

From Habit to Hazard: Areca Nut Consumption Leading to Gastric Outlet Obstruction

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Abstract: *Bezoars are uncommon masses formed in the gastrointestinal tract, often categorized into pharmacobezoars, lactobezoars, trichobezoars, lithobezoars, and phytobezoars based on their composition. This report details a rare case of a 23-year-old male presenting with recurrent vomiting, abdominal pain, and a palpable lump caused by an areca nut bezoar, leading to gastric outlet obstruction. Despite initial diagnostic challenges and failed endoscopic removal, surgical intervention successfully extracted a 15 x 8 cm mass. Histopathological examination confirmed the bezoar's composition, attributed to prolonged areca nut consumption and inadequate hydration. This case underscores the importance of thorough clinical evaluation, advanced imaging, and tailored intervention strategies in managing large bezoars, particularly those linked to dietary habits.*

Keywords: bezoar, gastric outlet obstruction, areca nut, gastrointestinal mass, surgical removal

1. Introduction

Bezoar is a mass found in the intestines of humans and animals, consisting of either undigested vegetable matter or hair, resembling a hairball. It is important to distinguish bezoars from pseudo bezoars, which are indigestible materials deliberately inserted into the digestive tract. Bezoars can form in any part of the gastrointestinal (GI) system, often leading to concretions. These might happen by accident or on purpose. According to their content, bezoars are usually divided into five categories: pharmacobezoars (medications), lactobezoars (milk proteins), trichobezoars (hair), lithobezoars (materials that resemble stones), and phytobezoars (vegetable and fruit fibers). Even though bezoars are very uncommon in healthy people and have a low overall prevalence, retrospective endoscopic series suggest they occur in fewer than 1% of patients. Gastric bezoars are rare, with incidence of 0.3%. They typically produce vague symptoms and are frequently discovered by chance during upper gastrointestinal endoscopies. Risk factors include dehydration, medication use, reduced stomach motility, and prior gastric surgery [1, 2]. Herein, we report a case of areca nut gastric bezoar causing gastric outlet obstruction.

2. Case Presentation

A 23 years' gentleman presented with a history of recurrent vomiting, experiencing 9-10 episodes daily for the past five days, each occurring immediately after eating and involving undigested food particles. He also reported passing loose, coffee colored stools for five days and experiencing repeated episodes of fever over three days, with no diurnal fluctuations, which responded to medication. Physical

examinations were generally unremarkable. The abdomen was soft and nontender, with a single lump measuring 6 cm horizontally and 3 cm vertically in left hypochondrium, extending to epigastric region, with a firm consistency, more pronounced when standing and changing with position. There was no history of jaundice, hematemesis, or weight loss. A complete blood count was conducted, revealing a total leukocyte count of 20,000 per microliter. He reported chewing tobacco (paan masala) 30-40 times a day for six months.

Three months prior, an ultrasound of the lower abdomen was normal. The following day, an ultrasound of the upper abdomen showed diffuse edematous wall thickening in the epigastric region, primarily involving the stomach (wall thickness approximately 5.00 mm) with a likely infective or inflammatory cause, recommended for an abdominal contrast-enhanced computed tomography (CECT) scan.

Two months ago, the patient noted a lump in the left hypochondrium and sought medical attention at the surgical outpatient department, reporting diffuse, mild, and colicky stomach discomfort. An abdominal ultrasound at that time showed no abnormalities, and he was treated conservatively.

After being asymptomatic for a month, he developed diffuse, colicky abdominal pain. The pain and the lump size both increased, prompting a visit to the gastroenterology outpatient department (OPD). An upper gastrointestinal endoscopy (UGIE) was attempted but not completed due to patient non-cooperation, then CECT abdomen was done which identified a hematoma. A follow-up UGIE revealed a stony hard lump in the stomach. Attempts to fragment the lump were unsuccessful, necessitating surgical intervention for removal.

