

Pulmonary aspiration during anesthetic induction in a patient with laparoscopic adjustable gastric band –A case report–

*Department of Anesthesiology and Pain Medicine, Dongtan Sacred Heart Hospital, College of Medicine, Hallym University, Hwaseong, Department of Anesthesiology and Pain Medicine, CHA Bundang Medical Center, CHA University, Seongnam, Korea

Su Jeong Nam*, Haeyoon Chang, Sun Ok Kim, Seon-Yi Lee, and Jong Chan Kim

Recently, the number of laparoscopic adjustable gastric banding surgery is increasing as is the number of patients with morbid obesity rapidly. However, no anesthetic management including preoperative fasting strategy for patients with laparoscopic adjustable gastric banding exists. Hereby, we report a case of a 22-year-old woman with laparoscopic adjustable gastric banding who suffered pulmonary aspiration during the anesthetic induction for appendectomy, despite a preoperative fasting period longer than 14 h. This case strongly suggests that guidelines for anesthetic management including the appropriate fasting period for patients with laparoscopic adjustable gastric banding are desperately required. (*Anesth Pain Med* 2016; 11: 417-419)

Key Words: Aspiration pneumonia, Laparoscopic adjustable gastric banding, Patient safety.

Among the bariatric surgeries for the morbidly obese patients, laparoscopic adjustable gastric banding (LAGB) is considered as a particularly effective option for patients who have failed to lose weight through diet control or medication [1]. Due to its minimal invasiveness, total reversibility, and consistent weight reduction effect combined with low morbidity and mortality, LAGB became the most frequently performed surgery for the treatment of morbid obesity [2].

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Corresponding author: Jong Chan Kim, M.D., Ph.D., Department of Anesthesiology and Pain Medicine, CHA Bundang Medical Center, CHA University, 59 Yatap-ro, Bundang-gu, Seongnam 13496, Korea. Tel: 82-31-780-5799, Fax: 82-31-780-5474, E-mail: aescula72@hanmail.net

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However, the worldwide popularity of LAGB may be overshadowed by various complications. Recently, we witnessed a case of a patient with LAGB who suffered pulmonary aspiration during the anesthetic induction for appendectomy, despite a preoperative fasting period of longer than 14 h. This type of adverse event needs to be considered as a potential risk of LAGB. Therefore, we report this case together with a literature review.

CASE REPORT

A 22-year-old woman was presented for urgent laparoscopic appendectomy under general anaesthesia. Her history showed that she had lost 25 kg after undergoing LAGB 11 months prior (current height: 163 cm, current weight: 50 kg, body mass index: 18.8 kg/m²). Also, 8 months after the LAGB, she started suffering from persistent dyspepsia and gastro-esophageal reflux disease (GERD), including dry cough and heartburn. Although the pressure of the gastric band was adjusted to relieve these symptoms at that time, her symptoms were not relieved. So she was prescribed additional medications including H₂-receptor blocker and proton pump inhibitor, which could not make her symptoms improved. She visited the emergency room because of lower abdominal pain. This pain appeared 32 h before surgery and was localized to the right lower quadrant. The preoperative pain score of her was below 3. The preoperative abdominopelvic computed tomography for the diagnosis of acute appendicitis was examined approximately 10 h before surgery and confirmed the diagnosis. Also, it showed the previously-inserted gastric band and 4 cm dilatation of the distal esophagus just proximal to the gastric band (Fig. 1). There were no other significant findings in the preoperative physical examination or evaluations

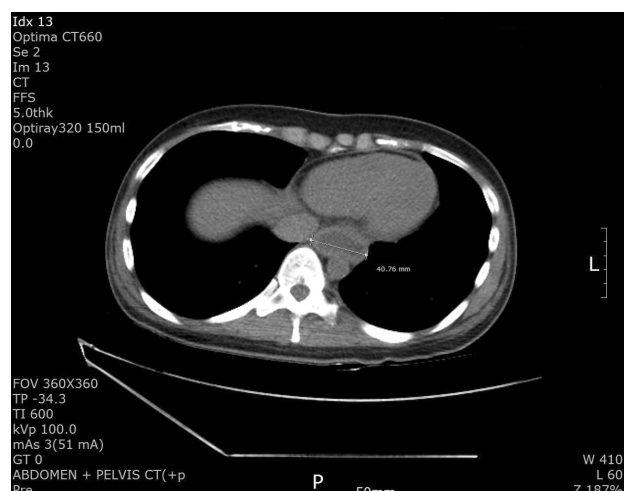


Fig. 1. Dilatation of the distal esophagus on the preoperative computed tomography.

including the preoperative chest radiograph (American Society of Anesthesiologists class 1 and modified Mallampati class 1).

