

# Hemospray as the Initial Treatment of a Lower Gastrointestinal Bleed Resulting from Stercoral Ulceration

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## ABSTRACT

Stercoral ulceration, an uncommon complication of constipation and fecal impaction, can present as a significant lower gastrointestinal bleed. Endoscopic management of this complication is rarely described in the literature. We describe the first documented case of an individual with massive hematochezia in the setting of stercoral ulceration being managed with Hemospray (Cook Medical, Bloomington, Indiana).

## INTRODUCTION

Lower gastrointestinal (GI) bleeding, anatomically defined as bleeding distal to the ligament of Treitz, is approximately half as common as upper GI bleeding and has an incidence of hospitalization estimated to be 20–30 per 100,000 persons.<sup>1</sup> The differential diagnosis more commonly includes diverticular disease, malignancy, and ischemic colitis, and less commonly includes radiation proctitis, vascular abnormalities, and iatrogenic post-polypectomy bleeding. Endoscopy is indicated for both diagnosis and treatment, and therapeutic modalities traditionally have included injection, cautery, and mechanical clips. The use of hemostatic agents presents a novel alternative.<sup>2</sup>

## CASE REPORT

A 23-year-old man presented with acute-onset hematochezia with an estimated passage of 1,000 mL<sup>3</sup> of fresh blood and clots. His past medical history was significant for a previous motor vehicle accident complicated by severe traumatic brain injury, quadriplegia, aphasia, and GI dysmotility requiring tube feeds. At baseline, he was constipated with one Bristol type 2 bowel movement every 4 days, requiring intermittent osmotic laxative use. There was no history of abdominal pain, infectious symptoms, or previous GI bleeding. On presentation, he was hypotensive (blood pressure 92/50 mm Hg) and tachycardic (heart rate 96 beats/min). Abdominal examination did not demonstrate any focal abnormality, and rectal exam demonstrated fresh blood. Initial hemoglobin was 95 g/L, compared to 145 g/L 1 week prior, and he received 2 units of packed red blood cells.

Initial computed tomography angiogram revealed no active bleeding but did reveal circumferential mural thickening of the distal sigmoid and rectum, and surrounding inflammatory stranding and hyperemia were seen (Figure 1). There was no pneumatosis. A subsequent technetium-99-labeled red blood cell scan did not show any active bleeding.

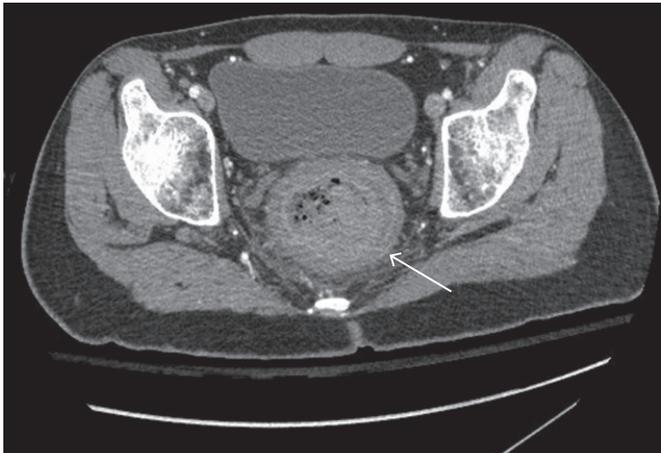
Flexible sigmoidoscopy demonstrated a 4-cm, 50% circumferential, deep ulcer with adherent clot seen in the distal rectum on retroflexion (Figure 2). There was some diffuse oozing with no obvious focus, and there was no pulsatile bleeding. There were significant amounts of fresh and old blood and stool proximal to the rectum. Given the evidence of active oozing, therapeutics were necessary. Given the size, difficult visualization, and unstable position of the ulcer on retroflexed view, endoscopic clot removal and use of hemoclips or electrocoagulation would pose an

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**Figure 1.** Circumferential mural thickening with inflammatory stranding seen around rectum; rectum is filled with stool (arrow).

unacceptably high risk for brisk bleeding and would unlikely be effective at achieving hemostasis. We therefore deployed a canister of Hemospray (Cook Medical, Bloomington, Indiana), and hemostasis was achieved. There were no complications except for Hemospray adhering to the endoscope camera, causing complete loss of visualization and necessitating termination of the procedure.

The patient was further managed with supportive measures, and he was observed for rebleeding. Surgical consultation was also sought for consideration of anoscopy. Given that hemostasis had been achieved, the surgical service elected to defer anoscopy unless there was further bleeding. These opinions were discussed with the patient's family, and they agreed with the management plan.

On day 5 post-procedure, follow-up repeat sigmoidoscopy to better characterize the ulcer demonstrated 2 visible vessels but no active bleeding. The persistence of stool in the rectum limited visualization, so further endoscopic therapies were not pursued. A single biopsy taken at the ulcer's edge, away from the visible vessel, to rule out neoplasia demonstrated

mild active inflammation and detached fragments of ulcer bed with no evidence of dysplasia or malignancy.

