

Sigmoid volvulus and descending colon adenocarcinoma, a double cause of intestinal obstruction: a case report

Vólvulo del sigmoide y adenocarcinoma de colon descendente, una doble causa de obstrucción intestinal: un reporte de caso

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Abstract

Large bowel obstruction is caused by colorectal cancer, diverticular disease or volvulus. The latter is caused by rotation of the intestinal loop on its own mesenteric axis, and occurs in the sigmoid colon (80%) and in the cecum (15-20%). Its management includes devolution by colonoscopy or surgery. Malignant bowel obstruction is the initial presentation in 7-29% of colorectal cancer, and its optimal treatment is controversial. We describe a clinical case of a double obstructive lesion and its surgical approach, an unusual presentation that poses a diagnostic and medical-surgical management challenge.

Keywords: Sigmoid volvulus. Sigmoid cancer. Colonic obstruction.

Resumen

La obstrucción del intestino grueso es causada por cáncer colorrectal, enfermedad diverticular o vólvulo. Este último, por la rotación del asa intestinal sobre su propio eje mesentérico, y se da en el colon sigmoide (80%) y en el ciego (15-20%). Su manejo incluye devolución por colonoscopia o quirúrgica. La obstrucción intestinal maligna es la presentación inicial en el 7-29% del cáncer colorrectal, y su tratamiento óptimo es controvertido. Describimos un caso clínico de una doble lesión obstructiva y su abordaje quirúrgico; una presentación inusual que conlleva un reto diagnóstico y de manejo médico quirúrgico.

Palabras clave: Vólvulo sigmoideo. Cáncer de sigmoide. Obstrucción colónica.

Introduction

Colon volvulus is the third leading cause of intestinal obstruction worldwide and occurs in 2 main locations: the sigmoid colon, accounting for 80% of cases, and the cecum, accounting for 15% up to 20% of cases¹. On the other hand, malignant bowel obstruction occurs in 8% up to 29% of patients with colorectal cancer² and can be its presenting feature in up to 80%

of cases, with distal colon neoplasms (below the splenic flexure) being the most common presentation (70%)². However, a volvulus associated with an unrelated tumor lesion is an unusual presentation that poses a diagnostic and surgical management challenge for these patients.

We present the case of a patient with bowel obstruction, with an intraoperative finding of a neoplastic lesion in the descending colon, associated with a

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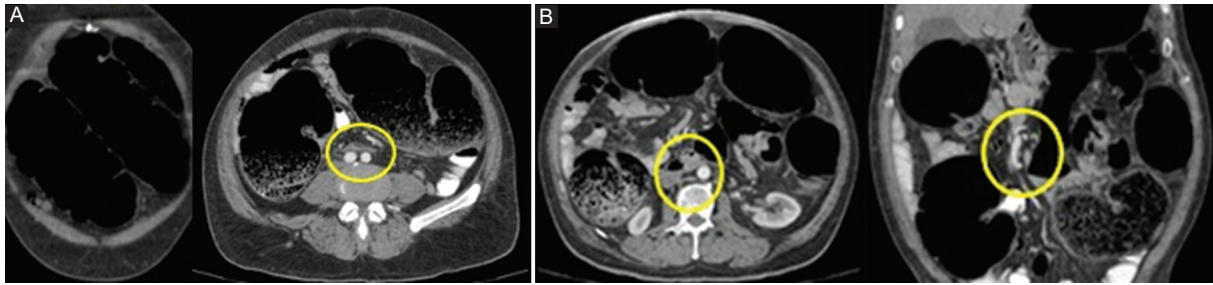


Figure 1. Computed tomography of the abdomen. **A:** transition zone at the junction of the descending colon and sigmoid. **B:** focal, circumferential thickening of a short segment of the descending colon forming an endoluminal mass.

