

# Subcutaneous Facial and Neck Emphysema as First Sign of Intestinal Perforation in a Female Patient After a Routine Colonoscopy

## *Rutin Kolonoskopi Sonrası Bir Kadın Hastada Bağırsak Delinmesinin İlk İşareti Olarak Subkutan Yüz ve Boyun Amfizemi*

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### Abstract

Colonoscopy is a safe procedure for the diagnosis and management of colorectal diseases. Colonic perforation due to colonoscopy represents an uncommon complication. Here we present an unusual case of iatrogenic bowel perforation resulting in subcutaneous facial and neck emphysema, pneumomediastinum and pneumoretroperitoneum. Taking a detailed recent medical history information is always required when encountering patients with subcutaneous emphysema after invasive examination procedures. Alertness on iatrogenic complication eventualities may improve prognosis and avoid life-threatening conditions.

**Keywords:** Subcutaneous emphysema, pneumomediastinum, pneumoperitoneum

### Öz

Kolonoskopi, kolorektal hastalıkların tanı ve tedavisinde güvenli bir yöntemdir. Kolonoskopi nedeniyle kolon perforasyonu nadir bir komplikasyondur. Burada deri altı, yüz ve boyun amfizem, pnömomediastinum ve pneumoretroperitoneumla sonuçlanan iatrojenik barsak perforasyon olgusu sunulmuştur. Invazif inceleme prosedürlerinden sonra subkutan amfizem hastalarıyla karşılaşıldığında her zaman detaylı tıbbi öykü alınması gereklidir. Iatrojenik komplikasyon olasılıkları hakkında tetikte olmak, prognozu iyileştirmek ve hayatı tehdit eden durumları önlemek için gereklidir.

**Anahtar Kelimeler:** Subkutan amfizem, pnömomediastinum, pneumoperitoneum

### Introduction

Colonoscopy is a commonly utilized procedure for the evaluation and therapy of colorectal diseases. Although it is considered a relatively safe test, complications such as intestinal perforation may be life-threatening if not diagnosed promptly [1]. Furthermore, although perforation rate has declined compared to the past, advanced interventional colonoscopy during the last years led to an increase trend [1].

We report information on a patient admitted to our facility with subcutaneous emphysema of neck and face, pneumoperitoneum, pneumoretroperitoneum and pneumomediastinum secondary to bowel perforation during routine colonoscopy.

### Case Report

A 62-year-old female was admitted to the emergency department of the Saint George General Hospital of Chania,

Crete, Greece complaining of chest and mild abdominal pain. Three hours earlier, she underwent a preventive colonoscopy by a gastroenterologist in a private medical practice in order to evaluate symptoms of abdominal discomfort of 3 months duration. Gastroenterologist reported that the procedure was uneventful. Her past medical history included hypertension and hyperlipidemia.

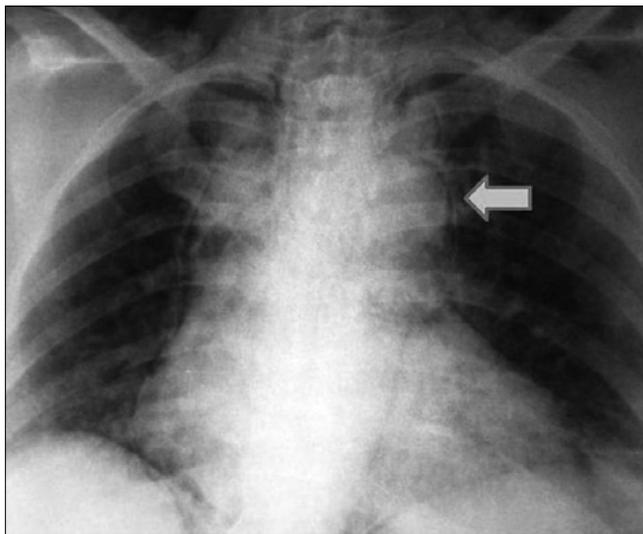
On admission, swelling of the face and neck were noticed. Her vital signs were as follows: blood pressure, 125/65 mmHg; oxygen saturation 97% while she was breathing ambient air; heart rate, 100 per minute; temperature, 36.5 degree Celsius. Laboratory evaluation disclosure included: white blood cell count, 9.90 cells/ $\mu$ L (normal range: 4–11 K/ $\mu$ L); hemoglobin, 13.9 g/dL (normal range: 13.5–17.5 g/dL); hematocrit, 42.1% (normal range: 40–50%); platelet counts, 135 cells/ $\mu$ L (normal range: 150–450 K/ $\mu$ L). Urine analysis and urine culture were normal. Biochemical parameters were within normal limits. An arterial blood gas analysis showed: pH, 7.48; PaCO<sub>2</sub>, 25.3



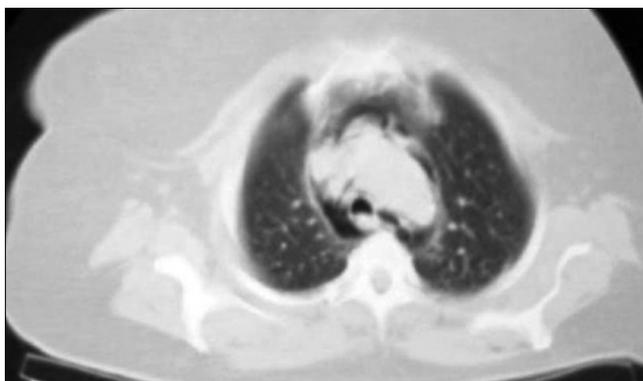
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**Figure 1.** Chest X ray showing the presence of air in the mediastinum.



