Case Report

Dealing with the Unexpected: Stercoral Perforation – A Surgical Conundrum

Muthu V[1] (✉), Nabil MA[2], Ng GH[2], Rahman NAA[2]

[1]Department of General Surgery, [2]Department of Colorectal Surgery, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia

Abstract

Stercoral colon perforation is a rare surgical emergency primarily linked to chronic constipation and advanced age. Diagnosis is challenging and requires established criteria and imaging. Urgent surgery is the modality of choice, typically involving Hartmann's procedure. Mortality rates can be as high as 60%, emphasising the need for early diagnosis and intervention. We presented a case of a 71-year-old bedridden female with a history of stroke, diabetes, and hypertension presenting with abdominal pain, fever and diarrhoea. Initial evaluation indicated dehydration, sepsis, and abdominal tenderness. An urgent imaging revealed a suspected rectal perforation, prompting emergency surgery. Intraoperatively, stercoral perforation due to impacted hard faeces was identified. Despite prompt and intensive treatment, the patient's condition deteriorated, ultimately resulting in her demise. Stercoral colon perforation is a critical condition requiring rapid diagnosis. Symptoms include abdominal distension, tenderness, cramps, fever, and anorectal pain. Healthcare providers should consider the possibility of stercoral perforation in individuals exhibiting these symptoms alongside a background of persistent constipation. Treatment involves peritoneal lavage and surgery. Early recognition is vital for proper management and improved outcomes.

Keywords: Colonic diseases; constipation; fecal impaction; intestinal perforation; sigmoid diseases

Correspondence:

Muthu Viknesh. Department of General Surgery, Faculty of Medicine, Universiti Kebangsaan Malaysia Medical Centre, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia. Tel: +6017-3021489 E-mail: mtvvicky@gmail.com

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Introduction

Stercoral colon perforation is a complex condition resulting from pressure necrosis due to faecal masses. It is a relatively rare surgical emergency, with an estimated incidence of 3.2%. Significant risk factors include chronic constipation, advanced age, and underlying medical conditions such as hypothyroidism. Identifying this condition is challenging but contingent on specific established criteria and imaging techniques. Treatment involves urgent surgery, usually with Hartmann's closure of the rectum. Mortality rates can reach 60%, underscoring the significance of prompt intervention with early diagnosis.

In this case presentation, we highlight a patient with stercoral perforation who received a timely diagnosis and treatment. We also offer our perspective on our treatment approach and literature review.

Case Report

A 71-year-old female, known diabetic, hypertensive, and bedridden from cerebrovascular stroke with right hemiparesis, sought care at our medical facility due to a four-day history of fever and abdominal discomfort. Her abdominal pain was primarily localised to the left iliac fossa and the suprapubic area. Additionally, she complained of myalgia, arthralgia, and nausea and also had been experiencing diarrhoea for the past month.

During the initial assessment, she was pale, lethargic and had signs of dehydration. She was also hypotensive and tachycardic. There was generalised abdominal tenderness but no indication of peritonism.

She exhibited a dry left foot ulcer with no signs of discharge, and the remaining physical examinations yielded unremarkable results.

She was resuscitated with crystalloid boluses. Her blood parameter analysis revealed a significant elevation in total white blood cell counts and C-reactive protein levels. She was not anaemic, acidotic or lacticaemic. Both chest and abdominal radiographs revealed unremarkable findings.

A broad-spectrum antibiotic regimen was initiated for presumed intrabdominal sepsis, and she ultimately required inotropic support. Upon stabilisation, an urgent abdominal computed tomography (CT) scan was promptly ordered. The imaging revealed a dilated rectum with structural wall defects and faecal material. Extraluminal air and multiloculated collections were observed within the abdominal and pelvic regions. These findings strongly indicated a perforated viscus, most likely originating from the rectum (Fig. 1).

