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A Rare Case of Prolapsed Sigmoid End Colostomy Complicated by Small Bowel Incarceration Treated with Manual Reduction and Emergency Surgery

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Manuscript Preparation E
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Conflict of interest: None declared

Patient: Male, 74-year-old
Final Diagnosis: Prolapsed colostomy with small bowel incarceration
Symptoms: Small bowel obstruction
Medication: —
Clinical Procedure: Emergency laparotomy
Specialty: Surgery

Objective: Unusual clinical course

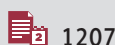
Background: Stoma prolapse is the full-thickness protrusion of bowel through a stoma, which occurs in 2% to 26% of colostomies. However, stoma prolapse complicated by small bowel incarceration is very rare, reported in only 3 cases thus far. To our knowledge, the present case is the first reported case of surgical treatment after preoperative manual reduction for small bowel incarceration.

Case Report: A 74-year-old male who had undergone sigmoid end colostomy in the right lower abdomen by Hartmann's operation for rectal cancer visited our emergency room complaining of severe stoma prolapse. The prolapse was about 20×15×15 cm in size and showed edematous change. Enhanced computed tomography revealed a loop of the small bowel incarcerated within the prolapsed colostomy. After the severe prolapse was reduced to 15×10×10 cm in size with manual compression for small bowel incarceration, an emergency laparotomy made via a circumferential incision revealed a partially necrotic prolapsed sigmoid colon and 15-cm-long red-dish small bowel loop in the abdominal cavity that needed to be preserved. A new sigmoid end colostomy was constructed in the right lower abdomen at the same site as the preoperative stoma.

Conclusions: It is important to remember that small bowel can herniate into a stoma prolapse, and when encountering the acute presentation of a large stoma prolapse, manual reduction of the incarcerated small bowel may help in selecting elective versus emergency surgery.

MeSH Keywords: Colostomy • Emergency Treatment • Intestinal Volvulus

Full-text PDF: <https://www.amjcaserep.com/abstract/index/idArt/920431>



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Background

Stoma prolapse is a relatively common, well-known, and long-term complication of stomas. Most cases can be managed conservatively with manual reduction or elective surgery, and it is rare that emergency surgical intervention is required to correct the prolapse. We describe a case of prolapsed sigmoid end colostomy accompanied by small bowel incarceration, of which only 3 cases have been reported thus far [1–3]. This is the first case, to our knowledge, of surgical treatment with preoperative manual reduction of the small bowel incarceration. We review the literature of similar cases and present some important learning points.

Case Report

A 74-year-old male visited our hospital's emergency room complaining of severe colostomy prolapse and abdominal pain. He had undergone a Hartmann operation 1 year before for rectal cancer during which a sigmoid end colostomy was created in the right lower abdomen at another hospital. The doctor in charge explained that the stoma was constructed in the right lower abdomen because the remaining sigmoid colon was too long. The stoma prolapse had been present for some time and had been managed conservatively in light of the patient's other comorbidities such as angina pectoris treated with an antiplatelet drug, symptomatic epilepsy after surgery for a cerebral arteriovenous malformation, and previous total gastrectomy, splenectomy for gastric cancer and right hemicolectomy for colon cancer.

The patient presented acutely with severe, generalized abdominal pain without signs of peritoneal irritation and progressively increasing stoma prolapse of 20×15×15 cm in size (Figure 1A). On examination, he was hemodynamically stable. The prolapsed stoma showed edematous change, and most of the mucosa was not ischemic. Laboratory findings were unremarkable including those for marker of intestinal ischemia such as creatine kinase, 71 IU/L; lactate dehydrogenase, 159 IU/L; base excess, 0.2 mmol/L and blood lactate, 1.7 mmol/L. Enhanced computed tomography (Figure 1B) revealed a small bowel loop incarcerated within the prolapsed colostomy and dilatation of the oral side of the intestine. Enhancement of the wall of the incarcerated small bowel did not show any vascular insufficiency.

