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Small Bowel Obstruction Caused by Delayed Intragastric Balloon Impaction

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We report the case of a 25-year-old woman who presented with small bowel obstruction. Four years earlier, she underwent intragastric balloon insertion for treatment of obesity. The ballon had not been removed. Radiographs and CT scan showed radio-opaque device in the lower abdomen with small bowel obstruction. At laparotomy, the obstruction was found to be caused by the migrated, deflated intragastric balloon.

Introduction

A number of treatments currently exist for morbid obesity, which can be defined as weight greater than 45 kg over normal body weight according to the normal Metropolitan Life Insurance Company tables. Conservative therapy including diet and exercise is generally ineffective. More invasive treatments including jejunoileal or duodenoileal bypass procedures, gastroplasty, delayed gastric emptying procedures (vertical or horizontal banding division or vagotomy), and jaw wiring, also have met with limited success. Use of an inflatable gastric balloon for treatment of obesity was first reported in 1982 in a series of five women [1]. The balloons remained inflated for only 1-3 weeks, and appeared to reduce hunger and promote weight loss when they were inflated. A longer lasting air-filled gastric balloon became available in the mid-1980's [2], but was of questionable clinical efficacy [3-4] and associated with a number of complications [5], including small bowel obstruction [6-9]. A fluid-filled gastric balloon was introduced into clinical practice in the late 1990's (originally the BioEnteric Intragastric Balloon or BIB, now marketed as the BIBTM Intragastric Balloon System, Allergan, Inc., Irvine, CA, USA) and was quickly adopted as an adjunct for treating obesity, replacing its predecessors [10]. The device was designed to be deflated and retrieved after no longer than 6 months. We report a case in which small bowel obstruction was caused by a deflated BIB, four years after its original insertion.

Case Report

A 25-year-old woman had a gastric balloon placed endoscopically for treatment of obesity, four years before we saw her. In the emergency room, the patient complained of generalized abdominal pain. The pain was initially colicky when it began seven days earlier,

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Abbreviations: BIB, BioEnteric Intragastric Balloon; CT, computed tomography

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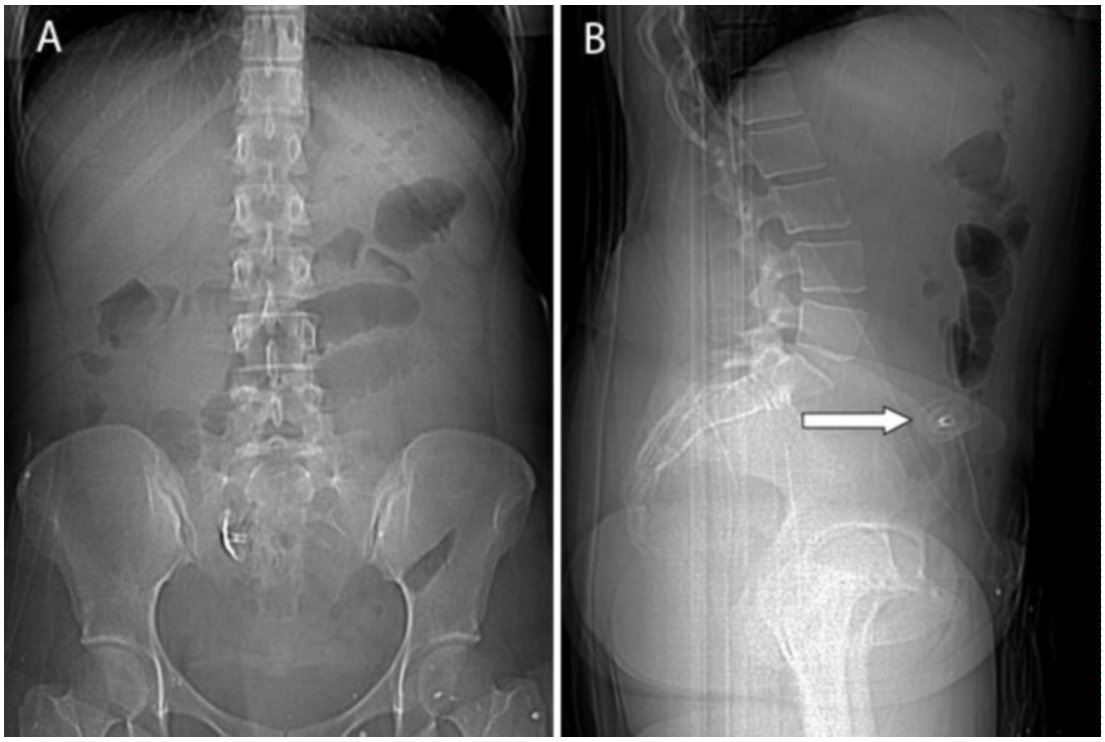

