

# Case Report: Bowel Obstruction Caused by Persimmon Phytobezoars: A Case Report



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## ABSTRACT

**Background:** The term phytobezoar refers to a trapped mass in the gastrointestinal tract caused by the agglomeration of indigestible ingested plant materials, including fibers, skins, and seeds. A persimmon phytobezoar is formed after the frequent consumption of persimmons. The clinical manifestations of persimmon phytobezoars are similar to other phytobezoars and depend on the localization and size of the trapped mass.

**Case Presentation:** Here, we presented a 57-year-old male with persimmon phytobezoars, which finally led to small bowel obstruction. The patient was referred to the emergency room with complaints of severe abdominal pain and frequent vomiting.

The patient underwent laparotomy surgery that led to the removal of a portion of his ileum.

**Conclusion:** Overindulgence in taking persimmon can lead to formation of phytobezoar and subsequent obstruction of small intestinal. Persimmon phytobezoars are difficult to break up into pieces because of containing tannins, cellulose, hemicellulose, and lignin.

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## 1. Introduction

**B**ezoars are indigestible material aggregations trapped in the gastrointestinal tract. They can form anywhere from the esophagus to the rectum; however, they are typically found in the stomach [1]. Depending on the content, bezoars are classified into 4 major types, as follows: phytobezoars, i.e., composed of plant fibers, skins, and seeds; trichobezoars, i.e., predominantly formed in women with mental health disorders, such as trichophagia and trichotillomania; lactobezoars, i.e., formed in milk-fed infants resulting from inspissated milk proteins ingestion; pharmacobezoars, i.e., generally caused by the conglomeration of sustained-release medications or medication vehicles, such as aluminum hydroxide, antacids, and cholestyramine [2-4]. Seed bezoars are a distinct subtype of phytobezoars that occur by the aggregation of indigestible fruit pits and vegetable seeds. Besides, they have different pathophysiology, compared to fiber bezoars [1].

Trichobezoars and phytobezoars are more common, compared to the other types. Most phytobezoars are formed after the frequent consumption of persimmons [3]. Various fruit and vegetable matter could lead to phytobezoar formation, such as persimmons, orange pith, grape, mango, and carrots [4]. Persimmons are a rich source of tannins. Tannins exist in numerous other organic materials, including plants, woods, and seeds. When large amounts of persimmons are achieved, tannins may interact with gastric acid and polymerize fibers to form a hard phytobezoar [5]. Persimmon phytobezoars are more difficult to break up into pieces, compared with other phytobezoars. This is because they consist of tough agents, such as tannins, cellulose, hemicellulose, and lignin [6, 7].

Predisposing risk factors include poor mastication, prior gastric surgery, hypoacidity, and gastric motility disorder, the ingestion of high fiber diet, insufficient chewing, reduced gastric secretion, diabetes mellitus associated with gastroparesis, Guillain-Barre syndrome, cystic fibrosis, renal failure, hypothyroidism, and myotonic dystrophy [6, 8-10].

Typical clinical manifestations include abdominal pain, nausea, vomiting, early satiety, abdominal fullness, discomfort, bloody or tarry stool, anorexia, weight loss, anemia, and hematemesis. These symptoms are occasionally associated with gastrointestinal bleeding, ulceration, perforation, and gastric or small bowel obstruction [11, 12]. In contrast, bezoars could be present in asymptomatic patients, i.e., found via esophagogastrode-

noscopy or Computed Tomography (CT) scans during a health check-up [11]. However, gastric obstruction occurs rarely because of its flexible volume [6]. Here, we presented a case of phytobezoar causing small intestinal obstruction, i.e., developed after overindulgence in consuming persimmon.

## 2. Case Presentation

A 57-year-old male presented to the emergency department with complaints of vague abdominal pain, aggravating abdominal distention, constipation, reduced stool bulk, and frequent nausea/vomiting. Besides, he has not defecated for two days. The abdominal pain was not positional, did not exacerbate with movement, or radiated to elsewhere.

Upon admission, his vital signs were as follows: blood pressure: 140/90 mmHg; heart rate: 80 bpm; respiratory rate: 18 and body temperature: 37°C, and the Glasgow Coma Scale/Score (GCS): 15; O<sub>2</sub> sat: 97%.

He had undergone gastric surgery 8 years ago for bowel obstruction. The patient encountered anemia and ischemic heart disease. He reported a history of smoking, consuming alcohol and opium, and medical history of taking Aspirin and Losartan. During the interview on his dietary habits, it was noted that the patient had consumed about 5-7 persimmon weekly. On physical examination, moderate distension and tenderness were presented in the upper abdomen. The patient was conscious and oriented to person, place, time, and situation and answered the questions. His sclera was not icterus and his conjunctival was not pallor. No enlargement or swollen of the cervical lymph nodes was observed.

