

2024

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Joseph O. Atarere

Department of Medicine Medstar Union Memorial Hospital, Baltimore, MD, 21218 United States Medstar Franklin Square Medical Center, Baltimore, MD, 21237 United States

Sakthi S. Gautham

Department of Medicine Medstar Union Memorial Hospital, Baltimore, MD, 21218 United States Medstar Franklin Square Medical Center, Baltimore, MD, 21237 United States

Jennifer A. Evans

Department of Medicine Medstar Union Memorial Hospital, Baltimore, MD, 21218 United States Medstar Franklin Square Medical Center, Baltimore, MD, 21237 United States

Haider A. Naqvi

Department of Medicine Medstar Union Memorial Hospital, Baltimore, MD, 21218 United States Medstar Franklin Square Medical Center, Baltimore, MD, 21237 United States, haider.a.naqvi@medstar.net

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Recommended Citation

Atarere, Joseph O.; Gautham, Sakthi S.; Evans, Jennifer A.; and Naqvi, Haider A. (2024) "Gastric and rectal phytobezoar from sunflower seed ingestion: A Case Report and review of the literature," *Journal of Community Hospital Internal Medicine Perspectives*: Vol. 14: Iss. 5, Article 20.

DOI: 10.55729/2000-9666.1392

Available at: <https://scholarlycommons.gbmc.org/jchimp/vol14/iss5/20>

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Gastric and Rectal Phytobezoar From Sunflower Seed Ingestion: A Case Report and Review of the Literature

Joseph O. Atarere^{a,b}, Sakthi S. Gautham^{a,b}, Jennifer A. Evans^{a,b}, Haider A. Naqvi^{a,b,*}

^a Department of Medicine, Medstar Union Memorial Hospital, Baltimore, MD, 21218, United States

^b Department of Medicine, Medstar Franklin Square Medical Center, Baltimore, MD, 21237, United States

Abstract

Seed bezoars are a subcategory of phytobezoars caused by undigested vegetable seeds or fruit pits. We report the case of a 48-year-old woman who was admitted due to severe constipation and rectal pain. Rectal examination was notable for numerous sunflower seeds at the anal verge. Initial CT imaging revealed fecal impaction with a rectal bezoar which was managed with manual evacuation. Repeat CT imaging was notable for a gastric bezoar which was successfully managed by dissolution therapy with Coca-Cola. Most seed bezoars can be managed conservatively and life-threatening complications are rare.

Keywords: Gastric bezoar, Rectal bezoar, Phytobezoar, Sunflower seed, Case report

1. Introduction

A gastrointestinal (GI) bezoar is a foreign body resulting from accumulation of ingested indigestible material.¹ Bezoars are responsible for between 0.4 and 4% of cases of gastrointestinal tract obstruction with most cases occurring in the stomach and small bowel.² Bezoars are classified based on composition: phytobezoars are composed of plant material fibers, trichobezoars from hair and food particles, lactobezoars from inspissated milk and pharmacobezoars form concretions of sustained release medications. Phytobezoars are the most common type of GI bezoars accounting for about 40% of reported cases.¹ Seed bezoars are a subcategory of phytobezoars caused by undigested vegetable seeds or fruit pits and are an uncommon case of fecal impaction responsible for <5% of cases of fecal impaction requiring hospitalization.^{2,3} We report the first case of a simultaneous gastric and rectal bezoar from sunflower seed ingestion in a middle-aged adult woman.

2. Case report

A 48-year-old woman was admitted to the hospital with progressively worsening constipation followed

by 1 week of diarrhea and 1 day of periumbilical and rectal pain. Relevant past medical history includes cognitive developmental delay and an admission for severe constipation 5 months prior which was managed with oral laxatives. She is wheelchair bound, lives alone in a townhouse and has no social support structure. Due to financial and mobility difficulties, she ran out of food and for several months, her diet consisted of cat food and sunflower seeds from prior pets that passed away.

