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A Phytobezoar Causing Terminal Ileal Obstruction Following Mini-Gastric Bypass

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1. Abstract

Bezoars are a rare cause of small bowel obstruction. A phytobezoar causing terminal ileum obstruction following minigastric bypass surgery is extremely rare. We present a case of a middle-aged man who presented with obstructive symptoms due to an impacted phytobezoar in the terminal ileum 7 years after having mini-gastric bypass surgery. He underwent diagnostic laparoscopy, enterotomy, and extraction of the large impacted phytobezoar from the terminal ileum.

2. Introduction

Bezoar is a term that refers to an intraluminal mass in the gastrointestinal system caused by the accumulation of indigestible ingested materials, such as vegetables, fruits, and hair [1,2]. Laparoscopic Roux-en-Y gastric bypass (LRYGB) and laparoscopic sleeve gastrectomy (LSG) are the two most frequently performed procedures today to treat morbid obesity. While generally considered to be safe, bariatric operations permanently alter the patient's gastrointestinal anatomy and, may lead to postoperative complications [3]. The anatomical and functional changes associated with gastric bypass can lead to the formation of bezoars, which cause intestinal obstruction [4]. Intestinal obstructions may occur in the interstitial anastomosis, the common limb, or close to the ileocecal valve and may require urgent surgical intervention [4,5].

3. Case Report

A 44-year-old Emirati man who underwent Minigastric Bypass 7 years ago presented to the emergency department at NMC Royal Hospital Sharjah with a 2-day history of acute onset epigastric pain associated with multiple episodes of vomiting. He had never experienced this type of pain before. On examination, he was afebrile and tachycardic, but maintained his blood pressure. His abdomen was mildly distended, with tenderness mainly in the epigastric and umbilical regions, without signs of peritonitis. The bowel sounds were slightly exaggerated, and he had been passing gas per anus but no stool for one day. Blood tests revealed leukocytosis (13 × 103/µL) with absolute neutrophilia (9.1 × 103/µL). An abdominal X-ray of the abdomen showed small, dilated bowel loops with multiple air-fluid levels and a plain computed tomography (CT) scan study showed dilated jejunal and proximal ileal loops with multiple air-fluid levels, a 'string of beads' sign and a small bowel feces sign in the distal ileum suggesting obstruction (Figure 1-2). After discussing the clinical and radiological findings with the patient, an emergency diagnostic laparoscopy was planned. During the diagnostic laparoscopy, there was distention of jejunal loops to the distal ileum where an intraluminal globular mass was seen obstructing the distal ileum, (Figure 3), with a transitional zone about 10 cm from the ileocecal junction. With a bowel grasper, the intraluminal mass was felt; it occupied around 3 cm of the distal ileum with a collapsed distal part. The entire large bowel was found normal in caliber without any visible pathology. We attempted but failed to milk the distal ileum mass to propel it through the ileocecal valve up to the cecum so the patient could expel it subsequently. We failed to dis-impact the intraluminal mass from the distal segment of the ileum with repeated trials. Hence, the dilated ileum proximal to the obstruction was clamped with a bowel grasper, and an enterotomy was performed over the obstruction, opening the ileum transversely (Figure 4 a-b). An intraluminal bezoar was found and extracted carefully with the help of a gasper and a Babcock, preventing spillage. After the removal of the complete bezoar mass, any additional extension was looked for, but none was

found. The enterotomy was closed with a 3-0 vicryl continuous suture in 2 layers (Figure 5). A thorough abdominal lavage was performed before completing the procedure. On examination, the bezoar was found to contain shrimps mixed with food particles and stool. The patient had a smooth postoperative course and was discharged on the 2nd postoperative day.

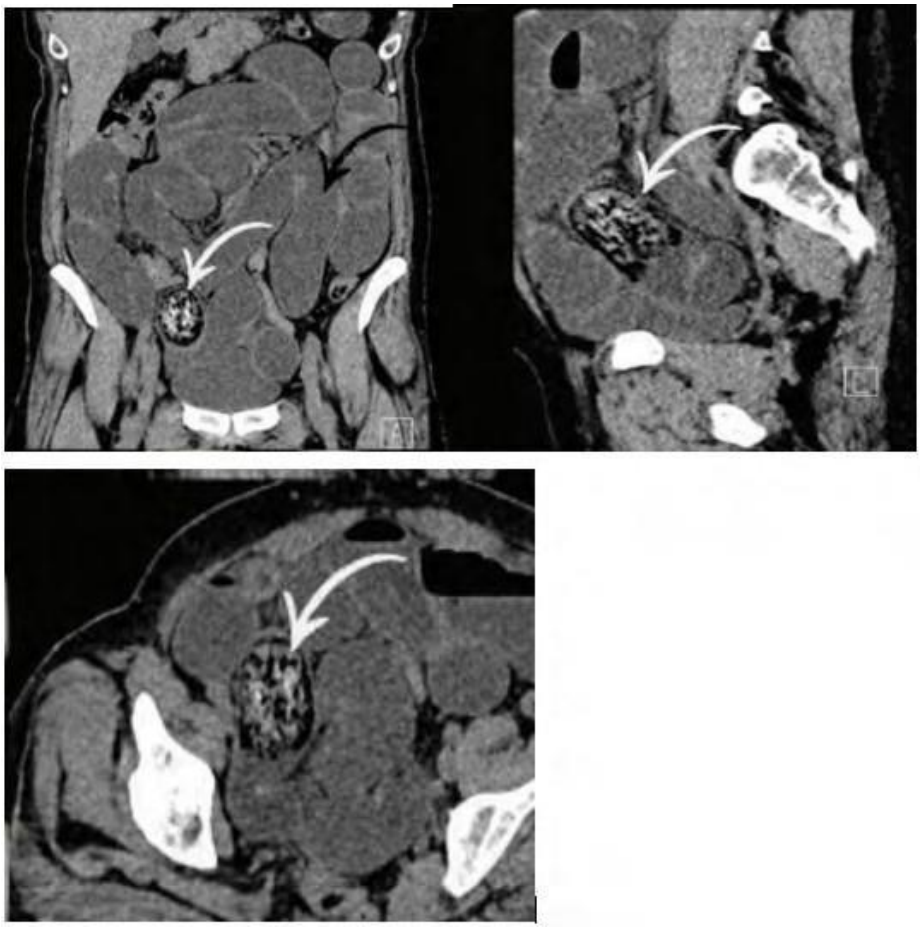

Figure 1: Plain CT abdomen showing phytobezoar (white arrow).

