Extraperitoneal Stercoral Perforation of Rectum

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Background	A 73-year-old patient was admitted from a skilled nursing facility with lower abdominal discomfort and fecal incontinence after an unwitnessed fall, with a radiographic finding of extraperitoneal stercoral perforation of the posterior rectum.
Summary	The patient presented without nausea, emesis, perirectal pain, or pain with defecation, but was found to have leukocytosis and fecal impaction with a large presacral abscess on imaging. The patient underwent manual disimpaction and transrectal drainage. The patient tolerated the procedure well and had resolution of the abscess without requiring further intervention.
Conclusion	Stercoral perforation is a difficult diagnosis to make preoperatively. Most often, fecalomas are found within perforated colon or within the abdomen at the time of emergent laparotomy, requiring resection and diversion along with abdominal irrigation. Although most stercoral perforations are in the sigmoid colon and at the rectosigmoid junction, there have been previous case reports of extraperitoneal perforations of rectal stercoral ulcers. In this case report, we not only found a stercoral perforation of the posterior rectum, but we also opted to treat the patient with transrectal drainage, rather than with laparotomy. This provides the surgeon with more options in the operative management of extraperitoneal stercoral perforations.

Keywords	Stercoral ulcer, fecaloma, extraperitoneal perforation

DISCLOSURE:
The authors have no conflicts of interest to disclose.

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Case Description

Stercoral perforation was first described by Berry in 1894. Stercoral ulcer is rare, and is associated with chronic constipation. Most cases have been described in the elderly, bedridden, and patients with psychiatric comorbidities as well as in immunosuppressed patients, those with metabolic or endocrine disorders, and patients who take certain medications such as opiates, NSAIDs, and tricyclic antidepressants. [1,2,3] The most common location for stercoral ulcer perforation is the sigmoid colon (50 percent), followed by rectosigmoid junction (24 percent). [1] These perforations typically occur along the antimesenteric border, leading to peritonitis and high rates of morbidity and mortality up to 35 percent in surgically treated cases or 47 percent for conservatively treated cases.[4,5] Stercoral perforation occurs most often in the sigmoid colon, as this is the narrowest portion of the colon and water absorption has been maximized up to this point, resulting in stool in its most condensed and solid form.[6] A contributing factor is that the anti-mesenteric border has a diminished blood supply compared to the mesenteric side, increasing its susceptibility to ischemia.[5] The diminished blood supply in this area, known as the Sudeck point, results from decreased or absent anastomosis between the inferior mesenteric and superior rectal arteries.[7]

Compared to perforations of the sigmoid colon, stercoral ulcer perforations of the rectum can be either intraperiteoneal or extraperitoneal. Rectal stercoral perforations typically occur in the anterior wall of the rectum, just proximal to the periteoneal reflection.[8] Intraperitoneal perforations are easier to detect clinically as patients tend to present with peritonitis.[3] Extraperitoneal perforations are more difficult to diagnose and have delay in diagnosis, at which time the patient has a risk of mortality ranging from 35 to 57 percent in the literature with surgical intervention.[3, 5] Extraperitoneal perforations are seen in only six percent of perforations secondary to stercoral ulcers.[9] In several other case reports, rectal stercoral ulcer perforations have been found to be along the lateral wall of the rectum [2,3] or along the anterior wall.[8] In this case report, we present a posterior rectal perforation secondary to a stercoral ulcer.

A 73-year-old woman with COPD and hypertension was admitted from a skilled nursing facility with lower abdominal discomfort and fecal incontinence after unwitnessed fall. She did not have fevers, night sweats, nausea, or vomiting. She denied peri-rectal pain or pain with defecation, tailbone pain, or urinary retention.

On physical exam, temperature was 37.9 degrees Celsius with pulse of 90 BPM and blood pressure of 168/70 mmHg. Abdominal exam was normal. The rectal exam was deferred until examination under anesthesia. The only abnormal laboratory value was a WBC of 19,900. CT scan of abdomen and pelvis demonstrated a large presacral abscess and fecal impaction in the distal rectum (see Figures 1 and 2).

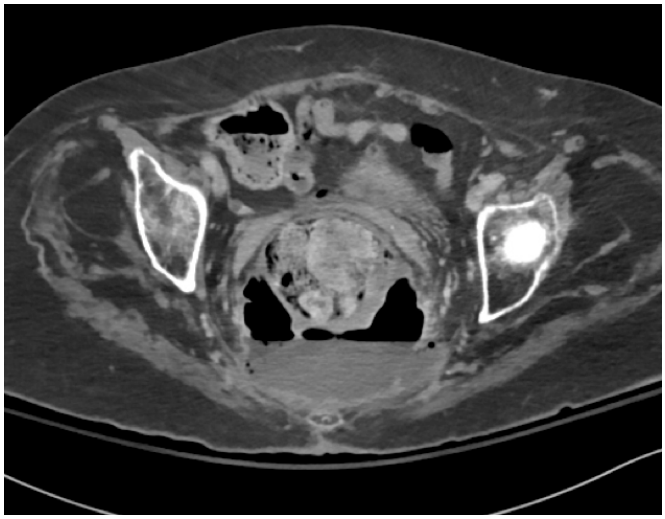

Figure 1. Large retrorectal abscess with air fluid level. Fecal impaction also seen.