Physical exam revealed a chronically ill appearing and cachectic middle-aged woman. The abdomen was firm and moderately distended with mild tenderness on palpation. Numerous sunflower seeds were visible at the anal verge on rectal inspection. Complete blood count revealed mild anemia with a hemoglobin level of 10.8 g/dL. Serum chemistries were significant for hypokalemia of 2.5 mmol/L and mild hypophosphatemia of 2.3 mg/dL. CT scan of the abdomen and pelvis showed massive stool burden throughout the gastrointestinal tract with dilated rectum and rectal wall thickening with surrounding edema consistent with stercoral colitis (Fig. 1).

An initial diagnosis of colonic bezoar with fecal impaction and encopresis was made. Manual disimpaction was attempted at bedside but due to

Received 15 February 2024; revised 7 June 2024; accepted 19 June 2024.
Available online 9 September 2024

* Corresponding author at: 201 E University Parkway, Department of Medicine, Baltimore, MD, United States.
E-mail address: Joseph.O.Atarere@medstar.net (J.O. Atarere), Sakthi.S.Gautham@medstar.net (S.S. Gautham), Jennifer.A.Evans@medstar.net (J.A. Evans), Haider.A.Naqvi@medstar.net (H.A. Naqvi).

<https://doi.org/10.55729/2000-9666.1392>

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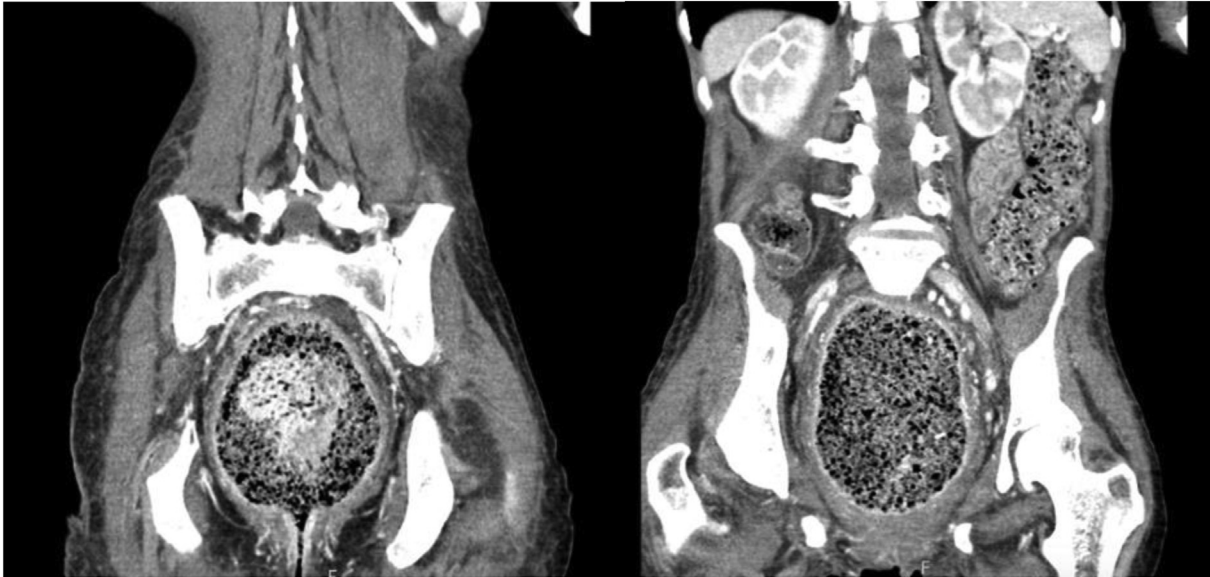


Fig. 1. CT scan of the abdomen and pelvis on initial presentation showing the dilated rectum, rectal wall thickening with surrounding edema and rectal bezoar (coronal views).

rectal tenderness, she was taken to the operating room for manual evacuation under anesthesia with operative findings of liquid stool with sunflower seeds and a piece of corn. Post-operative CT scan of the abdomen and pelvis with oral contrast revealed a completely decompressed rectum, normal caliber transverse and left hemicolon with moderate fecal material in the right hemicolon and terminal ileum (Fig. 2).

