

# Unusual Causes of Abdominal Pain after Colonoscopy: A Case Series

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## Abstract

### Keywords

- ▶ acute diverticulitis
- ▶ acute gangrenous cholecystitis
- ▶ colonoscopy
- ▶ incarcerated umbilical hernia
- ▶ rupture of ovarian cyst

Colonoscopy is a relatively safe procedure with an overall complication rate between 0.2 and 0.35%. Complications do occur, however, including preparation related complications, colonic perforation, postpolypectomy hemorrhage, postpolypectomy coagulation syndrome, and other less-common miscellaneous complications. Abdominal pain is one of the more common complaints that symptomatic patients will present with after a colonoscopy, occurring up to 5% of the time. Although the cause is usually minor and does not require further workup, gastroenterologists are most concerned about perforation and postpolypectomy coagulation syndrome in the setting of severe abdominal pain. However, as gastroenterologists, we must also be cognizant that there may be other less-common causes of the abdominal pain. The four cases presented here illustrate rare presentations of abdominal pain after colonoscopy, consisting of acute diverticulitis, incarcerated umbilical hernia, acute gangrenous cholecystitis, and rupture of the ovarian cyst.

## Introduction

Colonoscopy is a relatively safe procedure with an overall complication rate between 0.2 and 0.35%.<sup>1–4</sup> Complications do occur, however, including preparation related complications, colonic perforation, postpolypectomy hemorrhage, postpolypectomy coagulation syndrome, and other less-common miscellaneous complications.<sup>5</sup> Abdominal pain is one of the more common complaints that symptomatic patients will present with after a colonoscopy, occurring up to 5% of the time.<sup>6</sup> Although the cause is usually minor and does not require further workup, gastroenterologists are most concerned about perforation and postpolypectomy coagulation syndrome in the setting of severe abdominal pain. There are other less common causes of pain following colonoscopy; however, colonoscopists need to be aware of these conditions. Here, we report four unusual cases of abdominal pain following colonoscopy, all likely attributed to the procedure itself.

## Case Reports

### Case 1: Acute Diverticulitis

A 59-year-old male underwent outpatient colonoscopy for evaluation of iron-deficiency anemia. The findings consisted of ileal erosions likely secondary to nonsteroidal anti-inflammatory drug use, a sigmoid hyperplastic polyp removed by forceps polypectomy, sigmoid diverticulosis, and internal hemorrhoids. The procedure was performed without difficulty and without immediate complication. The patient did well until 2 days later when he developed left lower quadrant abdominal pain associated with nausea and vomiting. The following day, he was febrile with a temperature of 100.9 F. He presented to the emergency department (ED), where the physical examination was significant for tenderness to palpation in the left lower quadrant of the abdomen without rebound or guarding. Laboratory findings were significant for leukocytosis with white blood cell (WBC) 12.5 k/mcL and anemia with hemoglobin/hematocrit

(Hgb/Hct) 12.1 g/dL/38.5%. Computed tomography (CT) of the abdomen and pelvis with contrast revealed inflammatory changes around the sigmoid colon which contained multiple diverticula. There was no evidence for pneumoperitoneum. Findings were consistent with acute sigmoid diverticulitis. He was discharged from the ED on a clear liquid diet with prescriptions for ciprofloxacin and metronidazole. He followed-up in gastrointestinal clinic 1 week later and was doing well.

### Case 2: Incarcerated Umbilical Hernia

A 60-year-old female underwent outpatient surveillance colonoscopy for a history of colon polyps. The colonoscopy was unremarkable with no significant findings other than internal hemorrhoids. The procedure was uneventful. After she returned home, the patient developed periumbilical abdominal pain, with associated nausea and vomiting. She presented to the ED, where the physical examination was significant for an umbilical hernia and tenderness to palpation in the right suprapubic area. The emergency room physician was able to reduce the hernia. However, the patient continued to be symptomatic and was admitted for further monitoring and treatment. CT of the abdomen and pelvis without contrast revealed dilated loops of small bowel in the left side of the abdomen with decompressed distal small bowel loops consistent with obstruction. The transition point was at the level of the small umbilical hernia which contained a short segment of small bowel. She developed recurrence of the hernia with incarceration and was taken to the operating room. Repair of the incarcerated hernia was performed, and she had an uneventful postoperative course.

### Case 3: Acute Gangrenous Cholecystitis

A 75-year-old male underwent outpatient surveillance colonoscopy for a history of colon polyps. A diminutive polyp was found in the descending colon and was removed with a cold forceps. Additionally, he was found to have diverticulosis throughout the colon. The procedure was performed without any difficulty and without immediate complication. Later that day, he had the onset of right upper quadrant and epigastric abdominal pain. Over the next day, the pain progressively worsened and began radiating to the back and right scapular region. The patient presented to the ED and physical examination was significant for moderate tenderness in the right-upper quadrant. Laboratory testing was significant for leukocytosis with WBC 13.8 k/mcL and elevated total bilirubin of 2.1 mg/dL. CT of the abdomen and pelvis with contrast revealed a distended gallbladder with pericholecystic fluid, as well as a stone, in the neck of the gallbladder. Nuclear medicine hepatobiliary imaging scan with technetium 99 m disofenin revealed no uptake in the gallbladder despite 2 mg intravenous injection of morphine, indicating acute cholecystitis. The patient underwent laparoscopic cholecystectomy and was found to have acute gangrenous cholecystitis with pathologic findings of acute necrotizing cholecystitis.