Figure 1. 25-year-old woman with small bowel obstruction caused by migrated, deflated bioenteric intragastric balloon. (A) Radiograph shows the deflated gastric balloon in the lower abdomen and dilated small bowel. (B) Lateral CT scout shows the location of the balloon. Arrow points to the valve.

then on the day before admission became constant and associated with nausea and vomiting. She admitted to one day of diarrhea followed by absolute constipation for the previous 24 hours. She had no urinary complaints. Physical examination showed a well-oriented young woman in mild distress. The blood pressure was 120/80 mm Hg, and heart rate was 76 beats per minute. The abdomen was soft, mildly distended, mildly tender without rebound or guarding, and bowel sounds were active. Laboratory values obtained in the emergency room were normal.

Abdominal radiographs showed small radio-opaque device in the lower abdomen with moderate distention of a few small bowel loops with air-fluid levels, consistent with partial or early small bowel obstruction (Fig. 1). Abdominal and pelvic CT scan after oral and intravenous contrast showed a hyperdense ovoid structure near the ileocecal junction. There was dilation of the proximal small bowel with thickening of the intestinal wall, and peritoneal reaction (Fig. 2). We diagnosed an enteric impaction of a deflated intragastric device causing small bowel obstruction.

Later the same day, the patient underwent laparotomy. The exploration revealed an intraluminal obstructing object in the ileum, 90 cm proximal to the ileocaecal junction. Longitudinal 2 cm enterotomy proximal to the obstruction was done and the migrated deflated gastric balloon was removed (Fig. 3), with proximally impacted food. The patient was treated with antibiotics. She left the hospital on day 7 without any complications.

Discussion

The BIB is a temporary non-operative method helping to lose weight by partially filling the stomach, inducing the feeling of satiety and assisting in getting used to proper dietary habits. It is a smooth, spherical saline filled, silicone elastomer with a radiopaque filling valve. The balloon is placed in the stomach blindly or under endoscopic control and is then inflated [10]. It is filled with 500-700 cc of blue-colored saline solution, causing

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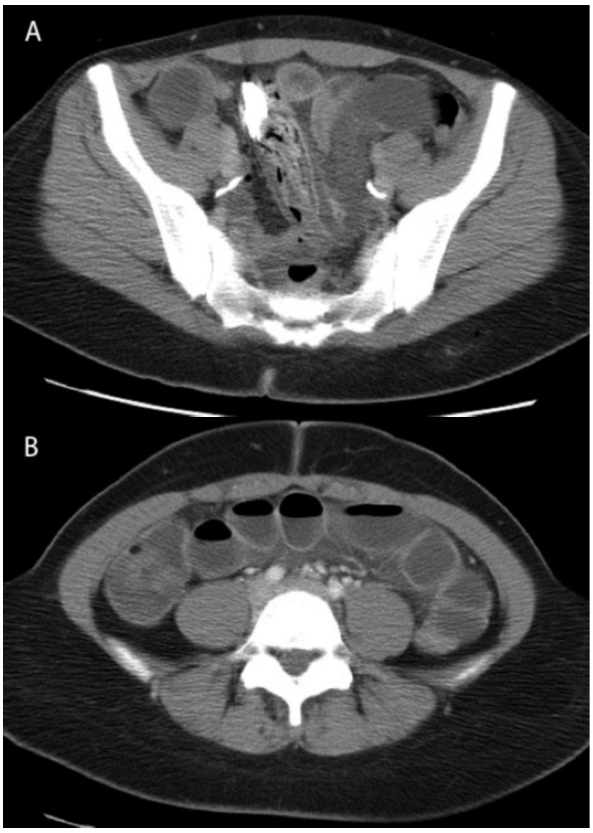