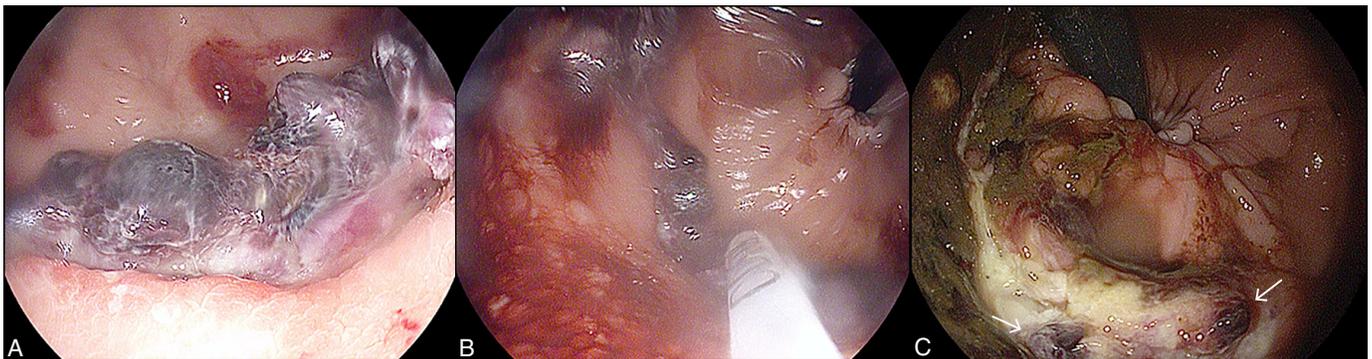
The patient had no further episodes of hematochezia and was discharged home post-admission day 7 with recommendations for a more aggressive osmotic laxative-based bowel regime. A follow-up sigmoidoscopy 6 weeks post-discharge revealed complete healing of the ulcer. The family reported that the bowel regime was successful at achieving a Bristol type 4 bowel movement on a daily basis, with no further episodes of bleeding.

## DISCUSSION

First described in 1984, stercoral colitis is an uncommon complication of constipation and fecal impaction.<sup>3</sup> When intraluminal pressure from fecaloma contact on the bowel wall exceeds capillary perfusion, the compromised microcirculation leads to local mucosal ischemia and may progress to necrosis, ulceration, or perforation.<sup>4</sup> Perforation usually occurs in the descending colon and the rectosigmoid because the luminal diameter is smallest here and the majority of the water has been reabsorbed from the stool.<sup>5</sup> Severe, chronic constipation is thought to be the main causative factor, and cases have been reported in elderly, psychiatric, bedridden, or narcotic-dependent patients.<sup>4,6</sup> In autopsy studies, stercoral ulcers have been reported in 1.3–5.7% of elderly institutionalized patients.<sup>7</sup>

There have been a few cases in the literature of massive hematochezia in the setting of stercoral ulceration. This was first described by Milliser et al. in 1970.<sup>8</sup> More recently, a visible vessel in a stercoral ulcer was reported to be successfully treated endoscopically with epinephrine and electrocautery.<sup>9</sup> Subsequently, a high-risk stercoral ulcer was treated with epinephrine injection monotherapy because of the concern of perforation with electrocoagulation.<sup>10</sup>

Hemospray is a novel proprietary inorganic powder that achieves hemostasis by forming a cohesive barrier after



**Figure 2.** Colonoscopic retroflexion. (A) Clot adherent to deep ulceration in distal rectum. (B) Hemospray catheter positioned prior to deployment in retroflexion. (C) Deep ulcer in distal rectum with two visible vessels (arrows).

coming into contact with moisture, which leads to mechanical tamponade and, by concentrating and activating platelets and coagulation factors, promotes thrombus formation.<sup>11</sup> This mechanical barrier lasts for 24–72 hours.<sup>12</sup> This product was recently approved in Canada for the management of nonvariceal upper GI bleeds. Other case series have demonstrated efficacy as primary or salvage therapy in lower GI bleeds of various etiologies, including post-polypectomy bleeds, Dieulafoy lesions, and radiation proctitis.<sup>13,2</sup> Hemostatic sprays like Hemospray and Ankaferd Blood Stopper (Ankaferd Drug Inc., Turkey) have been described in the management of post-polypectomy rectal ulcers as well.<sup>14,15</sup> Overall, the rate of immediate control of lower GI bleeding with hemostatic powders has been described in literature to be 88–100%, with recurrent bleeding in 3–13% of cases, with the exception of radiation proctitis, which has been shown to be as high as 77%.<sup>12</sup>

This case is the first reported case of Hemospray being used to treat a stercoral ulceration. Our case had poor preparation with significant amounts of retained stool that limited the use of electrocoagulation, and the diffuse nature of oozing and the ulcer's positional instability was not amenable to endoscopic management with mechanical hemoclips or injected epinephrine.

Although caution must be taken due to the risk of perforation in the setting of direct mucosal contact (up to 55 mm Hg of pressure may be applied), and there is the risk of obscuring the visual field with hemostatic powders as in our case, Hemospray may be an effective alternative to conventional endoscopic measures.<sup>12</sup>

## DISCLOSURES

Author contributions: Both authors contributed equally to the manuscript. M. Woo is the article guarantor.

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Informed consent was obtained for this case report.

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