Obstructive colorectal cancer: Current treatment strategy

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Abstract

Despite the availability of colorectal cancer screening, approximately 10% of patients present with obstruction as first symptom of the disease. The aim of this review is to present the current medical literature for the management of obstructive colon cancer. For obstructive right colon cancer the treatment of choice is right colectomy with primary anastomosis. For patients with acute or subacute obstructive left cancer, treatment options include Hartmann's procedure with temporary colostomy or endoscopic metallic stent placement as a bridge to the surgery or one-stage surgical resection with primary anastomosis or diverting stoma. This review illustrates guidelines and treatment proposals in palliative and curative settings, as well as individualized decision algorithm in order to determine the optimal treatment for the patient.

Key words: *Colorectal cancer; obstruction; diagnosis; treatment*

BACKGROUND

Colorectal cancer represents the 3rd most commonly diagnosed malignancy that accounts for 1.4 million new cases per year. The incidence varies by geographic region, and in particular, is higher in Europe than in North America followed by Oceania, Latin America and Africa [1,2].

Complications of large bowel diseases account for 47% of emergencies of the gastrointestinal tract, while colorectal cancer presents as emergency in around 30% of reports, ranging from 7 to 40%. Large bowel obstruction represents almost 80% of the emergencies related to colorectal cancer, while 20% concerns perforation cases. The most common location of obstruction is the sigmoid colon with 75% of the tumors located distal to the splenic flexure [3-5].

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DIAGNOSIS

Obstruction of the large bowel can present acutely with abdominal bloating, colic-like abdominal pain and vomiting that is less frequent than in small bowel obstruction, or subacutely with changes in bowel habits and recurrent abdominal pain especially at the left lower quadrant. Absence of flatus or feces passage and abdominal distention form the most common symptoms and physical signs [6].

Abdominal examination reveals tenderness, abdominal distention and increased or absent bowel sounds. A rectal cancer may be palpable, by digital examination, as an intrinsic lesion.

Electrolyte imbalance (elevated urea nitrogen and metabolic alkalosis) may appear in laboratory tests, as a consequence of vomiting and dehydration [7,8].

Consequently, the clinical suspicion of bowel obstruction should be investigated by abdominal x-ray or abdominal US. Abdominal computed tomography scan (CT) achieves diagnostic confirmation, with higher sensitivity and specificity than abdominal ultrasound

and abdominal plain x-ray and represents the imaging test of choice in current clinical practice. Furthermore, it has the absolute advantage to provide the clinician with an optimal grade of information, regarding the staging of neoplastic disease and to identify synchronous neoplasms. A water-soluble contrast enema is an alternative, in order to identify the site and cause of obstruction in cases where a CT scan is not available [9].

The role of colonoscopy is limited; especially in the emergency setting. The purpose of direct visualization is to differentiate between the various etiologies of obstruction, while endoscopic biopsies may be considered if placement of endoscopic stent and delay of surgical resection is the treatment strategy of choice [5, 10, 11].

In patients with an incomplete colonoscopy due to an obstructing colorectal cancer, the presence of a synchronous colonic tumor must be excluded. Many population – based studies show that about 4% of these patients have synchronous colorectal tumors. Of these synchronous tumors, 35-45% is located in a different colonic segment than the index tumor and they are significantly smaller. The European Society of Gastrointestinal Endoscopy (ESGE) and European Society of Gastrointestinal and Abdominal Radiology (ESGAR) recommend performing a CT colonography after an incomplete colonoscopy, due to its high accuracy for both colorectal cancer and large polyps. In conclusion, CT colonography may lead to a change in the surgical plan based on the presence of a synchronous tumor (in 1.4% of cases), while it provides information regarding the length and quality of the colon and the ability to better localize the tumor preoperatively [12].

Regarding preoperative staging of colorectal cancer presenting as an emergency, there are no specific data. Abdominal CT scan should be suggested, while evidence to support the indication for routine CT of the thorax is weak. In conclusion the need for staging CT should never delay the decision for surgical treatment [13].

