Scientific Research Publishing

Surgical Science, 2026, 17(3), 63-69
https://www.scirp.org/journal/ss
ISSN Online: 2157-9415
ISSN Print: 2157-9407

Stercoral Perforation of the Colon: A Rare Case Report

Daniel Biwole Biwole[1,2*], Orok Orok-Tambe[1,2], Pierre Valery Mvondo Onana[1], Edouard Christian Domra[1,2], Eric Stephane Eya Mvondo[2], Ma'aga Dourwe[1,2], Fabrice Tim Tientcheu[1], Arthur Essomba[1,2]

[1]Department of General and Visceral Surgery, Yaoundé Central Hospital, Yaoundé, Cameroon
[2]Faculty of Medicine and Biomedical Sciences, University of Yaoundé I, Yaoundé, Cameroon
Email: *claudepatrick81@gmail.com

How to cite this paper: Biwole Biwole, D., Orok-Tambe, O., Mvondo Onana, P.V., Domra, E.C., Eya Mvondo, E.S., Dourwe, M., Tim Tientcheu, F. and Essomba, A. (2026) Stercoral Perforation of the Colon: A Rare Case Report. *Surgical Science*, **17**, 63-69.
https://doi.org/10.4236/ss.2026.173006

Received: February 1, 2026
Accepted: March 14, 2026
Published: March 17, 2026

Abstract

Stercoral perforation of the colon (SPC) is defined as a perforation of the bowel that occurs when accumulated fecal material creates an increased pressure on the parietal wall, leading to decreased vascular perfusion leading to necrosis, ulceration and subsequent perforation. It is a rare entity often diagnosed during surgery. Frequent sites include the sigmoid colon, the recto sigmoid junction, the splenic flexure, and the ileocecal region, and. If not managed promptly, this condition can lead to high morbidity and mortality rates. We are presenting the case of a 50 years old African female with generalized fecal peritonitis of 08 days managed by laparotomy in our setting. The diagnosis of spontaneous perforation was made during surgery.

Keywords

Colonic Perforation, Spontaneous Perforation, Stercoral Perforation, Idiopathic Perforation

1. Introduction

Colonic perforations are a common complication of colorectal carcinoma (3% - 10%), diverticulitis (22.5%), orally ingested foreign bodies, and collagenous colitis [1]. Spontaneous perforation of the colon (SPC) is defined as the sudden rupture of a healthy colon in the absence of trauma or underlying disease [2] [3]. SPC was first described in a woman with spontaneous rupture of the rectum in 1894 [4].

SPC are classified as stercoral or idiopathic. Stercoral perforation of the large bowel is a rare event (with less than 100 cases reported in the literature) and is associated with chronic constipation. Idiopathic perforation is even more rarely reported is sporadic, and occurs at any age. It is a sudden perforation of the nor-

mal colon without underlying colonic pathology [3] [5]-[7]. Although more common among the elderly and neonates, SPC can occur at any age [8]. It typically presents with peritonitis and requires prompt surgical management. It should be considered in the differential diagnosis of acute generalized peritonitis, especially when free air is found under the diaphragm [9].

2. Case Description

A 50-year-old woman was admitted to the emergency department of Yaoundé Central Hospital with symptoms including diffuse abdominal pain and repeated vomiting, as well as a gradual cessation of bowel movements and gas, which had been developing for eight days prior to her admission. She was referred to us from a health center where she had stayed for three days and received fluid and electrolyte replacement therapy, analgesics, and metronidazole without improvement. The worsening general state prompted her transfer to the surgical emergency unit of the Yaoundé central hospital for further management.

On admission, past history revealed chronic constipation. She presented with an acute ill looking general state, was cold to touch with profuse diaphoresis and vital parameters showed a blood pressure of 110/60 mmHg, pulse of 117 beats per minute, respiratory rate of 24 cycles per minute, Oxygen saturation of 93% in air, and a temperature of 36.3 degrees. She had generalized cramping abdominal pains, sensitive to superficial palpation with generalized guarding, rebound tenderness, percussion note was dull and bowel sounds were absent on auscultation. On digital rectal examination, she had normal sphincter tone, an empty rectum with a bulging tender Douglas pouch.

A clinical diagnosis of an acute abdomen was withheld. Abdominal ultrasound requested showed free complex peritoneal fluid of moderate abundance, diffuse thickening of the omentum, parietal and visceral peritoneum, dilatation of the small bowel with no signs of peristalsis. Plain X-ray showed air fluid levels on the small bowel, presence of fecal material in the caecum, gas under the diaphragm. CT-scan requested was not realized due to the financial burden.

