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Case Reports

Long-Term Pulmonary Complications after Laparoscopic Adjustable Gastric Banding

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Early pulmonary complications following laparoscopic adjustable gastric banding (LAGB) have been rare, while long-term pulmonary complications have not been reported. Herein, we report two patients who presented 2 and 3 years after LAGB with unexpected pulmonary complications. The first patient had aspiration pneumonia secondary to stomal obstruction and esophageal reflux. The second patient had left lobar pneumonia, in which the connecting catheter appeared as a linear structure within the consolidation. This may be due to migration of the connecting catheter through the diaphragm, piercing lung parenchyma. Both complications presented as asthma-like symptoms. Diagnosis could have been missed if not evaluated properly. A high index of suspicion and long-term follow-up are important for diagnosing such complications after LAGB.

Key words: Aspiration pneumonia, gastric banding, laparoscopic, morbid obesity

Introduction

Obesity is an increasing problem in the Kingdom of Saudi Arabia.¹ The overall prevalence of obesity (BMI >30) is 35.5%, while the prevalence of morbid obesity (BMI >40) is 3.2%.¹ The increased weight reflects the westernization trend in our society in recent years. It has been attributed to an abundance of food combined with diminished physical activity.² Patients with morbid obesity have substantially

reduced quality of life and an increase in secondary health problems such as hypertension, diabetes, hyperlipidemia, cardiovascular and lung diseases, osteoarthritis and psychological stress.³ Reduction of weight has become of considerable importance in our society, particularly among working women. Since the 1950s, several bariatric operations have been introduced for weight loss. Some were abandoned because of adverse metabolic consequences.^{4,5} Currently, laparoscopic adjustable gastric banding (LAGB) has become a widely used procedure for morbid obesity.^{6,8} This technique is attractive, because it is minimally invasive, totally reversible and can be adjusted to the patient's need.^{6,7} Early postoperative pulmonary complications after LAGB have been rarely reported and include pulmonary embolism, atelectasis, and acute respiratory distress.⁹⁻¹³ However, long-term pulmonary complications have not been reported. This could be due to inadequate follow-up, loss of contact with many patients, and lack of specific symptoms. We report two patients who presented with unexpected long-term pulmonary complications after LAGB, and reinforce the importance of long-term follow-up.

Case 1

A 36-year-old Saudi lady, who works as a teacher, had morbid obesity, and 2 years ago underwent LAGB with the Swedish band (SAGB, Ethicon Endo-Surgery). Her BMI was 45 kg/m² prior to surgery. She had a 10-year history of bronchial asthma

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Omer S. Alamoudi

and allergic rhinitis. Her asthma was fairly stable, although she was on therapy irregularly. She was allergic to a wide range of allergens, including dust, chemicals, detergents, perfumes and smoking.

She presented in the outpatient clinic, 2 years after the LAGB surgery, with a 2-month history of severe persistent cough and an increase in acid reflux particularly at bed-time when she lay flat. Her cough was mainly dry and occasionally associated with yellow sputum and foul odor. On examination, her weight was now 68 kg, height 145.5 cm, and BMI 32.2 kg/m². Blood pressure was 110/80, pulse rate 84, and respiratory rate 20. She was afebrile. Her Peak Expiratory Flow Rate (PEFR) was 370 L/minute (92% of predicted value). Examination of head and neck, cardiovascular system, chest, and central nervous system (CNS) was unremarkable. Examination of the abdomen revealed the palpable subcutaneous injection port of the LAGB system. There were no palpable lymph nodes or lower limb edema. Blood count showed an elevation of white cell count to 15.7 K/uL (n= 4.6-10.2 K/uL), Hb 11.7 g/dl, platelets 444 K/uL and ESR 34 mm/1st h. Chest radiograph showed faint patchy airspace densities in the right upper lobe. Subcutaneous injection port and connecting catheter and gastric band were seen in the lower midline. High resolution CT scan of the chest showed unexpectedly significant dilatation of the entire esophagus with an air-fluid level (Figure 1), as well as patchy air-space consolidation of the posterior segment of the right upper lobe (Figure 2). These findings were consistent with right upper lobe aspiration pneumonia, secondary to stomal obstruction.