Post-operatively, she was managed with laxatives (Senna and MiraLAX) with passage of moderate amounts of liquid stool. Repeat CT abdomen and

pelvis on postoperative day 5 showed marked gastric dilation with increased stool burden in the colon (Fig. 3A). A diagnosis of gastric bezoar was made and treatment with Coca-Cola (3 L in 24 h) via nasogastric tube was initiated with continued passage of liquid stool. There were no complications with medical therapy. CT abdomen and pelvis on postoperative day 10 showed resolution of gastric distension with liquid stool throughout the colon (Fig. 3B) and she was discharged in stable condition.

She represented 3 months later with constipation after consuming dog food from a dumpster for

A. Axial view

B. Coronal view



Fig. 2. CT scan of the abdomen and pelvis after manual evacuation under anesthesia showing a normal caliber transverse and left hemicolon with moderate fecal material in the right hemicolon.

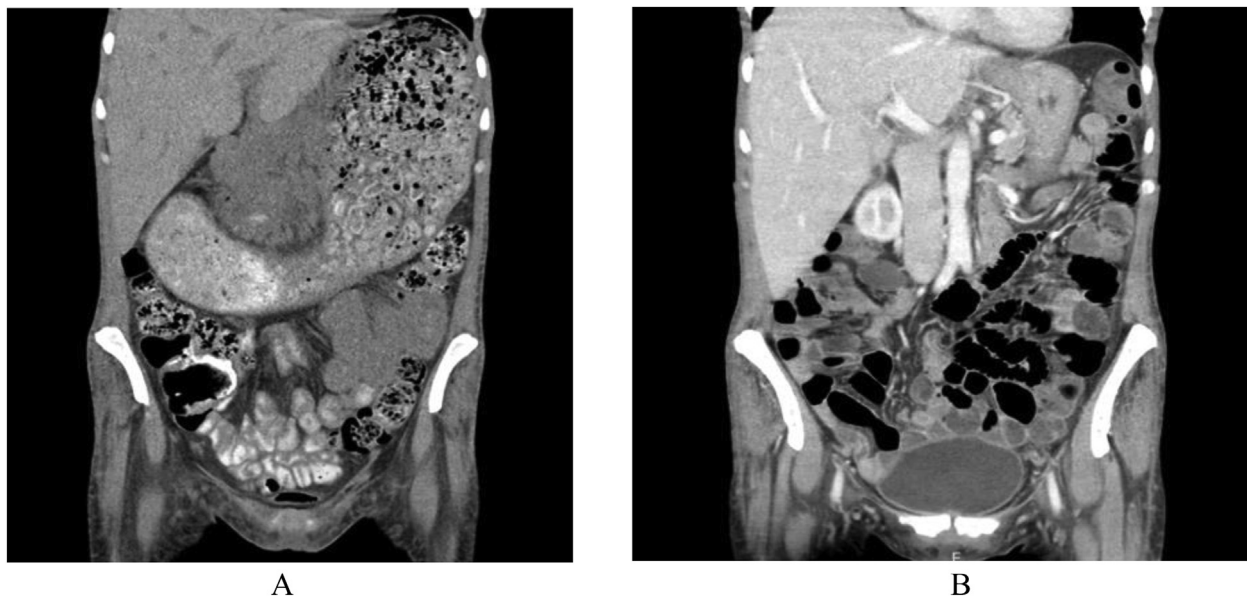


Fig. 3. A). CT scan of the abdomen and pelvis on postoperative day 5 showing marked gastric dilation and gastric bezoar with increased stool burden in the colon (coronal view). B). CT scan of the abdomen and pelvis on postoperative day 10 showing resolution of the gastric distension (coronal view).

several weeks due to poor access to food. Imaging showed increased stool burden with evidence of stercoral colitis, but no bezoar and she was managed with sennoside and laxatives (Senna and MiraLAX). That admission was complicated by lower gastrointestinal bleeding with CT scan showing active extravasation from the rectum which was managed with embolization of the distal superior rectal artery. She was subsequently discharged in stable condition to a subacute rehab facility.

