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BRIEF COMMUNICATION

Late Intragastric Balloon Induced Gastric Perforation

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Abstract Intragastric balloon (IGB) has been introduced in the 1980's for weight reduction. It can be classified into nonadjustable IGB, such as the BioEnterics Intragastric Balloon (BIB), or newer generation Spatz adjustable balloon system. Late IGB-induced gastric perforation is a rare major complication, presenting as acute abdominal pain weeks to months after its insertion. We herein present a 20-year-old patient, with gastric perforation occurring 10 months after Spatz IGB deployment. The patient underwent a successful endoscopic IGB retrieval and laparoscopic exploration with abdominal lavage. We also review the literature of late IGB-induced gastric perforation.

Keywords Intragastric balloon · Gastric perforation

Introduction

Intragastric balloon (IGB) has been used for weight reduction, mainly as a bridge therapy before bariatric surgery or as a primary procedure for patients unwilling to undergo surgery and those who do not fulfill its criteria. A meta-analysis of 15 articles, regarding the use of BIB in 3608 patients, has reported short-term effectiveness of 12.2 % weight loss and low rate of major complications, including mainly gastrointestinal tract obstruction (0.8 %), gastric perforation (0.2 %), and mortality related to the latter (0.1 %) [1].

The Spatz IGB has been introduced in 2010. It is an adjustable balloon system, approved for 1-year implantation. It owns a rigid catheter for fluid-volume adjustments and a safety anchor, enabling a longer durability. A large series of 70 patients has reported short-term results of 19 % weight loss and 4.3 % catheter impactions necessitating surgical extraction [2]. There were no cases of gastric perforation or mortality published so far.

IGB-induced gastric perforation is a rare major complication, occurring early after BIB deployment or retrieval [1, 3, 4]. Late IGB-induced gastric perforation can occur weeks to months after its insertion. We hereby present the literature of late IGB-induced gastric perforation and report the first case related to Spatz IGB.

Case Report

A 20-year-old female tourist, otherwise healthy, without any previous surgery, underwent Spatz IGB insertion 10 months earlier in her homeland with body mass index of 28.7 kg/m^2. The patient had a 6 % weight loss, which was quickly regained.

The patient presented at the emergency room with acute left hypochondrial pain, accompanied by nausea and vomiting. Physical examination detected abdominal distension with left upper quadrant tenderness. Laboratory tests were normal. Free air was not seen on upright x-ray. Later on, pain has been exacerbated. Repeated laboratory tests

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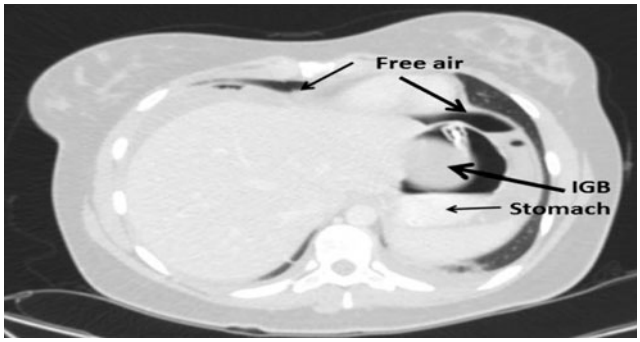

Fig. 1 Free perigastric air per CT

showed leukocytosis of 15,300/m^3. Sonography revealed free fluid at the upper abdomen and Douglas pouch. CT scan depicted free air and fluid mainly around the stomach, compatible with gastric perforation, without extravasation of contrast material (Fig. 1).

The patient was urgently taken to the operating room. Gastroscopy was performed under general anesthesia. The Spatz balloon was detected at the gastric body. The balloon was punctured; 600 ml of clear fluid was drained, and the deflated balloon was retrieved. Formal upper gastrointestinal (GI) endoscopy did not reveal any abnormality.

Laparoscopy was then performed. An amount of 500 ml of slightly turbid fluid was aspirated mainly from the upper abdomen and Douglas pouch. The stomach appeared enlarged, covered with fibrin on its anterior surface (Fig. 2). A window to the lesser sac was created and found clean, with an intact posterior gastric wall. The perforation was not found after thorough visualization of the upper GI tract nor after inflation with 600 ml of diluted methylene blue. The peritoneal cavity was irrigated, and two Jackson-Pratt drains were left near the stomach and in the Douglas pouch.

Postoperative course was uneventful. The patient was maintained on empiric course of intravenous antibiotics and resumed gradual oral feeding. Abdominal fluid samples were positive for leukocytes, and once the final culture results came negative, she was discharged on postoperative day 6. Follow-up 2 weeks after discharge was normal.

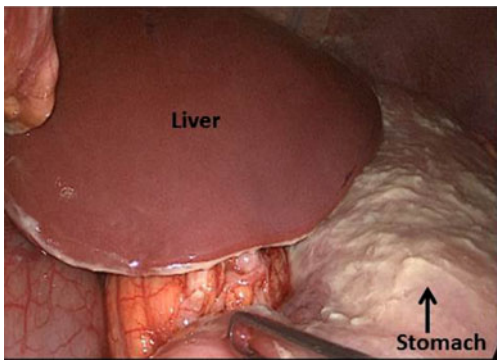

Fig. 2 Fibrin covered stomach per laparoscopy

Discussion

Late IGB-induced gastric perforation is a very rare complication, reported explicitly in only six previous cases of nonadjustable IGB [4–8]. The balloon might exert excessive pressure on the gastric wall, with subsequent erosion, ulcer, or eventual perforation [8]. Our case is the first report of late gastric perforation after adjustable IGB placement. It is possible that either the rigid catheter or the safety anchor had inflicted a tiny perforation due to direct pressure or because of reduced balloon motility by the latter.

Late gastric perforations presented with acute abdominal pain 7 weeks [5], 2 months [4, 6, 8], 5 months [5], and 7 months [7] after nonadjustable IGB deployment. Our case has presented 10 months after Spatz adjustable balloon placement. The diagnosis should be suspected solely on the occurrence of sudden pain in the epigastrium or left hypochondria. Neither normal laboratory tests nor absence of pneumoperitoneum on upright x-ray rules it; hence, further investigation with CT scan seems mandatory.

Treatment options included endoscopic IGB retrieval alone [5, 8], surgical IGB extraction through the tear via laparotomy [6, 7] or laparoscopy [4] and suture repair, or combining endoscopic IGB retrieval with laparoscopy as attempted previously [4] and performed successfully by us. We had to temporarily deflate the endotracheal cuff in order to facilitate endoscopic IGB retrieval. This might explain failed attempts reported previously [4].

Conclusions

Late IGB-induced gastric perforation necessitates a high index of suspicion and meticulous investigation as described aforementioned. We highly recommend commencing with endoscopic balloon retrieval and formal upper GI tract endoscopy. Subsequent laparoscopy for suture repair or merely peritoneal irrigation seems appropriate and prudent.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Informed Consent For this type of study, formal consent is not required.

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