Her surgeon deflated the band slightly; after that her symptoms subsided there has been no further cough or acid reflux, and the bad odor disappeared. However, she has gained 5 kg.

Case 2

A 35-year-old Saudi lady, who works as a teacher, had morbid obesity, and 3 years ago underwent LAGB with the Lap-Band® (Inamed, Allergan). Her BMI had been 48 kg/m² prior to surgery.

She presented in the outpatient clinic with a 1-month history of persistent nocturnal cough and acid reflux, particularly when she lay flat at bed-

time. Her cough was dry, and occasionally triggered by exposure to allergens such as perfumes, detergents and dust. One week prior to presentation, she had more cough, productive yellow sputum, left pleuritic chest pain, and low-grade fever. Although she had asthma-like symptoms for several years, she was on no medications. On examination, her weight was 92 kg, height 158 cm, and BMI now 36.8 kg/m². Blood pressure was 130/80, pulse rate 92, and respiratory rate 22. Temperature was 37.8°C. PEFR was 340 L/minute (80% of predicted). Examination of the head and neck was normal, but chest showed signs of consolidation on the left. Examination of the abdomen revealed the palpable subcutaneous injection port. Examination of cardiovascular system and CNS was unremarkable. There were no palpable lymph nodes or lower limb edema. Blood count showed elevation of the white cell count to 17.7 K/uL (n= 4.6-10.2 K/uL), Hb 12.3 g/dl, platelets 218 K/uL and ESR 55 mm/1st h. Chest radiograph showed a large air-space consolidation silhouetting the left dome of the diaphragm, and a linear structure was seen within the consolidation. In the lateral view, the tip of the catheter was pointing upwards (Figure 3). High resolution CT of the chest demonstrated the consolidated lobe with the connecting catheter within it (Figure 4). She was treated with antibiotics.

Unfortunately, the patient was then lost to follow-up, and her surgeon cannot be traced.

Discussion

LAGB has become a popular operation for morbid obesity worldwide.⁶ It has the advantage of being potentially reversible and can improve the quality of life with a low morbidity and mortality rate.^{7,8,13} Several early and later complications have been reported, eg. gastric perforation, band erosion or slippage, access-port problems, regurgitation and gastro-esophageal reflux from the pouch, with pouch dilatation (4.0%) and band displacement (1.6%) being the most common complications.^{9,10,12,14} In previous studies, pulmonary complications have been infrequent early postoperatively,⁹⁻¹³ and long-term pulmonary complications have not been reported. Chapman et al⁹ reviewed 41 stud-

ies published from 1988 to 2001 on LAGB. In a total of 8,504 patients who had undergone this surgery, early respiratory complications were very rare, and have been reported only in a total of 38 patients (0.44%) of whom 14 patients (0.16%) had pulmonary embolism.⁹ Chevallerier et al¹⁰ reviewed the complications after LAGB in 1,000 patients over 7 years from 1996 to 2003; pulmonary complications were extremely rare and found only in four patients (two acute respiratory distress, two pulmonary embolism). Dhafar et al¹¹ in his 4-year study on 97 patients, reported that two patients died with pulmonary embolism early postoperatively. However, on literature review, there were no studies to address long-term pulmonary complications following LAGB. Most of the previous studies with medium-term follow-up of 4 years have mainly concentrated on weight loss as a deciding factor for the success of the surgery, rather than long-term complications.

We report two patients who presented with pulmonary complications at 2 and 3 years after LAGB. The first presented with aspiration pneumonia secondary to recurrent gastroesophageal reflux disease (GERD). She had had repeated episodes of cough each night, mostly following a meal, which indicated repeated aspiration. Her esophagus was significantly dilated with a fluid level, indicating stasis due to either

severe narrowing of the stoma of the gastric pouch or chronic overindulgence in food, which led to filling the pouch as well as her distal esophagus during meals (Figures 1 and 2). This may explain the foul-smelling sputum that had been noticed by the patient.

