RESIDENT'S CORNER

Management of Malignant Large-Bowel Obstruction

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CASE SUMMARY: An otherwise healthy 59-year-old man presented to the emergency department with 2 weeks of narrowed stools, 5 days of obstipation, and 1 day of abdominal pain, nausea, and vomiting. Computed tomography revealed an obstructing sigmoid mass without evidence of metastatic disease, and the CEA was 1.2 ng/mL. Flexible sigmoidoscopy confirmed a circumferentially obstructing distal sigmoid neoplasm. Endoscopic stent placement was immediately followed by a firm distended abdomen. An upright radiograph obtained following the procedure demonstrated free intraperitoneal air. An emergent Hartmann procedure was performed for iatrogenic colon perforation in a patient with malignant obstruction and chronic dilation of the proximal colon.

CLINICAL QUESTIONS

- What is the preoperative workup for patients with obstructing colorectal cancer?
- What are the management considerations?

BACKGROUND

Malignant large-bowel obstruction (MLBO) occurs in 8% to 29% of patients with colorectal cancer (CRC) and accounts for 80% of emergent presentations of CRC that can compromise short- and long-term outcomes.[1] Due to the less solid composition of right-sided stool, the colon distal to the splenic flexure is the most common location (70%).[2] Patients presenting with malignant obstruction often have no prior screening for reasons that include lack of resources, refusal, or neglected symptoms. Less common etiologies of MLBO include urogynecologic and noncolorectal GI malignancies.

PRESENTATION AND DIAGNOSIS

Patients may present with an acute obstruction or gradual symptoms leading up to a complete obstruction. Symptoms of *acute* MLBO include crampy abdominal pain and distention associated with constipation and obstipation and possibly nausea and vomiting. Focal abdominal pain and tenderness may indicate peritoneal irritation due to colon wall ischemia. Sudden relief followed by progressive worsening pain may be due to perforation. *Subacute* or *chronic* MLBO is characterized by insidious change in bowel habits, weight loss, distension, and anorexia due to progressive luminal narrowing. Acute, subacute, and chronic clinical presentations lead to imaging that demonstrates bowel dilation up to the point of obstruction. Obstructing lesions amenable to endoscopic intervention are typically those that cause partial obstruction in patients who have tolerated a bowel preparation. Once the diagnosis is established by radiographs, endoscopic biopsies are generally not possible because of the obstruction. Pertinent laboratory studies include complete blood cell counts, and a metabolic panel to determine volume status and electrolyte abnormalities. Carcinoembryonic antigen level should be obtained as baseline. If not already completed and if the patient is hemodynamically stable, CT imaging of the abdomen and pelvis is highly sensitive and specific for detecting intraluminal and extrinsic obstruction and location (>90%), but is not diagnostic of malignancy. Computed tomography imaging may also show free air or fluid, suggesting perforation, and metastatic disease or carcinomatosis that may impact surgical decision making. A water-soluble contrast enema study is useful to assess the degree or exact

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location of the obstruction when needed. Endoscopy can be useful for patients with subclinical or chronic symptoms and may reveal the presence of synchronous neoplasms.[3]

MANAGEMENT

Preoperative Considerations

Initial management of patients presenting with obstructing CRC is nasogastric tube GI decompression for those with nausea or vomiting, resuscitative intravenous fluids to correct volume and metabolic derangements, and transfusions for anemia. Further management depends on the severity of the presentation, the comorbidities of the patient, and available resources. Treatment options range from self-expanding metallic stent (SEMS) placement for palliation or a bridge-to-surgery, to operative intervention with a variety of staged procedures.[4] The goals of treatment are 3-fold: (1) damage control, (2) primary resection adhering to oncologic principles, and (3) restoration of intestinal continuity, if possible.

Self-Expanding Metallic Stent

Endoscopic stenting with SEMS is an option for palliation in the setting of unresectable primary or metastatic disease not amenable to curative-intent treatment. In these cases, SEMS is designed to be the definitive treatment for the obstructive symptoms and often has the best chance of allowing the patient to proceed with palliative chemotherapy in a timely fashion. For patients with obstructing CRC that can be treated with curative intent, the goal of SEMS is to provide prompt decompression of the colon as a bridge-to-surgery, thereby avoiding the risks of emergency surgery and stomas that are not reversed in 30% to 40% of patients. In addition, SEMS as a bridge to elective surgery may have lower morbidity and stoma rates, as well as higher rates of lymph node harvest than emergent surgery.[5]

Despite the promise of SEMS as a bridge-to-surgery, overall complication rate, 30-day mortality, and oncologic outcomes are not clearly shown to be improved by SEMS in this setting. Self-expanding metallic stents require advanced endoscopic expertise and are associated with risks that include stent migration, occlusion, and perforation, a complication that occurred in this case, and that may compromise oncologic outcomes.[6] Not all lesions are anatomically amenable to stenting, including those at a sharp angulation or flexure, or those in the distal rectum that preclude deployment in normal bowel distal to the tumor. The SEMS-related perforation rate may be as high as 23%, and, in those with perforation, the tumor recurrence rate is double the rate of emergency resection.[7]

Surgical Management

Operative considerations include tumor location, presence of synchronous neoplasms, clinical urgency because of the obstruction, operative risk, and whether the proposed operation is curative or palliative. A patient with low to moderate surgical risk with one obstructing tumor may undergo primary resection and anastomosis without a diverting loop ileostomy (DLI) with low mortality and morbidity. The anastomotic leak rate is 2.2% to 6.9% without the additional burden and operative risk of DLI creation and reversal.[8] Patients with distended colon proximal to the obstruction or synchronous neoplasia may require a near-total or total colectomy with ileocolic or ileorectal anastomosis to accomplish one stage. Decision making should consider life expectancy and anastomotic leak risk, because extended resections may negatively impact quality of life. Bowel preparation is not recommended before emergency surgery nor is the lack of bowel preparation an absolute contraindication to primary anastomosis. The data on the benefit of on-table lavage is limited.