The patient was diagnosed as having a prolapsed sigmoid end colostomy complicated by small bowel incarceration (Figure 2). To prevent necrosis of the incarcerated small bowel, we tried to reduce the severe prolapse with manual compression and reduced it to 15×10×10 cm in size (Figure 3A). However, because hemorrhage from a slight mucosal laceration occurring during manual reduction was uncontrollable due to the patient's antiplatelet drug, we decided that emergency surgical intervention was required for reconstruction of the colostomy and to assess whether the small bowel repositioned in the abdominal cavity was necrotic.

The operation was performed under general anesthesia. A circumferential incision was made around the stoma to mobilize the prolapsed colostomy (Figure 3B). Intraoperative findings showed that the remaining sigmoid colon had prolapsed and folded over itself similar to intussusception (Figure 3C).

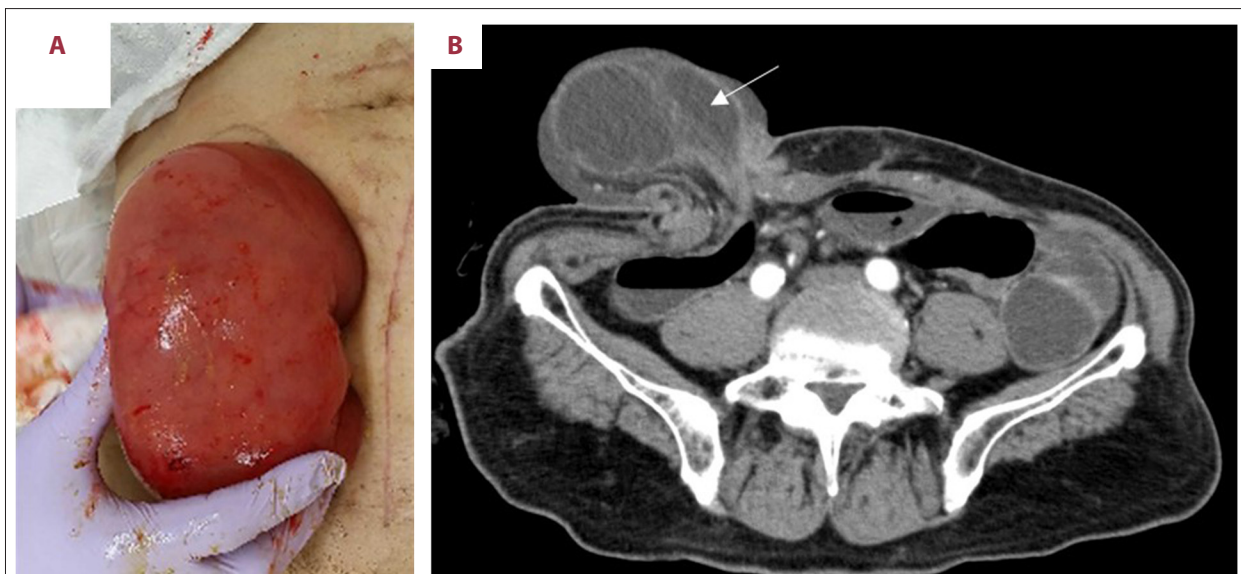


Figure 1. Preoperative findings. (A) Stoma prolapse was about 20×15×15 cm in size. (B) Enhanced computed tomography revealed the small bowel loop (arrow) incarcerated within the prolapsed colostomy. Enhancement of the wall of the incarcerated small bowel did not show any vascular insufficiency.

