

Single Case

A Rapid Development of Post-Colonoscopy Appendicitis within Twelve Hours: A Case Report

Sean-Patrick Prince^a Qitan Huang^b Denisse Camille Dayto^b
Andrew Sephien^b Varun Patel^b Sreekanth Chandrupatla^b

^aHoly Cross Health, University of Miami, Coral Gables, FL, USA; ^bUSF Morsani College of Medicine GME Citrus Hospital Program, HCA Florida Healthcare, Pensacola, FL, USA

Abstract

Introduction: Colon cancer has seen a steady decline in incidence due to increased colonoscopy use. We can assume that this increased use, results in a higher incidence of post-colonoscopy complications such as postpolypectomy syndrome, perforation and post-colonoscopy appendicitis (PCA). In this report, we present a case of PCA presenting to the emergency department within 12 h of a screening colonoscopy. **Case Presentation:** Our patient, a 77-year-old male, underwent an uncomplicated screening colonoscopy and was discharged home after briefly being monitored without any complaints. Later that day, the patient presented to the emergency department complaining of acute generalized abdominal pain. On presentation, the patient was found to be hypertensive and febrile with a distended abdomen with right lower quadrant tenderness on examination. Laboratory investigations noted an elevated white blood cell count with no evidence of acute appendicitis or focal inflammatory changes on contrast-enhanced abdominal and pelvic computer tomography. The patient was subsequently admitted and developed worsening right lower quadrant abdominal pain and distention overnight. Due to this worsening clinical condition, the decision was made to proceed with a diagnostic laparoscopy. After frank pus was found laparoscopically around the cecum and appendix, it was then converted to an exploratory laparotomy. Subsequently, a perforated gangrenous appendix was found with an erythematous and indurated cecum. **Conclusion:** Major complications of colonoscopy can include perforation and/or post-colonoscopy bleeding which have been shown to have a respective incidence of 0.21% and 0.1%. With the anticipated rise in the number of colonoscopies, much rarer complications such as PCA with an incidence of less than 0.05% will be seen more frequently. Due to its nonspecific presentation, it is necessary for providers to consider PCA as an important differential for all patients presenting with abdominal pain after a colonoscopy.

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Correspondence to:
Sean-Patrick Prince, dr.sean.p.prince@gmail.com

Introduction

Despite being the 3rd most common cause of cancer-related death in the United States of America (USA), colorectal cancer has seen a steady decline in incidence since the mid-1980s [1]. In the USA, between 2003 and 2012, its incidence declined by approximately 3% each year [1]. Most of this decline has been attributed to increased screening and colonoscopy use [1]. In patients 50–75 years old, colonoscopies increased by almost 200% between 2000 and 2013 [1]. This increased use of screening colonoscopy is further supported by its strong association with a reduced risk of death from colorectal adenocarcinomas [2].

Overall, colonoscopy has been shown to be a safe procedure with a low complication rate [3]. As colonoscopy use increases, rare complications, such as colonic perforation and hemorrhage, are anticipated to increase as well [4]. Therefore, awareness and recognition of these and even rarer complications, such as post-colonoscopy appendicitis (PCA), are necessary. Here, we present the case of a 77-year-old Caucasian male who developed acute gangrenous appendicitis with peritonitis after a routine colonoscopy.

Case Report

A 77-year-old Caucasian male with a medical history of coronary artery disease, heart failure, diabetes mellitus, hypertension, and chronic obstructive pulmonary disease underwent a routine screening colonoscopy. During the procedure, the endoscope was advanced under direct visualization until the cecum was reached. The appendiceal orifice and ileocecal valve were easily identified, with no signs of inflammation (shown in Fig. 1, 2). Otherwise, severe diverticulosis was noted in the left colon (shown in Fig. 3, 4) and the patient required piecemeal resection of a single sessile 1.6 cm polyp in the ascending colon (shown in Fig. 5, 6). After being discharged without complaints, he later presented to the emergency department with complaints of acute generalized abdominal pain. Vital signs on presentation revealed blood pressure of 175/82 mm Hg, heart rate of 86 beats/min, and temperature of 103.1 F. On physical examination, his abdomen was tender to palpation in the right lower quadrant. Laboratory investigations revealed a white blood cell count of 16.5×10^3 cells/ μL . Contrast-enhanced abdominal and pelvic computed tomography revealed cholelithiasis without evidence of acute appendicitis or focal inflammatory changes. On admission, blood cultures were obtained, and broad-spectrum antibiotics were started.

