstruction or perforation, the following examinations should be performed in sequence until a diagnosis is reached:

  1. Rectal examination
  2. Proctosigmoidoscopy and/or flexible sigmoidoscopy with biopsy
  3. Colonoscopy with biopsy (preferred) or double-contrast barium enema

When the patient presents with intestinal obstruction:

  1. Examine for peritoneal signs.
  2. An abdominal x-ray (flat and upright) will usually reveal the site of the obstruction.
  3. A water-soluble contrast enema will clarify the nature of the obstructing lesion.

The occurrence of free intestinal perforation is usually confirmed by free air under the diaphragm, best demonstrated in an upright chest, upright abdominal, or a left decubitus abdominal x-ray.

**Appropriate timeliness of surgical referral**

- A rectal examination with stool occult blood must be part of the initial evaluation.
- Proctosigmoidoscopy and flexible sigmoidoscopy are office-based procedures that require minimal preparation, and one or both procedures can be performed at the time of the original visit.
- A colonoscopy or double-contrast barium enema requires a complete mechanical bowel preparation. It should be performed at the patient’s earliest convenience.
- If a barium enema is obtained, it must be complemented by sigmoidoscopy or at least rigid proctoscopy.

**Preoperative Evaluation for Extent of Disease**

**Physical examination**

**Chest x-ray**

**CBC and chemistry profile**

- The value of carcinoembryonic antigen is unproven.
Abdominal CT scan or liver ultrasound (both unproven)

Rectal cancer

- Pelvic CT in selected patients
- Endorectal ultrasound if treatment will be altered by better definition of the T-stage.

Colonoscopy or double-contrast barium enema

- To evaluate the rest of the colon

Role of the Surgeon in Initial Management

Evaluation of the symptomatic patient and diagnostic procedures

- Perform rigid proctosigmoidoscopy, flexible sigmoidoscopy, and colonoscopy if part of the surgeon’s standard practice.
- Perform or collaborate on the endorectal ultrasound to optimize staging information.

Surgical considerations

- Uncomplicated carcinoma:
  1. Right colon, hepatic flexure, transverse colon
  - Right or extended right colectomy

Splenic flexure, descending colon

- Left colectomy

Sigmoid, rectosigmoid, upper rectum

- Anterior resection with preservation of sympathetic nerves

Mid- and lower rectum

- Low anterior resection or coloanal procedure with preservation of sympathetic and parasympathetic nerves
- Abdominoperineal resection
- Transanal excision/fulguration/adjuvant chemoradiation

Carcinomas complicated by:

  1. Obstruction, right colon
  - Resection with anastomosis

Obstruction, left colon

- Operative diversion, then two- or three-stage resection
- Resection with stoma
- Resection, intraoperative bowel lavage, primary anastomosis

Perforation

- Resection with primary stoma; if sealed, consider resection with anastomosis.

Invasion of adjacent organs
In-continuity resection with primary anastomosis

Localized liver or lung metastasis

- Colon or upper rectum: local resection with primary anastomosis
- Lower rectum: abdominoperineal resection, transrectal fulguration, laser; evaluate for hepatic or lung resection.

Widespread liver metastasis

- Operate for obstruction or persistent bleeding not amenable to other palliative therapies.

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The incidence of colorectal carcinoma remains fairly stable, with approximately 150,000 new cases diagnosed each year. Males and females are affected equally. On the positive side, most patients are diagnosed with local or regional disease. Patients who are at increased risk for developing colorectal carcinoma are those who have had a previous carcinoma of the colon or rectum, those with one or more first-degree relatives who have had colorectal carcinoma, those with familial polyposis, and those with ulcerative colitis of more than 8 years' duration.

In patients with one or more first-degree relatives with colorectal cancer, a screening examination every 3 to 5 years is recommended. This includes either a full colonoscopy or proctoscopy and barium enema (air-contrast).

Evaluation

When evaluating a patient with suspected colorectal cancer, regardless of age, one must carefully consider the frequency of symptoms. If an episode of bleeding is the first and only one, proctoscopy in the office is probably the only evaluation needed. Although there is still much debate about the efficacy of testing for occult blood in the stool, if it is found on repeated tests, a full evaluation is in order. A full evaluation is also warranted in patients who have had multiple episodes of bleeding or who complain of a change in bowel habits, mucus discharge, repeated bleeding, rectal pain, constipation, diarrhea, anemia, or other symptoms that may indicate the presence of a colorectal carcinoma.

Rectal examination should be part of the initial evaluation in all patients, as should either proctosigmoidoscopy or flexible sigmoidoscopy. In addition to a proctoscopy or sigmoidoscopy, the proximal colon must be evaluated either by air-contrast barium enema or colonoscopy. Colonoscopy is preferred because of the variation in quality of barium enema examinations, which increases the chances of overlooking cancers or significant pathology. Also, during colonoscopy, polyps can be removed and diagnostic biopsies performed. If a barium enema is ordered, it must always be complemented by some type of visualization of the rectum, such as sigmoidoscopy or rigid proctoscopy.

In the symptomatic patient, a physical examination, complete blood count, and chemistry profile are performed. A chest x-ray is helpful in excluding obvious pulmonary metastases. An abdominal CT scan or a liver ultrasound is of no value preoperatively unless one expects to find evidence of disease that would change the surgical approach.

