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Intussusception caused by dried apricot: A case report



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ABSTRACT

INTRODUCTION: An unusual cause of intussusception due to small bowel obstruction secondary to dried apricot consumption was encountered. Phytobezoar small bowel obstruction is a rare, but interesting pathology that accounts for 2–4% of small bowel obstructions (18). Even rarer, is an intussusception caused by dried fruit ingestion. We present the case of a 56-year-old female that presented with an intussusception after she ingested a large amount of dried apricots.

PRESENTATION OF CASE: The patient is a 56-year-old female with a small bowel obstruction secondary to intussusception in the distal ileum. She was taken to the operating room for a celiotomy where an intussusception of the distal small bowel was found. An enterotomy was performed which revealed dried apricots as the lead point. The intussusception was successfully reduced and the apricots removed.

DISCUSSION: Small bowel obstruction due to intussusception can be caused secondary to malignancy, Meckel's Diverticulum, benign neoplasm, and strictures. A less common cause for small bowel obstruction due to intussusception in adults is secondary to mechanical obstruction by bezoars. Risk factors for bezoar formation include previous gastric surgery, diabetes, and mastication problems.

CONCLUSION: Bezoars are an extremely rare cause of intussusception in adults. A high level of suspicion needs to exist in the presence of a history of eating dried fruit, history of gastric surgery, diabetes mellitus, and problems with mastication. Various treatment modalities exist to treat obstructions secondary to bezoars, including open reduction and removal of bezoar via enterotomy.

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1. Introduction

Intussusception of the bowel is defined as the telescoping of a proximal segment of the gastrointestinal tract within the lumen of the distal tract.¹⁷ Adult intussusception represents 5% of all cases of intussusception and accounts for only 1–5% of intestinal obstruction in adults. In children, it is usually a benign condition associated most commonly with a viral illness that gets easily reduced with air enema 80% of the time.¹⁸ In adults, however, intussusception can be associated with malignancy, Meckel's Diverticulum, benign neoplasm, strictures, and even rarer – bezoars.¹⁶ The most common cause of intussusception in adults is cecal adenocarcinoma.¹⁹ As such, the standard of care for intussusception in an adult is to go to the operating room for operative reduction and resection of the lead point rather than perform an air enema.¹⁹ In our case, the

patient was taken to the operating room and an apricot bezoar was found to be the lead point.

2. Case presentation

A 56-year-old morbidly obese woman with no significant medical history and a surgical history of cholecystectomy and hysterectomy many years ago presented with 24-h history of periumbilical pain associated with nausea, vomiting, and anorexia. She had never had a colonoscopy. She had been seen earlier that morning in the emergency room (ER) and discharged with a diagnosis of gastroenteritis. She returned to the ER that evening with worsening of symptoms and increasing obstipation. She denied rectal bleeding. On physical exam, her vital signs were stable and her abdomen was soft, non-distended, with normal bowel sounds. She had mild tenderness to palpation in the periumbilical region. Her rectal exam was negative. A computed tomography (CT) scan of her abdomen revealed findings of distal small bowel obstruction secondary to intussusception (Fig. 1). She had an elevated white blood cell count of 13,000 and a serum lactate of 0.73 units. She was given intravenous fluid resuscitation prior to emergent surgical laparotomy.

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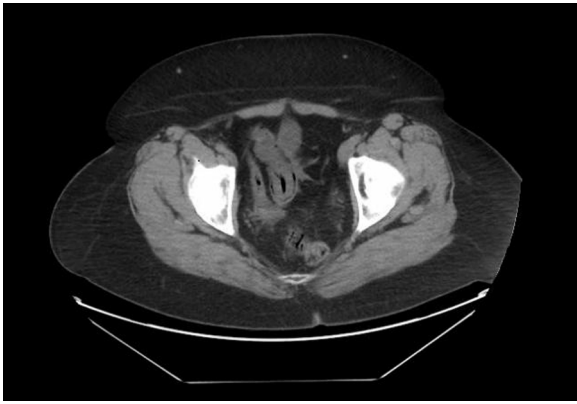


Fig. 1. Intussusception visualized in the distal small bowel on CT scan of the abdomen and pelvis.



Fig. 2. Intraoperative photo of all apricots removed.

In the operating room, a low midline laparotomy incision was performed and entry was gained into the intra-abdominal cavity. In the distal small bowel, we found the intussusception segment of the bowel which appeared hyperemic. The intussusception was manually reduced. The lead point of the intussusception was a mobile mass felt intraluminally in the ileum. Several other similar masses were noted within the other segments of the jejunum and ileum. A 6 cm enterotomy was made longitudinally along the small bowel. The freely mobile object within the lumen was extracted gently through the enterotomy and was found to be a whole apricot. Approximately ten whole pieces of apricot were removed (Figs. 2 and 3). The enterotomy was then closed in a longitudinal fashion using 3-0 PDS suture. The skin was left open and allowed to heal by secondary intention with packing of the wound with Betadine-soaked kerlix dressing. The patient tolerated the procedure well.

Postoperatively, her hospital course was complicated by a prolonged ileus. She required a nasogastric tube through most of her hospital course. Once she was able to pass flatus she was slowly advanced to a regular diet. Intravenous antibiotics were continued for 10 days due to spillage of enteric content during the surgery. A negative pressure therapy device was placed on her open abdominal wound and she was discharged home with home health care. Upon follow up evaluation several months later she is doing well with no symptoms. Her abdominal incision closed completely without infection.

