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Case Report

COLONOSCOPY AND BIOPSY ASSOCIATED BILATERAL PNEUMOTHORACES, PNEUMOMEDIASTINUM, PNEUMOPERITONEUM, PNEUMORETROPERITONEUM, AND SUBCUTAENOUS EMPHYSEMA

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ABSTRACT
Endoscopic perforation is a serious complication of colonoscopy. However, bilateral pneumothoraces following colonoscopy has rarely been reported. We report a case of bilateral pneumothoraces, pneumomediastinum, pneumoperitoneum, pneumoretroperitoneum and subcutaneous emphysema following colonoscopy in a patient with no radiological evidence of colonic perforation. Our case emphasizes the need for clinicians to be cognizant of the supra-diaphragmatic complications of colonoscopy that may occur and that nonoperative management may be appropriate even in a patient with profound radiological signs.

Keywords: *Colonoscopy, Pneumothorax, Pneumomediastinum, Pneumoperitoneum, Subcutaneous Emphysema*

INTRODUCTION
Endoscopic perforation of the colon is one of the most serious complications of colonoscopy. It may result in collection of air in the peritoneal cavity. However, bilateral pneumothoraces following colonoscopy rarely has been reported. We report a case of bilateral pneumothoraces, pneumomediastinum, pneumoperitoneum, pneumoretroperitoneum and subcutaneous emphysema following colonoscopy in a patient with no radiological evidence of colonic perforation.

CASES
A 49- year-old female with a history of ulcerative colitis (UC) underwent a colonoscopy. Her past medical history also included hypertension, depression, and endometriosis. Her medications included triamterene/hydrochlorothiazide, mesalazine and bupropion. She had been on prednisone 60 mg per day by mouth for a week due to flare up of her UC symptoms.

Colonoscopy revealed severe ulcerative proctocolitis extending from rectum to approximately 30 cm in the sigmoid colon indicating an active flare of ulcerative colitis; however, the colonoscope was introduced to only mid-transverse colon because of poor colonic prep and the degree of inflammation in the left colon. Multiple biopsies were obtained from the inflamed part and the transverse colon, sigmoid flexure, proximal and mid-sigmoid colon.

Approximately, 10 minutes after the procedure, the patient had a coughing episode, was unable to complete sentences without coughing and within 20 minutes she developed swelling and crepitus around the neck. Her vital signs showed a temperature of 98.1 F, pulse rate of 102 per min, respiratory rate of 20 per minute, blood pressure of 182/116 mm Hg. Oxygen saturations were 100% on 6 litres/min of nasal cannula. An urgent CT scan of neck, thorax, abdomen and pelvis revealed extensive air in the region of peritoneal and retroperitoneal space. Dilatation of colon with air fluid levels was noted. There was significant emphysematous change involving the face, neck and mediastinum with associated bilateral pneumothoraces. Subcutaneous emphysema also extended into chest wall bilaterally.

Gastrograffin contrast enema was given and a repeat CT was performed, which showed no evidence of contrast leak into the peritoneal or retroperitoneal cavity. A right sided chest tube was inserted and placed on suction. Exploratory laparotomy was held off as the patient was relatively comfortable and there was no evidence of colonic perforation or peritonitis. Intravenous levofloxacin and metronidazole were started on an empiric basis. She responded well to a nonoperative management. Subsequent x-rays demonstrated resolution of pneumothorax and patient was discharged after 5 days.

DISCUSSION

One of the most serious complications of colonoscopy is endoscopic perforation of the colon, which has been reported as between 0.03% and 0.7% (Cobb *et al.*, 2004; Brynitz *et al.*, 1986). Mortality rates have been reported between 7-26 % (Lohsiriwat *et al.*, 2008; Iqbal *et al.*, 2008; Teoh *et al.*, 2009). Risk factors for perforation include old age, medical comorbities and procedures such as polypectomy (Marwan *et al.*, 2007). Perforation can lead to extra intestinal collection of air. Forcible herniation of the colonic mucosa has also been suggested, such that the mucosa becomes permeable to air without an actual perforation developing (Ho *et al.*, 1996). We report a case of extensive extra-luminal collection of air following colonoscopy with no evidence of perforation. Different mechanisms have been proposed whereby extra-luminal air may reach the different body compartments (Webb, 1998). Gas may traverse from the peritoneum through small fenestrations in the diaphragm and enter the pleural space along the pressure gradient, as noted in some individuals with large volume of ascitic fluid that moves into the pleural space along a pressure gradient. Undiagnosed diaphragmatic defects may allow the transmission of air via this same pressure gradient (Baumann and Mettler, 1999). Retroperitoneal air may result from rupture of a retroperitoneal structure or by dissection of air through the colonic wall (pneumatosis coli) and subsequent passage along the mesentery to the retroperitoneum (Marwan *et al.*, 2007). When this develops, a direct communication exists to the mediastinum as air may travel along the fascial planes. Pneumomediastinum can lead to a pneumothorax when the mediastinal parietal pleura rupture. This aforementioned mechanism may account for bilateral pneumothoraces (Zeno and Sahn, 2006). Marwan *et al.*, (2007) reported a similar case that was managed non-operatively.

Our case emphasizes the need for clinicians to be cognizant of the supra-diaphragmatic complications of colonoscopy that may occur on occasion and that nonoperative management may be appropriate even in a patient with profound radiological signs.

Figure 1: Pneumothorax and Subcutaneous Emphysema

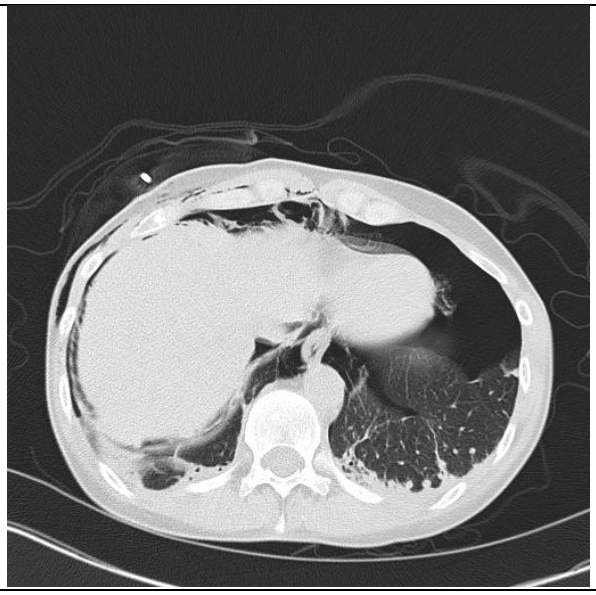

Figure 2: Pneumothoraces

Figure 3: Pneumoperitoneum

Figure 4: Pneumoretroperitoneum

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