

INTESTINAL OBSTRUCTION IN PREGNANCY: A RARE CASE OF ACUTE ABDOMEN

LUIZ OTÁVIO VILELA REBOUÇAS¹, FABIANO ALVES SQUEFF²

1- Médico residente de Cirurgia Geral da Universidade Evangélica de Goiás (UNIEVANGÉLICA) - Anápolis, GO, Brazil.

2- Médico preceptor da Residência de Cirurgia Geral Universidade Evangélica de Goiás (UNIEVANGÉLICA) - Anápolis, GO, Brazil.

ABSTRACT

Transverse colon volvulus is a rare, serious cause of acute obstructive abdomen. During pregnancy, this pathology becomes even less prevalent. Bowel obstruction syndrome is defined by a set of signs and symptoms that commonly manifest as intense abdominal pain, cessation of stool elimination and flatus, and has several non-traumatic causes, including volvulus. However, due to pregnancy, this condition may present a variability or overlap of symptoms with early worsening, sometimes due to limitations related to diagnostic imaging tests during pregnancy and, consequently, late diagnosis. In addition, this diversity of symptoms and high incidence of abdominal pain in the general population make its diagnosis difficult and becomes an important factor for hospital admission and, in severe cases, evolves with high morbidity and mortality. Due to its pathophysiology, there is a high risk of progression to complications due to progressive colon ischemia, especially without adequate intervention, therefore, early diagnosis and the appropriate therapeutic approach, whether colonoscopy or surgery, are imperative. Thus, this study demonstrates a clinical case of obstructive acute abdomen due to volvulus of the transverse colon during pregnancy and the therapies employed, from decompression by colonoscopy to a subsequent surgical approach requiring intestinal resection.

Keywords: Acute abdomen in pregnancy, Intestinal obstruction, Surgical complications in pregnancy, Partial colectomy, Intestinal anastomosis.

INTRODUCTION

Obesity The volvulus of the transverse colon is a rare etiology of intestinal obstruction caused by twisting of the colon. Intestinal obstruction is a condition with various clinical presentations, ranging from abdominal pain associated with the cessation of fecal and gas elimination, nausea, and vomiting, to simple and mild alterations in bowel habits. It can be classified according to topography (high or low), causative factor (mechanical or functional), and etiology, such

as adhesions, neoplasms, foreign bodies, inflammation, and even torsion — colonic volvulus. The term volvulus derives from the Latin *volvere*, meaning “to twist.” It was first described by Rokitsky in 1836.¹ Since then, it has been recognized as an important cause of intestinal obstruction, with particular characteristics compared to other etiologies.

Colonic volvulus is a less common cause of mechanical intestinal obstruction, accounting for less than 5% of cases. This type of obstruction involves luminal narrowing, creating a closed-loop mechanism and progressive intraluminal distension. Moreover, twisting of the mesenteric vessels leads to reduced perfusion of the affected intestinal segments, and when combined with marked segmental distension, it accelerates colonic ischemia. Consequently, there is a high risk of intestinal perforation and subsequent clinical deterioration due to contamination of the peritoneal cavity.

Anatomically, from the cecum to the sigmoid colon, there are regions more prone to twisting due to factors such as segmental mobility, long mesentery, chronic constipation, previous abdominal surgeries, aging, and weight loss.² Thus, Gingold³ identifies colonic volvulus as the third leading cause of large bowel obstruction, representing 10–15% of all colonic obstructions, while Ballantyne⁴ estimates a prevalence ranging from 1 to 20% of all intestinal obstructions. Furthermore, Halabi⁵, in a nine-year study, reported 63,749 cases of colonic volvulus among 3,351,152 intestinal obstructions, with a stable incidence of sigmoid volvulus and a 5% annual increase in cecal volvulus; distribution: sigmoid 60–75%, cecum 25–40%, transverse colon 1–4%, and splenic flexure 1%.

On the other hand, during pregnancy, due to the marked hormonal increase in progesterone produced by the placenta—essential for fetal development—systemic repercussions occur in the maternal organism, such as decreased gastrointestinal motility caused by mechanical alterations in the abdomen, increased uterine volume, and relaxation of smooth muscle resulting from high progesterone levels. Consequently, pregnant women tend to experience greater constipation compared to the general population². In addition, uterine growth causes distortion and displacement of the colon, which can favor constipation, torsion, and obstruction.