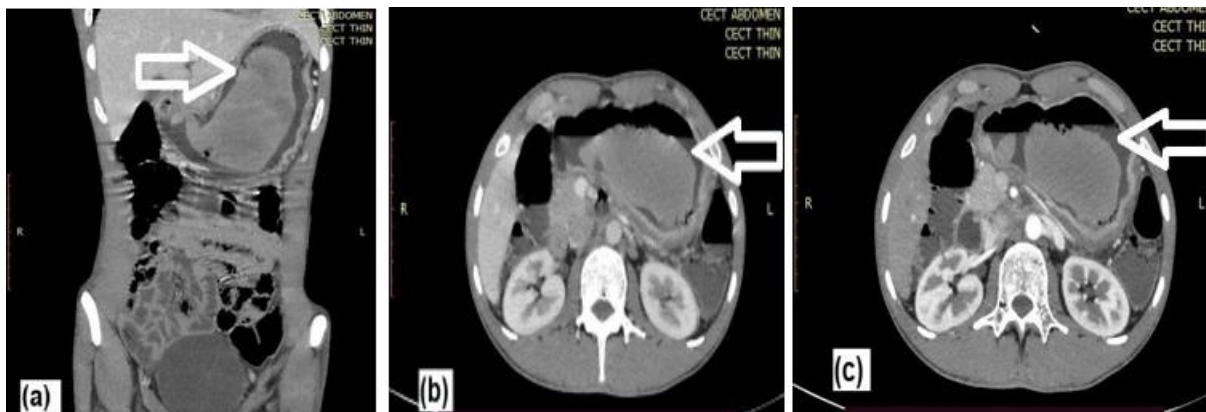


Figure 1: CECT abdomen; (a) coronal view showing large lesion inside stomach, (b) pre contrast axial view showing large lesion inside stomach, and (c) post contrast axial view showing large lesion inside stomach.

The patient underwent exploratory laparotomy under general anesthesia. A midline incision was made in the upper abdomen, followed by an enterotomy, during which a 15 x 8 cm (330 gram) stony hard mass was extracted. The removed specimen was sent for histopathological examination. Postoperatively, the patient was managed with intravenous fluids and antibiotics. On the first postoperative day, the Foley catheter was removed, and he was allowed to take small sips of water. On the second day, the Ryles tube (RT) was removed, and he was permitted to consume liquids. By the third day, he was shifted to a soft diet.

Figure 3: Intraoperative picture showing gastrostomy

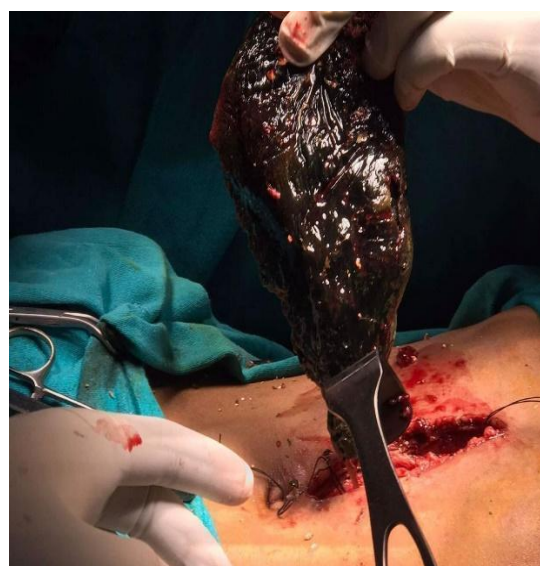


Figure 4: Intraoperative stony hard mass



Figure 2: Preoperative abdomen



Figure 5: 15 x 8 cm (330 gram) mass



3. Discussion

A bezoar is a mass formed from materials that are either indigestible or insoluble within the gastrointestinal tract. While rare, gastric bezoars often present nonspecific

symptoms and are typically discovered during upper gastrointestinal endoscopy or imaging procedures [1]. Bezoars are categorized based on their compositions [2].

- **Phytobezoars:** These are primarily made up of vegetable matter, with the diospyrobezoar, originating from persimmons, being the most common.
- **Trichobezoars:** Composed of hair, these are often found in the stomach.
- **Pharmacobezoars:** These are made from undigested drugs such as sucralfate, enteric-coated aspirin, theophylline, sodium alginate, and extended-release nifedipine.
- **Other Types:** Bezoar can be caused by tissue paper, polyurethane, fungus, shellac, Styrofoam cups, cement, vinyl gloves, and even milk curds.

