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A case report of severe gastric erosions, ulceration, and bleeding following intragastric balloon placement for weight loss

Meena Kothwal Patel, Manvek Jawanda, Rajkumar Srinivasan

ABSTRACT

Intragastric balloon (IGB) therapy has been increasingly used as minimally invasive procedure for obesity management, offering short-term weight loss benefits with a favorable safety profile. However, serious complications such as gastric erosions and upper gastrointestinal (UGI) bleeding, though rare, can occur and require urgent intervention. We report a rare case of severe UGI bleeding in a 36-year-old female following IGB insertion for weight loss. She presented to the emergency department with symptoms of upper gastrointestinal bleed and significant anemia (hemoglobin 68 g/L) ten days post-intragastric balloon insertion at private hospital in Sydney. Computed tomography imaging confirmed an intact gastric balloon without signs of gastric perforation. Emergency gastroscopy and early balloon removal were done without complication. Also, multiple gastric erosions were seen on the first gastroscopy. Despite initial stabilization, the patient had recurrent bleeding, necessitating two additional endoscopies to achieve hemostasis. This case highlights a rare but serious complication of IGB therapy. Delayed presentation contributed to the severity of bleeding. Intragastric balloon-related complications underscore the importance of careful patient selection, prophylactic proton pump inhibitor use, timely symptom recognition, and close post-procedure monitoring. Though IGBs are generally safe, clinicians must remain vigilant for rare but serious adverse events like UGI bleeding.

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INTRODUCTION

Intragastric balloons (IGBs) have been utilized as a treatment option for obesity for more than three decades. The first prominent device, the Garren-Edwards Gastric Bubble, was discontinued due to insufficient weight loss outcomes and a high incidence of complications. Since then, newer devices have been developed to overcome these limitations, however, comprehensive studies are still required to evaluate complication rates across different models. Compared to other bariatric procedures, IGBs have an exceptionally low mortality and morbidity rate. Complications are mainly associated with visceral injury related to device insertion and retrieval, and presence or migration of an *in situ* device which can lead to gastric ulceration and perforation, intolerance, gastrointestinal obstruction, and rarely, acute pancreatitis. We present a rare case of severe gastric erosions and bleeding secondary to intragastric balloon insertion in a 36-year-old female, requiring early removal of the device.

CASE REPORT

A 36-year-old female presented to our hospital emergency department with symptoms of upper gastrointestinal bleed ten days post-intragastric balloon

insertion at a private hospital in Sydney for weight loss management. She had anorexia and was not able to tolerate solids since IGB insertion. At presentation, the patient was tachycardic with a heart rate of 112 bpm and borderline hypotensive, with systolic blood pressure in the 90s. She had a hemoglobin of 68 g/L with normal electrolytes and renal function tests. A computed tomography (CT) scan of the abdomen showed a 9 cm × 10 cm gastric balloon situated in the stomach, with distension of the stomach proximal to balloon, without other pertinent findings including perforation (Figure 1A and B).

Following discussion with her private surgeon, she was taken to operating theatre for endoscopic removal of intragastric balloon and concurrent hemostasis. The endoscopy showed a superficial esophageal ulcer with no stigmata of recent bleeding at distal esophagus and multiple dispersed erosions with stigmata of recent bleeding in gastric fundus, body, and greater curvature of stomach. The IGB was visualized, and an endoscopic needle was used to aspirate 540 mL of methylene blue, before the collapsed balloon was removed with tripod forceps without any complications (Figure 2). The deflated and endoscopically removed IGB can be seen in Figure 3. Post-removal endoscopic assessment of the stomach at balloon site showed linear erosions with no active bleeding (Figure 4).

The patient was started on high dose intravenous (IV) proton pump inhibitor (PPI) post-procedure and admitted for ongoing observation. She was kept nil by mouth for the first 24 hours and gradual oral fluids were introduced later. She remained hemodynamically stable and her hemoglobin stabilized between 80 and 90 g/L for two days post-procedure. She had no further episodes of hematemesis but had ongoing epigastric pain, nausea, and melena. On the third day of admission, a rapid response was called for hypotension and hemoglobin drop to 58 g/L, which led to return to theater for repeat endoscopy after initial stabilization with intravenous fluids and blood transfusions. A CT mesenteric angiogram was done prior to the scope which showed no active arterial bleeding in the stomach.