### Case 4: Rupture of Ovarian Cyst

A 42-year-old female with a history of ovarian cysts underwent outpatient colonoscopy for the evaluation of rectal bleeding. A 15-mm flat, sessile polyp was found in the proximal transverse colon and was removed with snare cautery polypectomy. In addition, mild erythema was noted in the distal 3 cm of the rectum and multiple cold forceps biopsies taken for pathology. The procedure was performed without any difficulty, and no complications were noted. In the recovery room, the patient had the onset of suprapubic pain warranting evaluation with a noncontrast CT of the abdomen and pelvis. There was right adnexal enlargement and free pelvic fluid, with a small amount of blood in the dependent pelvis, presumed secondary to a ruptured hemorrhagic ovarian cyst. She was observed for several hours and the pain improved significantly. She was discharged home in stable condition.

## Discussion

Complications after colonoscopy most commonly cause abdominal pain include perforation and postpolypectomy coagulation syndrome. However, as gastroenterologists, we must also be cognizant that there may be other less common causes of the abdominal pain. The four cases presented here illustrate rare presentations of abdominal pain after colonoscopy, consisting of acute diverticulitis, incarcerated umbilical hernia, acute gangrenous cholecystitis, and rupture of the ovarian cyst.

Acute diverticulitis has been directly linked to colonoscopy with an incidence of 0.84 (95% confidence interval [CI]: 0.5–1.33) per 1,000 examinations within 30 days and 0.56 (95% CI: 0.3–0.95) per 1,000 examinations within 7 days.<sup>7</sup> Acute diverticulitis occurs as a result of micro- or macroporforation of colonic diverticula.<sup>8</sup> The most likely mechanism of diverticulitis after colonoscopy would be of a microperforation resulting from barotrauma or mechanical forces. In addition, it is possible that irrigation directly into a diverticulum would potentially have the same effect.

Only one report of incarceration of an umbilical hernia occurring after colonoscopy has been reported in the literature.<sup>9</sup> Incarceration of an umbilical hernia after colonoscopy is likely related to a combination of factors. Beetham and Khan believed that the mechanism was likely related to increased intra-abdominal pressure following colonic air distention forcing the small bowel into the hernia and compromising the blood supply.<sup>9</sup> We agree that multiple factors including mechanical forces increased air pressure within the colon, as well as increased intraabdominal pressure, is the most likely mechanism.

There are four reports of cholecystitis occurring after colonoscopy<sup>10–13</sup> with one report of acute gangrenous cholecystitis.<sup>11</sup> Acute cholecystitis is associated with cholelithiasis in most cases. The pathogenesis is related to obstruction of the cystic duct and cholesterol supersaturation of bile.<sup>14</sup> In regard to acute cholecystitis after colonoscopy, a mechanism was proposed by Milman and Goldenberg consisting of inflammation resulting from relative dehydration from bowel preparation

causing bile to become more lithogenic with diminished bile flow and gallbladder distention.<sup>10</sup> In addition, Maddur et al proposed that this may occur more commonly in the setting of preexisting cholelithiasis and that cystic duct obstruction may result from more lithogenic bile and contribute to the inflammatory process.<sup>13</sup> Bacterial translocation, as a result of mechanical forces, and manipulation in the colon has also been proposed as a possible mechanism or contributing factor<sup>10,11</sup> with Fernández-Martínez et al actually isolating *Enterococcus faecalis* and *Clostridium spp.* from the pericholecystic fluid in their case.<sup>11</sup>

Rupture of ovarian cyst is uncommon after colonoscopy with one reported case from the United Kingdom in which endoscopic mucosal resection was performed for removal of a 15-mm polyp.<sup>15</sup> Possible mechanisms for ovarian cyst rupture include increased intra-abdominal pressure from air insufflation during the colonoscopy or mechanical trauma from the colonoscopy or therapeutic interventions.

It seems likely that there is causality and not mere coincidence given the temporal association between these events and colonoscopy, as well as plausible mechanisms, to explain them as complications of the procedure itself. Given the paucity of cases reported, additional studies investigating the incidence of incarcerated umbilical hernia, acute cholecystitis, and rupture of ovarian cyst following colonoscopy, as has been done with acute diverticulitis,<sup>7</sup> would be helpful. As gastroenterologists, we must be aware that not all cases of abdominal pain after colonoscopy is due to perforation or postpolypectomy coagulation syndrome, and other less-common etiologies must be considered.

#### Conflicts of Interest

None declared.

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