

Rectosigmoidoscopy complicated by bilateral pneumothoraces, pneumomediastinum, pneumoperitoneum, pneumoretroperitoneum, and pneumoderma

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ABSTRACT

Rectosigmoidoscopy is a common procedure for diagnosis and follow-up of diseases of the lower gastrointestinal system. Although the procedure is proven to be safe in experienced hands, there is always risk of complications. We report a case of bilateral pneumothoraces, pneumoperitoneum, pneumoretroperitoneum, pneumomediastinum, and pneumoderma due to perforation during a rectosigmoidoscopy. Co-occurrence of all these in 1 patient is a very rare clinical condition. This report underlines the possibility of even the rarest and unexpected complications related to rectosigmoidoscopy. Endoscopist should be careful to avoid perforation, be aware of the potential complications, and be able to manage them.

Keywords: Pneumoderma; pneumomediastinum; pneumoperitoneum; pneumoretroperitoneum; rectosigmoidoscopy.

INTRODUCTION

Rectosigmoidoscopy is a common procedure for the diagnosis and follow-up for benign and malignant diseases of the lower intestinal system. Although it is known to be a safe procedure, complications such as hemorrhage, perforation, and infection may occur with low rates. Perforation is an even rarer complication but may cause serious problems. The rate of perforation reported in large patient series is less than 0.3%.^[1] We present a case of rec-tosigmoidoscopy complicated with bilateral pneumothorax, pneumomediastinum, pneumoperitoneum, pneumoretroperitoneum, and pneumoderma.

CASE REPORT

A 46-year-old female with a 6-year history of ulcerative colitis

was admitted to our hospital with abdominal pain. An urgent diagnostic rectosigmoidoscopy was performed, which revealed deep ulcerations in the sigmoid colon and rectum. During the procedure, the physician clearly recognized the perforated area in the sigmoid colon after mucosal biopsies were taken. The patient was admitted to the hospital for close follow up. During follow-up in the ward, she started suffering from dyspnea. The peripheral blood oxygen saturation measured decreased to 94% in room air. Her arterial blood pressure was 130/75 mm Hg, her heart rate was 94 beats/min, and her respiratory rate was 19 breaths/min. Arterial blood gas analysis in room air revealed pH=7.36, PaCO₂=38 mmHg, PaO₂ =83 mmHg, and oxygen saturation = 89%. Respiratory sounds were decreased in both hemithoraces, and she developed abdominal distension and tenderness. Meanwhile, she started developing progressive subcutaneous emphysema, predominantly located in the pectoral area, which also extended to her face and neck. Biochemical measurements, including blood count and C reactive protein (CRP), were in the normal ranges, and she did not have any fever. A computed tomography (CT) of the thorax and abdomen revealed bilateral pneumothoraces; subcutaneous air in the pectoral and neck areas; pneumomediastinum (Figure 1a); massive free air in the peritoneum; and free air images around bilateral perirenal areas, the right pelvic area, the caecum and the ascending colon (Figure 1b). Because she was symptomatic, bilateral chest tubes were placed. As the clinical symptoms

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worsened during follow-up and the endoscopist was certain of visualizing the perforation, an urgent laparotomy was performed. In the exploration, the exact site of perforation could not be defined. The operative team decided to create an ileostomy near the ileocecal valve because a perforation near the ileocecal valve was also suspected. The postoperative course was uneventful. Peritoneal and retroperitoneal air (pneumoperitoneum, pneumoretroperitoneum) and pneumoderma were resolved by the second day. Both lungs were re-expanded, and the chest tubes were removed on the fourth postoperative day. The patient was discharged on the sixth postoperative day. Pathological evaluation of colonic biopsy revealed chronic active colitis. The ileostomy was closed 2 months later. She has been doing well and symptom-free for 18 months.

DISCUSSION

Perforation of the colon during the rectosigmoidoscopy procedure allows passage of free air into the intraperitoneal cavity and/or retroperitoneal tissue planes. Retroperitoneal air results from either direct retroperitoneal colonic perforation or from dissection of air through the colonic wall (pneumatosis coli) and subsequent air entry along the mesentery to the retro-peritoneum. Retroperitoneal air may pass along the fascial planes to enter the mediastinum. Subsequent rupture of the mediastinal pleura allows air to enter the bilateral pleural cavities and cause pneumothoraces. Different mechanisms have been postulated whereby extraluminal air may reach and dissect different body compartments.^[2] Undue instrument manipulation, air insufflations during endoscopy, or improper use of diathermy may cause colonic perforation.^[3] Alternatively, forcible herniation of the colonic mucosa may occur, such that the mucosa becomes permeable to air without an actual perforation developing.^[4] Air may move through the retroperitoneal area and esophageal and aortic hiatus into the mediastinum, extending to the neck.^[5] It has been shown that air may also move into the thoracic cavities and, very

rarely, may cause bilateral pneumothoraces.^[6] Only three of five pneumothorax cases that have been reported secondary to colonoscopy were bilateral.^[5]