During the second endoscopy there was a Forrest 1A ulcer in the fundus beneath a large clot (Figure 5), bleeding of which was controlled with 15 mL of adrenaline 1:10000 injection into the ulcer base and application of 2× Instinct clips (Cook Medical, Winston-Salem, North Carolina, USA) (Figure 6), which achieved hemostatic control. Hemospray (Cook Medical, Winston-Salem, North Carolina, USA) was applied to the site for additional reinforcement. The total blood loss during the procedure was estimated greater than 1 liter which required 2 units of packed red blood cells (PRBC), 2 units of fresh frozen plasma (FFP), and 2 units of cryoprecipitate intraoperatively.

The patient was admitted to high dependency unit (HDU) for closer monitoring and was stable with hemoglobin in the 80 g/L for four days. The patient had another episode of hematemesis with associated drop in hemoglobin and needed blood transfusion with another check endoscopy. Though clotted blood at the fundus was noted, no active bleeding sites were identified in the third endoscopy. The clips from previous endoscopy were intact (Figure 7). A few non-bleeding superficial gastric ulcers with no stigmata of bleeding were observed on the greater curvature of the stomach (Figure 8).

A CT mesenteric angiogram performed the following day did not identify any active contrast extravasation in the stomach and elsewhere. The patient was monitored on the ward for six more days prior to advancing her to a full diet. Her hemoglobin was stable at 95 g/L and was discharged with oral proton pump inhibitor and sucralfate, with follow-up arrangements with her private surgeon. A follow-up check endoscopy completed six months later was normal with healed ulcerations.

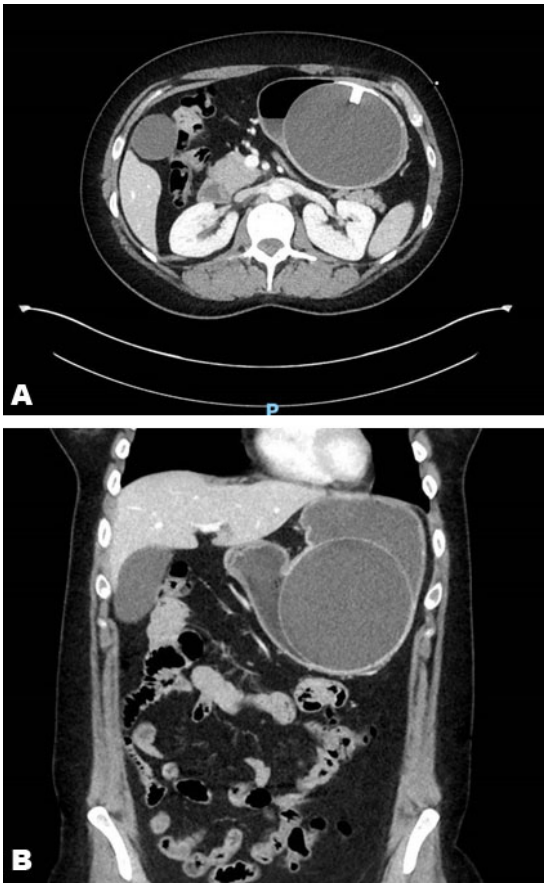

Figure 1: (A and B) Axial view of CT scan showing intragastric balloon in situ with no active bleed. (A) Coronal view of abdomen and (B) axial view of abdomen.

Figure 2: Endoscopic removal of intragastric balloon.

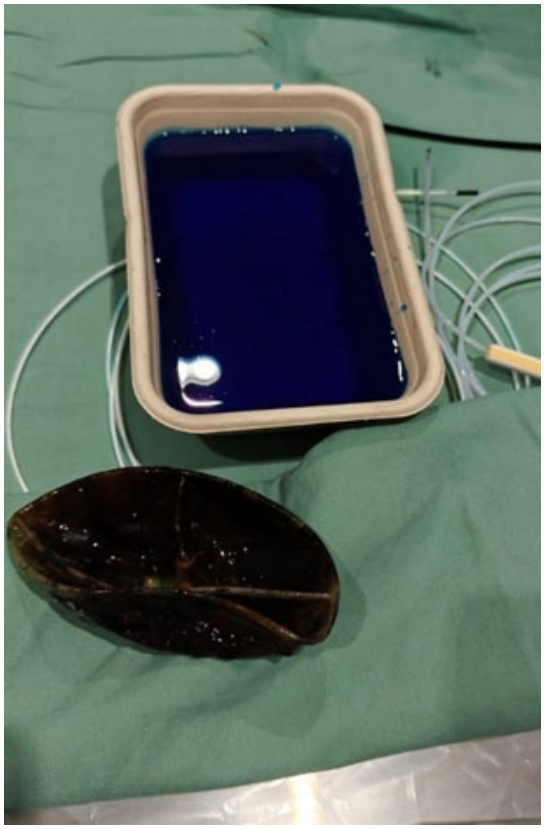

Figure 3: Deflated intragastric balloon post endoscopic removal.

