Nonoperative management of pneumoperitoneum after colonoscopy

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ABSTRACT

Pneumoperitoneum is often a sign of a perforated viscus and is considered a surgical emergency, as it can lead to enteric contamination within the peritoneal cavity with subsequent peritonitis and sepsis. Management of asymptomatic pneumoperitoneum can pose a dilemma to physicians. Here, we present and discuss a rare case of a 60-year-old man who developed a pneumoperitoneum after a colonoscopy.

KEYWORDS Colonoscopy; complications; pneumoperitoneum

Perforation rates in colonoscopies vary depending on the type of procedure being performed. The incidence of perforations ranges from 0.016% to 0.2% following diagnostic colonoscopies.¹ Perforations lead to free air in the abdomen, a condition known as pneumoperitoneum. Although pneumoperitoneum is often suggestive of an overtly perforated viscus, it may also arise through microperforations or through transmural passage of air into the peritoneal cavity during colonoscopies.² Pneumoperitoneum is a rare consequence of colonoscopies and poses a therapeutic dilemma to physicians, particularly if patients are asymptomatic. Pneumoperitoneum is generally thought to be a surgical emergency because it can lead to enteric contamination within the peritoneal cavity with subsequent peritonitis and sepsis.³ Here, we present a rare case of pneumoperitoneum that developed after colonoscopy.

CASE REPORT

A 60-year-old man with known diverticulosis presented with progressively worsening abdominal pain and hematochezia. Computed tomography (CT) scan of the abdomen showed edema and inflammation of the ascending colon consistent with colitis. Colonoscopy showed a polyp in the ascending colon, diverticulosis, and erythema consistent with segmental colitis associated with diverticulosis. There were inflammatory changes concerning for ischemic colitis in the transverse colon. The polyp was not removed. Carbon

dioxide was used for insufflation. The colonoscopy was not noted to be technically difficult, and there was no evidence of an overt perforation.

The patient was in pain following the procedure and had a distended abdomen with mild tenderness to palpation. To evaluate, a CT angiogram of the abdomen was performed and showed patent mesenteric vessels, pneumoperitoneum without discrete source (*Figure 1*), and air fluid levels throughout the colon without pneumatosis. Surgery was consulted to evaluate the pneumoperitoneum, which was likely secondary to colonoscopy with insufflation. The patient was asymptomatic at this time, but he was not passing gas or having bowel movements. He was placed on bowel rest and given intravenous fluids and antibiotics. His lactic acid levels were monitored, and serial abdominal exams were performed. Abdominal exams showed distention but were otherwise benign. Lactic acid levels trended down from 1.4 mmol/L on the day of presentation to 0.8 mmol/L after colonoscopy. He was afebrile and never developed leukocytosis. He recovered well and remained asymptomatic for the remainder of his admission, as well as during his outpatient follow-up 3 weeks later.

DISCUSSION

Perforation rates during diagnostic colonoscopies are relatively higher than those during screening colonoscopies due to the presence of predisposing factors for perforations.¹ Risk

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Figure 1. CT of the abdomen demonstrating the presence of pneumoperitoneum (white arrows).

factors for perforations include diverticulosis, advanced age, multiple comorbidities, and obstruction. Existing weakness in the colon wall as a result of infection, inflammatory bowel disease, or malignancy increases risk for perforation as well.⁴ The patient described in the case had colitis and therefore was at an increased risk for perforation. It is unclear if the pneumoperitoneum was due to a microperforation that resolved spontaneously or a simple transmural passage of air secondary to the insufflation. He was in pain during the evening after the colonoscopy. When the pneumoperitoneum was discovered on CT the next day, he was asymptomatic.

The management of asymptomatic pneumoperitoneum postcolonoscopy is controversial. A prospective pilot study addressed its management and advocated that until a large-scale study is conducted to define the incidence of this occurrence, all cases of pneumoperitoneum after colonoscopy should be treated as perforations rather than harmless transmural passage of air.² However, there are those who believe that if the patient is clinically stable with minimal abdominal pain and distention, and if fever and leukocytosis are absent, management should be conservative and nonsurgical. In nonsurgical cases, it is recommended that patients be treated with intravenous antibiotics and bowel rest.⁵ The patient discussed was determined to be a nonsurgical case, was monitored carefully with serial abdominal exams, and was given

intravenous fluids and antibiotics, with slow advancement of diet.

We hope that cases like this can shed more light on the approach to pneumoperitoneum postcolonoscopy and aid in the creation of a diagnostic algorithm that identifies which patients may be safely observed and which are surgical emergencies. Such information can potentially prevent unnecessary laparotomies, thereby reducing patient morbidity, hospital length of stay, and health care costs, while at the same time providing positive patient outcomes.

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