Laboratory examinations showed that white blood cell count was 6000 cells/mm^3, hemoglobin of 10.6 g/dl (normocytic normochromic), CRP 66 mg/l, Urea/creatinine were respectively 0.25 g/l and 10.3 mg/l.

Informed consent was obtained after 12 hours of admission since the patient and her family were reluctant to undergo the procedure. She was then prepared for an urgent laparotomy, which was made 4 hours later. Operative findings were approximately two litters of free fluid and feces showing fecal peritonitis (**Figure 1**), multiple false fibrinous membranes over the entire abdominal cavity. The sigmoid colon had a hypertrophic muscular wall with a 4 × 3 cm perforation on the antimesentric tenia proximal to the recto sigmoid junction, with necrotic borders (**Figure 2**). Multiple fecaloma were identified in the transverse, descending, and sigmoid colons. The stomach, duodenum, small bowel, and appendix were examined, but no perforations were found. The whole length of the colon was explored during the surgery and no macroscopic tumors or diverticula were observed.

These intraoperative findings were all Maurer *et al.* diagnosis criterias for stercoral perforation. The peritoneum was washed abundantly, an appendectomy and a sigmoidectomy were done with a Hartmann procedure (Figure 3). Laminar drains were placed in all abdominal spaces. The patient was placed on Piperacillin-Tazobactam 4.5 g/8 hourly, metronidazole 500 mg 8 hourly, analgesics, anticoagulant therapy, proton pump inhibitors, and 3500 mls of fluids 24 hourly. She was transfused two pints of packed red blood cells, one before, and one after surgery.

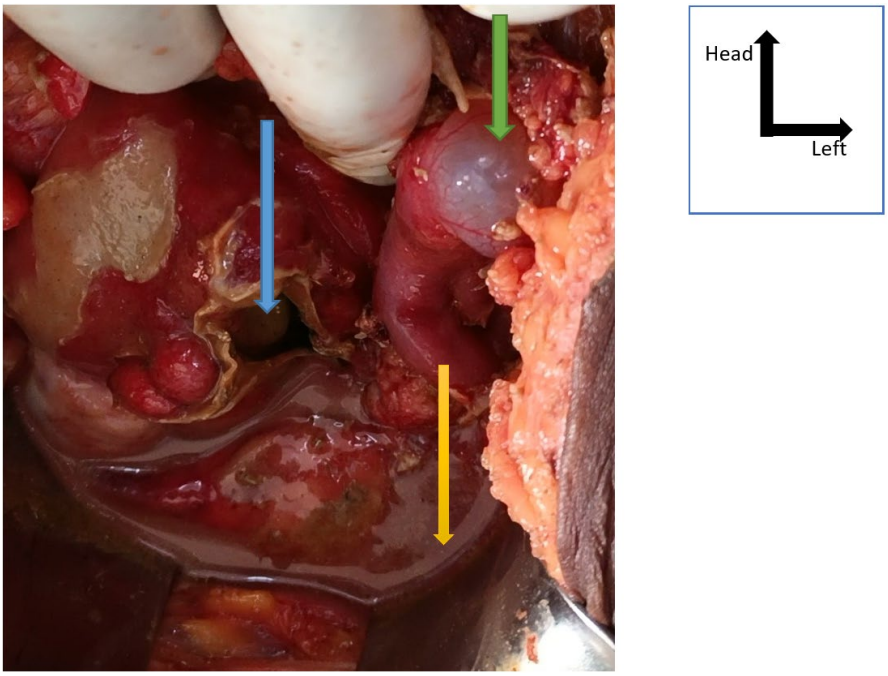

Figure 1. Blue arrow sigmoid colon perforation, yellow arrow showing fecal matter in the Douglas pouch, green arrow showing a left ovarian cyst.