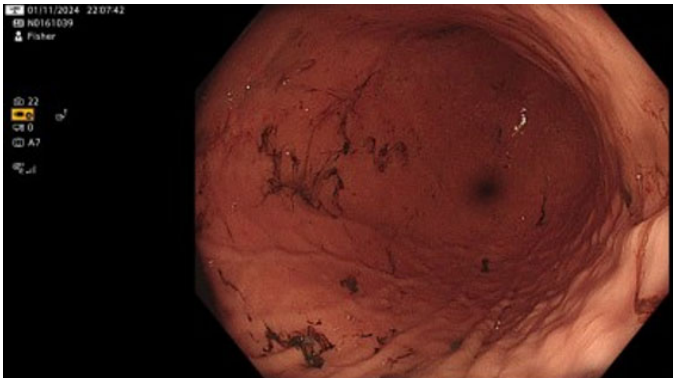

Figure 4: Gastric erosions after removal of intragastric balloon seen on first gastroscopy.

Figure 5: Second gastroscopy showing clotted blood in gastric fundus.

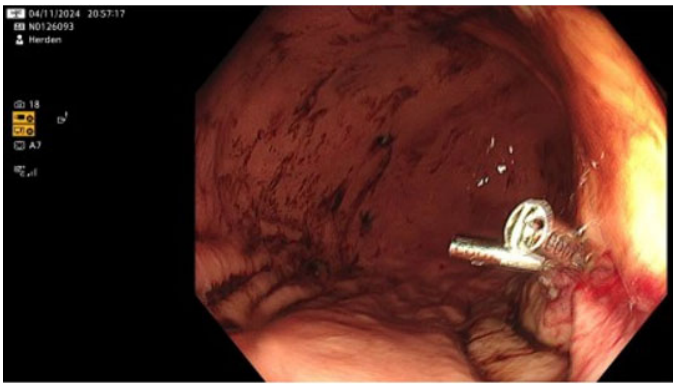

Figure 6: Second gastroscopy—hemostatic clip in the fundus.

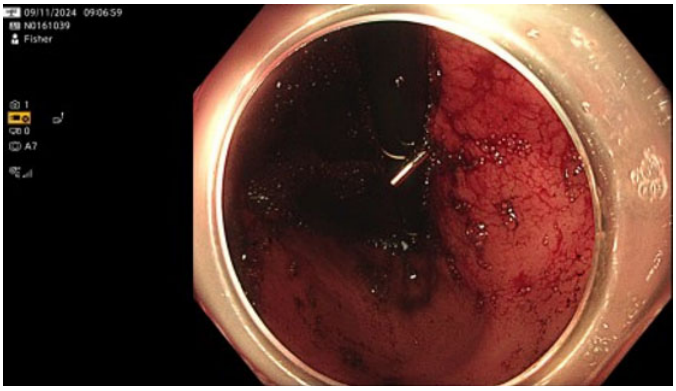

Figure 7: Third gastroscopy showing previous hemostatic clips in place with some clot.

Figure 8: Third gastroscopy showing gastric antrum ulcer.

DISCUSSION

First-line treatment for obesity involves multimodal approach of lifestyle interventions including diet, exercise, and stress management. Intragastric balloon therapy is an option for patients with a body mass index (BMI) of 27–35 kg/m² in Europe and 30–35 kg/m² in the United States, particularly for those who do not qualify for bariatric surgery. It may also serve as a bridging therapy for high-BMI patients (>50 kg/m²) to reduce surgical risks. Absolute contraindications for IGB placement include prior gastric surgeries, coagulopathies, severe liver disease, pregnancy, and alcoholism [1].

Relative contraindications include large hiatus hernias, inflammatory bowel disease, and psychiatric disorders, which must be addressed for compliance and safety [2].

Intragastric balloons aid weight loss by promoting satiety through gastric restriction, reducing stomach capacity by a third and reduced caloric intake. Its success depends on adherence to dietary and exercise changes. Mechanically, the balloon distends the stomach, affecting neural and hormonal pathways, including the downregulation of ghrelin, a hormone that stimulates appetite and energy balance. However, the IGB alone does not significantly lower ghrelin levels. Additionally, IGBs, especially the fluid-filled balloons, slow gastric emptying, prolonging satiety and reducing food intake. Patients who receive an IGB are managed by a multidisciplinary team including a nutritionist, gastroenterologist, and psychologist, who provide care before, during, and after the procedure. This includes a 12-month follow-up with a planned diet and exercise regimen to optimize outcomes. After the removal of the IGB, weight management solely depends on compliance with diet and exercise regimens.

