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The Location of Intra-gastric Balloon Induced Gastric Ulcer

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Abstract

The adverse event of Intra-gastric balloon technique includes abdominal pain, nausea, gastroesophageal reflux, spontaneous deflation, gastric ulcer, and perforation. Among these complications, the gastric ulcer is very important due to following complications such as bleeding and perforation. Observing the whole stomach is nearly impossible due to the intra-gastric balloon and food materials, so understanding the most common location of gastric ulcer is imperative. In this series, we cautiously suggest that the most common intra-gastric balloon induced gastric ulcer location might be the lower body and the angle.

Keywords: Intra-gastric Balloon; Gastric Ulcer; Location

Abbreviation

IGB: Intra-gastric balloon

Introduction

The intra-gastric balloon (IGB) technique has been widely used for reducing body weight of obese patients. Although IGB is a safe technique, it has adverse events. Abdominal, nausea, and gastroesophageal reflux occurred 33.7%, 29%, 18.3% of patients respectively [1]. Spontaneous deflation has been reported in variable proportions (3–23%) [2–4]. Gastric ulcer occurred in about 0.4% of patients, and perforation developed in about 0.21% of patients [5]. Gastric ulcer is the most important complication because it can result in bleeding and perforation, fatality cases. After IGB implantation, it is nearly impossible to observe the whole stomach due to the IGB and food materials. Therefore, it is important to know the most common location of gastric ulcer. However, there has been no report about the location of gastric ulcers. I report case series of three ulcers occurred at the nearly same anatomical location after IGB implantation.

Case Presentation

Case No 1

A 56-year-old Korean woman underwent saline filled IGB, End-Ball[®] (Endalis, Brignais, France) implantation for obesity, initial body weight was 90kg, and initial BMI was 32.3kg/m². She did not have the history of surgery or any specific family history of disease. She drank some alcohol just for social behavior. She did not smoke. There were no signs of reflux disease. Endoscopy before IGB implantation showed no gastric erosions or ulcerations. The Helicobacter pylori test was negative. There was no immediate complication related with the procedure. She visited an IGB clinic one a month and received prescription including proton pump inhibitor (PPI). However, she stopped visiting for the last three months. At 6th month after implantation, she visited an IGB clinic to remove the IGB. The interview revealed that she did not take PPI for the last three months. The IGB was removed as scheduled. Follow up endoscopy just after the IGB removal showed an about 5mm sized whitish ulcer base with moderately swollen mucosa at the anterior wall of the lower body of the stomach (Figure 1a). She did not complain any symptom, but PPI was prescribed for two months.

Case No 2

A 52-year-old Korean woman came to an IGB clinic for losing weight to relieve her knee joint pain. The initial body weight was 110kg, and BMI was 40.4Kg/m². She had osteoarthritis and essential hypertension, but did not have the history of surgery or any specific family history of disease. She did not have alcohol nor smoking. There were no signs of reflux disease. Endoscopy before IGB implantation showed no gastric erosions or ulcerations. The Helicobacter pylori test was negative. End-Ball[®] insertion was performed without any problem. She did not visit the IGB clinic after the first-month visit. She had received many messages and calls from a clinic but neglected. At

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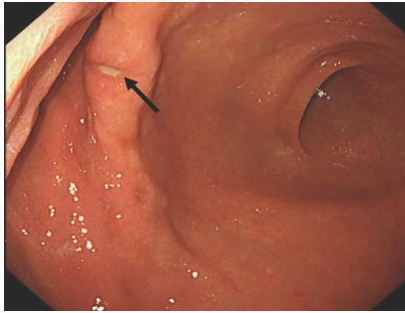


Figure 1a: An about 5mm sized whitish ulcer base with slight mucosal swelling was noticed at the anterior wall of the angle (black arrow).

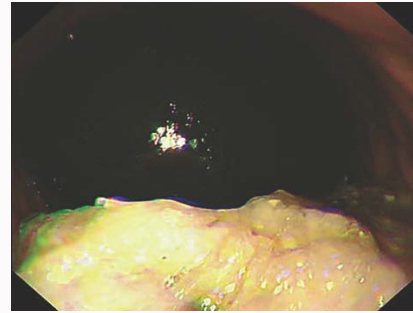


Figure 2: Food material and the intragastric balloon were observed in the upper body and the fundus.

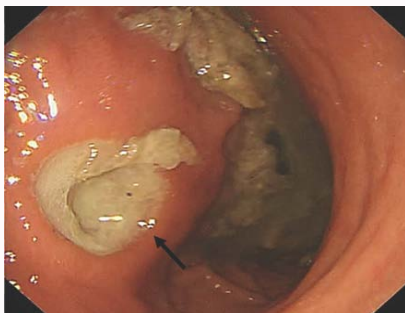


Figure 1b: An about 20mm sized whitish ulcer base was observed at the anterior wall of the lower body (black arrow).



