



Delayed ischemic gangrene change of distal limb despite optimal decompressed colostomy constructed in obstructed sigmoid colon cancer: A case report

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decompressed colostomy would resolve acute malignant colon obstruction efficiently; impending ischemic bowel may progress with a possible irreversible peritonitis. Any patient, who undergoes a decompressed colostomy without resection of the obstructed lesion, should be monitored with leukocyte count and abdominal condition survey frequently.

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Abstract

Creating blow-hole colostomy for decompression could provide a time-saving and efficient surgical procedure for a severely debilitated case with a completely obstructed colorectal cancer. Complications are reported as prolapse, retraction, and paracolostomal abscess. However, complication with an ischemic distal limb has not been reported. We report a case of critical intra-abdominal disease after decompressed colostomy for relieving malignant sigmoid colon obstruction; a potential fatal condition should be alerted. A 76-year-old male visited our emergency department for symptoms related to obstructed sigmoid colon tumor with foul-odor vomitus containing fecal-like materials. An emergent blow-hole colostomy proximal to an obstructed sigmoid lesion was created, and resolution of complete colon obstruction was pursued. Unfortunately, extensive abdominal painful distention with board-like abdomen and sudden onset of high fever with leukocytopenia developed subsequently. Such surgical abdomen rendered a secondary laparotomy with resection of the sigmoid tumor along with an ischemic colon segment located proximally up to the previously created colostomy. Eventually, the patient had an uneventful postoperative hospital stay. In the present article, we have described an emergent condition of sudden onset of distal limb ischemia after blow-hole colostomy and concluded that despite the

INTRODUCTION

In 8-29% of patients with colorectal cancer, obstruction is the major symptom at presentation, and 85% of patients undergoing emergency colorectal surgery have complete colonic obstruction from colorectal carcinoma^[1-4]. Obstructed colorectal cancer often dictates poor cancer-related prognosis and higher mortality or morbidity, because they are more advanced and are associated with a higher incidence of distant metastases^[3,5]. One-stage surgery is believed to be the preferred procedure for an obstructive right colon lesion, and staged operation is favored for the management of malignant left-side colonic obstructions^[6]. In patients with acute complete colonic obstruction, hemodynamic instability may be debilitated by concomitant medical diseases, and cancer resection may not be possible. Establishing a decompressed colostomy is usually recommended to resolve acute obstructive symptoms prior to cancer resection^[7,8].

Obstructive colorectal cancer may be complicated with concomitant proximal ischemic colitis, which would present dramatically with gangrene and/or colonic perforation, if the acute vascular insufficiency is severe^[9]. In general, colonic decompression by way of self-expanding metal stent or decompressed colostomy could

deliver intraluminal pressure lower enough than intramural vascular perfusion pressure to avoid hypoperfusive status of the intestine proximal to obstructive lesion. It is common to manifest proximal colon distention in left-sided colorectal cancer obstruction if a competent ileocecal valve exists^[10], and impending ischemic change of proximal colon would pursue. No fatal intra-abdominal complication for constructing a blow-hole colostomy, such as a gangrenous distal limb with peritonitis, has been reported.

We here report a case of severe intra-abdominal condition despite that a functional decompressed colostomy was created, a potential fatal situation of which the surgeons should keep in mind when relieving malignant colon obstruction using blow-hole colostomy.

CASE REPORT

A 76-year-old male patient, who had extensive abdominal distention associated with no stools or flatus passage for 2 d, was referred to our emergency department for sudden onset of vomiting with foul-odor and fecal material-like contents. He had a 4-mo history of gradual body weight loss, abdominal bloat, bowel habit change with decreased stool caliber and poor appetite. Abdominal computerized topography revealed an obstructive sigmoid colon lesion with segmental wall thickening and a stenotic lumen. There was a pill within the distended bowel segment immediately proximal to the stenotic lumen of the obstructed lesion. Sigmoid colon tumor with complete bowel obstruction was diagnosed based on history and image studies. The patient had underlying chronic obstructive pulmonary disease with intermittent consumption of inhalational bronchodilator. Physical examinations reviewed a distended abdomen with silent bowel sound; there was tachypnea with central bronchospasm. Hemogram showed WBC as 11 200/ μ L with a differential count of segment form, 78.4%; band form, 1%; and lymphocyte, 10.8%. Biochemical analysis showed slightly impaired renal function (BUN: 31 mg/dL, Cr: 2.1 mg/dL), normal electrolyte concentration (Na: 136 meq/L, K: 4.0 meq/L and Cl: 103 meq/L) and suboptimal nutritional status (albumin: 2.6 g/dL). Clinically, the patient complained of serious abdominal painful fullness, fever with chills, and dyspnea. Metal stenting to the colon stenotic lesion was attempted but failed. On account of emergent release of the obstructive bowel pressure, the patient underwent a blow-hole colostomy at proximal transverse colon by mini-laparotomy, which took less than 30 min under general anesthesia. The bowel segment at the operation field was severely distended with edema, however, adequate blood perfusion was observed. There was no ascites. A large amount of liquid yellowish stools with foul smell was drained out from the proximal and distal limbs of the colostomy after it was instituted. The patient sustained a smooth operation course.

