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CASE REPORT

Gastro-Broncho-Pleural Fistula after Laparoscopic Gastric Band Placement

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Abstract Laparoscopic gastric band placement is a common procedure for morbid obesity. Common complications include gastric perforation, band erosion, and band slippage. We present the first report in the literature of gastro-bronchial-pleural fistula after laparoscopic gastric band placement.

Keywords Gastric band · Gastro-bronchial-pleural fistula · Gastro-pleural fistula · Gastro-bronchial fistula

Introduction

Laparoscopic gastric band placement is a common procedure for morbid obesity. The technical aspects as well as the complications are well described in the literature. Complications are generally categorized into early and late. The most common early complication is gastric perforation. This occurs anywhere from 0.6% to 1.5% of patients and is recognized intraoperatively or within the early postoperative period [1–3]. Late complications consist most commonly of band erosion into the gastric lumen, band slippage, port dysfunction, and esophageal or pouch dilation. The current rate of erosion is quoted as less than 3% in most series. The erosion rate in current literature ranges, however, is from 0.4% to 9.5% [3–5]. Clinical presentation of erosion varies from asymptomatic with detection on routine endoscopy to symptoms consistent with a subphrenic abscess: pleuritic chest pain, left shoulder pain, and fevers. Patients rarely present with peritonitis. The time period of presentation ranges between 3 weeks and 45 months, with a mean period of 19 months [6].

We present the first report in the literature of gastro-bronchial-pleural fistula after laparoscopic gastric band placement. During creation of the retrogastric tunnel, overly aggressive dissection along the lesser curvature of the stomach at the right crus and adjacent to the angle of His at the base of the left may have contributed to this rare complication (Fig. 1).

Case

A 32-year-old female underwent laparoscopic placement of an adjustable gastric band in May of 2003. This was done at another institution approximately 1 year prior to her presentation in our office. Her postoperative course was complicated by development of a spontaneous left pneumothorax approximately 6 months after her surgery. She underwent thoracic computed tomography (CT) scan with intravenous contrast which also demonstrated a concurrent pneumonia for which she received a course of antibiotics. Her course was further complicated by contrast-induced acute renal failure requiring dialysis and 2 weeks in the intensive care unit. One month later, she developed a recurrent pneumothorax as well as an empyema for which she underwent left thoracotomy, decortication, and chest tube drainage.

Approximately 1 month following hospitalization for empyema, she developed purulent sputum and hemoptysis. She was treated with a course of oral antibiotics. Although she clinically improved, she continued to experience left lateral chest and left upper quadrant abdominal pain. In addition, she also had experienced an increase in gastro-

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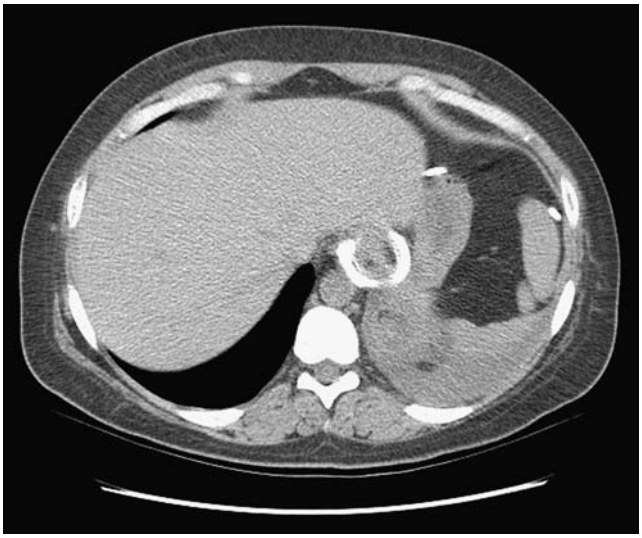

Fig. 1 CT scan of chest showing gastric band

esophageal reflux symptoms which improved on ranitidine, pantoprazole, and metoclopramide. Subsequent evaluation with abdominal CT scan and upper gastrointestinal series demonstrated a gastric fundic herniation with extravasation of contrast adjacent to the fundus of the stomach suggestive of a contained leak. Additional findings included a prominent air–fluid level noted proximal to the gastric band suggesting significant pouch dilation, gastroesophageal reflux, and bronchiectatic changes involving a portion of the left lower lobe of the lung (Fig. 2).

Physical examination revealed a heavyset woman weighing 189 lbs (body mass index (BMI) 33.5) which was down from her preoperative weight of 289 lbs (BMI 50.7). She was afebrile with stable vital signs. Her head, neck, and cardiovascular exam was unremarkable. On examination of her chest, she had bilateral breath sounds with bronchial breath sounds over the left base. This was associated with some coarse crackles which partially cleared after coughing. She had a well-healed left thoracotomy incision in addition to healed chest tube sited. Her abdomen was soft, obese, and nontender. Her laparoscopic port sites were well healed and the band reservoir was palpable in the right upper quadrant of the abdomen.

The preoperative impression was pouch dilation with a contained leak and possible gastro-pleural fistula. Approach via a left thoracoabdominal incision was planned with the assistance of the thoracic surgical service. The patient was informed that the gastric band would need to be removed due to presence of ongoing infection, and no plan for conversion to gastric bypass was made.

