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COLORECTAL PERFORATION BY SELF-INDUCED HYDROSTATIC PRESSURE: A REPORT OF TWO CASES

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☐ **Abstract—Background: Most iatrogenic colorectal perforations occur as a result of endoscopic or fluoroscopic studies. Accidents associated with hydrostatic pressure-induced perforation are rarely reported, and self-induced hydrostatic pressure is an extremely rare cause of perforation because the anal sphincter complex may provide a protective barrier against perianal hydrostatic pressure. We present two cases of rectosigmoid colon perforation secondary to self-induced hydrostatic pressure. Case Reports: A 61-year-old man and a 45-year-old man presented with abdominal pain after forceful entry of tap water into the rectum, during rinsing of the anus after defecation in the first case, and during self-administered enema in the second case. Emergency operations were performed with the suspicion of hydrostatic pressure-induced rectal injury, and showed rectosigmoid mesenteric perforation in both cases. Resection of the diseased segment and end colostomy (Hartmann's procedure) was performed in the first case, and primary resection and anastomosis in the second case. The pathologic results showed abrupt loss of the colonic wall in the mesenteric border, without evidence of other inflammatory disease; these findings were consistent with acute mechanical colon injury. The postoperative course in both cases was uneventful. Conclusion: These cases put forth an unusual type of colorectal injury, caused specifically by hydrostatic pressure, thus adding to the available literature on hydrostatic pressure-induced injury.** © **2013 Elsevier Inc.**

☐ **Keywords—colorectum; perforation; hydrostatic; pressure**

INTRODUCTION

Perforation of the colon and rectum by hydrostatic pressure is rare, and this type of injury typically occurs during fluoroscopic studies resulting from excessive intralumen colonic pressure of the dye (1–3). In rare cases, hydrostatic pressure-induced colorectal perforations are usually associated with accidents involving, for example, a personal watercraft, jet ski, or pool whip, even though the anal sphincter complex should provide a protective barrier against perianal hydrostatic pressure (4–9). Enema-induced perforation in constipated patients also has been reported as a result of hydrostatic pressure injury (10). However, self-induced hydrostatic pressure injury of the colorectum is extremely rare (11). We present two cases of rectosigmoid intramesenteric colon perforation secondary to self-induced injury due to the hydrostatic pressure of tap water.

CASE REPORTS

Case 1

A 61-year-old man was referred to the Emergency Department (ED) with the chief complaint of abdominal pain and rectal bleeding that began 6 h earlier after directing water through a hose at the rectum. For the past 3 years, the patient had been rinsing the anus with tap water from a rubber hose after defecation for reasons of anal

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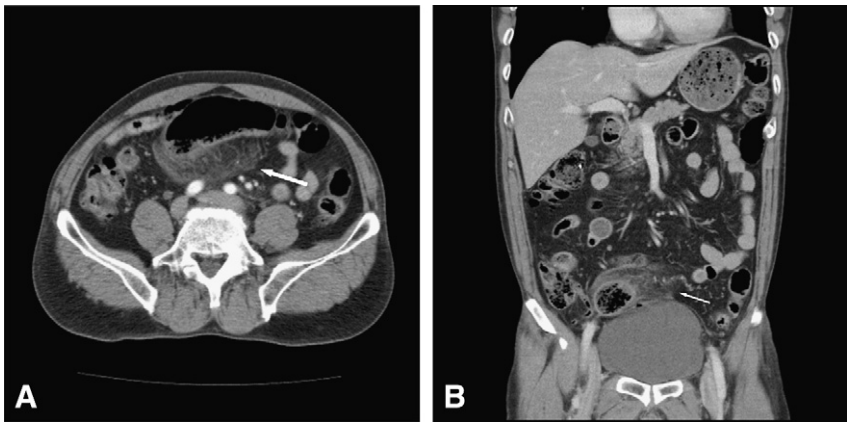

Figure 1. Computed tomography scan showing a loculated hematoma with mesenteric air bubbles in the rectosigmoid colon (white arrow). (A) Axial image. (B) Coronal image.

hygiene. The patient had cleaned himself this way for a long time, without any such sudden pain. He had no specific past medical history. He did not admit the circumstances of his injury until just before surgery. On the day of the injury, the patient rinsed the anus with tap water from the rubber hose after defecation as usual. After turning on the tap water, the distal end of the hose was accidentally in close enough proximity with the anus so that the patient felt the tap water running into the rectum. Immediately thereafter, he began to experience severe lower abdominal pain and rectal bleeding. He visited a local clinic and received conservative treatment. However, the lower abdominal pain worsened although the rectal bleeding stopped. The patient had never experienced pain like this before, nor had symptoms of diverticulitis. On physical examination, he appeared ill and had a temperature of 37.2°C, blood pressure of 150/80 mm Hg, pulse rate of 97 beats/min, and respiratory rate of 22 breaths/min. The abdomen was slightly distended and tender over the lower abdomen, without signs of peritoneal irritation. A digital rectal examination confirmed the presence of blood clot in the rectum, without active bleeding. Laboratory test results were within the normal limits, except for a white blood cell count (WBC) of 11,000/μL. A supine view of the abdomen showed gas-filled and dilatated small bowel loops in the mid-abdomen without free air. A computed tomography (CT) scan showed a hematoma with mesenteric air bubbles in the rectosigmoid colon (Figure 1). An emergency operation was performed. During the operation, an approximately 5-cm-sized mesenteric hematoma with crepitation in the rectosigmoid colon was found (Figure 2), but there was no evidence of free perforation of the colon or inflammatory disease in the remainder of the colon. Segmental resection of the rectosigmoid colon, including the affected mesentery, and end colostomy (Hartmann's procedure) were performed. Histological examination of the excised portion showed an abrupt tear (measuring 3 × 3 cm) in the mesenteric border of the colonic wall, with fecal impaction, but there was no evidence of diverticular disease. This finding was consistent with perforation through acute mechanical injury resulting from hydrostatic pressure. The postoperative course was uneventful, and the patient was discharged on the 9th postoperative day.

Case 2

A 45-year-old man presented to the ED with the chief complaint of abdominal pain that had begun 2 h earlier after he directed water through a hose at the rectum. The patient had been using tap water enemas for constipation for 4 months without an enema bag. On the day of the injury, the patient had similarly received an enema. When the distal end of the hose was in close

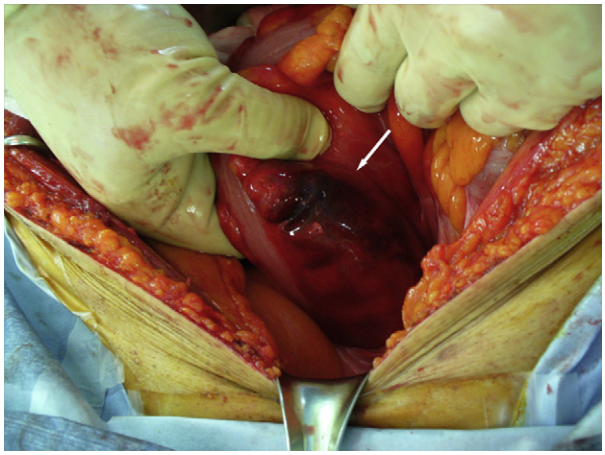

Figure 2. Operative finding in the rectosigmoid mesentery, a hematoma approximately 5 × 3 cm in size with crepitation was found (white arrow).