The patient ate her last meal (a small amount of rice) at 1 PM the day before the surgery, and had an ice cream at 5 PM the same day. On the next day at 7:30 AM, upon arrival in the operating theatre, standard monitoring devices were installed and anesthesia was induced with intravenous lidocaine 20 mg and propofol 120 mg. Immediately after injection of the anesthetics, the patient began to cough and vomit. The vomitus was about 400 ml of a dark brown liquid. The patient was immediately placed in the Trendelenburg position, and oral suction was initiated. Intubation with direct laryngoscopy was performed in the Trendelenburg position after an injection of intravenous rocuronium 50 mg. Tracheal suction through an endotracheal tube was also applied, and a small amount of liquid regurgitation materials was observed. The partial arterial oxygen pressure (PaO_2) as measured immediately after the intubation was 150 mmHg under 1.0 of FiO_2 (fraction of inspired oxygen). The operation lasted 25 min without any events. After the operation, the patient was transferred to the intensive care unit (ICU) without extubation.

The chest radiograph taken after arrival at the ICU showed broad infiltration of the bilateral lung fields that are suggestive of aspiration pneumonia (Fig. 2). A nasogastric tube was placed in order to drain the gastric contents continuously so as to prevent further regurgitation, and a course of IV antibiotics therapy was initiated. After 10 h of ICU care, the PaO_2 rose to 192 mmHg under 0.4 of FiO_2 . The patient was extubated on postoperative day (POD) 1 and was transferred to the ward



Fig. 2. Chest X-ray on arrival at the intensive care unit.

as her chest radiograph revealed that the pneumonic infiltration had improved and there were no symptoms related to aspiration pneumonia, such as fever, dyspnea, or hypoxia. She was discharged on POD 5 without any complications.

DISCUSSION

Since its introduction in 1993, LAGB has gained huge popularity and is currently considered as one of the most effective treatment for morbid obesity. Early positive studies were published to report the treatment's significant weight loss effect along with its low morbidity and mortality. However, the complications from LAGB seem to have been eclipsed by its indisputable weight reduction effect. In fact, recent studies have demonstrated that LAGB could have a number of adverse effects on the gastrointestinal tract, including alteration of the esophageal and gastric motility, reduced lower esophageal sphincter pressure, and pouch formation [3,4]. In the present case, pouch formation in particular, played a pivotal role in the development of pulmonary aspiration upon anesthetic induction. Pouches are formed approximately 6 months after LAGB and increase GERD symptoms such as those of our patient. It has been reported that GERD symptoms *per se*, are highly related to major respiratory complications such as aspiration pneumonia with or without pulmonary abscess and empyema, exacerbation of asthma, hemoptysis and bronchiectasis [5].

Anesthetic induction in patients presenting a risk of pulmonary aspiration is an immensely challenging problem for

anesthesiologists. Although the complication is rare, it is well-known to be associated with hypoxic brain damage, unanticipated ICU care, and even high mortality [6]. Although there have been some guidelines about the perioperative management of relevant patients including fasting recommendations to reduce the risk of pulmonary aspiration [7,8], large-scale, randomized controlled trials or specific recommendations for the perioperative anesthetic management of patients with a history of LAGB are still lacking. Likewise, there have been no studies about the appropriate preoperative fasting duration. In our case, pulmonary aspiration was developed in spite of a fasting period of more than 14 h. Also, in other case report, it was reported that the prolongation of the preoperative fasting duration for gastric emptying (more than 14 h) does not decrease the contents being present in the dilated esophagus or the gastric pouch, and does not reduce the risk of pulmonary aspiration [9].

Fortunately, there have been no reports of pulmonary aspiration associated with severe pulmonary complications or death in patients with LAGB. However, it is mandatory to pay careful attention to this growing category of patients in order to reduce the regurgitation and aspiration of the gastric contents in the perioperative period.

In this respect, guidelines for the preoperative risk classification and anesthetic management of patients with LAGB including intubation and extubation strategies and an appropriate fasting period are desperately required. We strongly suggest that the preoperative decompression of gastric or esophageal pouch by using nasogastric tube, rapid-sequence induction without mask-ventilation, awake intubation for patients with an anticipated difficult airway and fully awake extubation should be considered. Most of all, the investigation of appropriate fasting period before anesthetic induction should be conducted as soon as possible.

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