An emergency exploratory laparotomy was performed. Pus was encountered across all four abdominal quadrants, with predominant faecal contamination in the pelvic cavity. The distal sigmoid displayed ischemic features and multiple large and small perforations were identified in the anterior and posterior walls of the upper and mid rectum. No diverticula or tumour was identified during the procedure. Significant amounts of hardened faeces were evacuated from the affected colon segment. A Hartmann's procedure with an end colostomy was performed (Fig. 2).

She was subsequently managed in the critical care unit. She was in septic shock, necessitating high-dose inotropic support and an escalation of antibiotic treatment. Her condition was further complicated by myocardial infarction, severe metabolic acidosis, and acute kidney injury, sequelae from the sepsis.

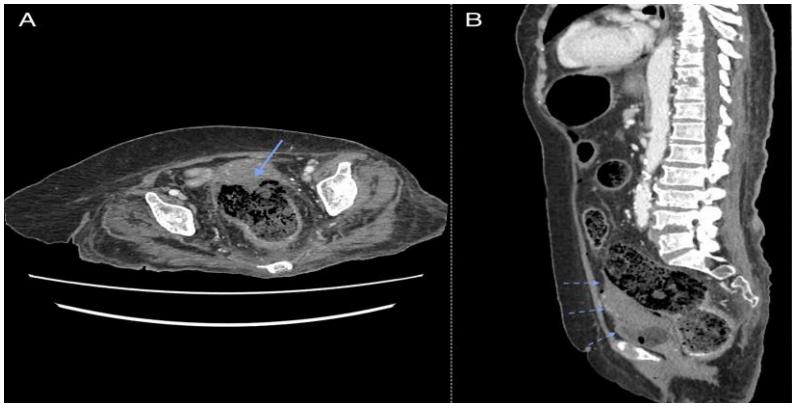

FIGURE 1: Sequence of computed tomography of abdomen and pelvis demonstrated stercoral perforation. (A) Axial image: Wall defects at the anterior upper rectum with extraluminal air; (B) Sagittal image: Loculated intraperitoneal collection air was seen within the pelvis and abdomen

Regrettably, despite aggressive post-operative intervention, she became more hemodynamically unstable, and tragically, she succumbed on the third day post-operatively.

Discussion

Colon perforation is rare, and stercoral perforation, where the large intestine ruptures due to pressure necrosis caused by a faecal mass, is even rarer. There have been fewer than 100 reported cases in medical literature since the 1900s. In 1894, Berry introduced the initial documented instance of stercoral colon perforation to the Pathological Society of London (1).

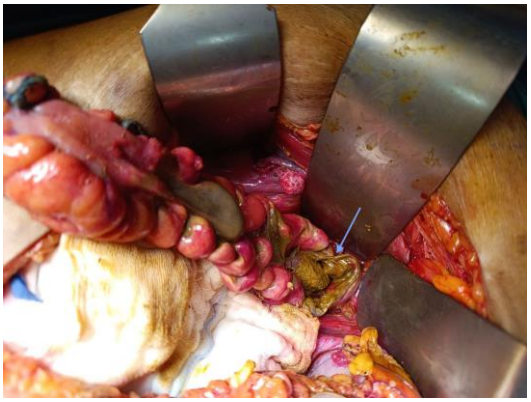

FIGURE 2: Intraoperative picture demonstrated stercoral perforation with hard faeces seen within

The occurrence rate of stercoral perforation is 3.2%, with the typical age of patients experiencing stercoral colitis is 62 years (2).

Stercoral perforation typically arises within the context of fecalomas. Fecalomas can lead to colonic distension and focal pressure necrosis. An increased intraluminal pressure of at least 35 cm H2O and above for several hours can compromise the vascular supply and ischemic colitis (3). This, in turn, can cause localised ischemia, tissue necrosis, ulcer formation, and, ultimately, perforation.

Numerous factors contribute to perforation, with long-standing constipation is being the predominant cause. The patient demographic includes individuals with a history of chronic constipation, elderly patients with dementia, those in nursing homes or bedridden, and occasionally patients with psychiatric conditions. Additionally, patients with hypothyroidism, scleroderma, or diabetic enteropathy form a smaller group at risk (4).