**Figure 3.** Computed tomography thoracic scan demonstrating the presence of free air in the mediastinum.

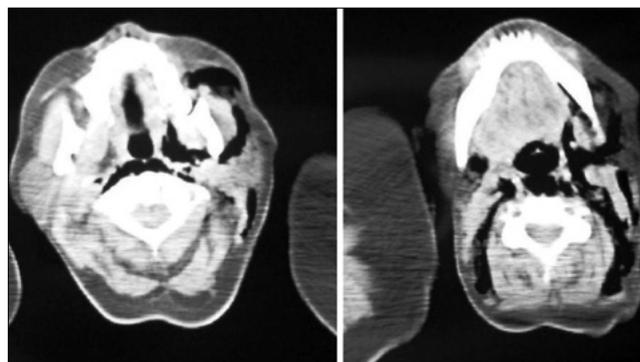
mmHg; PaO<sub>2</sub>, 72.6 mmHg. Her electrocardiogram revealed sinus rhythm with no abnormal findings.

Physical examination disclosed a distended abdomen with diffuse sensitivity on palpation without tenderness and crepitus in the left part of neck and buccal area. Imaging studies included chest X-ray and thoracic and abdominal thoracic scans showing pneumomediastinum, pneumoretroperitoneum and subcutaneous emphysema of the neck (Figures 1-4).

During colonoscopic examination, the gastroenterologist noticed a large inflamed diverticulum at the sigmoid level. The patient was consequently transferred to the Surgery department of our hospital. Due to the absence of peritonitis signs, a conservative management was decided with a triple scheme intravenous antibiotic administration (cefoxitine, metronidazole, amikacin). Daily follow-up assessment of the patient's situation with chest and abdominal radiographic examination was performed. Subcutaneous emphysema as



**Figure 2.** Abdominal X ray showing the presence of free retro-peritoneal air in the peri-vertebral area.



**Figure 4.** Computed tomography of the head and neck showing the presence of air in the muscle fascicle of the scapular neck and buccal area.

well as pneumomediastinum and retro-peritoneum started to resolve progressively. Following an uneventful 8-day hospital stay, the patient was discharged to home on good clinical condition.

## Discussion

Intestinal perforation following colonoscopy represents a rare complication [2]. In a retrospective study on more than thirty thousand patients, it was found to be only 0.1%

[2]. Perforations may be pneumatic due to excessive distension of the intestinal wall from high-pressure insufflations or mechanic from the pressure exerted by the gastroenterologist [3]. With regards to the time of diagnosis, perforations produced from diagnostic colonoscopy (due to the mechanical pressure) are larger and are detected promptly since patients are admitted earlier, while those occurring from therapeutic colonoscopy are diagnosed late and are smaller in size [4]. Sigmoid colon is more often affected [5]. Thermal injury and electro-coagulation may result in delayed colonic perforation due to ischemia of the colonic wall [6].

Pathogenesis of the extra-luminal air diffusion secondary to intestinal perforation is attributed to the anatomical continuity between the subcutaneous tissue, the mediastinum and the retro-peritoneum [7]. More specifically, following perforation, intra-luminal air is compressed and it may flee into retroperitoneal or peritoneal cavity [7]. From the retroperitoneal level, air is moving next to the fascial plans, mesentery and through the esophageal hiatus passes into the mediastinum and subcutaneous tissues [7]. In case of rupture of the mediastinal parietal pleura, pneumothorax may occur [8]. It is also remarkable that eventually, intestinal perforation is not detected and gas insufflations continue, situation may be complicated with tension pneumo-thorax with adverse outcomes in terms of prognosis and mortality [7, 8]. Possible clinical presentations of this complication also include pneumo-pericardium, periorbital edema and pneumo-scrotum [9].

Following perforation, symptoms may appear either immediately or after several hours [9, 10]. Abdominal pain and tenderness are suggestive of intra-peritoneal perforation [9]. High body temperature, leukocytosis and sinus tachycardia are usually present with intra and extraperitoneal perforation [9].

Management should be individualized on a case-by-case basis [3]. In the absence of signs of peritoneal inflammation, a conservative management with intravenous wide spectrum antibiotherapy is suggested. In the presence of fecal intestinal content or signs of peritoneal inflammation, a surgical approach is required [3]. In alignment, distal obstruction, worsening or absence of clinical improvement are suggestive for the surgery alternative [2, 3, 8]. Surgical management varies from simple closure with sutures, which depends from the time of diagnosis, the size of perforation and the quality of the injured intestinal wall, to colostomy, segmental resection or a Hartmann procedure [3]. Clipping during endoscopy could be performed in some cases if small tears of the colonic wall exist [2, 5].

Here, we presented a rare case of extra peritoneal perforation after a diagnostic colonoscopy referred to the hospital with signs of facial and neck subcutaneous emphysema. Physicians have to be alert of this rare complication and refer

patients in order to be timely diagnosed and closely monitored.

**Informed Consent:** Informed consent was obtained from patients who participated in this study.

**Peer-review:** Externally peer-reviewed.

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