A rechecked hemogram at the 2nd post-operation day, which is routinely given to patients undergoing abdominal surgery in our institute as a baseline for follow-up purpose, found rather unremarkable data (WBC as 8 800/ μ L with slightly elevated segment form of 84%, without band form).

Gradual remission of abdominal distention with persistent bowel content drainage was observed within the first three post-operation days; the colostomy would be deemed as a normal physical function. Unfortunately, extensive abdominal painful distention with board-like abdominal appearance, and sudden onset of high fever with a body temperature up to 39.8°C were noted afterwards. At follow-up, hemogram reviewed leukocytopenia with dominant left-shifted differential count (WBC: 1 600/ μ L, segment: 38%, band: 26%). We found such a surgical abdomen that an emergent operation should be done to explore the etiology.

Emergent laparotomy was done immediately to find marked foul-odor bloody ascites. The distal limb of colostomy extending from the colostomy distally to the obstructed sigmoid colon tumor was found to have severe ischemic gangrenous change. The proximal limb of colostomy was fine. Segmental resection of the lesioned colon, comprising the sigmoid colon cancer with a security of cancer-free distal section margin and a short segment of colon proximal to previously created colostomy, was performed. The blow-hole colostomy was then converted to end-T-colostomy. The patient exerted an uneventful postoperative course and scheduled colostomy reversal was undertaken 6 mo later.

DISCUSSION

Fine construction of a transverse colostomy by drawing out of a loop of the bowel and securing the mesentery to the skin to decompress obstructions from carcinoma of the rectum was first described in 1797^[11]. Intestinal obstruction from malignancy within the colorectum would carry catastrophic complications of perforation, electrolyte imbalance, bowel ischemia, and sepsis caused by bacterial translocation^[12]. Moreover, cancer patients, especially those with bowel obstruction, are usually malnourished, older, and dehydrated and may have coexisting disease at the time of presentation^[12-14]. Therefore, perioperative management of malignant bowel obstruction, inclusive of surgical planning option to minimize morbidity and mortality is a critical issue.

There are different strategies to decompress colon obstruction with different outcomes, including (1) non-surgical approach as balloon dilation, placement of a plastic non-expandable rectal tube, cryosurgical destruction, electrocoagulation, and laser ablation^[15,16] and (2) surgical approach as blow-hole enterostomy, or resection of tumor-bearing colorectal segment with or without colostomy^[2,4-8]. Because of the failure of self-expanding metal stent placement in this patient due to severe colon angulations and rather stenotic colon lumen, we recommended a blow-hole proximal transverse colostomy as an emergent procedure for this debilitated patient with severe coexisting medical condition.

To evaluate the surgical planning in malignant large bowel obstruction, it is widely accepted that for malignant colon obstruction from the right colon cancer, resection (right hemicolectomy) should be performed with anastomosis in one stage^[5,17,18]. Nevertheless, for obstruction from cancer of left colon or rectum, two types

of surgical approach could be used: (1) primary resection and primary anastomosis or Hartmann's procedure with synchronous treatment of carcinoma and obstruction, and (2) staged resection with the treatment of the obstruction prior to resection^[4]. Some surgeons prefer staged resection with fast resolution of the obstruction, and a delayed radical surgery. The main benefits of staged operation are less surgical trauma which is significant in patients whose general condition is precarious, and reduction of the risk of contamination due to unprepared bowel^[19]. Poor physical status as this patient, construction of a blow-hole colostomy in a minimal wound (fit to colostomy size) with less time-consumption (less than 30 min) could offer an anticipated decompression effect of the obstruction and prevent further surgical trauma to facilitate scheduled radical resection in the future.

Ischemic episode would take place in malignant large bowel obstruction and present dramatically with gangrene and/or colonic perforation if acute vascular insufficiency is severe^[9]. It is postulated that colon distention from malignant colon obstruction reduces the blood supply to the bowel wall and enhances the development of ischemia^[10]. Creation of a decompressed colostomy in malignant colon obstruction should rescue impending elevated intra-luminal pressure and possible development of the proximal colitis. But in our case, the cause of gangrenous distal limb might be due to, first, the development of tumor thrombi or septic emboli in the territory of vessels supplying the distal colon, or second, an underlying undetected ischemic change proximal to the cancerous mass which was not observed for the initial limited surgical field by mini-laparotomy. Clinically, the patient sustained sudden onset of high fever, peritoneal signs, and leukocytopenia with dominant left-shifted differential count on the 4th post-operation day, which was in the opposite direction to recovering status. Although, toxic signs presented by this patient alerted us of his deteriorated status, ischemic gangrene change of the distal limb between created stoma and obstructed sigmoid colon cancer was beyond our expectation. Nevertheless, bloody mucoid stools, which are usually in consistent with the clinical features of ischemic colitis, was not identified from the distal stoma ahead of the time in which toxic signs presented.

In conclusion, impending ischemic bowel may progress with a catastrophic peritonitis despite construction of blow-hole colostomy, which rescued malignant sigmoid colon obstruction. Consequently, it is important to monitor leukocyte count change and survey meticulously

abdominal condition for patients with decompressed colostomy created without resection of the obstructed lesion.

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