



(CASE REPORT)



Surgical management for a malignant bowel obstruction: Case report

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Abstract

Intestinal obstruction is an extremely important condition in the hospital setting due to its urgent management. Approximately 85% of partial obstructions are resolved with conservative treatment, while approximately 85% of complete obstructions require surgery. It is essential for us, healthcare personnel, to be trained and prepared, so this clinical case presentation will discuss the general aspects and surgical management for a malignant bowel obstruction.

Keywords: Malignant bowel obstruction; Intestinal obstruction; Cancer; Colorectal cancer

1. Introduction

Intestinal obstruction may be functional (due to abnormal intestinal physiology) or mechanical (due to extrinsic or intrinsic [mural or intraluminal] compression) and may be partial or complete. Mechanical obstruction of the large intestine may be of malignant or benign etiology. Large bowel obstruction is caused by cancer in 60% of cases. Obstruction complicates 8–29% of colorectal cancers and accounts for 80% of emergency presentations for colorectal cancer. Extracolonic malignancies, such as pancreatic cancer, ovarian cancer, and lymphoma, cause approximately 10% of large bowel obstructions.

2. Case Presentation

This is a 47-year-old male who denies allergies, surgeries, transfusions, previous conditions, trauma, or contagious infections. He also denies smoking, alcoholism and other drug addictions. Pathological diagnoses include high blood pressure and diabetes since 2012 without regular treatment.

04/24/22: The patient began experiencing constipation 9 days ago and self-medicated with a laxative (castor oil) without improvement. Two days later, abdominal pain increased and she visited a private physician who prescribed enemas, with partial improvement. She subsequently attended the Mexican Social Security Institute (IMSS) where she was treated with intravenous fluids and was discharged 24 hours later. However, she continued to experience abdominal pain and distension, and vomiting, which she described as containing fecaloid. He also suffered from weakness and weakness. During his stay in the emergency room abdominal pain persists, at a lower intensity, with no evidence of peritoneal irritation. Abdominal distension slightly decreased after NGT placement. Digital rectal examination revealed a rectal ampulla free of fecal matter, with no evident bleeding, and no palpable masses and the patient was admitted with a diagnosis of intestinal obstruction.:

- **Contrast-enhanced CT scan of the abdomen:** Ileal dilation with formation of air-fluid levels and peripheral gas in a pearl necklace pattern is identified, colonic dilation with abundant gas and debris throughout the

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colonic framework. The site of obstruction cannot be identified at the time of the study. Diagnostic impression: Image suggestive of intestinal pseudo-occlusion of undetermined etiology, abundant debris in the colon, and scant free fluid in the abdominal cavity.

04/25/22: **Hospitalization:** Pain and distension persist, at a lower intensity, NG tube with 100cc of fecaloid material output, pending bowel movements, no gas channeling. Coprological: Entamoeba histolytica cysts are observed.

2.1. Cabinet

- **Comparative abdominal CT:** Remission of previous gastric dilatation. Mild to moderate dilation of loops of small intestine and colon, with residual material, secondary to obstruction by an infiltrative tumor-like lesion measuring 2.92 cm in length with a wall thickness of 0.7 to 1.4 cm, circumferentially at a distance of approximately 25-30 cm from the anal verge, allowing the scarce, threadlike, partial retrograde passage of contrast medium through its lumen, producing the "bitten apple core sign." There is no extravasation of contrast medium into the peritoneum. Small amounts of free perihepatic and perivesical fluid are present. Diagnostic impression: Tumor-like lesion in the sigmoid colon causing intestinal occlusion, with residual material retained in the colon.
- He is scheduled for LAPE with sigmoidectomy. Partial colectomy with end colostomy and closure of the distal segment (Hartmann-type procedure), and ceftriaxone and metronidazole are added to the care plan.