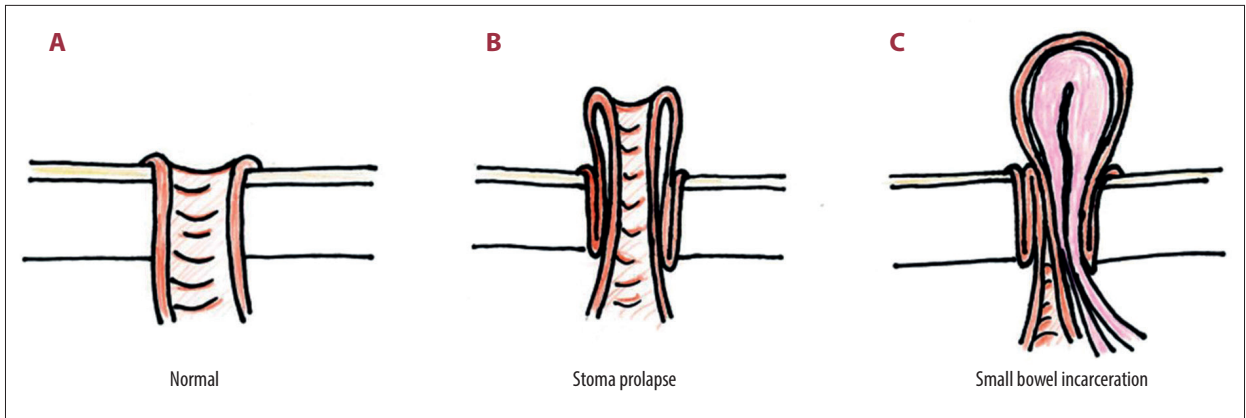


Figure 2. Schema. (A) Normal condition of colostomy. (B) Stoma prolapse. (C) The stoma prolapse with small bowel incarceration in this case.