After developing worsening abdominal pain and distention, with severe tenderness and guarding in the right lower quadrant, the patient underwent diagnostic laparoscopy the following day. During surgery, frank pus was visualized around the cecum and appendix with purulent fluid throughout the abdomen. After the surgery was converted to an exploratory laparotomy, a perforated gangrenous appendix was found with surrounding purulence and an erythematous and indurated cecum. The remainder of the colon was inspected, and there was no evidence of colonic perforation.

An appendectomy was then performed removing a 7 cm long and 1.5 cm wide appendix containing fecaloid material. Histological examination confirmed a clinical diagnosis of gangrenous appendicitis with periappendicitis. After the patient remained stable and the clinical condition improved, the patient was discharged home. The CARE Checklist has been completed by the authors for this case report, attached as online supplementary material (for all online suppl. material, see <https://doi.org/10.1159/000538970>).

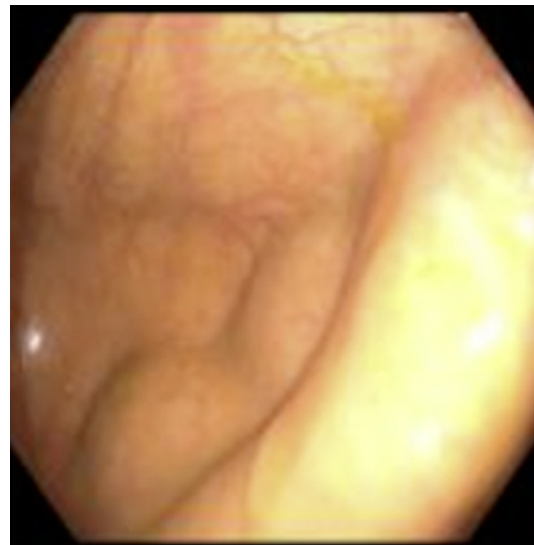


Fig. 1. Appendiceal orifice.

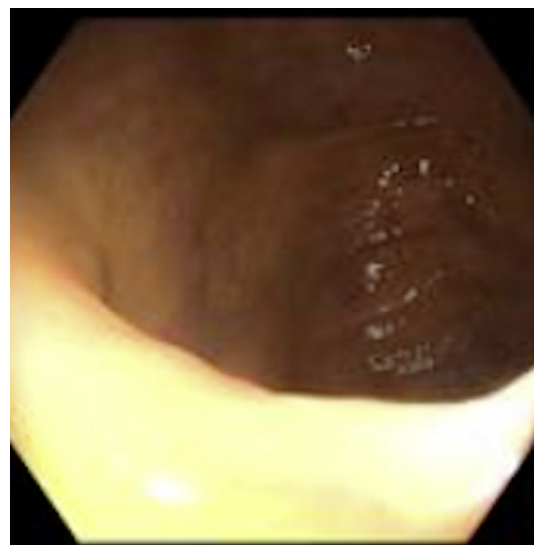


Fig. 2. Ileocecal valve.

Discussion

Colonoscopy is a commonly used procedure, which can be both diagnostic and therapeutic [3–6]. Thus, it is a relatively safe procedure [3, 6, 7]. Major complications such as perforation and post-colonoscopy bleeding have been shown to have incidences of 0.21% and 0.1% [7, 8]. Overall, the global post-colonoscopy complication rate has remained stable or has declined over time [9].

PCA is a rare but important post-colonoscopy complication. In the literature reviewed, PCA was first reported in 1988 by Houghton and Aston, and since then, there have been a total of 37 cases documented [10]. Although its incidence is approximately 0.038%, PCA is an important consideration in the setting of post-colonoscopy abdominal pain, fever, leukocytosis, and/or peritonitis [4, 7, 10, 11]. Because this nonspecific symptomatology is shared with more common complications such as postpolypectomy syndrome, detection and management are often delayed [4, 7]. With a delay in diagnosis precluding early appendectomy, the risk of

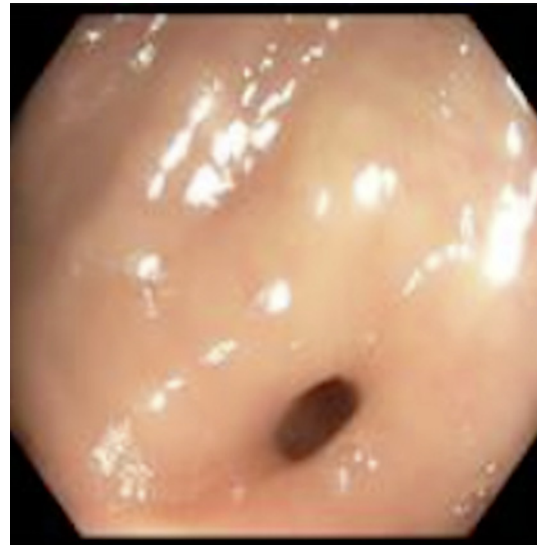


Fig. 3. Severe diverticulosis of the left colon.