MANAGEMENT OF OBSTRUCTION OF THE LEFT COLON (FROM DISTAL TRANSVERSE COLON TO UPPER RECTUM)

Hartmann's procedure remains one of the most common procedures in emergency surgery of the left colon and is still the preferred option in patients with high surgical risk. It should be preferred over simple colostomy, since the latter appears to be associated with longer overall hospital stay and need for multiple operations without a reduction in perioperative morbidity. On the other hand, creating a stoma provides colonic decompression with minimal surgical trauma, allows intensive resuscitation and a better staging prior to definitive treatment. Loop colostomy should be reserved only for unresectable tumors, whenever the placement of self expandable metallic stents (SEMS) is not feasible, and for severely ill patients who are not fit to receive general anesthesia or be submitted to major surgical procedures [14].

The historical concept that in order to avoid anastomotic leak, a completely clear colon is necessary, has been questioned. In recent years there has been an increasing trend toward a one-stage resection for left-sided bowel obstruction, but no randomized control trials have been conducted comparing Hartmann's procedure to resection with primary anastomosis. Grade A or B evidence are not available and the choice depends on the individual surgeon's preference. Many retrospective series present rates of anastomotic dehiscence ranging from 2.2 to 12%, compared to 2 – 8% rate after elective surgery [14-17].

The main advantage of primary resection and anastomosis is the avoidance of a second major operation, which is associated with overall higher morbidity rates. Furthermore, due to possibly necessary adjuvant treatment and disease progression, a great proportion of stomas created during Hartmann's procedure for colorectal cancer are not reversed [18].

All these must be counterbalanced by the potentially catastrophic results from an anastomotic leak in a severely ill patient. A tension-free anastomosis with good blood supply remains the gold-standard in order to prevent anastomotic dehiscence. The surgeon's subspecialty and experience seem to be important factors in surgical decision. Concerning the role of a diverting stoma, there is no evidence supporting that a defunctioning stoma can reduce the incidence of anastomotic leakage, though it seems to only reduce the clinical severity of an occurred anastomotic leak [19, 20].

Subtotal colectomy is not preferred to segmental colectomy in the absence of caecal serosal tears or perforation, evidence of bowel ischemia or synchronous right colon cancer, since it does not reduce morbidity or mortality and may be associated with higher rates of postoperative diarrhea [10,21,22].

Endoscopic stent placement was introduced initially for the palliative treatment of obstructive rectal or rectosigmoid cancer. The development of self expandable metallic stents (SEMS), that can be introduced through

the scope, allowed to extend their use not only with palliative intent to avoid a stoma, but also in order to transform an emergency surgical operation into an elective procedure; concomitantly reducing morbidity, mortality, and stoma rate. In facilities with endoscopic capability, SEMS should be preferred for the palliative treatment of obstructing left colon cancers since they are associated with similar mortality and morbidity rates and shorter hospital stay.

For resectable tumors, according to the guidelines of the European Society of Gastrointestinal Endoscopy (ESGE), the recommended interval between SEMS placement and concomitant curative operation should not be more than 5-10 days [23]. Although a longer interval would allow for a more thorough preoperative assessment of the patient and even an improvement on nutritional status, this delay could increase the risk of stent-related complications. These, according to the literature, include perforation, bleeding, pain, re-obstruction etc, with perforation being the most serious, in a reported rate of 7.7% according to a recent study [24]. Although there is a concern about oncologic drawbacks with SEMS placement, a recent meta-analysis did not show any significant differences on recurrence rate25.