Figure 2: CT abdomen 3-D reconstruction showing phytobezoar (white arrow).

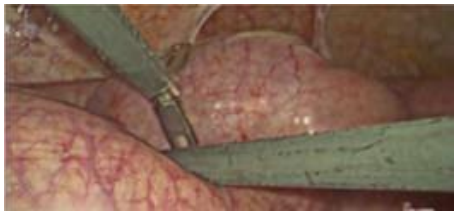

Figure 3: Intraluminal globular mass obstructing the distal ileum.

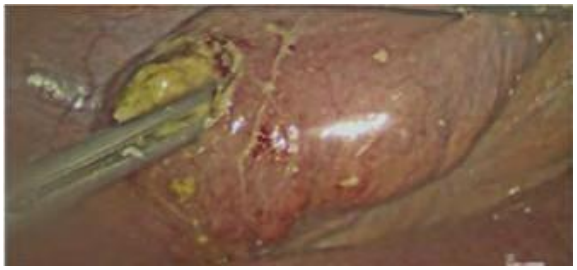

Figure 4a: Enterotomy and extraction of bezoar.

Figure 4b: Enterotomy and extraction of bezoar.

Figure 5: Closure of enterotomy.

4. Discussion

A bezoar is a mass in the gastrointestinal system which can be either hair (trichobezoars), vegetables (phytobezoars), or medications (pharmacobezoars) [6]. Risk factors for its formation include inadequate chewing, altered gastric motility, high fiber or low fluid diet, anatomical abnormalities, tumors, diverticulum, or strictures and previous gastric surgeries or vagotomy with partial gastrectomy in a patient treated for ulcers [7,8]. Bezoars present with nausea, anorexia, abdominal discomfort or pain, abdominal distension, hematemesis, fainting, and bloody or tarry stools [6,8]. Our case had epigastric pain, vomiting, and a distended abdomen, which suggested obstruction. Initially, we obtained an abdominal X-ray, then a computed tomography (CT) scan without contrast. Studies found that CT is the most useful imaging modality as it can show clear findings and complications [9-11]. Barium studies are avoided in emergencies as they worsen the condition in cases of complete obstruction and peritonitis in the presence of a perforation. Ultrasonography is challenging as it is operator dependent, and the air-fluid levels obstruct the view [8]. Roux-en-Y gastric bypass and sleeve gastrectomy increase gastric emptying, but, studies do not mention the effects of mini gastric bypass (MGB) on gastric emptying [12]. Perhaps MGB allows a fast transit of undigested food material from the stomach to intestine; a theory which is supported by the occurrence in our case after ingestion of a large amount of shrimp. Consistent with literature, the bezoar in our case occurred 10 cm proximal to the ileocecal valve because the distal lumen is narrow, less motile, and absorbs water with resultant impaction of the bezoar [8]. Unlike gastric bezoars, which may be treated by either chemical dissolution, fragmentation or endoscopic balloon dilatation before resorting to surgical management [6,10,13,14,15], Bezoars in the intestine are treated surgically since they cannot be accessed endoscopically [6,16]. In our case, a laparoscopic approach was used, but an open approach can be used when there is inadequate experience or if uncertain of the location, such as in a case from the UK [17]. In cases where bowel necrosis is observed, a bowel resection with primary anastomosis is performed [12]. In one study, a bezoar 80 cm from a jejuno-jejunal anastomosis was treated with an enterotomy and milked out of the small bowel [12]. Similarly, we attempted that, but failed to milk the bezoar to the cecum, therefore, an enterotomy was performed [12,18]. Dr. Mohammad Sarhan started as laparoscopic and then converted the case to open due to adhesions [12]. In another study, a phytobezoar in the Roux limb was disimpacted also using biopsy forceps followed by irrigation of the lumen [19]. In the UAE, a patient had obstruction after inadequate chewing of oranges [20], and studies reported that fibrous foods can obstruct patients with previous gastric surgeries [15]. However, our patient consumed a large amount of shrimp which do not have fibers. So, portions and improper chewing may have contributed to the obstruction. An obstruction at or distal to the entero-enteral anastomosis can dilate and rupture the excluded stomach, so it is imperative to diagnose intestinal obstruction in a timely fashion to facilitate early intervention thereby reducing morbidity and mortality.

5. Conclusion

Although gastric bypass helps patients lose weight, it affects gastric motility, putting patients at risk of obstruction. In addition, we should screen for nutrient deficiencies, as iron deficiency may lead to pica where patients crave non-nutritious items that may cause obstruction [21]. Our case was unique as it occurred after ingesting meat (shrimp) and after a mini-gastric bypass. Most cases occur after RYGB, and only one case was also a meat bezoar. They were similar because both patients reported inadequate chewing [22]. Bezoars should be kept as part of the differential diagnosis since they occur late postoperatively and patients should be advised to chew food well, drink enough fluids, and limit their fiber intake.

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