

Single Case

Successful Emergency Endoscopic Treatment of Gastric Outlet Obstruction due to Gastric Bezoar with Gastric Pneumatosis

Hirokazu Honda Takashi Ikeya Erika Kashiwagi Shuichi Okada
Katsuyuki Fukuda

Division of Gastroenterology, St. Luke's International Hospital, Tokyo, Japan

Keywords

Gastric pneumatosis · Gastric outlet obstruction · Gastric bezoar

Abstract

Gastric bezoars are rare and are usually found incidentally. They can sometimes cause severe complications, including gastric outlet obstruction (GOO) or gastric pneumatosis (GP). In cases of bezoars with GP, the optimal treatment strategy has not yet been defined. We report the case of an 89-year-old man with a history of type 2 diabetes mellitus and hypertension who presented to our emergency room with a 2-day history of upper abdominal pain, nausea, and vomiting. Physical examination revealed no rebound tenderness or guarding, and laboratory values revealed no elevation of the serum lactate level. A computed tomography scan of the abdomen showed a dilated stomach with significant fluid collection, GOO, and GP due to a 42 × 40 mm mass composed of fat and air densities. Emergency esophagogastroduodenoscopy revealed two gastric bezoars, one of which was incarcerated in the pyloric region. We used various endoscopic devices to successfully break and remove the bezoars. We used endoscopic forceps and a water jet followed by an endoscopic snare to cut the bezoars into several pieces and remove them with an endoscopic net. Follow-up endoscopy confirmed that the gastric bezoar had been completely removed. As seen in this case, endoscopic treatment may be a safe and viable option for the extraction of gastric bezoars presenting with GOO and GP.

© 2017 The Author(s)
Published by S. Karger AG, Basel

Introduction

Gastric bezoars are rare and usually found incidentally; the patient has no, or mild, symptoms. Gastric bezoars are classified according to their composition as phytobezoars, trichobezoars, pharmacobezoars, and other types. Phytobezoars are the most common and are composed of vegetable matter. They are usually caused by gastrectomy, gastric dysfunction, or type 2 diabetes mellitus (DM). Trichobezoars are composed of hair [1], and pharmacobezoars are composed of ingested medications [2]. Other types of bezoars may be composed of a variety of other substances, such as tissue paper and styrofoam cups. We usually perform chemical dissolution and endoscopic fragmentation to remove them as an initial therapy. However, sometimes, severe complications result, including gastric outlet obstruction (GOO) and gastric pneumatosis (GP) [3], and in these situations, the methods for removal of gastric bezoars have rarely been reported. Up to 20% of patients have recurrent bezoars; surgical removal should be reserved only for patients for whom chemical resolution and endoscopic therapy failed because gastrectomy is the main cause of gastric bezoars.

GP is a clinical condition in which there is intramural gas in the stomach. GP is generally categorized as either emphysematous gastritis (EG) or gastric emphysema (GE). The former is a rare and commonly fatal infection of the stomach wall caused by gas-forming organisms and, therefore, has a more ominous presentation, usually requiring a gastrectomy to remove necrotic tissue [4]. On the other hand, GE is a relatively benign condition that occurs when air enters the gastric wall, usually following trauma, into the gastric mucosa. In some cases, it is difficult to determine whether the GP is EG or GE because of the similar radiographic findings.

The optimal strategy for patients with GOO due to bezoars and GP has not yet been defined. Here, we present a case of safe and successful removal of bezoars identified by radiologic findings consistent with GP.