Multiple factors can contribute to perforation, including hypoperfusion affecting the antimesenteric aspect rather than the mesenteric border, fecalomas located more distally and having a denser consistency, prolonged localised pressure on the colon wall resulting in pressure ulcerations, and a reduction in stool water content (5). Another contributing factor is the relatively narrow diameter of the inferior mesenteric and superior rectal artery branches, often referred to as Sudeck's point, along with inefficient or absent anastomoses.

It is worth mentioning that the most frequently affected areas by ulceration are the sigmoid colon and the rectum, with particular emphasis on the rectosigmoid junction.

Diagnosing stercoral perforation can be challenging due to its rarity. Mauer et al. proposed four criteria to aid in the diagnosis, including (i) the presence of a round or oval perforation exceeding 1 cm in diameter on the colonic antimesenteric side; (ii) the accumulation of excessive faeces near the colon perforation; (iii) evidence of microscopic pressure ulcers and acute nonspecific inflammatory changes surrounding the perforation site; and (iv) exclusion of external injuries, diverticulitis, obstructions due to adhesions, or tumours (6). Our case met these diagnostic criteria.

For accurate diagnosis, an abdominal CT scan is the most reliable modality. Chest radiographs only detect free air in about 30% of colon perforations, so a CT scan should be considered when stercoral perforation is suspected. A hallmark of stercoral perforation is the formation of a fecaloma, a localised, solid, or calcified faecal mass which is usually equal to or larger than the colonic lumen's diameter (7). Non-contrast CT scans may reveal hyperdense mucosa, extraluminal gas, or protruding faecal material. The perforation site often involves the antimesenteric border of the colon, marked by discontinuous enhancement of the bowel wall to focal faecal distension in the colonic lumen (8).

In our patient, the accompanying CT scan did reveal a rectum with colonic wall defects suggestive of perforation. Intraoperatively, the perforation was evident at the rectosigmoid junction, as was the affected segment filled with hard faeces.

If necessary, initial management should include fluid resuscitation with crystalloid solutions, broad-spectrum antibiotics, and inotropic support. Emergency surgery is the definitive treatment for stercoral perforation. Simple perforation or segmental resection closure with an anastomosis should be avoided. The advisable approach involves surgically removing a portion of the colon, followed by the creation of an end colostomy, along with either a mucous fistula or Hartmann's closure of the rectum (9). Using suture closure and a proximal colostomy is linked to a 57% mortality rate while opting for colostomy alone results in a 43% mortality rate. Conversely, Hartmann's closure is the preferred surgical method, associated with a 32% mortality rate (10). Additionally, thorough abdominal lavage and careful colon examination for possible perforations or neoplasms are essential.

Intraoperative colonoscopy, when feasible, can serve as a valuable adjunct (2). It is pivotal in confirming the thoroughness of colonic resection and eliminating the possibility of other stercoral ulcerations that might lead to delayed colonic perforation. Maurer and colleagues proposed that the presence of colonic distension and numerous fecalomas could indicate the presence of these additional stercoral ulcerations and an increased likelihood of a secondary perforation.

Stercoral colon perforation is not solely a surgical concern; it is frequently compounded by a medical condition, such as an underlying compromised immune system, which adds to an unfavourable outlook. When perforation occurs, the mortality rate can range from 32% to 60%. Despite our best efforts to address general conditions and provide adequate nutrition and antibiotics with emergent surgical intervention, systemic sepsis could not be prevented in our patient.

Conclusion

Stercoral colon perforation is a rare but life-threatening condition, presenting symptoms like abdominal distension, tenderness, cramps, fever, and anorectal pain. Early diagnosis is challenging but crucial for prompt care. Healthcare providers should consider it in patients with these symptoms and chronic constipation history. Treatment involves peritoneal lavage combined with surgery, emphasising the importance of timely recognition for better outcomes.

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