In the second patient, there was a consolidation involving right middle and lower lobes of the lung. Interestingly, the connecting catheter has appeared as a linear structure that was seen within the consolidation (Figures 3 and 4). Part of the connecting catheter had migrated through the left copula of the diaphragm and pierced the lung parenchyma, causing pneumonic consolidation.

Both patients were known asthmatics and presented with asthma-like symptoms. The pulmonary complications could have been misdiagnosed if their symptoms had been treated as an asthma exacerbation, if they were not properly investigated. The lesson that we have learned from these patients is the importance of performing x-rays and CT scan of the chest in patients who have undergone LAGB if they present with respiratory symptoms. Patients who have undergone LAGB should be advised by their surgeon to see the chest physician if they have respiratory symptoms. The fear of having the band loosened by some patients, although it could be the only solution in the presence of severe GERD/obstruc-



Figure 1. High resolution CT scan of the chest showing dilatation of the entire esophagus with an air-fluid level (arrow).



Figure 2. High resolution CT scan of the chest showing patchy air-space consolidation (arrow) in the posterior segment of the right upper lobe, representing aspiration pneumonia.

Omer S. Alamoudi

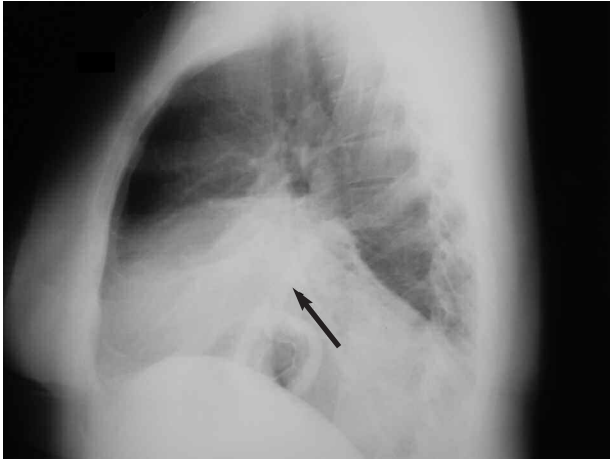


Figure 3. Lateral chest radiograph of the second patient, showing the connecting catheter (arrow) pointing upwards within the consolidation.

tion, should not deter patients from respiratory consultation, because their symptoms could be due to something else as in the second patient of this study. Dietary behavioral therapy in the presence of a well functioning restrictive band, may have a protective effect against aspiration. Removal of the band should be considered in the presence of repeated aspiration despite antireflux therapy or loosening of the band or in the presence of band malposition.

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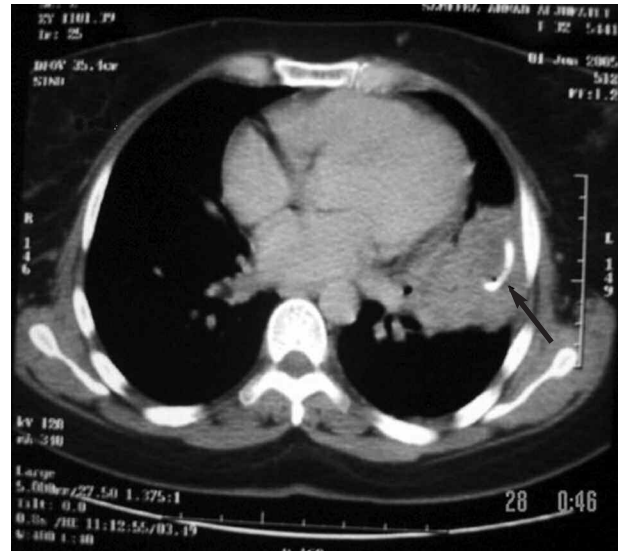


Figure 4. CT scan of the chest demonstrates the consolidated lobe; the connecting catheter appears as linear structure within it.

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