

Spontaneous surgical emphysema: A case report of a unique post-sleeve gastrectomy presentation

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Abstract

Nausea and vomiting are common joint presentations in post-sleeve gastrectomy. Nevertheless, it is uncommon for post-sleeve gastrectomy to manifest through subcutaneous emphysema. It is essential to distinguish spontaneous subcutaneous emphysema from other more severe presentations. However, this is sometimes challenging due to its resemblance to numerous ambiguous conditions. Acknowledging these conditions in the early phases is essential to prevent adverse complications. In this report, we discuss the approach to and management of a unique post-operative presentation.

Keywords: Subcutaneous emphysema; vomiting; oesophageal rupture; Boerhaave syndrome; sleeve gastrectomy.

Introduction

Obesity is considered a pandemic disease [1]. In 2016, over eighteen per cent of the world's population was obese, according to the World Health Organization [2]. Bariatric procedures are the best solution in the management of obesity [3]. In total, 59.4 % of bariatric procedures are sleeve gastrotomies, according to the American Society of Metabolic and Bariatric Surgery's report in 2019 [4]. However, they are highly successful procedures with outstanding outcomes in obesity and its co-morbidities [5]. Many known complications are associated with sleeve gastrectomy, such as gastroesophageal reflux (GERD), pulmonary embolism, infections, haemorrhage, and leaks [6]. Others are infrequent. We present a case report of a 19-year-old female with a rare presentation of neck-and-chest subcutaneous emphysema (SE) due to excessive forceful vomiting after sleeve gastrectomy.

Case Report

A 19-year-old female patient was admitted with a case of post-sleeve-gastrectomy nausea and vomiting. The patient under-

went sleeve gastrectomy two weeks prior to admission and had uneventful post-operative recovery and follow-up. Upon admission, the patient complained of severe nausea with forceful vomiting. She was nauseated and retching and had mild epigastric pain. She was vitally stable, and her investigations were unremarkable. A computer tomography scan (CT scan) showed no leakage or abnormal findings on admission. She was kept for observation and supportive management. The patient was well after three days of admission and was discharged home. Nevertheless, she presented again at our casualty department with an identical complaint. However, on this occasion, she had apparent swelling in the neck, upper chest, and per-orbital region. Neck and chest X-rays were conducted (**Figures 1-2**). These revealed marked subcutaneous emphysema (SE) and pneumomediastinum. A CT scan of the abdomen and chest with oral and IV contrast were requested for the patient to rule out airway or oesophageal injury. The CT scan displayed marked and ample subcutaneous emphysema with pneumomediastinum (**Figure 3**). No contrast leak from the oesophagus or stomach was noted. The patient was maintained on nil per oral with intravenous antibiotics and

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total parenteral nutrition. Ultimately, the SE diminished, and the patient resumed oral feeding. The patient was discharged after drinking adequate fluids and being seen by a nutritionist. After fourteen days, the patient was followed up in the surgical outpatient department with no symptoms of SE.

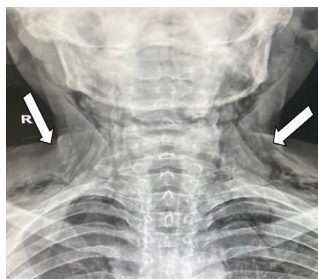


Figure 1: Neck x-ray showing subcutaneous emphysema.

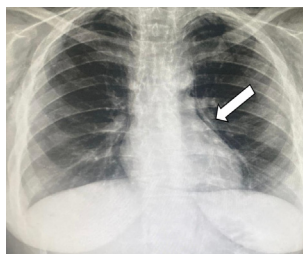


Figure 2: Chest X-ray showing pneumomediastinum and subcutaneous emphysema.

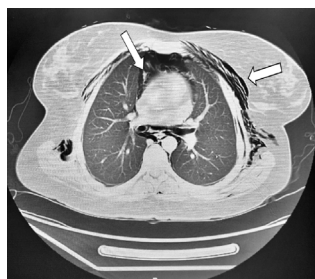


Figure 3: CT-scan chest demonstrating subcutaneous emphysema.

Discussion

Subcutaneous emphysema (SE) is air infiltration in the skin's subcutaneous layer. The development of SE indicates that air is occupying a deeper body region [7]. Air preferentially accumulates in the subcutaneous region with minor tension until the pressure increases enough to travel along another plane, leading to extensive spread [8]. The level of surgical emphysema can vary from mild subcutaneous emphysema to severe life-threatening airway compression, pneumomediastinum, and pneumothorax complications [9]. Subcutaneous emphysema and pneumomediastinum are infrequent post-operative presentations of sleeve gastrectomy; this was especially notable in our patient since she underwent uneventful post-operative recovery and was discharged and followed up two weeks after surgery. Nevertheless, her recent events of excessive forceful vomiting and retching led to the development of SE.

Aberrant air in the mediastinum and subcutaneous regions can originate from the oesophagus, lungs, airways, neck, and abdominal cavity [10] when (SE) and pneumomediastinum form spontaneously. The two most likely causes are alveolar

rupture or oesophageal rupture called Boerhaave's syndrome (BS) [11]. The mechanism of alveolar rupture in vomiting appears to be abdominal contraction against a closed glottis, resulting in increased intra-alveolar pressure. On the other hand, oesophageal ruptures occur due to excessive vomiting and retching, leading to increased intra-luminal pressure of the oesophagus, subsequently exceeding the wall's tensile strength [12]. Both conditions are associated with symptoms such as retrosternal chest pain, cough, sore throat, dysphonia, dysphagia, palpitation, neck discomfort, and dyspnoea [13]. However, BS patients present with a classic triad of vomiting, chest pain, and subcutaneous emphysema (Mackler's triad) and are generally septic due to mediastinitis.

The diagnosis of (SE) and pneumomediastinum can be difficult due to its delayed presentation and vague symptoms. After a careful medical history and detailed physical examination, it is vital to exclude other diseases with a similar presentation, such as ischemic heart attack, pulmonary embolism, pericarditis, musculoskeletal disorders, and chest infections. The X-ray of the chest is a helpful tool to diagnose this condition. Reliable signs on posterior chest X-rays include the separation of the mediastinal pleura from the left heart border and subcutaneous emphysema [14]. X-rays are also abnormal in 90% of cases of BS with additional signs, including left pleural effusion and hydropneumothorax [15]. Water-soluble swallow and diluted barium studies help to exclude perforation of the oesophagus; however, a false-negative result occurs in 26–66% of all patients [16]. Computer tomography (CT) scans with oral contrast are helpful when the diagnosis is questionable, as well as a diagnosis of perforation in the oesophagus.

The management of SE involves the determination of the underlying cause, analgesia, rest, and reassurance. Furthermore, patients may require antibiotics as a prophylaxis to prevent mediastinitis. Subcutaneous emphysema is typically a self-limiting condition once the diagnosis is confirmed [17]. Most presentations last a few days, including a hospital stay, as in our case report. Nevertheless, some authors suggest that hospitalization is not always required. Possible complications are tension pneumothorax, tension pneumomediastinum, air embolism, and pneumopericardium, although these are all rare [13].

Conclusion

Spontaneous emphysema is a unique manifestation of post-sleeve gastrectomy. It is usually a self-limiting disorder that can be established when other more severe conditions have been excluded, such as oesophageal rupture, which can be lethal. To avoid future complications, it is critical to report these cases to identify others in a timely manner.

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