The clinical presentation of acute obstructive abdomen varies greatly depending on the onset of symptoms, which are determined by the site and whether the luminal occlusion is partial or complete. In general, there is a change in bowel habits, ranging from slowed transit to complete cessation of gas and fecal elimination. This may be accompanied by abdominal distension, which may or may not be associated with epigastric pain, nausea, and vomiting. Clinical deterioration occurs mainly due to dehydration secondary to vomiting, prolonged fasting caused by anorexia and nausea, and associated electrolyte imbalances. Partial obstructions are candidates for non-operative management, including hydration, analgesia, correction of electrolyte disturbances, gastric decompression if emesis is present, and, in some cases of colonic volvulus, decompression through colonoscopy or semirigid tubes—provided the patient’s clinical condition is stable^{6–8}. Conversely, complete obstructions require surgical management, which may involve intestinal resection, intestinal diversion, or removal of the obstructive factor, given the high risk of complications such as intestinal perforation and the low rate of spontaneous resolution.²

The diagnosis of intestinal obstruction is established based on clinical suspicion combined with patient history, laboratory tests, and imaging findings. Clinical and physical examination

may, in general, reveal information about the topography of the obstruction, such as palpable masses, abdominal distension, hyperresonance on percussion, and the presence or absence of bowel sounds. Laboratory tests support the investigation by identifying possible inflammatory factors, dehydration, and other abnormalities. Depending on the probable etiology and clinical condition, imaging studies are performed to determine the cause and guide either clinical or surgical management. These include radiography, ultrasonography, computed tomography, and magnetic resonance imaging.

However, it is well known that in this country there is a marked disparity among hospital services — ranging from the availability of laboratory and imaging exams to access to less invasive or surgical treatments. This disparity considerably increases the risk of underdiagnosis or inadequate management, thereby compromising maternal and fetal safety.

OBJECTIVES

This article aims to report the clinical case of a young adult woman who, during pregnancy, developed a transverse colon volvulus and, consequently, an acute obstructive abdomen — an extremely rare etiology, especially during gestation. The objective is to describe the diagnostic methods used, the initial therapeutic approach, and the definitive treatment adopted, as well as the postoperative course and progression during the final phase of pregnancy.

CASE REPORT AND METHOD

The case was analyzed from the moment the patient was admitted to the emergency department of a hospital, allowing the extraction of both qualitative and quantitative information and providing a comprehensive view of the entire case up to its final outcome — that is, the clinical course of the pregnant patient from the onset of intestinal obstruction, the effectiveness of the treatments administered, and the decision-making process of the healthcare professionals involved. Accordingly, the patient described in this study presented to the emergency department on her own initiative, complaining of lower back pain associated with dysuria. She was approximately 22 weeks pregnant, as estimated by obstetric ultrasound. She denied any comorbidities and reported a history of splenectomy following trauma. During the initial assessment, laboratory tests and renal and urinary tract ultrasonography were performed, revealing signs of acute pyelonephritis. Antibiotic therapy was initiated, and the patient was hospitalized.

During hospitalization, she developed abdominal distension associated with cessation of stool and gas elimination. The surgical team was consulted and requested an abdominal computed tomography (CT) scan due to the significant abdominal distension and interruption of intestinal transit.



Figure 1. Abdominal X-ray (anteroposterior view) from the computed tomography scout image.

Source: Patient's personal file (2024).



Figure 2. Abdominal computed tomography scan, coronal section. Green arrow – marked distension of the transverse colon. Red arrow – fetal skull.

Source: Patient's personal file (2024).



Figure 3. Abdominal computed tomography scan, coronal section, showing a "twist" of the colic vessels, suggestive of volvulus.

Source: Patient's personal file (2024).



Figure 4. Abdominal computed tomography scan, coronal section, showing marked distension of the transverse colon.

Source: Patient's personal file (2024).

The abdominal computed tomography scan shown above revealed marked distension with air–fluid levels in the colon and upstream (small intestine), associated with a rotational appearance of the mesenteric vessels near the root and a caliber transition of the bowel loops, suggesting intestinal rotation — transverse colon volvulus.

Due to the patient's clinical stability and the absence of factors indicating complications, an attempt was made to achieve colonic decompression through colonoscopy. However, this approach was unsuccessful. Therefore, an exploratory laparotomy was performed to ensure maternal and fetal well-being.

A midline transumbilical incision was made to allow wide exposure of the peritoneal cavity. A marked distension of the entire transverse colon was identified, which was rotated around its own axis, along with distension of the proximal intestinal segments and a gravid uterus with normal appearance.



Figure 5. Intraoperative view showing marked distension of the transverse colon.

Source: Photograph taken by the medical team (2024).

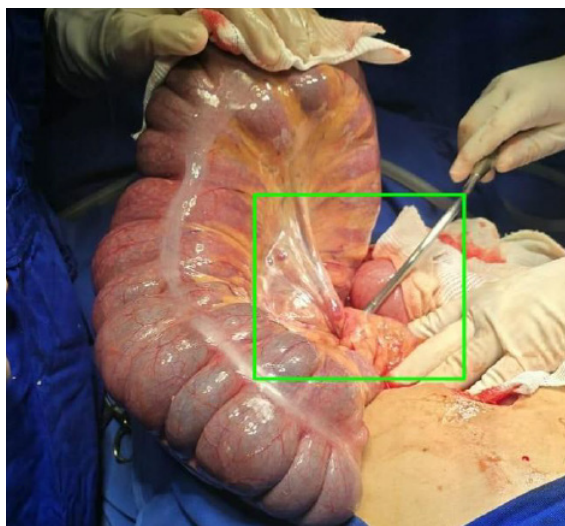


Figure 6. Intraoperative view showing the transverse colon with mesocolon rotation.