Chewing areca nuts is common throughout Asia, notably in India and Pakistan. After alcohol, caffeine, and tobacco, chewing areca nut has been regarded as an addictive practice. The euphoric effects of areca nuts are believed to be caused by an alkaloid called arecoline, a cholinergic agent and central nervous system stimulant that increases the amount of acetylcholine in the brain. In our patient, due to the high amount of areca nut consumption and inadequate water intake, the insoluble fibres of the nut could not pass the pylorus, leading to the formation of a large bezoar, eventually leading to gastric outlet obstruction.

The incidence of gastric bezoars is about 0.3% during upper endoscopies [1]. According to demographics, trichobezoars are more frequently observed in girls in their 20s, while the majority of adult instances of phytobezoars occur in males between the ages of 40 and 50 [2]. A peculiar and rare manifestation known as Rapunzel syndrome features a gastric trichobezoar with a long tail extending through the small bowel to the cecum, primarily occurring in young girls [3]. The following are risk factors for patients with gastric bezoars.

- **Prior gastric surgery:** The development of gastric bezoars may be predisposed by an underlying anatomical defect [4]. Between 70 and 94 percent of patients with gastric bezoars have had stomach surgery, and between 54 and 80 percent have had pyloroplasty and vagotomy [5].
- **Altered gastric motility:** Conditions like gastroparesis impair the stomach's ability to grind food and coordinate movements, increasing the risk of bezoars [6].
- **Medications:** Anticholinergic agents, opiates, and medications with insoluble carrying vehicles can alter gastric motility, while high hygroscopy, the ability to attract and retain water, can also affect it.
- **Other:** dehydration, inadequate chewing, high fiber diets, and conditions like diabetes mellitus, which can lead to gastroparesis, also heighten the risk.

Gastric bezoars typically form ingesting indigestible materials, particularly when the stomach's grinding mechanism and motor functions are impaired [7]. Although delayed gastric emptying was once thought to be the primary cause, recent studies show patients often experience Accelerated or regular gastric emptying, indicating the composition of ingested materials, such as unripe persimmons, significantly influences bezoar formation [5].

Gastric bezoars patients frequently have no symptoms for years, with symptoms appearing gradually. Abdominal pain, nausea, vomiting, early satiety, anorexia, and weight loss are typical symptoms [8]. Previous surgeries may cause gastrointestinal bleeding from gastric ulcers, often because to reduced motility or extended exposure to gastric acid, with gastric outlet obstruction being rare [9].

Gastric bezoars and trichobezoars are often discovered incidentally on imaging, with occasional abdominal masses or halitosis, and patchy alopecia. Abdominal radiographs with or without barium, ultrasonography, or CT scans are diagnostic imaging modalities that may reveal a filling defect or a mass [10]. Trichobezoars may absorb barium, although phytobezoars are typically resistant to it. Gastric bezoars show up as intraluminal masses with hyperechoic arc-like surfaces and noticeable acoustic shadows on ultrasonography. Computed Tomography scans show them as low-density masses with a mottled look and air bubbles, providing high sensitivity and the ability to detect both small intestine and stomach bezoars [11].

Gastrointestinal perforation, peritonitis, protein-losing enteropathy, steatorrhea, pancreatitis, intussusception, obstructive jaundice, appendicitis, constipation, and pneumatosis intestinalis are less frequently linked to bezoars than small bowel obstruction [12].

Gastric bezoars are often diagnosed incidentally through imaging or upper endoscopy. CT scans reveal a low-density intraluminal mass with air bubbles, while endoscopically, they appear as a dark, amorphous mass in the stomach's fundus. Treatment for gastric bezoars without obstruction or severe bleeding depends on symptom severity and the bezoar's characteristics, including its composition, consistency, and size, which can determine the feasibility of chemical dissolution. Phytobezoars, the most prevalent type of bezoars, can often be dissolved chemically.

