

## Status post colonoscopy diagnosis of sigmoid colon perforation in a morbidly obese patient: a case report

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### Abstract

**Objective:** This case study emphasizes one of the conventional, yet unique complications experienced after surveillance colonoscopy, especially in tobacco smokers with morbid obesity.

**Background:** Within endoscopic procedures, iatrogenic perforation of the colon is a rare complication with a very low incidence among all colonoscopic perforations. However, it is well-noted for its significant incidence due to diagnostic and therapeutic procedures.

**Presentation:** A 59-year-old African American male patient with a past medical history of hypertension, congestive heart failure, obesity, and prediabetes underwent surveillance colonoscopy and later presented to the ER with severe left upper quadrant abdominal pain radiating to the genitals. CT confirmed the diagnosis of sigmoid colon perforation.

**Discussion:** Although extremely rare and one of the most severe complications, the sigmoid colon or the rectosigmoid junction is the most common location for bowel perforation as this is a more tortuous and difficult-to-pass area in the context of a colonoscopy for colorectal cancer screening. The patient was not a proper candidate as he has the common etiological factors of perforation, namely morbid obesity and smoking history. A CT scan with or without contrast confirmed the diagnosis.

**Conclusion:** This case study aims to compare bowel perforation's etiology with previous studies to identify contributing factors that increase such complications. The literature concludes that the male gender, along with morbid obesity and smoking history, tends to correlate with a higher risk of complications associated with a colonoscopic intervention.

**Keywords:** Bowel/Iatrogenic perforation, endoscopies, colonoscopy, Sigmoid, rectosigmoid, Etc

### Background

Colonoscopic perforations are one of the most severe complications when performing gastrointestinal procedures, specifically endoscopies. Although rare, it is associated with unpleasant complications, such as peritonitis and sepsis, which could eventually lead to morbidity and mortality [8]. As the number of endoscopic

procedures in the colon increase, there are also many related complications [6]. This study compares with previous studies to better understand how specific risk factors may contribute to complications after a colonoscopy. Recognizing and understanding risk factors early on can reduce the probability of complications and aid in treating further possible perforations [10].

### Introduction

When discussing the complications associated with lower gastrointestinal endoscopies, bowel perforations due to colonoscopic intervention are widely recognized as one of the most severe yet rare complications. The incidence of diagnostic colonoscopic perforations ranges from 0.016 % - 0.8 % [2]. In such cases, bowel perforations can lead to complications during operations, sepsis, and stoma formation. The most frequent areas affected are the sigmoid and rectosigmoid colon [9]. Although several factors, such as

postoperative abdominal scars, tumors, radiotherapy, and diverticular diseases can predispose to complications such as perforation, the patient's anatomy, and history take precedence to result in perforations. Smoking has been associated with an increased rate of perforations [12]. Men with a BMI of 30 or greater have a relative risk of 1.78 for diverticulitis [5]. We introduce this rare case of a 59-year-old morbidly obese African American male smoker presenting with severe LUQ abdominal pain and tenderness radiating to the genitals.

## Case Details

A 59-year-old male who underwent surveillance colonoscopy on 10/09/2022 visits the surgery outpatient clinic with severe left upper quadrant abdominal pain radiating to the genitals.

He denies bowel movements and flatulence since the procedure. The patient has a history of hypertension, congestive heart failure, and prediabetes. The patient denies nausea, vomiting, diarrhea, constipation, fevers, chills, etc. The patient is placed on NPO for 12 hours, and a CT scan is ordered.

### Vitals on arrival:

Temperature: 37° C, Heart rate: 70/min, Respiratory rate: 17/min, Blood pressure: 187/96 mm of Hg, SpO<sub>2</sub>: 98 %, Weight: 162 Kg

### Physical exam on arrival:

- General: Alert and oriented, in no apparent distress, well nourished
- HEENT: Normocephalic, normal hearing, no scleral icterus, moist mucous membranes
- Heart: Regular rate and rhythm, no murmurs, rubs, gallops
- Pulmonary: Clear to auscultation and percussion, non-laboured respiration
- Abdomen: Soft, tender, non-distended, normal bowel sounds, no masses. On LUQ palpation, pain radiates to the whole abdomen, diffuse tenderness, positive rebound tenderness.
- Genitourinary (GU): Genitalia examined in a standing position with a standard external exam, no masses felt with a cough, intact cremasteric reflex.
- Back: No cerebrovascular (CVA) tenderness
- Musculoskeletal: Normal range of motion and strength, no tenderness or swelling
- Neurological: Awake, alert, and oriented x 3
- Skin: Warm, dry, and pink, with no rashes and lesions
- Psychiatric: Cooperative, appropriate mood and affect

### Assessment:

CT scan confirmed the diagnosis of sigmoid colon perforation. Colostomy was planned, and risks, benefits, and alternatives were discussed with the patient in detail, and the patient acknowledged the same as a part of the preoperative workup, labs, and vitals were monitored.

### Differential diagnosis:

The patient's abdominal pain can have different causes, such as cholecystitis, pancreatitis, atherosclerosis, diverticulitis, bowel perforation, etc., as these may be due to morbid obesity, as seen in this patient. The specific diagnosis was narrowed towards bowel perforation with supporting points such as status post colonoscopy, non-contributory lab values against cholecystitis and pancreatitis, and a CT scan was ordered confirming sigmoid colon perforation, and an ileostomy was planned.

