

Successful Dissolution of a Large Gastric Phytobezoar Through Nonsurgical and Nonendoscopic Fragmentation

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ABSTRACT

A phytobezoar is the result of poorly digestible vegetable matter that accumulates in the gastrointestinal tract often forming a hard mass in the stomach. We present a case of a phytobezoar in a patient without predisposing risk factors, resulting in significant stomach distension initially believed to require high-risk surgical intervention but which ultimately resolved after 3 days of conservative treatment with prokinetic agents. The patient was discharged uneventfully and was recommended a low-fiber diet indefinitely while undergoing further workup for motility disorders.

KEYWORDS: bezoar; phytobezoar; coca-cola lavage; cellulase

INTRODUCTION

A bezoar is defined as a concretion of foreign, indigestible material that accumulates in the gastrointestinal (GI) tract in the form of a mass. Bezoars are classified into 4 types according to their material make-up: phytobezoar made of vegetable fibers or plant material, trichobezoar are a result of ingestion of human hair, pharmacobezoars contain accumulated masses of medication, and lactobezoars made of undigested milk described in premature infants and in full-term infants. Among different types of bezoars, phytobezoars are the most common and are formed by excessive consumption of herbal nutrients containing high amounts of indigestible fibers. Impaired gastric motility or digestion from impaired peristalsis, low gastric acidity, peptic ulcer disease, chronic gastritis, and loss of normal pyloric function also contribute to phytobezoar formation. Other predisposing risk factors include previous gastric surgery, improper mastication, and dentition problems.¹ Patients with phytobezoars may experience nonspecific symptoms such as epigastric pain, nausea, vomiting, early satiety, weight loss, diarrhea, dysphagia, or upper GI ulcerations and hemorrhage. Complications are intestinal obstruction, perforation, ulcer, and melena, among which small bowel obstruction is the most common major complication. Before the 1960s, phytobezoars were often treated with surgery; however, a range of therapeutic options have since been reported, including medical treatment with cellulase, papain, metoclopramide, or N-acetylcysteine, which successfully fragment phytobezoars.² Chemical dissolution is another treatment option using either Coca-Cola lavages or hydrolytic solutions. We describe the successful treatment of a large gastric phytobezoar in the inpatient setting through nonsurgical fragmentation.

CASE REPORT

A 76-year-old woman with a medical history of chronic constipation, hypothyroidism, hypertension, and migraines without surgical history presented with 10 days of increasing abdominal pain and distention with associated constipation, inability to pass gas, and poor oral intake. She endorsed weight loss, intermittent emesis, and persistent epigastric pain. Imaging (Figure 1) showed massive distention of the stomach measuring up to 26 × 17 cm, concerning for gastric outlet obstruction, as well as diffuse fluid-filled dilated loops of small and large bowel. She was initially treated with nasogastric decompression, but despite large volume output, she continued to experience significant abdominal distension. Upper GI endoscopy revealed a large phytobezoar in the stomach (Figures 2 and 3) with a patent pylorus. Surgery evaluated because of concern that the patient would not be able to spontaneously pass the bezoar, given its size and density, but because of high risk of perforation and lack of complete obstructive symptoms, surgical intervention was not recommended. The patient underwent a 2-L Coca-Cola lavage,