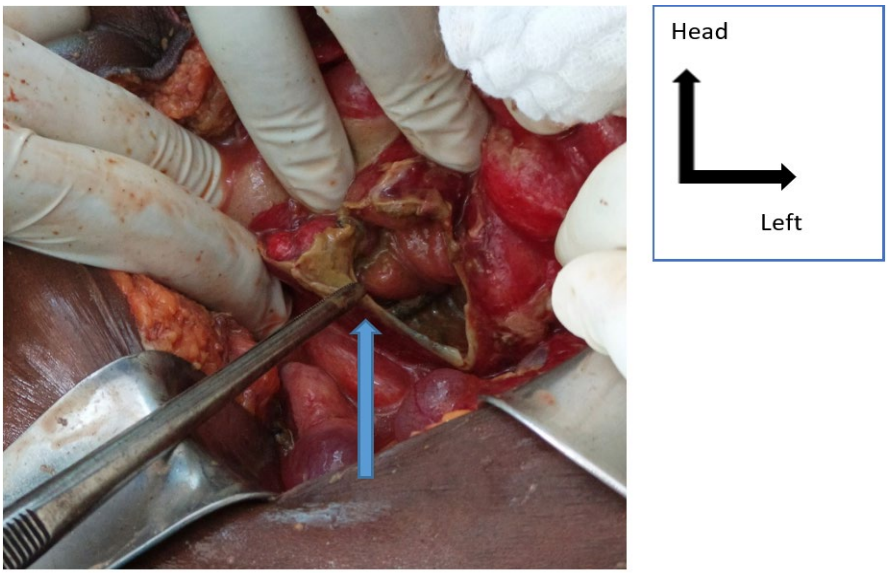

Figure 2. Blue arrow showing sigmoid colon perforation of 4 × 3 cm on the tenia coli with necrotic edges.

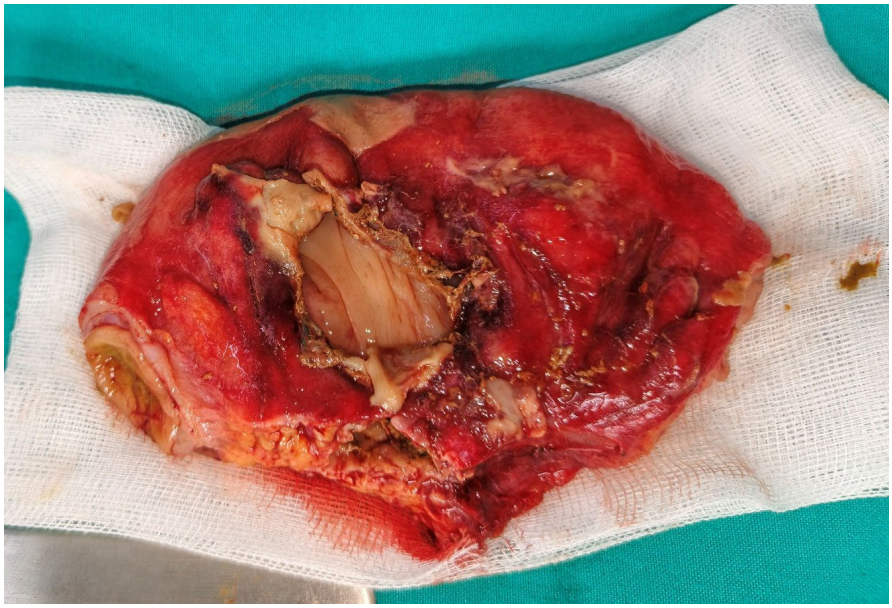

Figure 3. Sigmoidectomy excluding the perforation.

The post-operative period was marked by persistent tachycardia, hypotension, and respiratory distress non-responsive to measures of reanimation. She was pronounced clinically dead 48 hours after surgery from multiple organ failure complicating a septic shock. Two weeks after the death of the patient, the result of the histological examination was released and showed submucosal and mucosal edema, parietal ischemia and necrosis at the edges of the perforation. There were no signs of malignancy on the specimen. These findings confirmed the diagnosis of stercoral perforation

3. Discussion

Stercoral perforation of colon is the second type of spontaneous perforation of colon. Spontaneous perforation of the colon (SPC) refers to a sudden perforation of the normal colon in the absence of tumors, diverticulosis, or external injury [3] [10]. The first case was reported in a woman with spontaneous rupture of the rectum in 1872 [7]. SPCs have further been divided it into Idiopathic and Stercoral perforation based on the etiological and pathological factors behind their occurrence [11].

Stercoral perforation is common in patients with a history of chronic constipation and occurs more frequently on the antimesenteric border of the recto sigmoid, an area prone to ischemia because of anatomical vascularization. They are those with rounded shape perforation with more than 1 cm in diameter; the colon usually full of stool contaminates the abdominal cavity through the perforation. Microscopic examination shows evidence of ischemia and necrosis of colonic mucosa leading to feculent ulcer and acute inflammatory reaction surrounding the perforation site. All external injuries or other diseases such as obstruction, tumors, and diverticulosis must be excluded [3] [6]. Our patient had a history of chronic

constipation associated with a rounded shape perforation with a diameter of 4cm on the antimesenteric border of proximal rectosigmoid, presence of stools in the peritoneum and in the colon. The histologic examination of the perforation revealed necrosis on the edges of the perforation with edema of mucosa and submucosa, signs of parietal ischemia around the perforation. All these findings met the diagnosis criteria of Maurer and al and were consistent with the literature.