Bezoars made of vinyl gloves are resistant to chemical breakdown, but if the gloves are malleable and soft, they can be removed endoscopically. If they are matted and hardened, surgery is necessary. Severe symptoms and resistant bezoars may require endoscopic therapy or surgical intervention. Chemical dissolution offers a noninvasive, cost-effective alternative, but up to 6 weeks it can cause small bowel obstruction [13]. Despite these risks, several agents are commonly employed for chemical dissolution, each with varying degrees of effectiveness depending on the type of bezoar.

Endoscopic therapy for managing bezoars involves fragmenting the mass using a water jet, forceps, snares, or direct suction via a large-channel (6 mm) endoscope. The resultant fragments can be recovered with a large-bore nasogastric tube, like an Ewald tube, removed using an endoscope, or left to travel through the gastrointestinal track naturally [14]. Surgical management is typically reserved for cases where chemical dissolution and endoscopic fragmentation are either not feasible or have failed. During surgical procedures like enterotomy or gastrotomy, it is crucial to inspect the rest of the stomach and small bowel to ensure no other bezoars are retained [15].

4. Conclusion

Gastric outlet obstruction by areca nut bezoar is an unusual clinical circumstance. Following a comprehensive history, endoscopy and pertinent imaging typically show related pathology abnormalities in patients. Usually endoscopic removal is preferred for gastric bezoars, but in this exceptional case, because of the large size and consistency of the bezoar, surgical exploration was done.

References

- [1] Kadian RS, Rose JF, Mann NS. Gastric bezoars--spontaneous resolution. *Am J Gastroenterol* 1978; 70:79.
- [2] Prisant LM, Carr AA, Bottini PB, Kaesemeyer WH. Nifedipine GITS (gastrointestinal therapeutic system) bezoar. *Arch Intern Med* 1991; 151:1868.
- [3] DeBakey M, Oshner A. Bezoars and concretions. *Surgery* 1938; 4:934.
- [4] Pul N, Pul M. The Rapunzel syndrome (trichobezoar) causing gastric perforation in a child: a case report. *Eur J Pediatr* 1996; 155:18.
- [5] Krausz MM, Moriel EZ, Ayalon A, et al. Surgical aspects of gastrointestinal persimmon phytobezoar treatment. *Am J Surg* 1986; 152:526.
- [6] Hewitt AN, Levine MS, Rubesin SE, Laufer I. Gastric bezoars: reassessment of clinical and radiographic findings in 19 patients. *Br J Radiol* 2009; 82:901.
- [7] Lee J. Bezoars and foreign bodies of the stomach. *Gastrointest Endosc Clin N Am* 1996; 6:605.
- [8] DeBakey M, Oshner A. Bezoars and concretions. *Surgery* 1938; 4:934.
- [9] Jain SA, Agarwal L, Khyalia A, et al. Pharmacobezoar--a rare case presented as gastric outlet obstruction. *J Surg Case Rep* 2018; 2018:rjy116.
- [10] Newman B, Girdany BR. Gastric trichobezoars--sonographic and computed tomographic appearance. *Pediatr Radiol* 1990; 20:526.
- [11] Ripollés T, García-Aguayo J, Martínez MJ, Gil P. Gastrointestinal bezoars: sonographic and CT characteristics. *AJR Am J Roentgenol* 2001; 177:65.
- [12] Abou Azar S, Wehbe MR, Jamali S, Hallal A. Small Bowel Obstruction Secondary to a Metamucil Bezoar: Case Report and Review of the Literature. *Case Rep Surg* 2017; 2017:2702896.
- [13] Chen HW, Chu HC. Migration of gastric bezoars leading to secondary ileus. *Intern Med* 2011; 50:1993.
- [14] Zarling EJ, Thompson LE. Nonpersimmon gastric phytobezoar. A benign recurrent condition. *Arch Intern Med* 1984; 144:959.
- [15] Chintamani, Durkhure R, Singh JP, Singhal V. Cotton Bezoar--a rare cause of intestinal obstruction: case report. *BMC Surg* 2003; 3:5.