Case Presentation

An 89-year-old man presented to our emergency room with a 2-day history of upper abdominal pain, nausea, and vomiting that had been present for 2 days. He had a history of type 2 DM, hypertension, and dementia and was bedridden. His vital signs were stable. On physical examination, his abdomen was tender to palpation over the epigastrium without rebound tenderness or guarding. Laboratory values were as follows: sodium 143 mmol/L, potassium 3.2 mmol/L, total bilirubin 0.5 mg/dL, creatinine 0.99 mg/dL, urea nitrogen 22.7 mg/dL, C-reactive protein 4.08 mg/dL, hemoglobin A1c 6.2%, hemoglobin 9.9 g/dL, leukocyte count 12,200 mm³, platelet count 215,000 mm³, and lactate 0.9 mmol/L. Abdominal X-ray and a computed tomography scan of the abdomen revealed a dilated stomach with significant fluid collection, GOO, and GP due to a 42 × 40 mm mass composed of fat and air densities (Fig. 1). Emergency esophagogastroduodenoscopy (EGDS) revealed two gastric bezoars, one of which was incarcerated in the pyloric region. We used various endoscopic devices to successfully break and remove the bezoars. EGDS procedures were performed with a conventional single-accessory channel endoscope (GIF-Q260J; Olympus Medical Systems, Tokyo, Japan). First, we performed fragmentation with endoscopic forceps and a water jet. However, this was insufficient to extract the obstruction. Therefore, we used an endoscopic snare to cut the bezoars into several pieces and removed them with an endoscopic net (Fig.

2). Follow-up endoscopy confirmed that the gastric bezoars had been completely removed (Fig. 3).

Discussion

The strategy for treatment of gastric bezoars causing severe complications, including GOO or GP, has not yet been defined. Patients with no or mild symptoms are usually treated with chemical dissolution [5] and endoscopic fragmentation. Several other endoscopic techniques have also been reported [6]. However, these endoscopic techniques were performed in situations without GOO or GP. Surgical removal is usually selected as the initial therapy for patients with GOO, because gastric bezoars presenting with GOO are generally too large to extract and too hard to break, and it is often a severe condition for these patients [7]. Because of the difficulties associated with the endoscopic procedure, reports of successful endoscopic removal of bezoars presenting with GOO and GP are extremely scarce.

Previous reports describing the indications for emergency EGDS in patients with GP are limited. GP as a complication of EGDS has been reported [3], but Matsushima et al. [4] reported a strategy for the management of patients with suspected GP. He mentioned the necessity of diagnosing whether the GP is EG or GE. EG is a severe condition caused by severe infection or ischemia, and in some cases, it requires surgical removal of the ischemic area using total or partial gastrectomy. On the other hand, GE is considered to be a benign condition caused by trauma to the stomach mucosa and usually does not need surgical removal. Endoscopic findings give us important information as to whether the mucosa is ischemic or not. We performed EGDS to diagnose and treat on the basis of the findings by Matsushima et al. [4].

GP in this case was believed to be GE for the following reasons: (1) endoscopy findings showed several gastric ulcers due to mucosal injury arising from intraluminal high pressure resulting from the obstruction [8]; (2) the patient was in no apparent distress; (3) a computed tomography scan did not show evidence of ischemia, and (4) follow-up EGDS showed only patchy redness indicating inflammation without necrotic tissue. We believe that endoscopic therapy should be attempted before surgery in cases of GE.

In this case, the size of the bezoar (>40 mm) made it necessary to break it using a water jet, endoscopic snares, forceps, and nets. The patient was able to avoid invasive surgery through repeated endoscopic procedures. His history of gastrectomy, old age, and type 2 DM are risk factors for phytobezoars, which are composed of undigested food. Endoscopic treatment is preferable to surgery not only because it is less invasive, but also because of the possibility of the recurrence of postgastrectomy phytobezoars. In conclusion, endoscopic treatment may be a safe and viable option for the extraction of gastric bezoars presenting with GOO and GP when the patient's condition is stable and there is no evidence of ischemia.

Disclosure Statement

The authors declare no conflicts of interest in relation to this article.

Statement of Ethics

The authors have no ethical conflicts to disclose.