The idiopathic SPC occurs due to asymmetrical distribution of intraluminal pressure at the pelvirectal angle in the absence of obvious impacted fecal matter. Idiopathic SPC has a linear perforation and the feculent ulcer cannot be seen at microscopic examination. Other characteristics are a clear mucosal edge that does not extend to the serosa, and a regular broken end of the muscular layer [11].

Although more common among the elderly and neonates, stercoral perforation of colon can occur at any age. It accounts for 1% of all emergency colonic surgeries and 3% of all colonic perforations [8] [12]. The most common sites of perforation are the sigmoid colon (54.1%), the recto-sigmoid junction (21.5%), followed by the descending colon (13.6%), transverse colon (9.6%), cecum (3.9%) and ascending colon (1.3%) [3] [5] [10]-[13].

It typically presents with peritonitis and requires prompt surgical management. It should be considered in the differential diagnosis of acute generalized peritonitis, especially when free air is found under the diaphragm [9]. Only 10% of spontaneous colon perforations are diagnosed prior to surgery [14]. Our patient presented with clinical signs of an acute generalized peritonitis with a systemic inflammatory response syndrome evolving over 8 days. Ultrasound was consistent with radiologic signs of peritonitis and x-ray results showed important dilatation of the ascending colon with stasis in the transverse colon, descending colon, and rectum.

Surgical treatment is standardized and post-operative survival is over 60%. However, the morbidity and mortality rates depend on peritoneal contamination [5]. Early surgical eradication of the affected part of the colon including all stercoral ulcers and aggressive therapy for peritonitis leads to low mortality [6]. Timely intervention to prevent and/or treat any associated sepsis along with extensive peritoneal lavage and surgical removal of diseased colonic tissue at the primary stercoral ulceration site coupled with aggressive therapy for peritonitis are key treatment modalities in salvaging patients presented with stercoral perforation of the colon [15]. Primary resection with anastomosis and Hartmann procedure are not competing operations but are situation-dependent therapeutic concepts in spontaneous colonic perforation [6]. Other authors emphasize that primary repair is effective in stable patients with spontaneous colon perforation. Their findings support primary repair as a first-line option when clinically appropriate [16].

The case we are presenting benefited of extensive peritoneal lavage, an appendectomy, a sigmoidectomy, and a Hartmann procedure. Our choice of therapy without anastomosis was guided by the delay in presentation of 08 days from onset of symptoms, the septic state of the patient before surgery, the degree of peri-

toneal contamination, and the diameter of the colon perforation of 4 × 3 cm. The outcome is in line with reports from other authors where diagnostic and therapeutic delays adversely affect morbidity and mortality [6] [15].

The severity of fecal colon perforation requires strengthened prevention measures to improve patient survival, particularly by encouraging patients with chronic constipation to exercise regularly, drink enough fluids every day, eat a high-fiber diet, and, if necessary, use prokinetics or laxatives intermittently. Also, the diagnosis should always be suspected or at least ruled out in elderly patients with history of chronic constipation who presents with acute abdomen, early referral of patients with clinical features of acute peritonitis to first category hospitals. It is also important to recommend early and aggressive resuscitation prior to surgery in patients presenting with signs of generalized acute peritonitis, a subdiaphragmatic gas crescent on radiological examination, and a history of chronic constipation, and to systematically continue their postoperative care in the intensive care unit. Each medical-surgical team should work towards the effective implementation of these measures to improve the prognosis of the disease. However, in developing countries, the low number of qualified medical staff in health centers, the lack of knowledge about the disease among medical staff due to its rarity, and the low socioeconomic status of patients limitating access to appropriate care are major obstacles that must be overcome in order to achieve this goal.

4. Conclusion

Stercoral perforation of the colon is uncommon in the general population and should be considered in the differential diagnosis of patients with history of constipation presenting an acute peritonitis with free gas under diaphragm. Early diagnosis and appropriate surgical treatments is keystone to improve the prognosis. Types of surgery will depend on patients underlying comorbid conditions, hemodynamic status, and degree of fecal peritonitis. Constipation should be prevented or minimized to reduce the future risk of perforations in elderly patients with comorbid conditions.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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