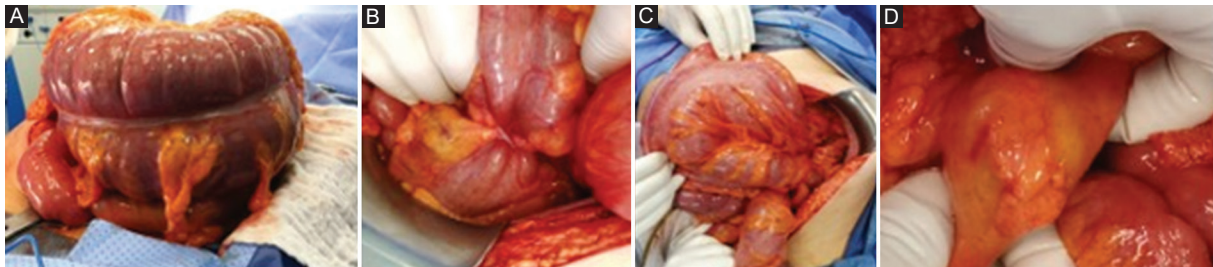


Figure 2. Intraoperative findings. **A:** critical dilation of the transverse colon. **B:** 100% stenosing napkin-ring tumor in the descending colon. **C:** sigmoid colon volvulus with dilation. **D:** lymph node conglomerate at the root of mesocolon.

sigmoid volvulus, causing a secondary obstructive process. In this case, the descending colon tumor was not the cause of volvulation.

Case report

A 63-year-old man presented with a 5-day history of abdominal distension, absence of bowel movements, and flatus. Physical examination revealed the presence of a distended abdomen with decreased bowel sounds, tympanic to percussion, and no relevant findings or evidence of bleeding on rectal examination.

Initial studies showed mild leukocytosis with neutrophilia, and abdominal x-rays revealed significant distention of large bowel loops without distal gas, prompting a contrast-enhanced abdominal CT scan, which revealed a coffee bean sign, and a transition zone at the junction of the descending colon and sigmoid colon with retractive changes suggestive of possible neoplastic involvement, causing retrograde dilatation of large bowel loops, reaching a diameter of up to 95 mm in the transverse colon and 147 mm in the cecum, with competence of the ileocecal valve (Fig. 1).

The patient was taken for exploratory laparotomy, which revealed critical dilatation of the transverse

colon without evidence of ischemia of the bowel wall. A napkin-ring stenosing tumor was found in the descending colon, causing 100% obstruction and retrograde dilation of the transverse, ascending, and cecal colon. At sigmoid level, a volvulus with twisting and dilatation was observed. Carcinomatosis foci and Blummer's shelf metastatic foci were noted in the pouch of Douglas and the mesentery of the ascending colon, with a 3 cm × 4 cm lymph node mass (Fig. 2).

Sigmoid colon devolvulation with mesosigmoidoplasty, decompression of the transverse colon with a Nelaton tube, decompression of the rectum with an endorectal tube, and loop colostomy of the transverse colon were performed. The patient had a satisfactory postoperative recovery with early discharge on day 4, without readmission or complications. Histopathological study revealed the presence of fibroadipose tissue with moderately differentiated metastatic adenocarcinoma of the colon, with non-mutated KRAS and NRAS.

Discussion

In the case of a double obstructive lesion, as evidenced in our case report (neoplastic obstruction plus sigmoid volvulus), decision-making is crucial for both

Table 1. Cases of neoplastic lesions with concomitant obstructive process

Authors	Year	Patient age (years)	Sex	Volvulus location	Tumor location	Surgical management
Lee et al. ³	2015	50	Female	Sigmoid	Rectum	Ileostomy and anterior resection of rectum
Mortensen and Hoffman ⁴	1979	36	Female	Transverse	Hemartoma	Decompression, devolvulation, and colopexy
Meyers et al. ⁵	1972	54	Male	Cecum	Left colon carcinoma	Cecal volvulus detorsion and transverse colostomy
Figiel and Figiel ⁶	1953	80	Female	Ascending colon	Splenic flexure carcinoma	Cecectomy
Wecksell and Gordon ⁷	1979	80	Male	Ascending colon	Transverse adenocarcinoma	Devolvulation, right hemicolectomy, and primary anastomosis
Aras et al. ⁸	2015	80	Male	Sigmoid colon	Sigmoid colon cancer	Total colectomy and Hartmann's procedure

recovery and the patient's clinical and oncological prognosis. Currently, few cases of neoplastic lesions occurring concomitantly with an obstructive process are known, which could guide health care professionals in their management³⁻⁸ (Table 1).