The patient went to the operating room on February 25, 2004 and underwent exploratory laparotomy. On entry into the abdominal cavity, extensive adhesions between the liver and proximal stomach in the region of the gastroesophageal junction were encountered. The triangular ligament was taken down freeing up the left lobe of the liver. The gastroesophageal junction was exposed, and a dense fibrous capsule was noted surrounding the gastric band. This was carefully incised, and the band was divided and easily removed. There was no evidence of esophageal or gastric injury or band erosion. Dissection was carried out laterally and a paraesophageal hernia was noted. A hernia defect measuring approximately 3 cm was noted in the diaphragm. The diaphragm was incised posterolaterally, enlarging the hernia defect in order to facilitate reduction of the gastric fundus. At this time, the gastric fundus was noted to be densely adherent to the left lower lobe of the lung.

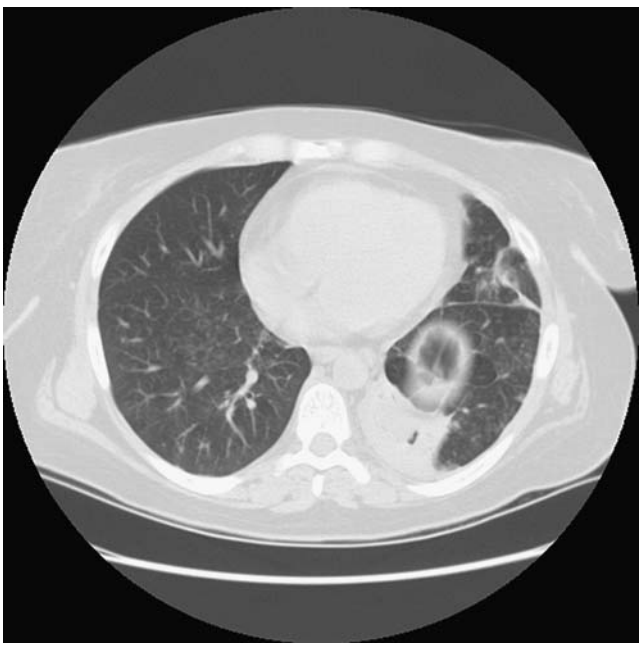

Fig. 2 CT scan of chest demonstrating bronchiectatic changes

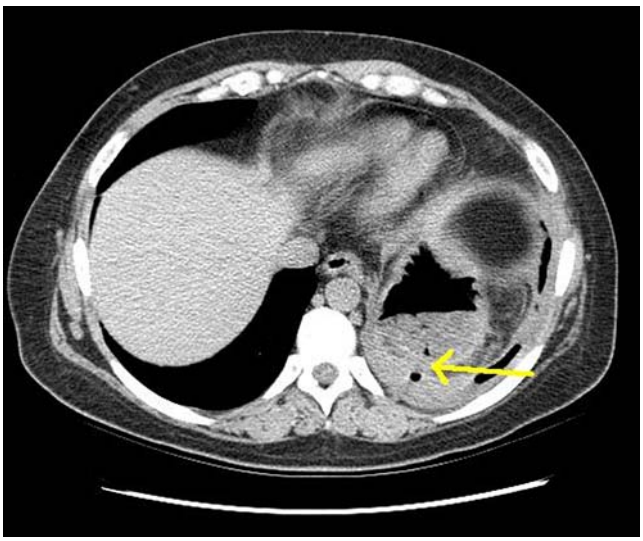

Fig. 3 CT scan of chest demonstrating fistula tract (*arrow*)

A posterolateral thoracotomy was then performed, and the remainder of the gastric fundus was mobilized. A clear paraesophageal hernia was identified measuring approximately 4.0–4.5 cm. There was also noted to be a gastro-bronchopulmonary fistula between the gastric fundus and the left lower lobe of the lung (Fig. 3). This was taken down using a TA 60, 3.5 mm stapler, and the staple line was oversewn using 3–0 silk Lempert type sutures. A left lower lobectomy was then performed.

The patient was transferred to the surgical intensive care unit postoperatively. Her remaining hospital course was uneventful and only significant for pain which was managed by the chronic pain service. Her cough and reflux symptoms improved, and she was discharged home on postoperative day 8.

Discussion

Our patient presented 1 year postoperatively with a symptomatic gastro-bronchopulmonary fistula. To our knowledge, there have been no other similar reports of such a complication following gastric band placement. We postulate that an unrecognized injury to the left hemidiaphragm occurred during dissection to create the retrogastric tunnel resulting in a paraesophageal hernia. Incarceration and strangulation of the fundus subsequently resulted in the empyema and ultimately the gastro-bronchopleural fistula.

In review of the literature, gastropleural fistula can arise from three different pathologic conditions. There can be a gastric perforation with secondary abscess formation and erosion through the diaphragm. A perforation of the intrathoracic portion of the stomach can occur in an esophageal hiatal hernia. The cause can also be traumatic in nature resulting in the immediate formation of a gastropleural fistula. Trauma can also result in the formation of a diaphragmatic hernia with subsequent perforation of the intrathoracic stomach at a later date [7]. In our patient, the latter of the three conditions was most likely the case. Presumably, the cause of this complication originated during creation of the retrogastric tunnel. During dissection of the right crus and creation of the retrogastric tunnel, an inadvertent injury was most likely created in the diaphragm. This went unnoticed, and the rest of the procedure was uneventful. Several months later, the patient undoubtedly developed a diaphragmatic hernia that became incarcerated with eventual strangulation and perforation into the left chest which was likely influenced by the presence of a partially obstructing band. This resulted in pneumothorax and then subsequent empyema and fistula formation.

Although a rare complication of laparoscopic gastric band placement, gastro-bronchopleural fistula is a risk after inadvertent injury to the diaphragm during dissection at the hiatus.

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