2.2. Operating Room

2.2.1. Post-operative note

- **Post-operative diagnosis:** intestinal occlusion due to malignant tumor of the sigmoid.
- **Operation performed:** Sigmoid and descending colectomy, end colostomy with Hartmann pouch, omentectomy, cavity lavage, CVC placement.
- **Description:** Patient under general anesthesia, asepsis and antisepsis of the abdomen with a supra-umbilical midline incision, with dissection to the cavity, approximately 1000cc of serous inflammatory fluid is aspirated from the cavity, subsequently a tumor is located in the distal portion of the sigmoid, the mesocolon is released up to 10cm of tumor in the distal region, subsequently the mesosigmoid is released, which is very dilated by the occlusion, with section of the sigmoid at this level with a TA 90 stapler, subsequently the colon and small intestine are drained in an antegrade manner with the output of approximately 2800g of pasty fecal matter. During the procedure there is a laceration of the serosa in 2 portions of the small intestine that is repaired with 3-0 silk. A colon viability check was performed, which showed signs of ischemia at the sigmoid colon, and it was decided to increase the resection level to half of the descending colon, with partial omentectomy. The cavity was lavaged, and a 24-fr Blake drain was placed in the pelvic space. The colostomy was then exteriorized on the left flank, with loop fixation to the aponeurosis and mucosal fixation to the skin with 2-0 silk. The cavity was closed with 1-gauge Prolene in the aponeurosis, TSC with 2-0 chromic, and skin with steel staples.
- **Transqx findings:** Sigmoid tumor measuring 10cm x 10cm with occlusion at the same level, dilatation of the colon and small intestine, approximately 2800g of fecal matter, approximately 1000cc of inflammatory fluid in the cavity.
- **Transqx bleeding:** 100cc
- **Biopsies:** tumor of the sigmoid and omental segment.



Figure 1 Dilation of the colon and small intestine seen during surgery

- **ICU:** A patient is received from the operating room with approximate fluid losses of 4000 mL, with tachycardia (HR 126) and hyperlactatemia (Lact 3.2), without alteration of skin color or capillary refill, mild non-hemorrhagic hypovolemic shock is determined.

04/28/22: **ICU:** asymptomatic, tolerates clear liquid diet, uresis due to SF, colostomy bowel movements. Wound covered and clean, without abdominal alarm data, functional colostomy. Antimicrobials are discontinued, a clear liquid diet is prescribed, continued P replacement, and transfer to a regular hospitalization room is indicated.

02/05/22: **LABS**

- **Histopathology of sigmoid:** Moderately differentiated adenocarcinoma invasive of all muscular and serosa layers, with a 3 mm invasion of the pericolic fat of the sigmoid colon. Metastasis in 2/9 pericolic lymph nodes.
- **Histopathology of omental segment:** congestive changes.
- **Consultation note (medical oncology):** Request a run-off MRI once the staples have been removed from the surgical wound, as well as immunohistochemical studies. Schedule an appointment in 4 weeks for outpatient treatment.
- **Care plan:** home discharge is indicated.

06/15/22: **Outpatient consultation:**

- **Medical Oncology: Immunohistochemistry and MRI Review RUN OFF: HER2/neu:** negative. KRAS, NRAS, BRAF: negative for mutations. MRI: Retroperitoneum with no occupying lesions. Colon with gas and fecal matter, colostomy identified on the left flank, sigmoid not visible. Fat planes are preserved. There is no free fluid in the cavity.
- **Care plan:** Capecitabine 1000 mg every 12 hours for 14 days, then 7 days off, then restart capecitabine 1000 mg every 12 hours for another 14 days. Schedule follow-up lab appointment.

3. Discussion

Patients with a malignant process require immediate surgical intervention if they are at risk of perforation, are clinically unstable (tachycardia, hypotension, acidosis), or are very symptomatic. Unstable or high-risk surgical patients should undergo bowel diversion with a loop stoma if the lesion is bulging or the anatomy does not allow for adequate resection. (1)

Two traditional procedures for colonic decompression are the loop stoma and the blow-out stoma and can be performed openly, laparoscopically, or even with local anesthesia in unstable patients. On the other hand, even unstable patients can undergo colon resection with proximal stoma if the characteristics of the lesion allow it. (3)

Stable patients with low-moderate surgical risk should undergo resection of the obstructive lesion and the dilated proximal colon, with or without a stoma. (3)

Creating a stoma requires a phased operation. The first procedure resects the lesion and anastomoses it with a loop stoma or end colostomy. The second procedure restores intestinal transit. Otherwise, single-stage operations are performed in patients with low-to-moderate surgical risk, a single obstructing lesion, longer life expectancy, or reluctance to have a stoma created. (3)

Two-stage operations are appropriate if the risk of anastomotic leak is high. The disadvantage of these types of operations is that the stoma reversal procedure is associated with an increased number of complications. In addition, 40% of patients do not undergo this procedure and report a poorer quality of life compared to patients without a stoma (4).

3.1. Hartmann procedure

It is a procedure that involves the resection of the sigmoid colon and rectum with the creation of a colostomy and closure of the rectal stump (Hartmann's pouch).