References

- 1 Crawley AJ, Guillerman RP: Rapunzel syndrome. *Pediatr Radiol* 2010;40(suppl 1):S100.
- 2 Stack PE, Thomas E: Pharmacobezoar: an evolving new entity. *Dig Dis* 1995;13:356–364.
- 3 Chintapalli KN: Gastric bezoar causing intramural pneumatosis. *J Clin Gastroenterol* 1994;18:264–265.
- 4 Matsushima K, Won EJ, Tangel MR, Enomoto LM, Avella DM, Soybel DI: Emphysematous gastritis and gastric emphysema: similar radiographic findings, distinct clinical entities. *World J Surg* 2015;39:1008–1017.
- 5 Dhakal OP, Dhakal M, Bhandari D: Phytobezoar leading to gastric outlet obstruction in a patient with diabetes. *BMJ Case Reports* 2014, DOI: 10.1136/bcr-2013-200661.
- 6 Wang YG, Seitz U, Li ZL, Soehendra N, Qiao XA: Endoscopic management of huge bezoars. *Endoscopy* 1998;30:371–374.
- 7 Robles R, Parrilla P, Escamilla C, Lujan JA, Torralba JA, Liron R, et al: Gastrointestinal bezoars. *Br J Surg* 1994;81:1000–1001.
- 8 Muthukumarasamy G, Damodharan K, Chudy M, Ablett M: Gastric emphysema and pneumoperitoneum. *ANZ J Surg* 2010;80:945–946.

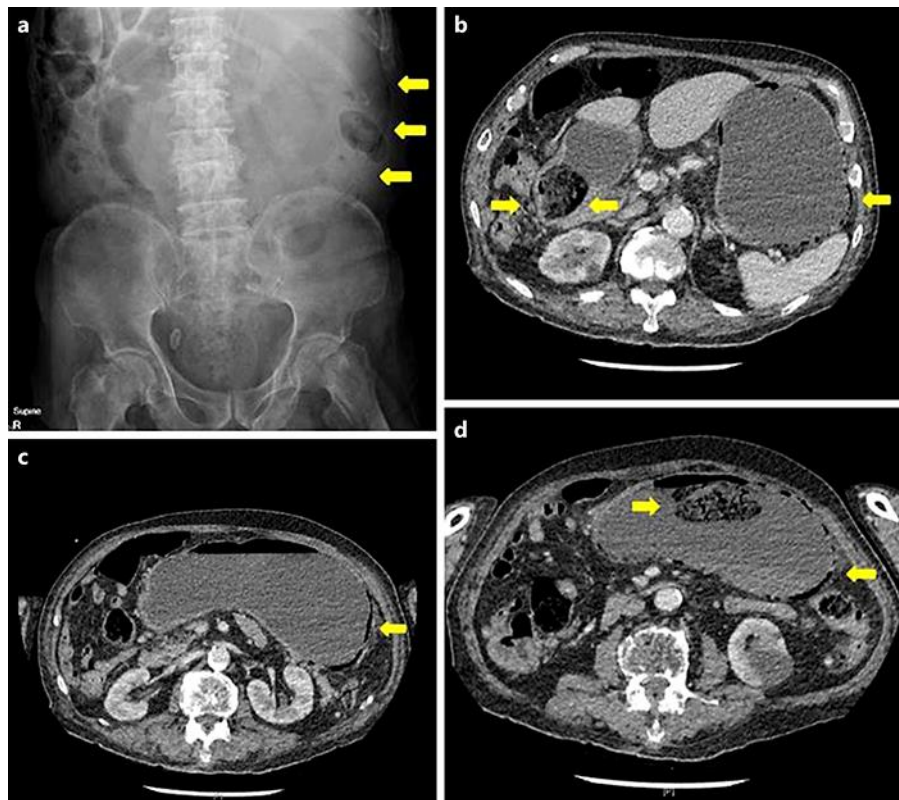


Fig. 1. **a** Abdominal X-ray showing intramural gas in the stomach wall. Yellow arrows show the intramural gas. **b–d** A computed tomography scan of the abdomen shows gastric outlet obstruction due to a 42 × 40 mm mass composed of fat and air densities and intramural gas in the stomach wall. It also shows a dilated stomach with significant fluid collection and another 40 × 40 mm mass in the stomach. Yellow arrows show intramural gas and two masses; one of them is incarcerated material at the pyloric region.

