The Journal of Emergency Medicine, Vol. 52, No. 4, pp. e117–e122, 2017

0736-4679/$ - see front matter

http://dx.doi.org/10.1016/j.jemermed.2016.10.047

Clinical Communications: Adult

PNEUMOMEDIASTINUM, PNEUMOTHORAX, AND SUBCUTANEOUS EMPHYSEMA CAUSED BY COLONOSCOPIC PERFORATION: A REPORT OF TWO CASES

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□ **Abstract—Background: Although colonoscopy is generally a safe procedure, lethal complications can occur. Colonoscopic perforation is one of the most serious complications, and it can present with various clinical symptoms and signs. Aggravating abdominal pain and free air on simple radiography are representative clinical manifestations of colonoscopic perforation. However, unusual symptoms and signs, such as dyspnea and subcutaneous emphysema, which are less likely to be related with complicating colonoscopy, may obscure correct clinical diagnosis. We present two cases of pneumomediastinum, pneumothorax, and subcutaneous emphysema caused by colonoscopic perforation. Case Report: A 75-year-old woman and a 65-year-old man presented with dyspnea, and facial swelling and abdominal pain, respectively. In the first case, symptoms occurred during polypectomy, whereas they occurred after polypectomy in the second case. Chest radiograph and computed tomography scans revealed pneumomediastinum, pneumothorax, and subcutaneous emphysema in the neck. During both operations, an ascending colonic subserosa filled with air bubbles was observed, and laparoscopic right hemicolectomy was performed in the first case. In the second case, after mobilization of the right colon, retroperitoneal colonic perforation was identified and primary repair was performed. The postoperative course was uneventful. Why Should an Emergency Physician be Aware of This?: These cases show the unusual clinical manifestations of colonoscopic perforation, which depend on the mechanism of perforation. Awareness of these less typical manifestations is crucial for prompt diagnosis and management for an emergency physician.** © **2016 Elsevier Inc. All rights reserved.**

□ **Keywords—colonoscopy; perforation; pneumomediastinum; pneumothorax; subcutaneous emphysema**

INTRODUCTION

As the volume of colonoscopies has increased over the years for colorectal cancer screening, the frequency of therapeutic procedures has also increased (1). Although colonoscopy is a generally safe procedure, related complications may be inevitable. Colonoscopic perforation is one of the most serious complications, because it can lead to leakage of bowel content into the peritoneal cavity and eventually sepsis. Therefore, early diagnosis and prompt management play a critical role in morbidity and mortality risk (2). However, unusual clinical manifestations can interfere with accurate diagnosis and ultimately delay treatment. Pneumomediastinum, pneumothorax, and subcutaneous emphysema are extremely rare presentations after colonoscopic perforation (3,4). We present two cases of pneumomediastinum, pneumothorax, and subcutaneous emphysema caused by retroperitoneal colonic perforation by colonoscopic polypectomy.

RECEIVED: 19 October 2016;
ACCEPTED: 21 October 2016

Case 1

A 75-year-old woman presented to the emergency department with abdominal pain, dyspnea, and facial swelling. One month earlier, screening colonoscopy had been performed at a local clinic, and she was then referred to the department of gastroenterology for treatment of a lateral spreading tumor (LST) of the ascending colon following polypectomy for two small polyps. She had no specific medical history except for well-controlled diabetes mellitus diagnosed 5 y earlier. During colonoscopy, an LST of about 3 cm was identified (Figure 1) and endoscopic submucosal dissection was performed (Figure 2). However, at the end of the procedure, the patient complained of dyspnea and abdominal pain, with concurrently developing neck and facial swelling. Even though a precise perforation site was not identified, the procedure was terminated because of the possibility of perforation. Initial vital signs at the emergency department were as follows: body temperature 37.5°C; blood pressure 130/89 mm Hg; heart rate 92 beats/min; and respiratory rate 21 breaths/min, with SpO_2 of 100% on 2 L/min of oxygen by facial mask. On physical examination, the abdomen was distended, tympanic, and tender over the whole abdomen, without definite signs of peritoneal irritation. The patient had an acutely ill appearance with neck and facial swelling. A clear crepitus was palpated on the neck and anterior chest wall, indicating subcutaneous emphysema. Laboratory test results were within normal limits, except for a white blood cell count of 12,000/μL. Chest radiograph revealed pneumothorax, pneumomediastinum, pneumoperitoneum, and soft tissue emphysematous changes in the neck (Figure 3). The patient underwent emergency laparoscopic surgery because the LST was not completely removed and the abdominal pain was aggravated over 2 h. During laparoscopic surgery, although the perforation site was not identifiable, a subserosal layer of the ascending colon filled with air bubbles was observed (Figure 4). Right hemicolectomy was performed and the resected specimen revealed a 2-mm perforation on the side of the retroperitoneal attachment.