Ultrasound evaluation should be ordered for patients with rectal cancers in whom invasion of or adherence to adjacent structures is suspected. Such a finding may change the recommended treatment, indicating the possible need for preoperative radiation with or without concomitant chemotherapy. Endorectal ultrasound will accurately identify tumor invasion through the rectal wall. It also has been shown to be far more accurate than CT scanning in evaluating the depth of tumor penetration and will accurately determine invasion into the prostate or bladder in the male preoperatively.

Patients who present with advanced disease and bowel obstruction should be examined for peritoneal signs. Upright abdominal or chest x-rays can be used to assess whether or not there is free air under the diaphragm. In the absence of peritoneal signs, a water-soluble contrast enema
may indicate the nature and location of the obstructing lesion.
The role of the surgeon in the initial management of the patient includes the initial evaluation and the ordering of diagnostic procedures, including proctosigmoidoscopy, flexible sigmoidoscopy, and colonoscopy, if this is part of the physician's practice. Either the surgeon or the radiologist performs and evaluates the endorectal ultrasound scan.

Staging

The three main staging systems for colorectal cancer are the Dukes', TNM, and modified Astler-Coller systems. In the United States, the modified Astler-Coller system is used most commonly. The TNM system has been modified to correlate directly with the Dukes' staging system (Table 1). Astler-Coller's stage A carcinomas are cured following surgery in the vast majority of patients, with a 5-year survival rate more than 90%. Astler-Coller B2 carcinomas, ie, tumors that have penetrated through the muscular layer of the bowel wall, are associated with a somewhat lower survival rate of approximately 70% to 80%. In contrast, the cure rate of surgery alone for tumors with lymph node involvement is approximately 50%, and the 5-year survival rate of patients with metastatic disease ranges from 5% to 10%.

Treatment

Surgery for uncomplicated carcinomas is fairly straightforward. Right colon hepatic flexure and transverse colon carcinomas are treated by right or extended right hemicolectomy, and splenic flexure and descending colon carcinomas by left or extended left hemicolectomy. Cancers of the sigmoid colon, rectosigmoid, and upper rectum are treated by anterior resection with preservation of the sympathetic nerves. Carcinomas of the mid- or lower rectum may be treated by low anterior resection or coloanal anastomosis with preservation of the sympathetic and parasympathetic nerves. If the carcinoma involves the sphincter muscles or extends to within 2 cm of the dentate line, abdominoperineal resection may be necessary. For small rectal carcinomas, trans-anal excision or endocavitary radiation treatment may be suitable. Endocavitary radiation is available at several centers in the United States. Fulguration may also be utilized for low rectal carcinomas in poor-risk patients. However, the frequency with which this procedure has been used has decreased over the last 20 years. Right colon carcinomas complicated by obstruction are treated by resection and anastomosis. In patients with an obstructing left-sided lesion, a left colon resection may be performed with a diverting colostomy and Hartmann procedure or the traditional three-stage approach. Intraoperative lavage should be considered in some cases in order to perform a primary anastomosis. In the case of perforation, resection with a stoma is recommended. If the perforation is sealed, resection with primary anastomosis may be possible. With invasion of adjacent organs, in-continuity resection with primary anastomosis should be the goal.

Metastatic Disease

In the presence of localized liver or lung metastases from cancers of the colon or upper rectum, local resection with primary anastomosis should be performed, if possible. In a patient with a lower rectal carcinoma that has metastasized to the liver or lung, abdominoperineal resection, transanal excision, fulguration, or other methods of eradicating the primary tumor are employed. The patient should then be considered for elective hepatic or lung resection. In the presence of widespread liver metastases, surgery should be performed only for obstruction or persistent bleeding that is not amenable to palliative measures. In the case of advanced rectal carcinoma without distant metastasis, a multidisciplinary approach is necessary. The combination of preoperative intravenous fluorouracil (5-FU) or 5-FU and leucovorin with radiation therapy can lead to significant down-staging of the tumor with significant tumor shrinkage. This may permit a less radical, less morbid surgical procedure. In patients with widespread metastases, ie, extensive liver metastases not amenable to resection, postoperative chemotherapy should be considered. There are several national trials underway to treat these patients, and a medical oncologist should be consulted. In the patient with isolated hepatic or pulmonary metastasis resection for a cure may still be achieved. A thoracic surgeon should be consulted if pulmonary metastases are present.

Adjuvant Therapy

Effective adjuvant treatment to prevent recurrent disease in patients with colorectal carcinoma has been described by Laurie, Moertel, et al. This has led to both a significant increase in survival and a decrease in recurrence in patients with Dukes' stage C colon cancer who are treated postoperatively.
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with 5-FU and levamisole (Ergamisol). Recent data also support the use of 5-FU and leucovorin as effective adjuvant therapy.
All patients with stage B2 or C rectal carcinomas should be considered for both chemotherapy and radiation. Radiation therapy reduces the incidence of local recurrence. Intravenous chemotherapy, consisting of 5-FU combined with either levamisole or leucovorin, is used to reduce the likelihood of systemic disease.
Maintaining an acceptable quality of life is important when caring for patients with recurrent colorectal carcinoma. Some patients with local, hepatic, or pulmonary recurrence can still undergo surgery for cure. In the presence of significant obstruction or pain, some type of intervention is necessary to provide the patient with an adequate quality of life. In patients with unresectable disease, adequate pain control can be achieved with the appropriate use of opioid analgesics and/or with help of the anesthesiologist or neurosurgeon.

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