Intraoperatively, the patient was placed in lithotomy position after general anesthesia was induced. External examination revealed no significant abnormalities other than perianal skin tags. Digital examination revealed a large amount of hard stool in the distal rectum. She was disimpacted manually. There was a palpable posterior perforation of the distal rectum approximately 6 cm from the dentate line. The abscess cavity was entered and the contents were aspirated. Loculations were broken up digitally, and the cavity was irrigated with saline. On proctoscopy, the distal rectal mucosa appeared normal. The posterior perforation measured slightly greater than 1 cm. The wound was left open to allow for further drainage.

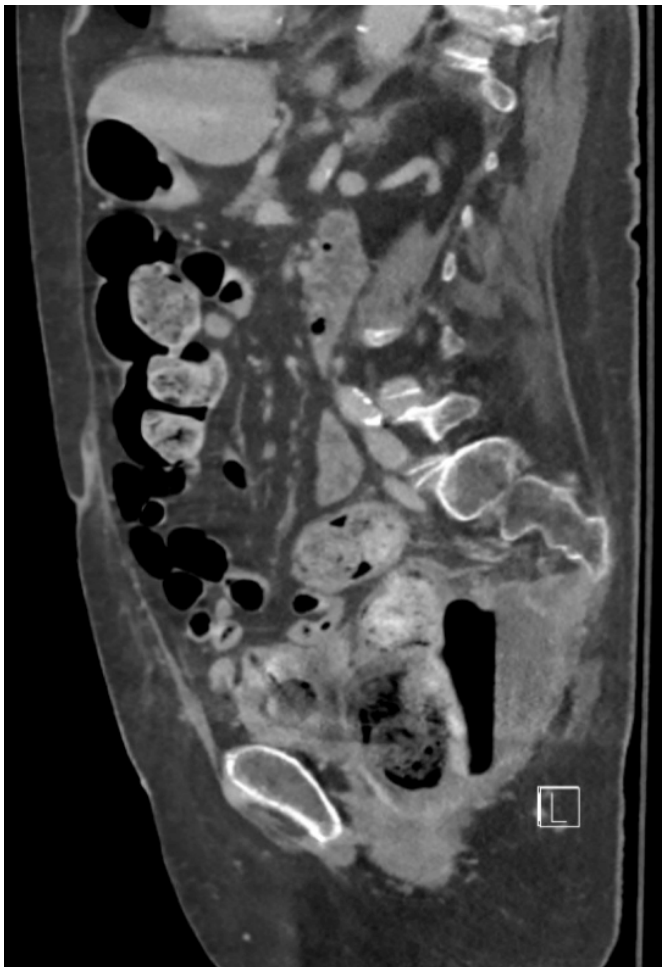

Figure 2. Lateral view showing rectal stool burden with large retrorectal abscess

Postoperatively, the patient did well and was discharged back to her skilled nursing facility with stool softeners and daily tap water enemas. She was not discharged with antibiotics as sufficient source control was felt to be obtained. She was seen in the outpatient clinic one week after discharge, at which time she continued to complain of constipation. On rectal exam, she had a moderate amount of stool, and the abscess cavity was unable to be palpated. She was instructed to follow up as needed or to return for symptoms such as fevers, abdominal pain, pain with defecation, or tenesmus.

Discussion

The incidence of stercoral ulceration makes up 3.2-5 percent of all causes of colonic perforation.[7, 9, 10, 11] Twenty-eight percent of patients presenting with stercoral perforation are found to have multiple stercoral ulcers throughout the colon on laparotomy, which may increase the risk of a second stercoral perforation[9], making it important for the surgeon to search for other areas of ulceration on laparotomy.

The pathophysiology of stercoral perforation begins with constipation and fecaloma causing ulceration. The hard fecaloma decreases perfusion, and the intraluminal pressure exceeds the capillary perfusion pressure. This leads to local ischemia, mucosal necrosis, ulcer formation, and perforation.[2, 3, 5, 6] Within the distal colon as well as the rectum, there is minimal water content in the stool, a decrease in lumen size, and high intraluminal pressure during defecation, which may also contribute to ulceration[8, 12] These fecalomas can collect over months to years, and in up to 20 percent of patients, scybala may calcify.[9] Stercoral perforations tend to have rounded or ovoid features that conform to the contour of the fecaloma, and perforation occurs where thinning of the mucosa is greatest.[8, 12] This can help distinguish stercoral perforations from other causes of colonic perforation, such as from diverticulitis, in which the perforation is located beneath an epiploic appendage or towards the mesocolon. Additionally, colonic perforations that are not from stercoral ulcers rarely exceed 1cm in size, and have a more linear tear than a rounded tear.[9]

The literature reports that only 10 percent of stercoral perforations are diagnosed pre-operatively.[10] A study by Maurer et al [9] proposed criteria to help diagnose perforated stercoral ulcers: (1) >1cm round or ovoid anti-mesenteric perforation; (2) presence of fecalomas in the colon or abdomen; and (3) pressure necrosis or ulcer with microscopic chronic inflammation around the perforation.

