Gastrobronchial Fistula: A Rare Complication Post-Laparoscopic Sleeve Gastrectomy

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Abstract

A gastrobronchial fistula (GBF) is an abnormal connection between the stomach and the lungs, and is an extremely rare but serious complication of laparoscopic sleeve gastrectomy (LSG). GBFs are usually the result of a persistent staple line leak that leads to the formation of a subphrenic abscess. The abscess may either spread through lymphatics or directly erode into the diaphragm and result in a GBF. We present the case of a 49-year-old female who developed a GBF after being managed for recurrent staple line leaks post-LSG. This case highlights the importance of timely detection and management of leaks to prevent this potentially fatal sequela.

Keywords: Gastrobronchial fistula; Laparoscopic sleeve gastrectomy; Bariatric surgery

Introduction

Laparoscopic sleeve gastrectomy (LSG) has become a well-established surgical approach in the management of morbid obesity. It promotes weight loss by reducing the capacity of the stomach and by altering hormone levels responsible for hunger and satiety. When compared to more invasive bariatric procedures, LSG is relatively simple, has a lower post-operative morbidity, and preserves the natural continuity of the gastrointestinal system [1]. Complications include strictures, staple line bleeding and staple line leakage [1-4]. Of these, staple line leakage carries the highest morbidity and occurs in up to 5.5% of primary cases [1, 3-7] and 20% of revisional cases [2]. Most leaks occur in the proximal stomach near the gastroesophageal junction [2]. A persistent gastric leak can increase the risk of forming a gastrobronchial fistula (GBF) which is a rare but potentially fatal complication [3, 8]. Minimally invasive endoscopic procedures with percutaneous drainage have been increasingly adapted to manage post-operative staple line leaks with success rates of 80-95% [1, 2, 4, 7]. However, leaks may become persistent despite intervention and progress to develop a GBF as in the case presented.

Case Report

A 49-year-old Hispanic female with a past medical history of asthma and morbid obesity underwent a LSG. One month post-operatively after LSG, the patient presented with left upper quadrant abdominal pain, vomiting and intolerance to oral intake. Laboratory studies were notable for a white blood cell (WBC) count of 22,000 cells/mm³, and a computerized tomography (CT) scan revealed three distinct fluid collections in the left upper quadrant compatible with abscesses and worrisome for a contained leak. Upper gastrointestinal endoscopy revealed a proximal staple line deformity. Lavage yielded copious purulent fluid through the defect, and it was closed using argon plasma ablation and an over-the-endoscope clip. The patient had an upper gastrointestinal series (UGIS) prior to discharge which did not demonstrate contrast extravasation. However, 1 month after the clip was placed, the patient returned to the emergency department with recurrent left upper abdominal pain that was worse with oral intake. Routine labs showed a WBC count of 15,500 cells/mm³, and a CT scan revealed extraluminal air with reaccumulation of fluid in the left upper quadrant compatible with a leak. Upper gastrointestinal endoscopy was again performed which showed a staple line defect in the gastric body superior to the previous defect. The defect was again closed with argon plasma ablation and an over-the-endoscope clip. However, UGIS post intervention revealed a persistent leak which prompted an exploratory laparotomy and drainage of the abscess. During the procedure an upper gastrointestinal endoscopy with underwater seal testing demonstrated no leaks and a Jackson Pratt drain was placed in the area. The patient was stable post-operatively and discharged 1 week later on a bariatric diet as tolerated and drain remaining in place. Four days after discharge, the patient returned with a 2-day history of epigastric pain and inability to tolerate oral intake. Complete blood count revealed a WBC count of 15,900 cells/mm³, and CT scan revealed a 5 × 1.4 ×
2 cm collection in the left upper quadrant suspicious for an abscess for which the patient was treated with intravenous (IV) antibiotics. UGIS was done and revealed a leak proximal to the previous clips. The patient was managed with IV antibiotics and endoscopic placement of a 23 mm × 15.5 cm WallFlex covered stent which was sutured in place. The subphrenic collection was not drained and the patient was discharged 5 days later.

