

CASE REPORT

Massive Subcutaneous Emphysema Involving the Head and Neck After Laparoscopic Roux-en-Y Gastric By-pass

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ABSTRACT

Massive and life-threatening extraperitoneal pneumodissection after laparoscopic procedure is a rare complication. It has been described after laparoscopic cholecystectomy, urologic and gynecologic surgeries, extraperitoneal hernia, and antireflux procedures. Here, we describe such a complication after laparoscopic Roux-en-Y gastric bypass in a 21-year-old woman with a body mass index of 41. Postoperatively, massive subcutaneous emphysema, fever, anxiety, and hypoxia occurred. She required reintubation and mechanical ventilation for two days. She was weaned from the mechanical ventilator and subcutaneous emphysema decreased gradually. Duration of her hospitalization was seven days, after which she was discharged uneventfully. Diagnosis of the surgical complications in the early postoperative period is not easy but vital after bariatric surgery. In obese patients, it is difficult to realize the swelling on the trunk when compared to thin patients. Fascial and neck swelling can indicate the severity of the pneumodissection. In such cases, pharyngo-esophageal perforations due to difficult endotracheal intubations in obese patients or trauma during per oral passage of the stapler anvil should be kept in mind and ruled out immediately. To our knowledge, this is the first documented case of massive subcutaneous emphysema involving the neck and face after laparoscopic gastric bypass.

Key words: Laparoscopy, Obesity, Gastric by-pass, Postoperative complication, Subcutaneous emphysema

ÖZET

Laparoskopik Roux-en-Y Gastric By-pass Sonrası Baş ve Boyuna Yayılan Masif Cilt Altı Amfizem

Laparoskopik cerrahi sonrası yaşamı tehdit eden masif cilt altı amfizemi nadir bir komplikasyondur. Bu durum laparoskopik olarak yapılan kolesistektomi, ürolojik ve jinekolojik ameliyatlara, ekstraparitoneal fıtık ve antireflü ameliyatlardan sonra tarif edilmiştir. Bu olgu sunumunda, böyle bir komplikasyon 21 yaşındaki vücut kitle indeksi 41 olan kadın hastaya yapılan laparoskopik Roux-en-Y gastrik bypass sonrasında tanımlandı. Ameliyat sonrası, masif cilt altı amfizem, ateş, anksiyete ve hipoksi meydana geldi. Hastaya postoperatif yeniden entubasyon ve iki gün boyunca mekanik ventilasyon gerekli oldu. Cilt altı amfizemi giderek azalan hasta mekanik ventilatörden ayrıldı. Hastanede yedi gün kalan hasta sorunsuz olarak taburcu edildi. Obezite cerrahisi sonrası erken dönemde cerrahi komplikasyonların tanısı hem zordur hem de hayati öneme sahiptir. Obez hastalarda, zayıf hastalara

göre cilt altı amfizeme bağlı gövde deki şişmeler daha zor fark edilir. Yüze ve boyuna yayılan amfizem olayın ciddiyetinin bir ölçüsü olabilir. Bu gibi durumlarda, obez hastalarda zor endotrakeal entübasyona bağlı veya stapler anvilinin ağız yoluyla geçirilmesine bağlı farinks veya özofagus perforasyonları ayırıcı tanıda akılda tutulmalı ve hızla ekarte edilmelidir. Bildiğimiz kadarıyla, laparoskopik gastrik bypass sonrası baş ve boyuna yayılan masif cilt altı amfizemi ilk olarak sunulmaktadır.

Anahtar kelimeler: Laparoskopi, Obezite, Gastrik by-pass, Ameliyat sonrası komplikasyonlar, Cilt altı amfizem

INTRODUCTION

Laparoscopic Roux-en-Y gastric bypass is one of the most popular bariatric operations worldwide. It is associated with a significant learning curve, and thus most complications occur due to early surgeon experience. Here, we describe a patient with a massive subcutaneous emphysema after laparoscopic gastric bypass during our early experience. As far as we know, this has not been reported previously.

CASE REPORT

A 21-year-old woman with a body mass index of 41 had been planned for laparoscopic Roux-en-Y gastric bypass. Previously, we had performed more than 100 open gastric bypasses, and this was our first laparoscopic experience. She had previous open appendectomy with right paramedian vertical incision. She had no previous illness and normal routine preoperative laboratory profile. She was placed in the supine position, with the surgeon situated between the patient's lower between lower extremities is better. We used six trocars (one 15 mm, two 11 mm and three 5 mm) and intraabdominal pressure was maintained at 15 mmHg. Roux-en-Y anastomosis was established by stapler and the opening of the stapler entrance into the jejunum was closed with hand suturing. The mesenteric defect between the jejunojejunostomy was closed. The gastric pouch was created by linear stapler and the antecolic-antegastric anastomosis was performed with #21 EEA stapler. The anvil of the stapler was passed per oral with the help of a large bored nasogastric tube. We checked the anastomotic integrity with methylene blue test. The operating time was 330 minutes, and the blood loss was estimated as 50 ml. During the procedure, there was no anesthetic or surgical complication. She was kept in the intensive care unit for one day and later transferred to the surgical ward. During this period, we did not notice any abnormality except minor edema on the face (Figure 1). She was mobilized on day one and had minimal abdominal pain but abdominal distension.