The treatment plan for perforations following colonoscopy varies from nonsurgical (medical treatment) to surgical (urgent laparotomy or laparoscopy) approaches.^[7,8] The decision depends on the clinical presentation, primary tumor described by colonoscopy, site of perforation, and degree of colon wall damage. Urgent surgery with laparotomy or laparoscopy might be curative and life saving for exploration and repair of the defect.^[2,7,8] However, it may not be possible to find an exact location of perforation. It is plausible to speculate that perforation can be occult due to the rapid healing of a small defect. Yet, an ileostomy should be created for stabilization, decompression, and to aid in healing. However, nonsurgical management was also advocated.^[3,8] Marwan and colleagues indicated that nonsurgical management may be appropriate in a patient with a properly prepared bowel.^[4] Nevertheless, air entry should be found and repaired in such patients. In our case, perforation is thought to be located at the ileum. However, the endoscopist did not recall any maneuver resulting in perforation. The decision about surgical or nonsurgical management and the procedures should be made on a case-by-case basis. In our case, an ileostomy provided certain and immediate relief of pneumoperitoneum, pneumoderma, and pneumoretroperitoneum. Bilateral pneumothoraces were treated by bilateral chest tube insertion.

Pneumothorax accompanied by pneumomediastinum, pneumoperitoneum, pneumoretroperitoneum, and pneumoderma is a very rare complication of rectosigmoidoscopy. If the patient develops dyspnea and pneumoderma during or after this procedure, a chest radiogram or thoracoabdominal CT should be taken for diagnostic purposes. Urgent treatment, starting with chest tube insertion(s) and laparotomy would be lifesaving.

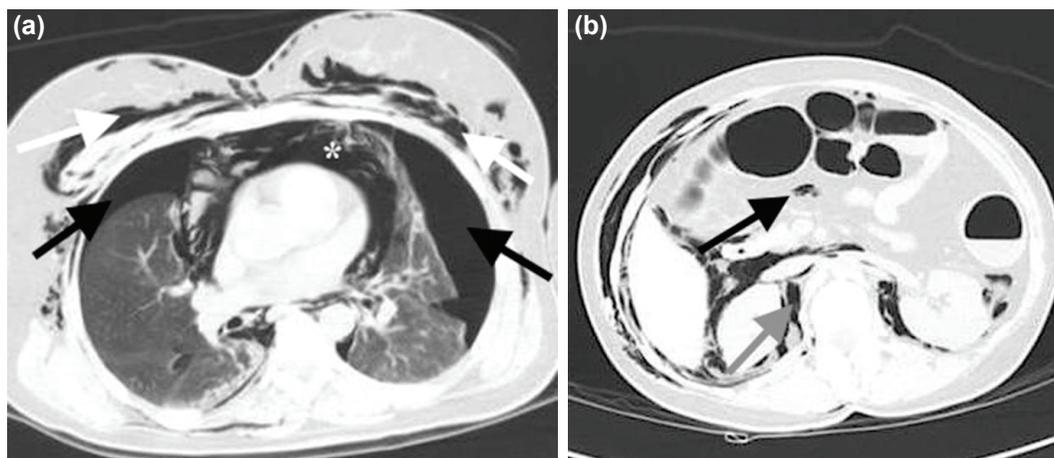


Figure 1. (a) Chest computed tomography (CT) showing bilateral pneumothoraces (black arrow), pneumoderma (white arrow), and pneumomediastinum (asterisk). (b) CT of the abdomen showing pneumoperitoneum (black arrow) and pneumoretroperitoneum (gray arrow).

Conflict of interest: None declared.

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OLGU SUNUMU - ÖZET

İki taraflı pnömotoraks, pnömoperitoneum, pnömoretroperitoneum, pnömomediastinum ve pnömoderma ile komplike olmuş rektosigmoidoskopi

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Rektosigmoidoskopi alt gastrointestinal sistemin hastalıklarının teşhis ve takibinde sık kullanılan bir işlemdir. İşlemin tecrübeli ellerde güvenilirliği ispatlanmıştır, ancak komplikasyon ortaya çıkma ihtimali vardır. Rektosigmoidoskopi esnasında perforasyona bağlı tümü aynı anda ortaya çıkan iki taraflı pnömotoraks, pnömoperitoneum, pnömoretroperitoneum, pnömomediastinum ve pnömoderma olgusunu çok nadir görülmesi nedeniyle sunuyoruz. Bu olgu ile rektosigmoidoskopide nadir komplikasyonların mümkün olduğunun altı çizilmektedir. Endoskopistin işlem sırasında perforasyon oluşmaması için azami özen ve gayret göstermesi, sıklığından bağımsız tüm olası komplikasyonlar hakkında bilgi sahibi olması ve gerektiğinde süreçlerini yönetebilmesi gerekmektedir.

Anahtar sözcükler: Pnömoderma; pnömoperitoneum; pnömoretroperitoneum; pnömotoraks; rektosigmoidoskopi.

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