## Management:

Procedure: 11/10/2022

Preoperative diagnosis: Perforated colon

Postoperative diagnosis: Perforated colon with hemoperitoneum

Blood loss: 50 ml

Complications: None

The perforated sigmoid colon was operated on under general anesthesia with a generous midline incision. This exploratory laparotomy was difficult, and it took three times more than the usual time to reach the abdominal wall and peritoneal cavity due to the patient's morbid obesity. Massive amounts of blood in all the quadrants with clots were found and evacuated along with old blood, and cultures were taken with antibiotic irrigation. The entire colon was examined and found to be supple with many adhesions at the sigmoid colon, which was then taken down meticulously, laboriously, and painstakingly with Metzenbaum scissors. There was noted to be an area of bleeding just above the peritoneal reflection. However, the perforation cannot be characterized entirely, and there was not a free hole, but there was a perforation, and when probed with the Kelly clamp, an opening to the colon was found. The incision was then closed with two layers of silk suture. A GI visit was planned for a complete evaluation of the entire colon until the hepatic flexure and no additional perforations or bubbling were noticed. Colonoscopy was completed, and a JP drain was placed in the pelvis. A decision was made to do a protective loop ileostomy in the right lower quadrant, which was found to be difficult as the subcutaneous tissue was 6 to 7 inches deep. A suitable spot on the ileum was identified along with the long mesentery. It was pulled onto the ostomy site, and a red rubber catheter was placed across the small bowel mesentery. Second-time antibiotic irrigation was again utilized and retrieved, followed by anatomic wound closure with correct lap counts. Iodoform gauze was placed between the staples of the skin, and an osteotomy was matured, which completed the procedure. The patient was advised to follow up in 4 weeks if he has no postoperative emergent complications after the procedure.

The patient visited the clinic on 12/12/2022 for a follow-up on ileostomy. ROD was placed in the ostomy at the time of the ileostomy, as it became loose. However, the ostomy bag and stoma are intact. Later, during this outpatient visit, ROD was quickly removed. Ileostomy reversal was planned for the patient in February if the lower GI imaging returned to normal limits. The patient was told to return in four weeks for his subsequent follow-up. On 01/09/2023, the patient visited the clinic for his appointed follow-up for ileostomy, and his wound was healed. The ostomy and stoma are still intact. The patient is planning to have an ileostomy reversal in February 2023. Before his ileostomy reversal, the patient needs cardiac clearance due to his hypertension and congestive heart failure history. As stated previously, the patient must also have routine lower GI imaging. On 01/30/2023, the patient returned to the clinic for ileostomy reversal/closure after completing his typical

cardiac clearance and lower GI imaging. His procedure is scheduled for February 2023. In the meantime, he was educated about complications related to the process and acknowledged the same.

During all three follow-up visits he had until today, the following vital signs were observed on the arrival of each visit, respectively, as

**Table: 1**

Date	Weight (lbs)	BMI Index (kg/sq meter)	BP (R arm/sitting)	Heart Rate (BPM)
12/12/2022	326	44.2	128/82	64
01/09/2023	322	43.7	140/92	80
01/30/2023	312	42.3	110/90	60

## Discussion

Within endoscopic procedures, iatrogenic perforation of the colon is a rare complication with a low incidence of 0.4 %. Garcia et al., in their work, shows that the specific incidence for diagnostic and therapeutic procedures was 0.056 % and 0.23 %, respectively, which confers a risk four times greater in therapeutic strategies [2]. Most of the perforations by diagnostic endoscopies occur in the sigmoid colon or the rectosigmoid junction, as occurred in this case, as this is a more tortuous and difficult-to-pass area in the context of a colonoscopy for colorectal cancer screening [7,4]. As the conservative treatment failed to relieve the symptoms, a decision was made to proceed with an ileostomy surgery in this patient due to the complexity of adhesions and morbid

shown in **Table 1**: A marked difference in weight loss and BMI was kept until the recent visit. The patient is on medications for his chronic medical problems and current medical conditions, and he claims he adheres to the medications as per prescription.

obesity. The surgical treatment performed was with a simple suture plus a protection ileostomy, the most frequently used treatment for this type of complication. [7,13,1]. Recurrence of bowel perforation is widespread in patients who have had surgery compared to those who did not. Our patient had no past bowel surgery or any symptom of bowel obstruction before the colonoscopy. Therefore, any coincidental causes of bowel perforation can be ruled out by confirming that the patient's perforation is due to a colonoscopy. There is a known positive correlation between smoking and the risk of bowel perforations; this patient has a high chance of recurrence and slow wound healing [11].

## Conclusion

In this patient, it is evident that a surveillance colonoscopy resulted in bowel perforation leading to an exploratory laparotomy, protective loop ileostomy, and additional recovery time. Bowel perforations due to the intervention of a colonoscopy are recognized as one of the most severe yet rare complications. Nearly 42.4 % of the adult population in the United States suffer from obesity, with 9.2 % suffering from severe obesity [3]. As a result, bariatric surgeries are more frequently performed, resulting in far more increased frequency of complications.

This report aims to raise clinician awareness of a rare, yet potentially fatal cause of bowel perforations. The diagnosis of bowel perforations should be considered in a patient with abdominal pain status post colonoscopy intervention without further delay and should be acted on accordingly. Although perforations from colonoscopies are rare, providers should be conscious of the risks and preventable complications.

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## Abbreviations

BMI: Body Mass Index

CT: Computerized Tomography

CVA: Cerebrovascular

GI: Gastrointestinal

GU: Genitourinary

JP drain: Jackson-Pratt suction device used during the procedure.

LUQ: Left Upper Quadrant

NPO: Nothing by mouth

ROD: Ileostomy stoma supporting rod SPO2: Oxygen Saturation

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