An increased risk of perforation in patients receiving bevacizumab was outlined by a recent meta-analysis that included 4086 patients from 86 studies. For this reason, the latest guidelines of the European Society of Gastrointestinal Endoscopy (ESGE), do not recommend the use of SEMS in patients who are under treatment with antiangiogenic agents. As a bridge to an elective surgery, SEMS seem to offer a better short-term outcome than emergency surgery, but long-term outcomes appear comparable; further studies are necessary. All the randomized control trials have shown that the use of SEMS has reduced the rate of stomas and as they allow a progressive resolution of the obstruction, they may lead to an increased possibility of an elective surgical procedure. Moreover, the odds of laparoscopic resection are increased with the use of SEMS, the so-called endo-laparoscopic approach [23,26-28].

EXTRAPERITONEAL RECTAL CANCER

Rectal cancer that is complicated by obstruction represents a locally advanced disease and has particular features that influence its management. If curative resection is intended, neoadjuvant chemoradiotherapy followed by elective surgery should be undertaken. Therefore, a stoma should be fashioned in order to decompress the bowel, and then should be followed by the appropriate oncologic treatment. The use of SEMS is not indicated for obstructive low rectal cancer cases, as it is complicated with tenesmus and chronic pain, worsening patients' quality of life. The migration of the stent or rectal perforation as a consequence of tumor necrosis and shrinkage due to chemoradiation may compromise the final oncologic results [29].

The type and location of an emergency created stoma should correspond to the type and location of the future diverting or definitive stoma. A decompressing right-sided loop transverse colostomy may be preferred to a decompressing sigmoid colostomy because it may be left in place after the planned surgical resection, it has low risk of damaging the marginal arcade, and it is fashioned easier due to the mobility of the transverse colon. A loop ileostomy could be used alternatively as a temporary decompressing stoma, only in the case of incomplete colonic obstruction with an inadequate ileocaecal valve – otherwise, colonic distension will not be resolved. A competent ileocaecal valve mandates the need for a decompressing colostomy. When an abdominoperineal resection is planned, an end sigmoid colostomy should be the decompressing stoma of choice [30-32].

MANAGEMENT OF OBSTRUCTION OF THE RIGHT COLON

The medical literature regarding the treatment of obstructive right colon cancer is less extensive compared to that of obstructive left colon cancer and this is probably related to variable anatomical reasons. The hepatic flexure is easier to mobilize compared to the splenic flexure. The surgeon is allowed to perform a primary ileocolic anastomosis without additional maneuvers, due to the mobility of the small bowel. The blood supply of an ileocolic anastomosis is always better compared to colocolic or colorectal anastomosis, whose blood supply depends on the patency of the marginal arcade [33].

Right colectomy with primary ileocolic anastomosis for obstructing right-sided colon cancer represents the option of choice, despite the fact that patients are usually older with more comorbidities and usually more advanced coloregional disease than those with left colon cancer. If intraoperatively a primary anastomosis is considered unsafe, a terminal ileostomy with colonic fistula represents a good alternative. The rate of anastomotic leakage for emergency right colectomy is acceptable, when compared to elective cases and to left colon resections with anastomosis [34].

A side-to-side, by-pass anastomosis, between terminal ileum and transverse colon may be performed, as a palliative surgical treatment, in cases of unresectable right-sided colon cancer. It is preferable to loop ileostomy that can be fashioned alternatively. Nowadays, decompressive cecostomy has been abandoned, and should be reserved only for fragile patients via percutaneous technique. Finally, the use of SEMS is not recommended for obstructive right colon cancer, as a bridge to elective surgery, and could be an option only for high risk patients [35, 36, 37].

CONCLUSION

As a conclusion, although there is an almost universal clinical consensus concerning the management of obstructive right and transverse colon cancers, the treatment strategy of obstructive left colon cancer includes many alternatives. The practice of self expandable metallic stents introduction for colonic decompression, although not something quite new in the medical armamentarium, is a useful tool as a bridge for surgery or as palliative treatment for inoperable cases or for patients with distant colon metastases. Until now, there are only a few randomized studies, comparing alternatives, with conflicting results. Based on the advantages and disadvantages of different alternatives and personal experience, clinicians should construct a decisional algorithm for the management of obstructing colon cancer.

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