Fig. 4. Diverticulosis.

complications, such as gangrenous appendicitis and perforation can increase [3–5, 7]. Although early radiological imaging is important in making the correct diagnosis, the lack of inflammatory alteration in the appendix during the early stages of appendicitis makes it difficult to be detected [7]. In the present case, the patient underwent surgery the day after presentation, based on his clinical picture and a negative computed tomography scan on admission.

There are several proposed mechanisms for PCA, including (1) preexisting subclinical appendiceal disease, (2) increased intraluminal pressure with insufflated air leading to obstruction of the orifice and appendiceal lengthening, (3) direct intubation of the appendiceal lumen by the colonoscope, (4) mucosal injury around the appendiceal lumen leading to inflammation, and (5) introduction of bowel contents/fecaliths into the appendix [3–7, 10]. In our patient, there was no evidence of subclinical disease of the appendix, and the likely etiologies included increased intraluminal pressure insufflating the appendix. Similar to

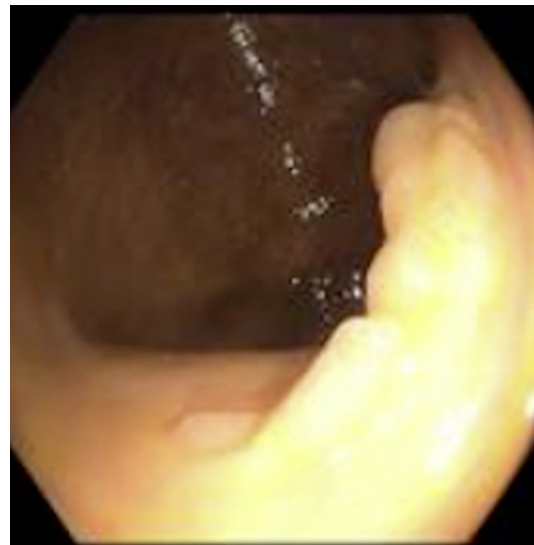


Fig. 5. Polyp (1.6 cm) in the ascending colon.



Fig. 6. Post-polypectomy retroflexed in the rectum.

Johnston and Maa [12], direct intubation of the appendiceal lumen by the colonoscopy is less likely due to the size of the colonoscope.

The proposed criteria for PCA by Shaw, Gallardo, and Basson are symptoms that begin <72 h after colonoscopy with no endoscopic evidence of appendicitis or cecal inflammation at the time of the initial procedure [3]. In this case, the patient's symptoms developed within 12 h of the procedure, and the cecum and appendiceal orifice appeared normal without signs of inflammation. After presenting to the emergency department, the patient was started on antibiotics and admitted for observation, eventually requiring exploratory laparotomy. Possibly, a greater suspicion of PCA would have prevented the need for an exploratory laparotomy.

Although randomized trials suggest that antibiotics alone can be used to treat uncomplicated appendicitis due to delayed diagnosis, the majority of post-colonoscopy cases were treated with open appendectomy [3, 7]. With increased awareness and early detection, the laparoscopic approach could be a safer alternative in these patients.

PCA is an extremely rare complication that can be mistaken for more well-known complications such as postpolypectomy syndrome. This can potentially lead to delays in recognition and treatment as well as more serious outcomes. Increased clinical awareness is necessary for early diagnosis and timely intervention. PCA should be considered an important differential diagnosis for all patients presenting with abdominal pain after colonoscopy.

Statement of Ethics

This study protocol was reviewed and the need for approval was waived by the Institutional Review Board at HCA Florida Healthcare/USF Morsani College of Medicine GME Citrus Hospital Program. Written informed consent was obtained from the patient for publication of the details of their medical case and any accompanying images.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

Sean-Patrick Prince, MD, University of Miami/Holy Cross Health: writing, editing, and publication consent. Qitan Huang, DO, HCA Florida Healthcare/USF Morsani College of Medicine GME Citrus Hospital Program, Denisse Camille Dayto, MD, HCA Florida Healthcare/USF Morsani College of Medicine GME Citrus Hospital Program, Andrew Sephien, MD, HCA Florida Healthcare/USF Morsani College of Medicine GME Citrus Hospital Program, Varun Patel, MD, HCA Florida Healthcare/USF Morsani College of Medicine GME Citrus Hospital Program, and Sreekanth Chandrupatla, HCA Florida Healthcare/USF Morsani College of Medicine GME Citrus Hospital Program: writing and editing.

Data Availability Statement

All data generated or analyzed during this study are included in this article and its online supplementary material files. Further inquiries can be directed to the corresponding author.

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