In situations of extraperitoneal perforation, patients may present with a palpable rectal mass, bright red blood per rectum, low abdominal or pelvic pain, or sepsis.[3, 6] However, up to 79 percent of patients may not present with a rectal vault full of stool. The hypothesis for this finding is that the fecalomas have difficulty passing through the narrow rectosigmoid junction.[9] This hypothesis may also help to explain why 94 percent of all rectal perforations are proximal to the peritoneal reflection, as the fecalomas may be unable to pass into the rectal vault to cause rectal perforation. On imaging there is pneumoperitoneum when the perforation is intraperitoneal, and in 84 percent of patients fecal impaction is also seen.[12]

The optimal management of stercoral perforation in the literature for both intraperitoneal and extraperitoneal perforation involves resection of the affected colonic segment and diversion, along with intraoperative colonic disimpac-

tion, abdominal lavage, and identification of other stercoral ulcers.[2, 3, 4, 11, 12, 13] Previous reports indicate that operative mortality is lowest in patients who receive resection and diversion compared to resection or diversion alone.[9] In all cases reviewed in this study, colonic resection without immediate restoration of continuity was employed either as a Hartmann's or subtotal colectomy in addition to extensive washout and antibiotics.

The treatment of the patient in this case was similar to the treatment of low pelvic abscesses via a low posterior drainage rather than with laparotomy with washout and diversion. In low pelvic abscesses, drainage is accessed by a transrectal route. In this scenario, a stab wound is made through the rectum and enlarged digitally or with a hemostat to connect it to the abscess. A catheter or small chest tube can then be sutured in place transrectally to allow for continued intraluminal drainage as well as irrigation with saline and or antibiotics.[14] In this case, the abscess cavity was found posteriorly 6 cm proximal to the dentate line. The cavity was explored digitally and contents were aspirated. Loculations of purulence were broken up digitally, and the cavity was irrigated by saline. The wound was left open to allow for further drainage intraluminally.

Recent studies have investigated whether closing rectal defects after transanal endoscopic microsurgery (TEM) is necessary. When the defect is left open, there is no significant difference with regards to bleeding or infection. Leaving the defect open is a safe alternative to closure, especially when the defect may not be easily accessed or may be under increased tension with closure.[15] When the mesorectal fat layer remains intact, it provides a vascularized matrix that assists with regrowth and healing of the rectal wall.

In a similar case report, Tokunaga et al[8] took the patient for emergent laparotomy for free air with an unknown region of perforation. Exploration revealed a 2 cm anterior perforation of the rectum. The perforation was debrided and closed primarily in two layers, and the abdomen was irrigated. Histology of the debrided edges revealed necrosis with infiltration of inflammatory cells, consistent with perforated stercoral ulcer. Tokunaga et al argued that simple closure after washout is acceptable when there is early diagnosis and the patient is otherwise stable. With late diagnosis, however, resection with or without proximal diversion or colostomy is the preferred treatment. In our case, the patient had no hemodynamic instability and her perforation was diagnosed with imaging. This gave us the opportunity to drain and irrigate her abscess soon after presentation to the hospital.

When patients present with perforated extraperitoneal stercoral ulcers, we propose the option to manage the patient with transrectal drainage rather than with laparotomy. Our patient had no hemodynamic instability and was not progressing to septic shock. Additionally, her perforation was completely extraperitoneal. Although not seen in the literature reviewed, it could be possible to have an extraperitoneal perforation with extension above the peritoneal reflection. In that scenario, we would not recommend transrectal drainage as intra-abdominal source control would be warranted.

A suggested treatment algorithm for the approach of perforated stercoral ulcers is based on location of the perforation and hemodynamics. For hemodynamically unstable patients, whether the perforation is intraperitoneal or extraperitoneal, exploratory laparotomy with disimpaction, lavage, resection, and diversion is supported in the literature. [2, 3, 4, 11, 12, 13] For intraperitoneal perforations in stable patients, exploratory laparotomy with disimpaction, lavage, and primary closure of the defect has been reported.[8] Finally, our treatment approach is best suited for extraperitoneal perforations in stable patients.

Conclusion

Stercoral perforations carry a high mortality risk, as they tend to be diagnosed late in the course when patients are becoming septic. These patients require emergent laparotomy with resection, diversion, and washout; however, in cases of perforation that are caught early, or for extraperitoneal perforations of the rectum in stable patients, we propose a feasible novel approach to treat the patient with transrectal drainage rather than with laparotomy.

Lessons Learned

Perforation of the large bowel secondary to stercoral ulceration is rare, and extraperitoneal perforation of the rectum is even less often encountered. When a patient presents with extraperitoneal stercoral perforation of the rectum, it is possible to manage operatively with less invasive interventions of disimpaction and drainage transrectally rather than laparotomy when the diagnosis is made early and the patient remains stable.

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