Source: Photograph taken by the medical team (2024).

Still during the intraoperative period, after detorsion of the volvulus, lysis of adhesions, and mobilization of the colon, an extended ileocelectomy was performed due to signs of ischemia in the ascending colon — a closed-loop mechanism caused by a competent ileocecal valve — while preserving the descending colon. Subsequently, a side-to-side entero-colonic anastomosis (between the distal ileum and the descending colon) was carried out using a 75 mm linear cutting stapler, with reinforcement of the staple line using 4-0 nonabsorbable suture.

DISCUSSION

The distribution of intestinal volvulus varies significantly according to geographical and epidemiological factors.⁹ In Uganda, this condition is the second most common cause of intestinal obstruction, with an increase in cases over the past four decades¹⁰. However, transverse colon volvulus is relatively rare compared with sigmoid and cecal volvulus, accounting for only 4% of all cases of colonic volvulus, according to another analysis of 306 cases conducted in the 1960s.^{4,9}

The etiology of transverse colon volvulus generally involves congenital, mechanical, and physiological factors that alter normal anatomical relationships. A short transverse mesocolon and broad fixation points at the hepatic and splenic flexures normally prevent torsion of the transverse colon.¹¹ Nevertheless, congenital abnormalities such as redundancy, non-fixation, or other visceral anomalies may predispose to volvulus. In addition, physiological factors such as pregnancy or chronic constipation, a high-fiber diet, and megacolon associated with Hirschsprung's disease may also contribute to the development of volvulus.²

Intestinal volvuli are characterized by abnormal twisting or rotation of the intestine, resulting in closed-loop obstruction and subsequent compromise of blood perfusion.¹² Transverse colon volvulus is an extremely rare condition in surgical practice due to the shorter transverse mesentery and the natural anatomic fixations at the hepatic and splenic flexures. This pathology is often associated with

other abnormalities, such as congenital malformations and bands, chronic constipation, obstructive neoplastic lesions of the distal intestinal segments, neuropsychiatric disorders, and pregnancy.

In the present case, the patient exhibited a redundant and dilated transverse colon that, despite fixation at the hepatic flexure, developed volvulus. It can be hypothesized that her previous splenectomy may have contributed to this condition, as surgical access to the Traube's space may require mobilization of the splenic flexure of the transverse colon, thereby removing one of its fixation points. However, a causal relationship could not be proven, and only inferences can be made regarding possible factors that may have contributed to the development of the volvulus in association with the gestational state.

Surgical management is required due to the high probability of associated necrosis. Treatment options include simple detorsion of the mesenteric twist, detorsion followed by fixation of the involved segment, or colectomy of the affected segments. Nevertheless, even after surgical intervention, there remains a considerable risk of recurrence of volvulus in the remaining bowel segments.

Given the marked distension of the proximal segment and uncertainty about the viability of the twisted bowel, resection of the involved colonic segment with primary anastomosis was performed. During outpatient follow-up, the patient remained asymptomatic, showing good clinical and surgical recovery. Mortality rates associated with volvulus increase significantly in patients with gangrenous bowel, highlighting the importance of early diagnosis and prompt treatment. Fortunately, despite the development of gangrene, the patient underwent timely surgical intervention, preventing perforation and subsequent generalized infection. At the time of writing, the patient remains in good clinical condition, with preserved fetal vitality.

FINAL CONSIDERATIONS

The diagnosis of acute obstructive abdomen can be challenging due to numerous factors — even more so during pregnancy. However, it is the duty of the attending physician to listen to and understand the patient's complaint and to provide the best possible investigation and treatment. Despite the significant disparities in infrastructure, technological resources, and access to healthcare professionals, it is our individual responsibility to compensate for these limitations through a thorough history-taking and an excellent physical examination. In the present case, accurate identification and appropriate management made it possible to save two lives and prevent associated morbidities, such as the need for colostomy or prolonged hospitalization due to infection. Therefore, solid theoretical knowledge is essential to enable early suspicion, correct diagnosis, and timely treatment and resolution of such cases.

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MAILING ADDRESS

LUIZ OTAVIO VILELA REBOUÇAS
Av. Madre dos Anjos, s/n, Jundiá - Anápolis - GO - Brazil
E-mail: luiz.reboucas21@gmail.com

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