The patient presented to the emergency department 2 weeks later with progressively worsening shortness of breath and a cough for 1 week. The cough was productive of brown, foul-smelling sputum. The patient also reported pleuritic chest pain, fever, chills and decreased appetite associated with nausea but no vomiting. On examination, the patient was afebrile, blood pressure was 97/63 mm Hg, heart rate was 135 beats/min, respiratory rate was 22/min and oxygen saturation was 98% on room air. On examination, there was dullness to percussion of her chest and decreased breath sounds on the left lung base with the presence of bronchial breath sounds. Labs results showed a WBC count of 27,500 cells/mm$^3$, and a computerized tomography angiography (CTA) (Fig. 1) on admission revealed a 10 cm intrapulmonary left lower lobe air and complex fluid collection, compatible with an intrapulmonary abscess. A follow-up CT scan with IV and enteral contrast (Fig. 2) of her abdomen and pelvis revealed a fistulous connection between the left upper abdomen and left chest cavity.

The patient was admitted to the surgical intensive care unit where she received 3 L of normal saline and was started on IV antibiotics. Once stable, it was determined that the patient required a left anterolateral thoracotomy for drainage of the left lower lobe abscess as it was too large to be drained percutaneously by interventional radiology. Intraoperatively, a large abscess was visualized in the left lower lobe with severe lower lobe distention. Purulent material was aspirated with a large bore catheter and the abscess was unroofed. The stent was then repositioned proximally and sutured in place to cover the localized area of the extravasation. A post-operative UGIS revealed no leak or obstruction. The patient continued to have an elevated WBC count and a repeat CT scan 10 days post-operatively revealed a 6 × 7.3 cm cavitory lesion in the left lower lobe communicating with the left pleural space. The patient underwent a second left thoracotomy 12 days after the initial operation. The accumulated purulent fluid was drained and a small wedge of the lower left lobe was resected. A repeat esophagogastroduodenoscopy (EGD) 4 days after the second thoracotomy revealed distal migration of the stent secondary to erosion of the recently placed suture. The stent was repositioned proximally and fixed in place with sutures. UGIS post intervention revealed no extravasation of contrast. The patient improved over the following week and was subsequently discharged.

Discussion

Obesity and its related complications have become a major public health issue. This has led to the development of surgical procedures that promote weight loss. LSG is a widely performed bariatric procedure due to its relative simplicity and comparable outcomes to the standard Roux-en-Y gastric bypass. LSG reduces the size of the stomach by 75-80% to improve satiety, improve insulin sensitivity and decrease fasting ghrelin levels [9]. Staple line leaks, staple line bleeding and strictures are complications of LSG which occur in up to 5.5%, 2% and 1% of cases, respectively [1-4]. Of these, staple line leakage is associated with the highest morbidity and mortality.
GBFs are a rare but life-threatening complication of LSG that can develop in the setting of a persistent gastric leak. This patient developed a subphrenic collection after presenting with recurrent staple line leaks. Unfortunately, this collection was not drained and likely resulted in the development of her GBF. This case report serves as an example of the importance of early diagnosis and management of suspected gastric leaks post-LSG.

Conclusions

GBFs are a rare but life-threatening complication of LSG that can develop in the setting of a persistent gastric leak. This patient developed a subphrenic collection after presenting with recurrent staple line leaks. Unfortunately, this collection was not drained and likely resulted in the development of her GBF. This case report serves as an example of the importance of early diagnosis and management of suspected gastric leaks post-LSG.

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Conflict of Interest

None to declare.

Informed Consent

Not applicable.
Author Contributions

Ashen Fernando participated in patient care. Ashen Fernando and Jean Luc Francois wrote the case report. Nicole Majachani and Reshad Salam participated in the literature search. Stephanie Yee and Jamshed Zuberi revised and edited the case report.

Data Availability

The authors declare that data supporting the findings of this study are available within the article.

References