Honda et al.: Successful Emergency Endoscopic Treatment of Gastric Outlet Obstruction due to Gastric Bezoar with Gastric Pneumatosis

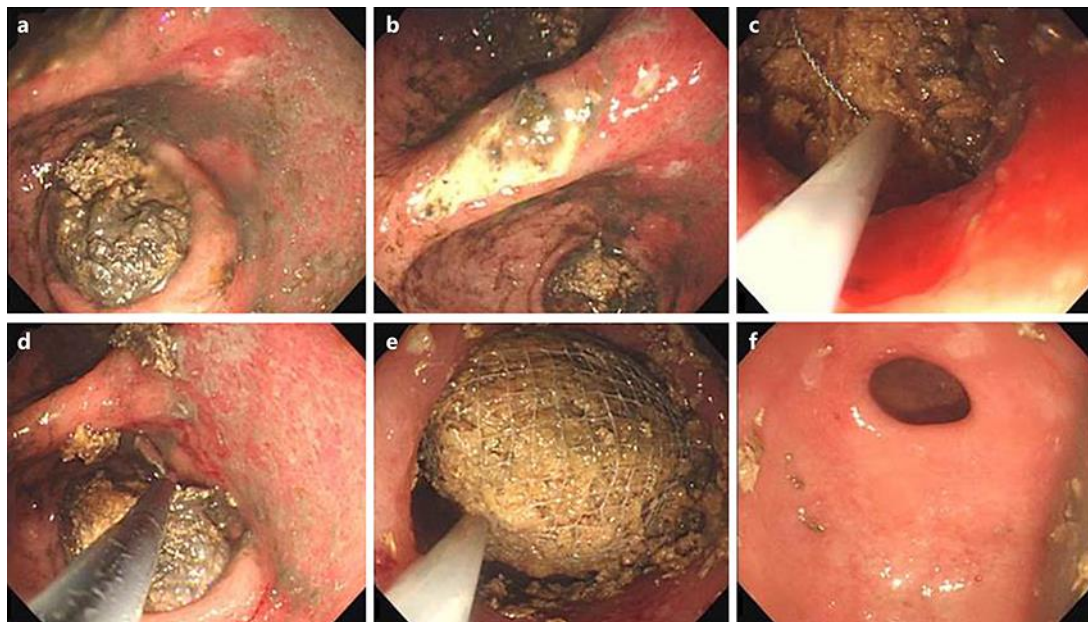


Fig. 2. **a** Incarcerated bezoar in the pyloric region. **b** Gastric ulcer causing gastric pneumatosis. We believe this is the entrance of the intramural gas. **c** Endoscopic view of breaking the bezoar into small pieces with an endoscopic snare. **d** Endoscopic view of trying to extract the bezoar with the endoscopic forceps. **e** Endoscopic view of removing the bezoar with the endoscopic net. **f** After removal of the bezoars from the pyloric region.

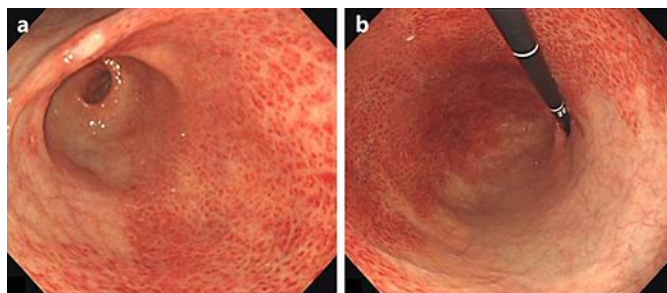


Fig. 3. **a, b** Follow-up final esophagogastroduodenoscopy revealed spreading patchy redness due to gastric pneumatosis and no remaining bezoar. Patchy redness indicates inflammation of the stomach caused by gastric pneumatosis and general improvement.