In an emergency setting, it is indicated to manage obstructive processes, perforation, or hemorrhage. As an elective procedure, it is indicated for healing, palliative treatment, and anticipation of impending obstruction. Less frequently,

it is indicated in cases of ischemia, volvulus, or iatrogenic perforation during a colonoscopy, or due to a foreign body, anastomotic leak, rectal prolapse, colitis, etc.

It is also indicated in unstable patients or those at high surgical risk in whom a primary anastomosis cannot be safely performed. (3)

3.2. Technique

- With the patient in the supine position, a midline incision is made, retracting the umbilicus laterally to make a straight cut.
- The fascia is then dissected with a scalpel or electrocautery.
- Once the peritoneal cavity is accessed, the patient is placed in a gentle Trendelenburg position to facilitate exposure of the pelvic structures.
- The small intestine is retracted upward to keep it out of the plane and the sigmoid colon and descending colon are mobilized along Toldt's line.
- It's important to identify the ureter at this point, and the gonadal vessels can be a landmark, as the ureter is usually located slightly medial and deep to them. To confirm that the structure is the ureter, gently press it with forceps and observe peristalsis.
- Once the sigmoid and descending colon are fully mobilized, the proximal bowel transection point is selected, which is usually at the junction of the descending and sigmoid colon, identified by visualization of the ascending branch of the left colic artery.
- The descending colon is divided with a linear-cutting stapler.
- The rectum is identified and differentiated by the loss of Taenia coli and is similarly divided with a stapler.
- The next step is to create the colostomy. To do this, the proximal intestine must be exposed 2-3 cm above the skin, without tension. Exposing more than 3 cm is not recommended, as this can result in a redundant stoma and an increased risk of prolapse or parastomal hernia.
- The stoma is created by placing one Kocher clamp on the fascia and another on the skin at the desired colostomy site, then applying pressure to the parietal peritoneum and making a 3cm disc-shaped cut in the skin.
- The subcutaneous fat is then dissected to expose the aponeurosis, then the muscle, until the peritoneum is reached.
- The peritoneum is opened with electrocautery and the stapled proximal intestine is held with a Babcock clamp and pulled through the abdominal wall.
- The staple line is cut from the stoma and 4 sutures are placed (superior, inferior, lateral, medial), which should cover the entire thickness of the intestine and the entire thickness of the skin. (3)

3.3. Hartmann reversal

Reversal of the Hartmann procedure for diverticulitis with creation of a colorectal anastomosis is a common reoperation performed by many general and colorectal surgeons that can occasionally involve considerable pelvic dissection. Several critical steps are required to create a secure anastomosis and minimize the risk of recurrent diverticulitis. To ensure the latter, the entire high-pressure zone of the sigmoid and descending colon must be respected, and the anastomosis with the true rectum must be constructed. The proximal extent of the resection is defined by careful palpation of the left colon wall, with the goal of removing the entire segment that exhibits muscular hypertrophy and wall thickening. The distal incision line should be in the upper rectum, as evidenced by the disappearance or coalescence of the tenia coli. Failure to include the upper rectum in the resection will double the risk of recurrent diverticulitis. As mentioned above, the surgeon must also be careful not to lose the "hidden" adherent sigmoid colon in a very difficult pelvis and thus construct an anastomosis between the descending colon and the middle sigmoid colon. This scenario is not uncommon and can lead to anastomotic leak due to poor blood supply, continued colonic obstruction, or pelvic sepsis if the area of stricture or previous perforation in the distal sigmoid colon is not resected. (3)

3.4. Morbidity and mortality

In the immediate post-surgical period, morbidity and mortality are similar for patients with benign and malignant processes, although for obvious reasons, long-term mortality is worse for malignant obstruction.(4)

Patients undergoing emergency surgery have a 30-day mortality rate of 10-15% compared to 1-2% in those undergoing elective surgery, with sepsis and multiple organ failure being the leading causes.

Predictive factors for unfavorable outcome include the patient's physiological status, comorbidities, and in patients with malignant processes, tumor histology. (5)

Because patients undergo surgery under less-than-ideal conditions, it's not uncommon for half of them to experience complications. Surgical site infection and stoma complications (pain, irritation, stricture, prolapse, retraction, hernia, and necrosis) occur in up to 44% of patients. (6)

4. Conclusion

Because patients undergo surgery under less-than-ideal conditions, it's not uncommon for half of them to experience complications. Ideally, patients should be prepared with fluid and electrolyte replacement and decompression of the digestive tract so they can enter the operating room in optimal condition, thereby further avoiding potential complications.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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