Figure 3: Food stasis was observed in the upper body and fundus. The intragastric balloon was noticed at the upper body.

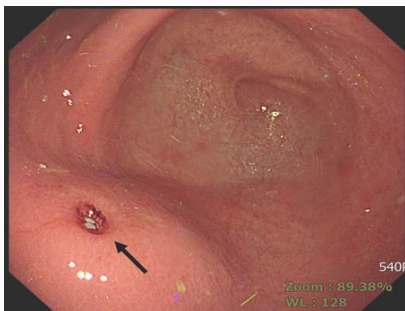


Figure 1c: An about 5mm sized whitish ulcer base with slight fresh bleeding and marked swelling was noticed at the anterior wall of the lower body (black arrow).

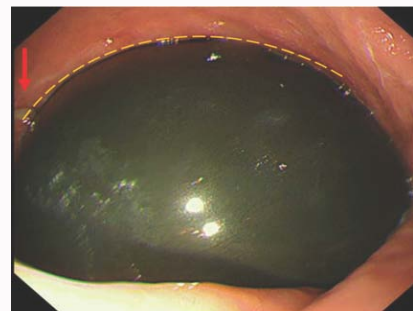


Figure 4: The intragastric balloon located on the angle (yellow dotted line). A small ulcer was noticed at the anterior wall of the angle (red arrow).

4th month after an IGB implantation, she developed abdominal pain and general weakness. She came to a clinic and confessed that she did not take PPI for the last two and half months. IGB was removed urgently was performed safely. Follow up endoscopy revealed an about 20mm sized deep ulcer at the anterior wall of the lower body of the stomach (Figure 1b). Hemoglobin was 8.7g/dL, and hematocrit was 29%. Transfusion was done, and two-month PPI was prescribed for the patient.

Case No 3

A 29-year-old Korean woman visited the IGB clinic to lose weight. Her initial body weight was 130kg, and BMI was 34.6kg/m². She did not have the history of surgery or any specific family history of disease. She did not have alcohol nor smoking. There were no signs of reflux disease. Endoscopy before intragastric balloon implantation showed no gastric erosions or ulcerations. End-Ball[®] implantation had made her lose 25kg for six months. However, she had not taken PPI for about four months. After End-Ball[®] removal, follow up endoscopy

revealed an about 5mm sized whitish ulcer base with markedly swollen mucosa at the anterior wall of the angle of the stomach (Figure 1c). Two-month PPI was prescribed.

Discussion

Gastric ulcer is the most important complication of IGB because it can result in serious bleeding and perforation. Three ulcers in this case series showed common location: the anterior wall of the lower stomach, from angle to the lower body. This information can be very important for endoscopic examination to diagnosis the presence of ulcer of a patient with an IGB. With an IGB, gastric emptying is prolonged seriously, so the stomach is filled with food material as well as the IGB (Figure 2). In this situation, it is nearly impossible to inspect the whole stomach to evaluate the presence of an ulcer when a patient with an IGB complains abdominal pain. However, an endoscopist can observe the antrum and the lower body in most situations because food material is accumulated in the fundus, and the IGB ordinarily locates in the upper body (Figure 3). Thus, it would be the good news if an IGB induced ulcers mostly located in the lower



Figure 5a: Endoscopy shows a gastric balloon and food material in the fundus and the upper body.



Figure 5b: The angle was inspected as a minimal mandatory endoscopic examination.



Figure 5c: The lower body was inspected as a minimal mandatory endoscopic examination.

body and the angle of the stomach. Theoretically, the lower body and the angle can be the most common site of pressure ulcers caused by IGBs. The dramatically narrowed gastric luminal volume from the lower body to the antrum can make an IGB press the lower body and the angle, especially the anterior wall (Figure 4). Consistent pressure by a 500cc to 600cc saline filled IGB can decrease the microcirculation of the gastric mucosa and finally increase the possibility of creating pressure ulcer. Based on experience, the lower body and the angle are mandatorily inspected when a patient complains symptom suggesting gastric ulcer after an IGB implantation in our clinic (Figure 5). These three cases provide valuable information for managing a patient with abdominal pain after an IGB implantation. Large-scale study about the location of the ulcers caused by IGBs should be proceeded to guide IGB practitioners for diagnosing the cause of abdominal pain by minimal mandatory endoscopic inspection. This data appears to be also important for management about a gastric perforation by an IGB.

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