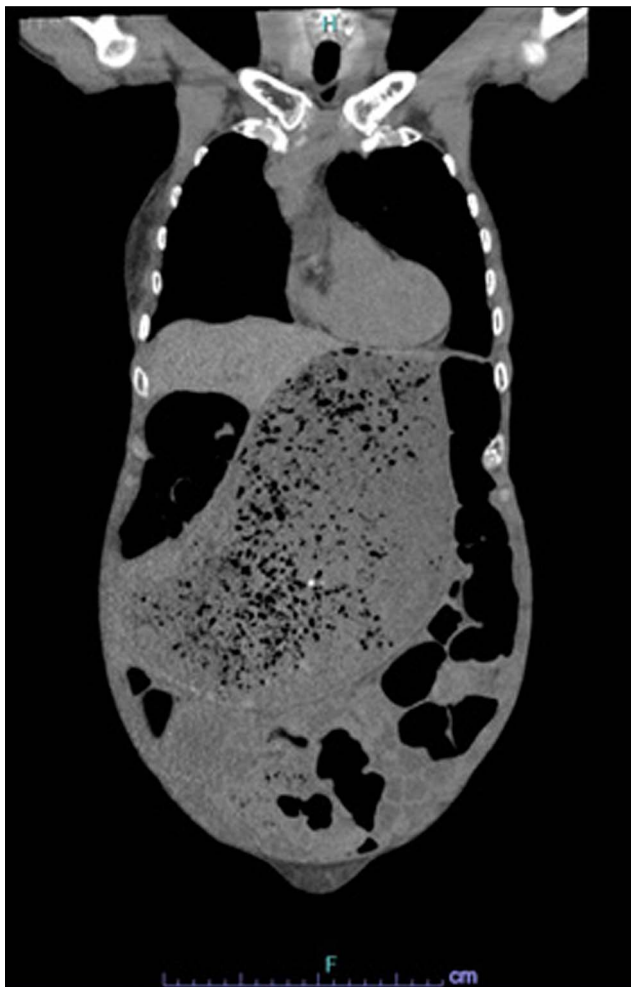


Figure 1. Computed tomography of abdomen showing distention of the stomach.

and received over-the-counter cellulase 2 tablets twice daily, and a promotility agent with intravenous metoclopramide 10 mg thrice daily for 72 hours. The patient clinically improved with decreasing abdominal distension and ability to tolerate oral intake.



Figure 2. Upper endoscopy reveal food residue and bezoar.



Figure 3. Upper endoscopy showing food residue and bezoar.

Endoscopy was repeated 3 days after initiation of conservative therapies with intent to treat the bezoar through mechanical disruption but instead revealed that the phytobezoar had passed (Figure 4). Gastroenterology suspected idiopathic hypomotility disorder and recommended that the patient adhere to a low-fiber diet indefinitely and follow-up outpatient for further workup and diagnosis of likely underlying motility disorder.

DISCUSSION

A bezoar is an uncommon cause of mechanical intestinal occlusion with an incidence reported to be about 0.4%. Endoscopy remains the most important tool in the detection and treatment of gastric bezoars because it solidifies both the diagnosis of a bezoar's presence as well as its subtype, allowing for focused treatment options. Phytobezoars are typically managed with either Coca-Cola lavage, papain enzyme therapy, cellulase supplementation, or mechanical interventions including through endoscopy or surgery.⁵ The



Figure 4. Endoscopy 3-days post therapy initiative showed the bezoar had passed.

approach used is focused on either dissolution to break down the phytobezoar into smaller pieces allowing passage or procedurally to remove persistent bezoars causing severe symptoms.

Dissolution of phytobezoars has become the most common initial approach to treating such cases. Of the dissolving agents, Coca-Cola has been found to be the most efficacious.^{2,4} It has been speculated that certain ingredients within Coca-Cola play the major role in bezoar breakdown, specifically, the tandem mucolytic effect of sodium bicarbonate and the acidifying effects of carbonic and phosphoric acids. In addition, the carbon dioxide release in the form of bubbles is hypothesized to penetrate the bezoar through its pores assisting in possible passage. Similarly, papain's use in the erosion of phytobezoars has been believed to be of similar reasoning. An enzyme derived from the papaya plant, papain is believed to rapidly hydrolyze proteins because of its proteolytic properties.⁴ Cellulase, the last of the supplements suggested to aid in the breakdown of phytobezoars, has been proposed because of the underlying makeup of the bezoars.^{3,6} As these bezoars are typically formed by vegetable fibers and plant material, which are high in cellulose, cellulase supplementation is proposed to cleave the glycosidic bond present in cellulose. Despite the variety of lytic options, Coca-Cola has been shown to lead to high dissolubility of bezoar fragments when compared with cellulase and papain.

Alternate treatment options for phytobezoars typically include interventions such as endoscopic or surgical removal. These modalities are particularly used to address bezoars resistant to lytic therapies and/or patients who present with worsening signs of obstruction or ileus. As these more invasive interventions often carry high risk, as was the case with this patient, it is important to be able to have early and accurate diagnosis of phytobezoars so as to be able to implement conservative management, which as we described is a safe and effective

method of treatment, before any sequelae develop, which may necessitate more emergent risky intervention.

DISCLOSURES

Author contributions: D. Shah: abstract and case documentation and is the article guarantor. Q. Ali: discussion and final editing. K. Bernier: final editing. VA Gutierrez: endoscopic imaging. L. Harper: faculty oversight and editing.

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Informed consent was obtained for this case report.

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