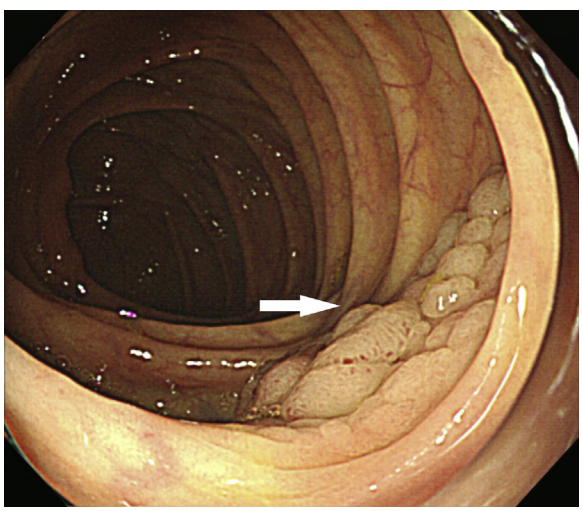

Figure 1. Colonoscopic findings. An approximately 3-cm lateral spreading tumor (white arrow) is located on the mid–ascending colon.

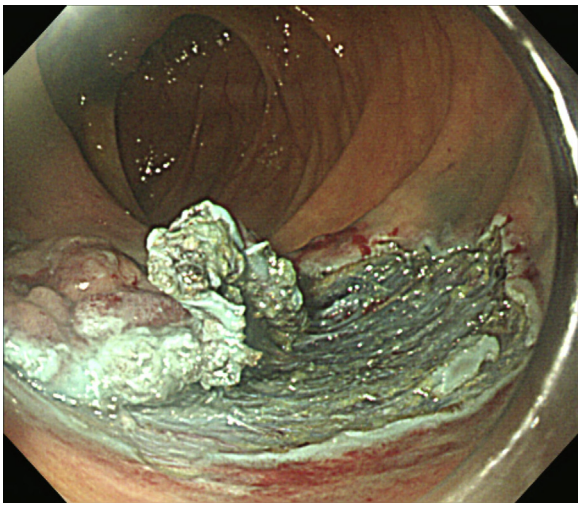

Figure 2. Endoscopic submucosal dissection of the lateral spreading tumor.

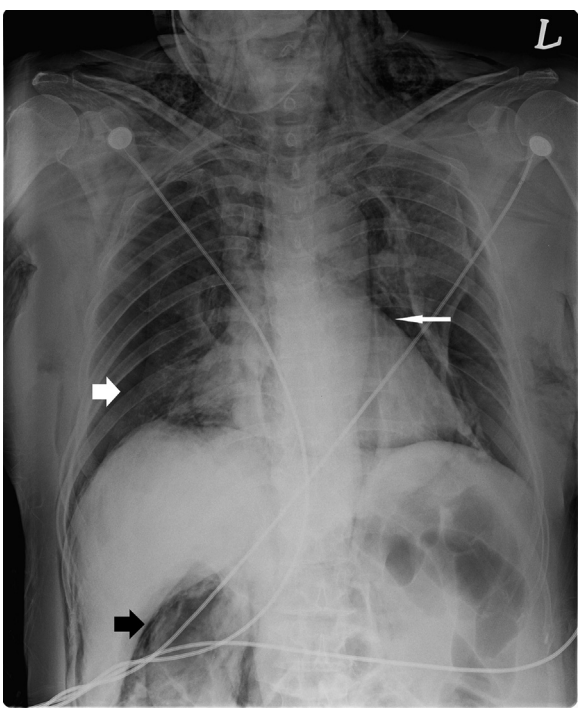

Figure 3. Chest radiography showing pneumothorax (white thick arrow), pneumomediastinum (white thin arrow), pneumoperitoneum (black arrow), and subcutaneous emphysema.