3. Discussion

GI bezoars can occur anywhere from the esophagus to the rectum but are more commonly identified in the stomach.^{2,4} Most patients present with constipation and rectal pain similar to the patient in our report.^{5,6} There are several risk factors for bezoar formation including previous gastric surgery, anatomic abnormalities like gastric diverticula and coexisting medical and psychiatric disorders.⁵ The patient in the case report had cognitive developmental delay which when coupled with her poor social support system contributed to limited access to food. Interestingly, our patient initially presented with a rectal bezoar and then developed the gastric bezoar. During hospitalization, as she felt better, her appetite improved, and with increased oral intake, she developed the gastric bezoar.

Although uncommon, fecal impaction from rectal seed bezoars have been reported among adults.^{3,6} Due to their small size, seeds can easily traverse the pylorus and as a result, rarely cause gastric bezoars.

A systematic review of case series and reports found that only 1.3% of seed bezoars occur in the stomach.⁶ With prolonged ingestion, gradual accumulation and dehydration of seeds in the rectum can lead to the formation of a bezoar that presents as fecal impaction. Although rare, complications like stercoral colitis (as seen in the patient in this report) and rectal perforation can occur in severe cases.⁷

Sunflower seeds are the second most common cause of seed bezoars in adults after prickly pears.⁶ Although sunflower seeds are a good source of nutrients, their shells contain indigestible plant fibers like cellulose, lignin and tannin which form a glue-like coagulum in the presence of gastric acid.^{6,8} This glue-like coagulum rarely traverses the pyloric sphincter and over time can lead to the formation of a gastric bezoar. The patient in the case report had been consuming sunflower seeds for about 6 months prior to presentation which led to the formation of bezoars in both the rectum and the stomach.

The diagnosis of a GI bezoar is often suggested by a typical history and digital rectal exam. CT scan is the most reliable imaging modality for diagnosing GI bezoars, but endoscopy is the gold standard for diagnosing gastric bezoars as it offers the opportunity for sampling and has therapeutic applications.^{1,9} As seen with this case, rectal seed bezoars are best managed with manual evacuation under anesthesia and surgical removal is reserved for patients with ileus or refractory bezoars.¹⁰ Management of gastric phytobezoars can be divided into 3 categories: dissolution, fragmentation, and/or retrieval.¹ In the case described above, the bezoar resolved completely with

dissolution therapy using Coca-Cola. Dissolution therapy with Cellulase and Coca-Cola are well tolerated without adverse effects and are preferred to the proteolytic enzyme papain which is associated with gastric and esophageal perforation.¹ In cases of bezoars that did not improve spontaneously, Coca-Cola has been used as treatment anecdotally for decades. The mechanism of Coca-Cola is not fully understood; however, the prevailing hypothesis is 1). Coca-Cola's low pH (2.6, 2). Mucolytic effect of NaHCO₃ and 3). Digestion of bezoars by CO₂ bubbles.^{11,12} Fragmentation and retrieval by endoscopy is reserved for cases unresponsive to dissolution therapy.^{1,10}

4. Conclusion

Seed bezoars are a subgroup of phytobezoars which, unlike others, occurs more commonly in the rectum than the stomach. This case represents the first documented simultaneous gastric and rectal seed bezoar. Most seed bezoars can be managed conservatively and life-threatening complications are rare. Treatment of rectal bezoars is with manual evacuation and most gastric bezoars respond to dissolution therapy with Cellulase or Coca-Cola.

Specific author contributions

Joseph O. Atarere; Sakthi S. Gautham: Manuscript writing, proofreading, figures and review of data.

Jennifer A. Evans; Haider A. Naqvi: Overall supervision and proofreading.

Financial support

None.

Conflicts of interest

None to report.

Acknowledgement

None.

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