A giant mass causing bowel obstruction was confirmed by CT scanning, as distended bowel loops were observed proximal to collapsed loops (Figure 1). The patient underwent laparotomy surgery which resulted in a part of his ileum being removed. Figures 2 and 3 illustrate the surgical removal of the part of obstructed ileum being resected. The patient's laboratory test data were normal during hospitalization (Table 1).

## 3. Discussion

The origin of the word "bezoar" derives either from the Arabian "badzehr" or the Persian word "padzahr", pad (protecting) + zahr (poison); both indicating counter poison or antidote [12]. A phytobezoar can be single or multiple with various colors depending on the materials constituting the phytobezoar.

**Table 1.** Patient’s pre-operation laboratory data

Tests	Values	Tests	Values		
<b>Biochemistry</b>	Urea	62	WBC	9500	
	Cr	1.85	Hgb	11.8	
	Na	136.5	<b>CBC</b>	Plt	212000
	K	4.6	PMN(%)	83.7	
	BS	104			
PT	15.5	PH	7.37		
PTT	39.9	<b>VBG</b>	HCO <sub>3</sub>	24	
INR	1.15		PCO <sub>2</sub>	41.9	
LDH	368				

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Cr: creatinine, CBC: Complete blood count, WBC: white blood cell, Hgb: hemoglobin, Plt: platelet, PMN: Polymorphonuclear leukocytes, Na: sodium, K: potassium, BS: blood sugar, PT: Prothrombin Time, aPTT: Activated Partial Thromboplastin Time, INR: international normalized ratio, HCO<sub>3</sub>: Bicarbonate, PCO<sub>2</sub>: partial pressure of carbon dioxide, LDH: Lactate dehydrogenase, VBG: venous blood gas

Endoscopic examinations are beneficial in the detection and treatment of the disease. CT scan demonstrates the site of obstruction in the intestines; it also visualizes multiple bezoars. Thus, it is a valuable tool in patients requiring laparotomy [11]. CT scanning has a higher accuracy rate than abdominal Ultrasound (US) [1].

The ultimate goal of bezoars treatment is the removal of the mass and prevention of recurrence. Available treatment choices for this condition depend on the location, size, and presence of complications [10]. In our case, the patient underwent laparotomy as he presented with intestinal obstruction.



**Figure 1.** CT scan confirming bowel

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**Figure 2.** The surgical removal of the part of obstructed ileum being resected

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Treatment options for bezoars are divided into two major groups of conservative and surgical interventions. Prokinetic medications, enzymatic dissolvents, such as cellulose, papain, acetylcysteine, and Coca-Cola, mechanical disruption, such as endoscopic fragmentation, gastric lavage, and extracorporeal lithotripsy are considered as conservative therapy.

For large and tough bezoars or patients with Gastric Outlet Obstruction (GOO), operative extraction is usually selected [9]. The treatment is chosen based on the volume, chemical synthesis, location, and associated pathology of bezoar. Saline solution, hydrochloric acid, sodium bicarbonate, CocaCola, and enzymatic agents (e.g.

papain, cellulase, pancreatin) can be used in the chemical dissolution method.

Some studies indicated the positive role of enzymatic agents, such as cellulase and pancreatin in the dissolution of bezoars; however, their usage is limited. The reason is they may cause complications, such as esophageal and gastric ulcers, electrolyte disturbances, abdominal pain, nausea, and vomiting, or more rarely, anaphylactic reactions.

Nowadays, using Coca-Cola is a feasible method and is popular among other chemical agents.

Phytobezoars are usually found in the stomach; therefore, gastroscopic methods are the most commonly used



**Figure 3.** The surgical removal of the part of obstructed ileum being resected

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approach in this respect. In cases of ileus, intestinal, ischemia, and perforation, like when other options have been unsuccessful, surgical intervention is required. Laparotomy is the main choice of treatment in most patients, especially the complicated cases [13].

Postoperative Ileus (POI) is defined as a transient absence of gut motility after abdominal or other surgical procedures. POI, a common and expected complication of abdominal surgery, is characterized by bowel distention, the lack of bowel sounds, flatus, and bowel movements. Inhibitory neural reflexes and inflammatory processes are the main involved mechanisms [14].

Opioids are usually given to relieve pain after surgery; however, they cause the debilitation of bowel function. POI is often exacerbated by opioid use during and following the operation [15]. The patient presented some predisposing factors, such as dependence on opioids and prior abdominal surgery which led to the faster development of mass formation [16].

## Ethical Considerations

### Compliance with ethical guidelines

There were no ethical considerations to be considered in this research.

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### Author's contributions

All authors equally contributed to preparing this article.

### Conflict of interest

The authors declared no conflicts of interest.

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