Figure 1. Swelling on the face.

She complained of cervical and facial swelling, and described hearing crackling sounds with head/neck movements. On palpation, she had marked cervical and facial subcutaneous crepitus. There was minimal crepitus on the abdomen but some over the upper thoracic region. She had severe fever (39.1°C) and anxiety. Chest radiography demonstrated atelectasis but not pneumothorax. We performed emergency upper gastrointestinal contrast films and contrast enhanced computed tomography of the thorax and abdomen. There was no leakage but severe atelectasis and severe subcutaneous emphysema were remarkable (Figure 2, 3). Her oxygen saturation decreased gradually and we intubated the patient for mechanical ventilation. Her arterial blood gas analysis demonstrated increased carbon dioxide (PCO₂: 33 mmHg). She was followed in the intensive care unit for two days until her improvement. She was weaned from the mechanical ventilator and her subcutaneous emphysema decreased gradually. She started to drink and became mobilized again and was transferred to the surgical ward. Total duration of hospitalization was seven days, after which she was discharged uneventfully.

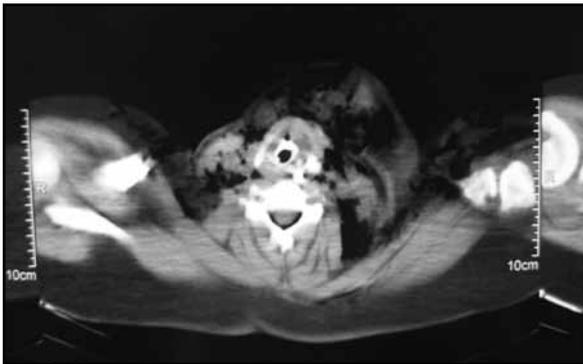


Figure 2. Subcutaneous emphysema in the neck.



Figure 3. Subcutaneous emphysema on the trunk and the intact gastrojejunostomy anastomosis.

DISCUSSION

Asymptomatic subcutaneous emphysema after laparoscopic surgery is not uncommon. McAlister and associates performed routine computed tomography within 24 hours after laparoscopic cholecystectomy and reported subcutaneous emphysema in 56% of the cases^[1]. However, clinically significant subcutaneous emphysema after laparoscopic procedures is not frequent, varying in incidence from 0.43% to 2.34%^[2,3]. This condition has been considered generally harmless; however, significant consequences, e.g. hypercarbia, pneumothorax or pneumopericardium, can be associated with prolonged hospital stays or intensive care. At that point, massive subcutaneous emphysema should be suspected as a potentially life-threatening complication of laparoscopic surgery^[4,5].

Several laparoscopic abdominal procedures such as cholecystectomy, rectopexy, Nissen fundoplication, and inguinal hernia repair can result in symptomatic

subcutaneous emphysema^[1,3,6-8]. The risk increases with extraperitoneal dissections, such as division of the pharyngo-esophageal ligament and mobilization of the distal esophagus during reflux surgery, or extraperitoneal inguinal hernia repair can result in significant subcutaneous emphysema including the abdominal and thoracic wall. Other described risk factors were higher insufflation pressure, prolonged surgical procedures (longer than 200 minutes), use of six or more surgical ports, and old age due to reduced natural subcutaneous tissue resistance^[3,8,9]. In the present case, there was no extraperitoneal dissection, but six ports and prolonged operating time due to adhesiolysis of the previous surgery, combined with our early experience with laparoscopic gastric bypass, may have caused the massive subcutaneous emphysema. It likely developed due to pneumodissection of CO₂ around the trocar sites, because trocar retractions from the peritoneum during manipulations of the surgical equipment are easier in obese patients. We believe that the increased thickness of subcutaneous tissue caused frequent trocar displacements, and once the leakage was established, the extent of the emphysema increased with the duration of the procedure. Following this experience, we believe that obesity alone can be considered a new risk factor for subcutaneous emphysema.

Roux-en-Y gastric bypass is a complex surgical procedure and it is applied to a high-risk population. Diagnosis of the surgical complications particularly in the early postoperative period is not easy, but vital. In obese patients, it is difficult to notice the swelling on the trunk by simple inspection or even palpation when compared to thin patients. Cervical and facial emphysema can be more marked due to low subcutaneous resistance. Pharyngo-esophageal perforations due to difficult endotracheal intubations in obese patients or trauma during per oral passage of the stapler anvil should be kept in mind and ruled out immediately. To our knowledge, this is the first documented case of massive subcutaneous emphysema involving the neck and face after laparoscopic gastric bypass.

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