



ORIGINAL ARTICLE

Gastrobronchial fistula: A rare complication after laparoscopic sleeve gastrectomy and its endoscopic management (case report)

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Abstract

Background: Bariatric surgery is considered the standard of care for morbid obese patients who failed conservative management. However, it's not free of complications. Gastrobronchial fistula (GBF) is one of complications that could be happened during the post-operative course that could be successfully managed either surgically or endoscopically. **Case presentation:** We present a case of 45 years old morbid obese female patient underwent gastric bypass surgery that was early complicated by gastric leakage that was managed endoscopically with OVESCO clipping. 6 years later, the patient presented with chest infection with coughing of food that was proved to be associated with gastrobronchial fistula. We applied OVESCO clips and closed the fistula and dilate the gastrojejunostomy due to very narrow gastrojejunostomy using a balloon 20 to 30 mm and dilatation was done several times. **After that repeated the barium meal showed that the fistula was successfully closed.** **Conclusion:** Gastrobronchial fistula is one of rare reported complications following bariatric surgery that could be successfully managed endoscopically through different strategies in a highly effective therapeutic option that help in shortening of the leakage healing time.

Keywords: Bariatric surgery; Gastrobronchial fistula; Endoscopic management.

Introduction

Obesity is one of the leading causes of morbidity and mortality all over the world. Its prevalence has been increasing dramatically in recent years. Bariatric surgery is considered the gold standard of care for patients who failed conservative management. Contemporary bariatric operations include laparoscopic Roux-en-Y gastric bypass (RYGB), laparoscopic sleeve gastrectomy (LSG), laparoscopic adjustable gastric band (LAGB) and the biliopancreatic diversion with duodenal switch (BPD-DS). The Roux-en-Y gastric bypass (RYGB) was one of the first bariatric procedures developed but laparoscopic sleeve gastrectomy (LSG) is currently the most commonly performed bariatric procedure worldwide^{1,2}. Bariatric procedures can be associated with devastating complications. Early complications include leaks, stenoses, bleeding, and venous thromboembolic events (VTE). Late complications include Gallstone disease, anastomotic ulcers, perforation, bleeding, small bowel obstruction and gastrobronchial fistula (GBF)³. GBF is a rare but serious subtype of gastric leaks, they 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 GBF⁴.

Case presentation:

On May 2015, our 45 years old female patient from Libia presented after gastric bypass surgery in her early postoperative period with post gastric bypass leakage, endoscopy showed staple line leak just below the z line with small remaining stomach and the gastrojejunostomy was normal. We applied the OVESCO clips and the leakage was stopped. The patient after 2 weeks stabilized and left our country to Libia. In January 2021 the patient presented again with a history of recurrent chest infection with coughing of food, she can't come to Egypt because of corona and the restrictions, after a while, she came with a barium meal using water soluble contrast showing gastro bronchial fistula, endoscopy showed that the OVESCO clips have fallen and the fistula just below the z line and very narrow gastrojejunostomy. We applied OVESCO clips and closed the fistula and we dilate the gastrojejunostomy using a balloon 20 to 30 mm and dilatation was done several times, we repeated the barium meal after the endoscopy and it showed that the fistula was successfully closed.

Discussion:

Moeller and Carpenter first classified the causes of gastro-bronchial fistula into five categories: (1) trauma, (2) esophageal or gastric surgery, (3) neoplasm, (4) gastric ulcer, and (5) subphrenic

abscess⁵. Gastric fistula incidence following bariatric surgery has been estimated as 0.9-2.6%, reaching 10% in revision operations, with the angle of His being the most common location⁶. It has been suggested that ischemia in the gastric wall surrounding the staple line is more likely related to most cases of leak and subsequent fistula formation rather than staple line dehiscence⁷. Distal stenosis following LSG may be the explanation of development of GBF, which decreases gastric emptying and thereby increases pressure in the stomach and directs the gastric contents into the fistula tract. This facilitates persistent communication between the stomach and the respiratory tract⁸. In our case, the early postoperative period was associated with the occurrence of staple line leak that was managed by OVESCO clip. Patient remained free for six years then with developed gastrobronchial fistula with no history of intervention, so we propose that the gastrobronchial fistula occurred secondary to a chronic silent microleak, which might be not significant to cause symptoms.

Clinically, patients present with pulmonary symptoms such as chronic productive cough, recurrent chest infection, or even vomiting and expectoration of food particles and gastric contents⁹. In a recent multicenter retrospective study of 13 patients with gastrobronchial fistula following LGS, the mean duration before the appearance of symptoms was found to be 129 days¹⁰ while the late occurrence of gastrobronchial fistula after 6 years in our patient may be due to the early closure of staple line leak with OVESCO clip. Early detection of gastric leaks is crucial to improve patient outcomes. A high index of clinical suspicion is of great importance in the detection of leaks as tachycardia, fever and abdominal pain are often the presenting signs^{11, 12}. Following the detection of leaks, adequate management is crucial to reduce recurrence and prevent the progression of leak-related complications. Management of gastric leaks includes percutaneous, endoscopic and surgical approaches. Endoscopic procedures with percutaneous drainage are often used as they are minimally invasive and successful in 80-95% of cases¹¹.

These procedures involve using self-expanding covered metal stents, clips (as we did in our patient), argon plasma ablation or glue injections. In cases with functional or mechanical obstruction, leaks may persist despite these interventions and progress to fistulas¹¹. The progression of a chronic leak to a GBF may go undiagnosed as the subphrenic collection of gastric content can induce an omental "walling off" response that blocks and prevents diffuse peritonitis¹³.

This may explain the delayed presentation of a GBF in our patient. Immediate diagnosis and management of GBF is essential in reducing mortality from pulmonary infections, respiratory failure and septic shock. Since GBF is a rare complication of LSG, there are no well-established diagnostic and treatment algorithms¹³. UGIS, CT scan with oral contrast and barium meal are acceptable imaging modalities used to diagnose GBF^{6, 8}. For many years, surgical intervention was considered the only way to treat GBF¹¹.

Surgical options described in literature include Roux-en-Y over the fistula, esophagojejunal anastomosis and total gastrectomy. However, this carries a significant risk of mortality

ranging from 20% to 70%, most commonly due to aspiration pneumonia, acute respiratory distress syndrome and sepsis¹¹.

As a result, minimally invasive endoscopic procedures have been adapted to manage GBFs. A multicenter study of 15 patients who underwent endoscopic procedures reported a 93% success rate in closing GBFs. However, an average of 4.5 endoscopic sessions were required¹¹. Endoscopic interventions included in this study were dilations of the narrowed gastro jejunostomy and OVESCO clip, while a report by Fernandoa et al used dilatation and fully covered metal stent was applied, but stent migration was occurred requiring re-intervention to maintain coverage of the fistula, stent migration is the most common reported complication occurring in 15-60%¹¹. To minimize this, a report by Al-Lehibi described a successful case in which combined endoscopic approaches using over the scope clips (OVESCO) and fully covered metal stents achieved successful healing of the fistula with no recurrence¹⁴. Recently, there is a reported novel treatment for post-LSG broncho-gastric fistula with application of autologous stem cells after the failure of the conventional surgical/endoscopic approach.¹⁵

In conclusion, management of GBF should be individualized to each case, however surgical approaches carry a high mortality rate, therefore, endoscopic therapy through different strategies is a highly effective therapeutic option and should be implemented early in order to shorten leakage healing time.

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