Intragastric balloons differ in material, therapy duration, volume, adjustability, and placement method. Placement is usually via an endoscopic procedure. FDA-approved balloons include Orbera Intragastric Balloon System (Apollo Endosurgery, Austin, TX, USA), ReShape Integrated Dual Balloon System (Re-Shape Medical Inc., San Clemente, CA, USA), Obalon Balloon system (Obalon Therapeutics Inc., Carlsbad, CA, USA), Spatz3 Adjustable Gastric Balloon (Spatz Medical, Fort Lauderdale, Florida, USA), and Elipse Gastric Balloon (Allurion Technologies Inc., Natick, MA, USA). These devices generally achieve approximately 6.8–20.1% total body weight loss over 4–12 months, depending on the device type and duration of treatment [2].

The early removal rate for an IGB varies by study but is generally in the range of 4–16.6%. In a systematic review by American Society for Gastrointestinal Endoscopy (2015), adverse events from the Orbera IGB implantation included pain and nausea (33.7%), with an early removal rate of 7%. Serious complications such as migration (1.4%) and gastric perforation (0.1%) were rare, often linked to prior gastric surgeries. Four deaths were reported and were associated with perforation or aspiration events [3].

The clinical guidelines developed by American Gastroenterological Association (AGA, 2021) stated that early removal of IGBs occurred in 9.4% of patients, primarily due to intolerance, including epigastric pain, nausea and reflux. Serious adverse events were uncommon (5.6%) and included gastrointestinal injuries such as perforation (0.3%), mucosal injury (0.8%), gastric bleeding (0.76%), and obstruction (0.12%). No deaths were reported during seven randomized controlled trials (RCTs) conducted over 6–8 months, but post-marketing surveillance noted rare cases of hyperinflation, pancreatitis, and death. Despite these risks, IGBs generally have a favorable safety and tolerability profile, offering a viable treatment option for appropriate patients [4].

The primary cause of gastric perforation following IGB placement is the prolonged pressure of the balloon against the gastric mucosa leading to ischemia and disruptions in prostaglandin production. This process results in ulcer formation and ultimately, perforation of the gastric wall [5]. A systematic review for life-threatening complications of IGBs by Stavrou et al. (2018) identified 22 gastric perforations, 2 esophageal perforations, and 10 bowel obstructions. Gastric perforations were attributed to the endoscopist (9 cases), the patient (4 cases), and the device (9 cases), while esophageal perforations were linked to endoscopist error, and bowel obstructions were mostly patient related (7 cases) or device related (5 cases). The authors concluded that BIB/Orbera balloon insertion is safe with few complications, which can be minimized through proper physician training and patient supervision [6].

Severe upper gastrointestinal (UGI) bleeding caused by gastric ulcers following IGB insertion is an extremely rare complication. In this case, the patient experienced symptoms of pain, vomiting, and melena shortly after the IGB was placed but delayed seeking medical care for nearly 10 days. The patient education regarding symptoms of severe complications is also important to avoid life-threatening outcomes of UGI bleeding.

CONCLUSION

Gastric erosions caused by IGB placement leading to ulcers and severe UGI bleeding are rare but serious complications that might require prompt IGB removal and multiple gastroscopies to control the bleeding. Intragastric balloons are generally regarded as a safe and effective option for obesity management; however, they are not without the risk of significant adverse effects. Complications such as pain, nausea, reflux, gastric erosion, and bleeding related to the device may necessitate early removal. Proper patient selection, the use of periprocedural proton pump inhibitors (PPIs) and anti-emetics, avoiding NSAIDs and steroids, patient education, safety-netting, and maintaining regular follow-up can help minimize the risk of complications associated with IGBs.

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Microsoft Copilot was used to assist with language editing of the manuscript. The tool was not used to generate any data in the article. All AI-generated suggestions were reviewed and approved by the authors. All content remains the authors' original work, and the authors take full responsibility for the final manuscript.

Author Contributions
Meena Kothwal Patel – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Manvek Jawanda – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Rajkumar Srinivasan – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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Authors declare no conflict of interest.

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All relevant data are within the paper and its Supporting Information files.