The most common site of colonic volvulus is the sigmoid, accounting for 50% up to 90% of colonic volvulus cases. Endoscopic devolvulation is the preferred management in cases of hemodynamic stability and absence of peritonitis, as it allows the evaluation of mucosal viability and resolution of the malrotation within the same procedure. However, the risk of recurrent volvulus, which occurs in up to 67% of cases, must be considered⁹. Therefore, definitive management with colectomy with or without anastomosis during the same hospitalization is advised. In 2018, Dolejs et al.⁹ conducted a comparative analysis between colectomy with primary anastomosis without proximal diversion and colectomy with terminal colostomy (Hartmann's procedure), finding similar outcomes in terms of morbidity and mortality between the 2 procedures.

Despite this, Hartmann's colostomy remains one of the preferred management options regardless of the clinical scenario. Of note that in cases of hemodynamic instability or signs of peritonitis, the management must undoubtedly be surgical, with a sigmoidectomy following the acute phase of the volvulus, as recommended by the American Society of Colon and Rectal Surgeons¹⁰, to prevent recurrence. If surgical resection is not possible, mesosigmoidoplasty or sigmoidopexy is recommended.

Nevertheless, the most effective approach for surgical treatment of sigmoid volvulus has long been a matter of controversy. With the advent of laparoscopy, minimally

invasive surgery has gained ground due to its short- and mid-term benefits. This was demonstrated by Lee et al.¹⁰, who compared postoperative outcomes between laparoscopic and open surgery in patients with sigmoid volvulus in elective or emergency surgery, showing a higher rate of postoperative complications, greater need for a stoma, and longer hospital stay in the emergency open surgery approach compared to elective laparoscopic surgery after sigmoid decompression.

Malignant bowel obstructions are often the initial presentation of colorectal cancer in 8% up to 29% of patients^{2,11}, representing a common cause of emergency surgery. The most common site of obstruction is the sigmoid colon and typically presents in advanced stages of the disease.

Conventional treatment for malignant bowel obstruction has been resective surgery, adhering to oncological principles and based on 3 therapeutic principles: resection of the tumor lesion with or without primary anastomosis, proximal colostomy, and subsequent stoma closure. Various surgical options are available, including primary resection and anastomosis with or without protective ileostomy, right, left, near-total, or total colectomy with ileocolic or ileorectal anastomosis, and palliative management with colostomy with or without resection of the lesion.

In cases in which colostomy is chosen, the Hartmann technique is the most widely used, allowing resection of the affected segment without primary anastomosis, with a shorter operative time in the context of emergency surgery and avoiding the morbidity associated with anastomosis. However, of note that closure requires a second surgical stage, with a morbidity rate of 5% up to 57% and mortality from 0% up

to 34%. Due to comorbidity (severe adhesion syndrome or progression of oncological disease), only 60% achieve adequate closure.

In the last 2 decades, endoscopic decompression with stenting for palliation or as a bridge therapy to surgery with curative intent has been proposed to convert emergency into elective surgery, significantly reducing the risk of adverse events and need for a temporary stoma^{9,12-15}.

Of note that after stenting, the initiation of chemotherapy should be evaluated to reduce the risk of tumor growth. Cases must be carefully selected due to the long-term risk of perforation and stent migration^{13,14}.

Transanal drainage tubes are a therapeutic option in cases of malignant bowel obstruction. They have demonstrated a success rate of up to 80%, with a serious complication rate, such as perforation, under 5%¹⁶. A meta-analysis conducted by Xu et al.¹⁶ compared the effects of metal stents and endorectal tubes in relieving obstructive symptoms in patients with colorectal cancer obstruction and found no statistically significant difference in terms of technical success. However, higher clinical success and a lower complication rate were observed with the use of metal stents.

Conclusions

The choice of surgical management for malignant obstruction depends on the location of the lesion, its characteristics, the presence of synchronous neoplasms, the clinical urgency, the patient's hemodynamic status, and the proposed curative or palliative management, which can be challenging for the surgeon. In our patient, a surgical approach was considered via laparotomy, and also given the intraoperative findings of critical large bowel distension with a risk of bowel perforation, associated with a double obstructive lesion, one of which was an advanced-stage neoplastic lesion due to peritoneal involvement, a palliative approach was performed. This included decompression of the colon with a Nelaton tube and endorectal tube, mesosigmoidoplasty for volvulus management, and transverse loop colostomy without resection of the tumor lesion to reduce surgical morbidity and allow the patient to undergo complementary oncological treatment. This approach allowed the patient to recover within 48 hours, with early hospital discharge and rapid initiation of oncological management.

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Conflicts of interest

None declared.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

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