In the palliative setting, proximal diversion without resection of the primary neoplasm will relieve the obstruction with less operative risk. The goal in this setting should be to allow the patient to begin chemotherapy as soon as possible, because this is the only intervention that will prolong survival. Laparoscopic diverting loop ileostomy or transverse loop colostomy will minimize recovery, and, in unstable patients, the loop colostomy may be done under local anesthesia and sedation. A laparoscopic DLI is often technically easier to perform and may be more appealing to the patient with less odor and less prolapse, but there is debate about whether this will relieve the obstruction if the ileocecal valve is competent.

There are 2 options for 2-stage operations: the first operation involves resection of the cancer-containing segment and primary anastomosis with DLI or resection with end colostomy (Hartmann procedure). Bowel continuity is then reestablished with takedown of the ostomy. These options should be utilized at the discretion of the operating surgeon.

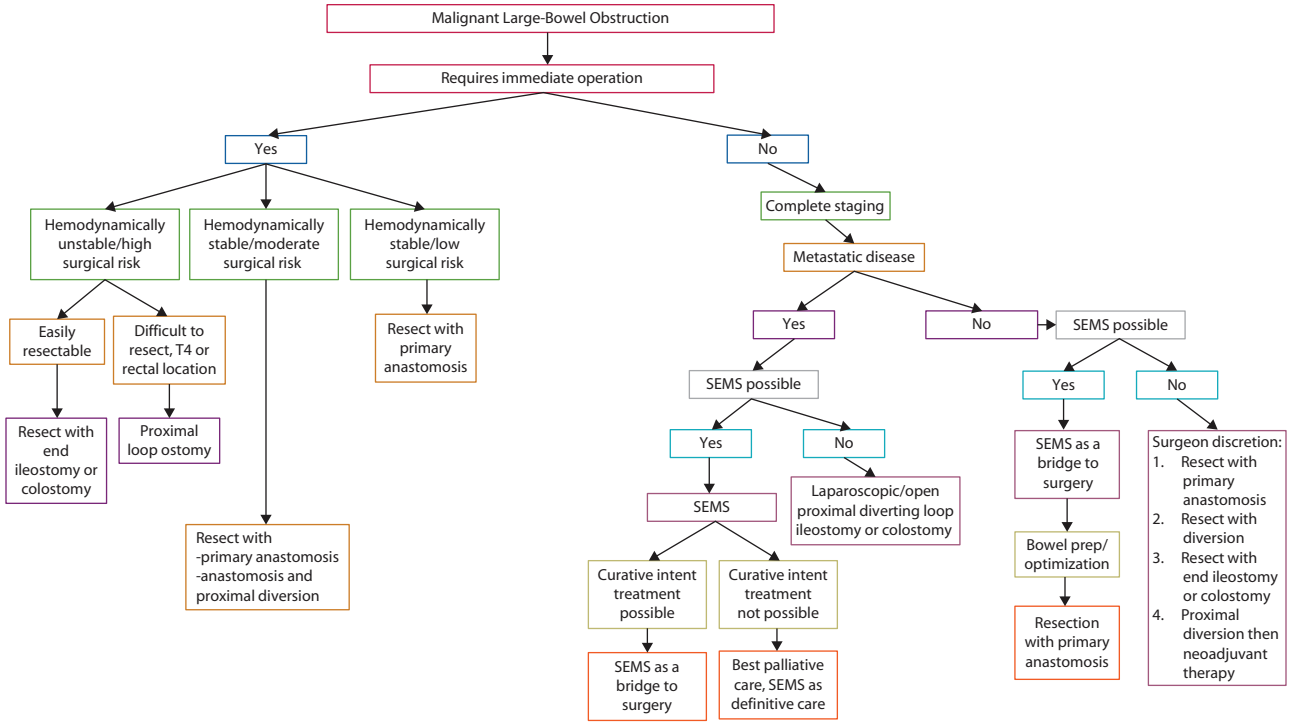
Three-stage operative options are characterized by first providing a diverting loop stoma or SEMS to address the obstruction, and allow medical optimization and adjuvant therapy, if indicated. The second stage is resection of the cancer-containing segment with proximal diversion. The third stage reestablishes intestinal continuity. These patients often have worse outcomes because they typically have severe physiologic derangements or high-risk characteristics that make them poor surgical candidates for 1- or 2-stage options. Three-stage mortality rates approximate 10% with morbidity rates close to 30%.[9]

Minimally invasive approaches in the emergent setting may be considered with possible benefits including less blood loss, smaller incisions, less perioperative pain and opioid use, earlier ambulation, and shorter length of stay.[10]

The overall prognosis for patients undergoing emergent surgery for obstructing CRC is significantly worse than for patients undergoing elective resection. Thirty-day mortality for emergency surgery is 10% to 15% compared with 1% to 2% for elective patients.[10,11] The most frequent causes of death are septic complications and multiorgan failure. In addition, oncologic outcomes for patients with obstructing CRC after emergent curative resection are associated with higher rates of local recurrence and metastatic disease, and lower 5-year cancer-specific survival (<30%).[11,12]

The algorithm for management decisions and treatment of obstructing CRC in this article is based on expert consensus opinion and current evidence-based literature. This guide to management of obstructing CRC may aid surgeons considering operative options when accounting for specific patient characteristics and surgeon experience and expertise.

EVALUATION AND TREATMENT ALGORITHM



Abbreviations used in algorithm: prep = preparation; SEMS = self-expanding metallic stent.

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