Figure 2. 25-year-old woman with small bowel obstruction caused by migrated, deflated bioenteric intragastric balloon. (A) CT scan shows the deflated balloon impacted in the small bowel. (B) Proximal to the balloon, the small bowel is dilated.

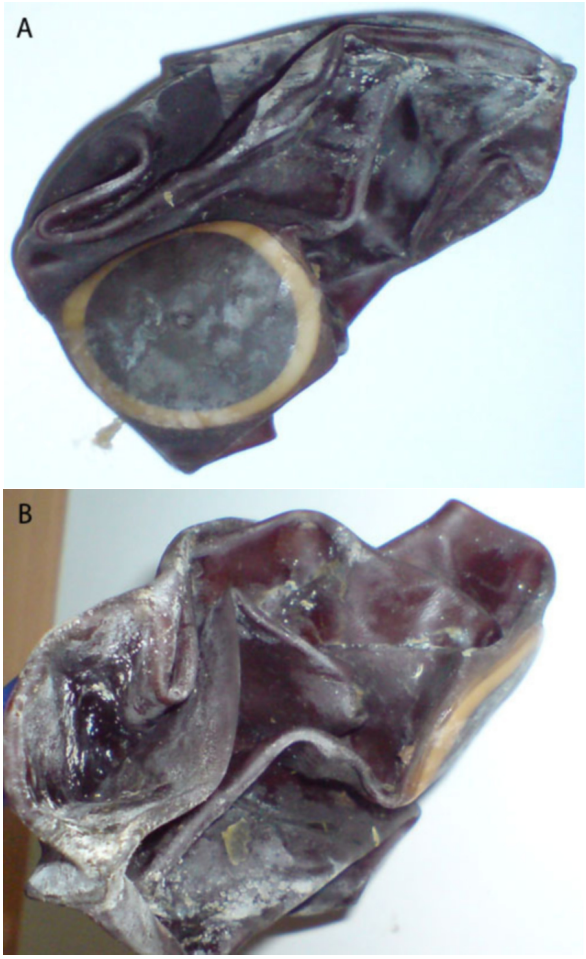

Figure 3. 25-year-old woman with small bowel obstruction caused by migrated, deflated bioenteric intragastric balloon. (A-B) Photographs of the migrated balloon when following removal from the small bowel. Note the round valve, which appeared radio-opaque in CT and radiographs.

it to expand into a spherical shape. The placement of BIB is limited to maximum 6 months, and then it has to be emptied and removed by endoscopy to reduce the risk of long-term complications.

A number of complications have been reported with the use of early air-filled gastric balloons [5-9]. Similar complications for the fluid-filled BIB have also been reported, including esophagitis, gastric erosions or ulcerations, gastric perforation, gastric obstruction, balloon rupture, intestinal obstruction [11-16]. Large and small bowel obstruction following spontaneous emptying of a BIB has been reported to occur within a few months of insertion [17-18], but we were unable to find a report of this complication four years after insertion. We believe that the deflated BIB remained within the stomach as a benign iatrogenic bezoar in the years preceding presentation. Intragastric balloons are no longer widely used to treat morbid obesity, because of their questionable long-term efficacy and significant rate of complications [19-20]. However, radiologists may continue to encounter images similar to those presented here. Adequate clinical history and familiarity with the appearance of gastric balloons in the collapsed state will be necessary for the correct interpretation of such images.

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