

# Phytobezoar-Induced Small Bowel Obstruction in a Young Male with Virgin Abdomen

Edward P. Manning<sup>1\*</sup>, Vikram Vattipally<sup>2</sup>, Masooma Niazi<sup>3</sup> and Ajay Shah<sup>2</sup>

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\***Corresponding author:** Edward P. Manning, Department of Medicine, Hospital of the University of Pennsylvania, Philadelphia, PA 19104, USA, Tel: 1 718-430-2000; E-mail: [Edward.Manning@uphs.upenn.edu](mailto:Edward.Manning@uphs.upenn.edu)

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## Abstract

Phytobezoars are a rare cause of small bowel obstruction. Such cases are most commonly associated with previous abdominal surgery or poor dentition or psychiatric conditions. A 40 year old man with a virgin abdomen and esophageal motility disorder and psychiatric illness presented with small bowel obstruction.

laparotomy. Differential diagnosis included a neoplasm or congenital

underlying small bowel disease such as a diverticulum, stricture or tumor. Therefore, such cases are commonly associated with previous surgery, Crohn's disease, congenital diverticula or tuberculosis [4,17-22].

Hypocidity, such as in the case of truncal vagotomy, decreases hydrolysis of ingested food thus increasing the amount of undigested food matter passed into the small bowel [16]. Increased intake of indigestible matter, such as hair (trichobezoar), or poorly masticated food has a similar effect. This increases the probability of bezoar formation, particularly phytobezoars.

This also increases the probability of obstruction of the terminal ileum, since the terminal ileum is the narrowest portion of the small bowel. Finally, interactions between ingested matter and the gastrointestinal environment may result in rather unusual cases of bezoars, such as the ingestion of unripened persimmons (diospyrobezoar) or inspissated milk in underdeveloped gastrointestinal systems (lactobezoar). For example, in the case of diospyrobezoars, the ingestion of unripened persimmons introduces a high concentration of tannin and shibuol into the highly acidic environment of the stomach. Gastric acid polymerizes these substances thus providing a nidus for bezoar formation [15,23].

Phytobezoars have no unique signs or symptoms associated with their presentation. Most intestinal bezoars present as a complete bowel obstruction. (Escamilla 1994) Small bowel obstructions due to phytobezoars often present with crampy abdominal pain with vomiting. While prior surgery is a predisposing factor for phytobezoars, it is not a necessary condition [13]. High pitched bowel sounds may or may not be present though in the absence of adhesions due to a prior surgery, strictures due to an underlying conditions such as Crohn's, a diuretic, or tumor is usually found [13]. A more recent study of 15 cases of small bowel obstruction due to phytobezoars in 2008 showed that 13 of the 15 cases presented free of fever with no peritonitis though nasogastric drainage revealed bilious fluid. Only two cases presented as acute abdomens requiring emergency surgery [12].

Because they are so rare, phytobezoars are often difficult to recognize and diagnose. Phytobezoars should be suspected in patients who have had previous gastric or abdominal surgery, extremely poor dentition, or sufficiently increased fiber intake prior to presentation [3]. While physical examination, abdominal Xray, and small bowel study have been traditionally recommended in suspected cases of phytobezoars, the sensitivity of such diagnostic studies is only 10% [12]. Barium studies reveal an intraluminal filling defect, suggesting a mass not fixed to bowel wall with a mottled appearance similar to a Wilms tumor [15]. On ultrasound, a phytobezoar appears like a hyperechoic surface with acoustic shadowing [15].

CT remains the best modality to diagnose a phytobezoar; however, it can often be misdiagnosed in favor of more common sources of bowel obstruction such as intussusception. CT has a positive predictive value of only 20%, [12,24] revealing a stool-like mass with a solid rim and heterogenous, "mottled/gas" appearing center unable to take up iodine contrast in between proximal, distended loops of bowel and a distal, collapsed loops of bowel [12,13].

On laparotomy, a distended ileum with a mobile intraluminal mass near the ileocecal valve, the narrowest portion of the small bowel, is often found [13]. The mass is generally followed by collapsed bowel. The small bowel is often not ischemic unless it is found very late in the presentation. A thorough examination of the intestines and stomach is

necessary during surgery, as concomitant bezoars is not uncommon [6].

The literature shows that phytobezoars have been managed in numerous surgical and medical manners that share a favorable prognosis. In a study of 87 cases of phytobezoars, in which all cases were treated surgically, digital fragmentation and milking of the bezoar into the cecum were initially attempted. Enterotomy and bezoar extraction were subsequently performed if fragmentation and milking of the bezoar were not possible [5].

In a later retrospective study of 375 patient hospitalized for small bowel obstruction, 15 cases (4%) were secondary to phytobezoars. Of these 15 cases, diagnosis was made by CT in three patients and obstruction was subsequently relieved in these three cases with gastric aspiration, avoiding surgery. The remaining twelve underwent laparotomy during which the bezoar was fragmented digitally and washed into the colon [12].

Laparoscopic treatment of bezoars has also been described as an effective means of treating bezoars in the small intestine [25]. The evidence suggests that if a phytobezoar is diagnosed prior to surgery, it is likely that medical treatments will be successful.

Numerous medical therapies have been attempted with success in clearing phytobezoars, including Coca Cola, [26-28], Adolph's Meat Tenderizer, [29] L-cysteine, cellulase, [30,31] cellulase with metoclopramide, [32] papain, [31] water jet, pineapple juice, normal saline, 0.1 M hydrochloric acid, sodium bicarbonate, pancrealipase, pancreatin, and 12% zinc chloride [2].

These therapies are not without complications and should be reviewed in detail before attempts at using them [2,31]. While some of these medical treatments may seem bizarre or anecdotal in nature, some of them, such as a Coca Cola lavage, have recently been found to be effective based on systematic review (greater than 50% effectiveness when used as a stand alone therapy and greater than 90% as an adjuvant to laparoscopic techniques) [33].

In reviewing the literature, the goal of treatment should be to clear the intestinal lumen of the phytobezoar and prevent recurrence [34]. Primary attempts toward treatment of phytobezoars in the small intestine in stable patients should focus on medical treatment.

Secondary treatment should involve milking of the phytobezoar into the cecum. An enterotomy is indicated if the bezoar cannot be fragmented and milked into the cecum. Finally, a resection is indicated in cases of intestinal necrosis, failure of the bezoar separating from the intestinal mucosa, and anticipated recurrence of phytobezoar.

Surgery, when warranted, should not be delayed as it is associated with prolonged postoperative hospitalization [12,35]. A review of the management of phytobezoars is summarized in Figure 2.

## Case Continuation and Discussion

Exploratory laparotomy was performed, revealing dilated proximal small bowel loops with some congestion, collapsed distal small bowel loops, and a transition point in the midileum approximately 45 cm from the ileocecal junction, as shown in Figure 3.

The transition point contained thick, viscous material and a suspicious polypoid mass with a likely tree top mobility distally. An attempt was made to digitally fragment the material and milk it toward the cecum; however, the mass was fairly immobile.

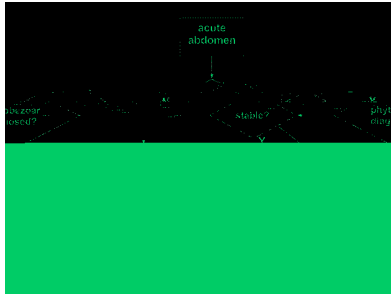


Figure 2