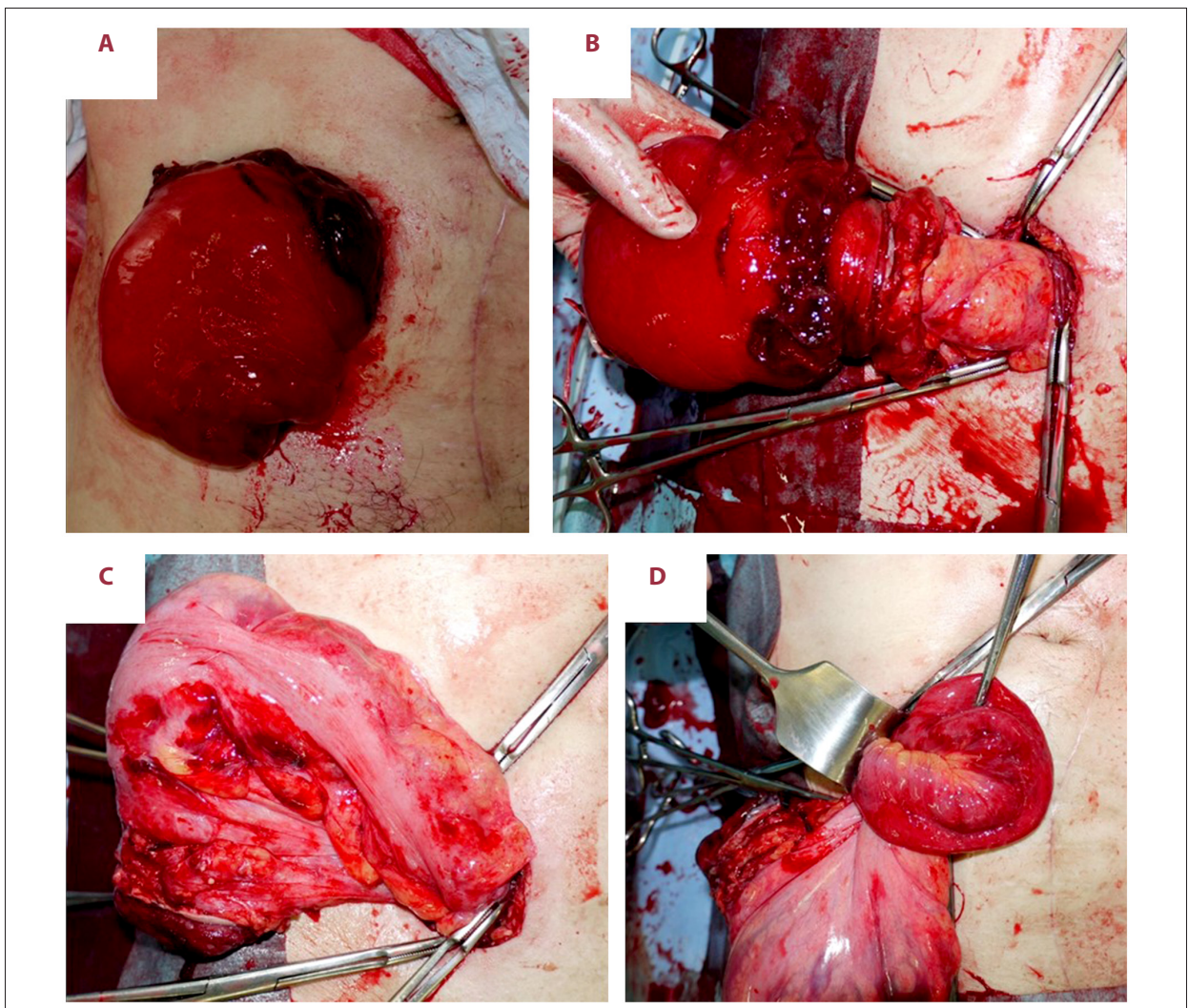


Figure 3. Intraoperative findings. (A) Prolapsed stoma after manual reduction to reposition the small bowel was 15×10×10 cm in size. (B) A circumferential incision was made to mobilize the prolapsed colostomy. (C) The remaining sigmoid colon to be absolved had prolapsed and folded over itself similar to intussusception. (D) The 15-cm-long small bowel loop was repositioned after it was assessed that resection was unnecessary.

Table 1. The 4 case reports of stoma prolapse complicated by small bowel incarceration including our case.

Case No.	1	2	3	4
Author	Daniell [1]	Fujita et al. [2]	Miller et al. [3]	Our case
Year	1981	2004	2017	2019
Age	83	81	102	74
Sex	M	M	M	M
Primary surgery	Hartmann operation	Sigmoid loop colostomy	Resection of transverse colon	Hartmann operation
Disease in primary surgery	Sigmoid colon cancer	Colon obstruction (not malignancy)	Transverse colon cancer (Stage 4)	Rectal cancer
Type of stoma	Sigmoid end colostomy	Sigmoid loop colostomy	Transverse end colostomy	Sigmoid end colostomy
Stoma site	LLQ	RUQ	RUQ	RLQ
Interval to prolapse	2 years	2 years	6 months	1 year
Manual reduction	Not performed	Not performed	Not performed	Performed
Emergency or elective surgery	Emergency	Emergency	Emergency	Emergency
Treatment for prolapse	Resection of necrotic colon and incarcerated small bowel	Resection of necrotic colon and incarcerated small bowel	Resection of colon and incarcerated small bowel	Resection of necrotic colon without resection of small bowel

LLQ – left lower quadrant of abdomen; RUQ – right upper quadrant of abdomen; RLQ – right lower quadrant of abdomen.

The colon of the prolapsed stoma was mostly viable but showed some partial necrotic change. During exploration of the abdominal cavity, a reddish small bowel loop 15 cm in length was found on the oral side 90 cm from the Bauhin valve, and it was determined that resection of this small bowel loop was unnecessary (Figure 3D). Thus, 20 cm of the remaining sigmoid colon including the prolapsed colostomy with necrotic change was resected, and a new end colostomy was reconstructed at the preoperative stoma site in the right lower abdominal quadrant.

The patient made an uneventful recovery and was discharged 9 days after surgery. He is still alive with no stoma complications or recurrence of rectal cancer 2 years after the surgery.

Discussion

Roughly 150 000 stomas are created in the United States annually [4]. Unfortunately, the rate of stoma-related complications ranges from 20% to 70% [5], and these complications can be grouped into early and late-occurring complications. Stoma prolapse is a late complication, and full-thickness protrusion of bowel through a stoma occurs in 2% to 26% of colostomies [6] and in some ileostomies and urostomies. Prolapse is more

frequent with loop colostomies than with end colostomies at a ratio of approximately 3: 1 [7], and it frequently involves the distal limb of the loop. Risk factors for stoma prolapse include patient factors such as advanced age, obesity, bowel obstruction at the time of stoma creation, and lack of preoperative site marking by the enterostomal nurse [8]. Techniques proposed to prevent stoma prolapse include extraperitoneal tunneling, mesentery-abdominal wall fixation, resection of redundant colon, and limitation of the size of the aperture. In the present case, the sigmoid end colostomy was constructed in the right lower abdomen because the remaining sigmoid colon was elongated during a Hartmann operation. In fact, intraoperative findings show redundant sigmoid colon, which seems to be the main cause of frequent stoma prolapse.

Acute stoma prolapse can often be reduced at the bedside with the aid of sugar and ice to reduce bowel wall edema, thus allowing for an elective repair if the prolapse were to recur. Surgical options include new stoma reconstruction with resection of the redundant colon, and various methods were reported in the previous literature, such as Miwa-Gant mucosal plication [9], a technique similar to an Altemeier perineal proctectomy [10], modified Delorme technique [11], amputation with a linear stapler [12], and button-pexy fixation [13].

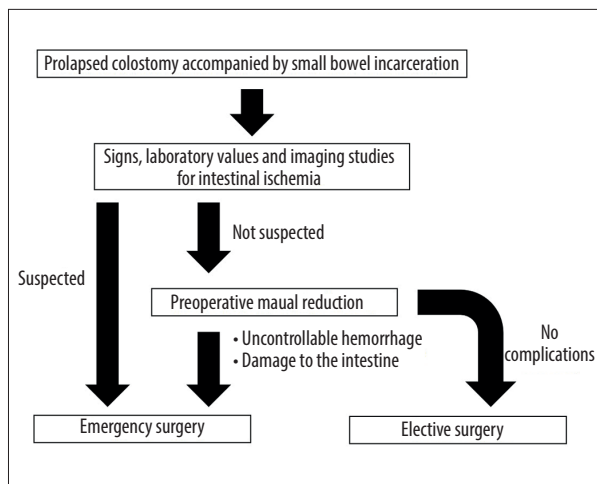


Figure 4. Treatment plan for prolapsed colostomy accompanied by small bowel incarceration suggested by this case

Our patient suffered a prolapsed sigmoid end colostomy complicated by small bowel incarceration, which is very rare and has been reported in only 3 case reports [1–3] so far (Table 1). Small bowel incarceration into a prolapsed colostomy is presumed to occur if the small bowel becomes adherent to the prolapsed colon or accidentally herniates into the potential space made by the colon intussusception associated with stoma prolapse. Operative findings from the 3 previous case reports indicated that they had all occurred by accidentally herniation, as in our case. However, our case is the first example in which small bowel incarceration could be reduced with manual compression before surgical treatment and the repositioned small bowel could be preserved. We decided to perform emergency surgery for the prolapsed colostomy because use of an antiplatelet drug had resulted in hemorrhage with uncontrollable

oozing. The herniated condition and vascular insufficiency can be easily diagnosed with computed tomography. If we had prevented damage to and bleeding from edematous mucosa during gentle manual reduction, we might have been able to avoid emergency surgery.

From this case, we suggest a treatment plan for prolapsed colostomy accompanied by small bowel incarceration (Figure 4). If a similar case is encountered, the surgeon should assess whether the patient has intestinal ischemia based on signs and symptoms, laboratory values and imaging studies. If intestinal ischemia is not suspected, preoperative manual reduction for small bowel incarceration can be attempted. It is important to remember that surgeons should not hesitate to perform emergency surgery for uncontrollable hemorrhage or damage to the colostomy with compression as in our case. However, manual reduction with no complication may allow for elective surgery, including minimally invasive operation such as button-pxy fixation.

Conclusions

It is important to remember that small bowel can herniate into a stoma prolapse, and when encountering the acute presentation of a large stoma prolapse, careful manual reduction of the incarcerated small bowel may help to allow the selection of elective surgery instead of emergency surgery.

Conflict of interests

None.

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