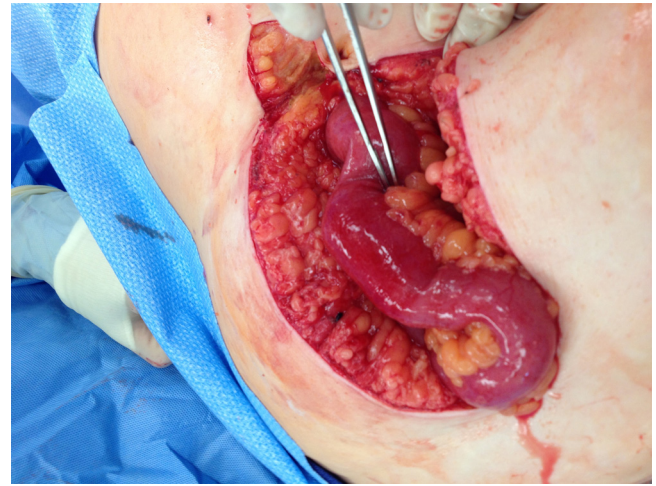


Fig. 3. Region of bowel wall hyperemia and edema where apricot was first palpated and intussusception reduced.



Fig. 4. Dried apricot on the left, and dried apricot on the right after 2 days of soaking in water. It is clear to see that problems with mastication and inability to chew the dried fruit into smaller particles can lead to a bowel obstruction.

3. Discussion

A bezoar is a concretion of indigestible particles that usually forms in the body of the stomach and progress down the digestive tract where they can cause a small bowel obstruction.⁹⁻¹² There are four major types of bezoars: trichobezoars, pharmacobezoars, lactobezoars, and phytobezoar. A trichobezoar is composed of hair and is associated with patients who have psychiatric disorders such as trichotillomania. A pharmacobezoar is usually composed of undigested pills from supplements and medications. Lactobezoars are more commonly seen in neonates from formation of milk curds in the stomach due to an immature digestive system. Finally, phytobezoars, which is what our patient had, are composed of fruits and vegetables and are the most common cause of bezoars.⁹

Several case reports exist about small bowel obstructions caused by phytobezoars.¹⁻⁷ A great variety of foods have been described to cause a bowel obstruction secondary to phytobezoars, including grapefruit, mango, green figs, pickled fruits and vegetables, brussels sprouts, broccoli, peppers, and dried fruits such as apricots, figs, peaches, and prunes. Phytobezoars are high cellulose containing foods are resistant to enzymatic break down in the human gastrointestinal chain, thus further contributing to intestinal obstruction.

The suspected pathoetiology is likely the expansion of fruit that is high in cellulose content and can absorb a large amount of fluid causing an obstruction in the smaller lumen of the small bowel as it makes its way down from the stomach (Fig. 4). The obstruction causes the wall of the intestine to become edematous telescoping on itself and as a result, causing an intussusception.

All bezoars are associated with several predisposing risk factors. Previous history of gastric bypass surgery is the highest risk factor, followed by mastication problems, diabetes mellitus, and trichotillomania. These risks are synergistically increased when combined together.¹⁰ Our patient had dentures, which most likely contributed to her not fully digesting the dried apricots by chewing causing her to swallow them almost whole.

The diagnosis of bezoars can be cumbersome because these cases are extremely unusual. In one study, only half of the studied phytobezoar obstructions were diagnosed using CT of the abdomen, about 20% were diagnosed using a small bowel follow through, and the rest were diagnosed via laparotomy.¹⁶ Ultrasound of the abdomen was not able to detect a single case of phytobezoar obstruction, and imaging with CT scan had to be obtained afterwards.¹⁹ Thus, a CT scan is most likely the best imaging modality in diagnosis of bezoar. A high index of suspicion for bezoar needs to exist in lieu of history of ingestion of dried fruit and symptoms of small bowel obstruction.

The treatment of small bowel obstruction caused by bezoars varies ranging from medical treatment with digestive enzymes such as cellulase and Coca-Cola soft drink, followed by gastroendoscopic removal if medical treatment alone did not help, and surgical removal of the obstruction.^{11–13} Although successful endoscopic disruption of small bowel bezoars has been reported, these procedures can only be alternatives to surgery.^{3,8} Endoscopic treatment includes mechanical lithotripsy with basket, fragmentation with polypectomy snare, fragmentation with biopsy forceps, injection or irrigation directly with Coca-Cola or cellulase.¹⁴ If endoscopy fails, surgery needs to be performed. Laparoscopic retrieval of phytobezoar is safe and effective.^{15–17} No literature exists on exact treatment of intussusception of small bowel obstruction secondary to a bezoar. In our case, a low midline laparotomy with a small enterotomy proved to be successful in reducing the intussusception and removing the bezoars.

4. Conclusion

Bezoars can lead to a small bowel intussusception. A high level of suspicion needs to exist in light of a history of recent dried fruit

ingestion, as these are notoriously difficult to diagnose with CT or ultrasound. A medical history of diabetes mellitus, gastric surgery, and mastication problems should serve as a signal to consider bezoar as the cause of the small bowel obstruction. CT is the best study modality to diagnose small bowel obstructions secondary to bezoars. Treatment varies from medical management with Coca-Cola and cellulase enzymes, followed by gastroenteroscopic disruption and retrieval. The definitive treatment of intussusception in an adult is surgery, nevertheless. Laparoscopic retrieval is a safe and effective method of bezoar removal, and is a safe alternative to open surgery.

In our case, the diagnosis of an intussusception was made via a CT scan and the patient was taken to the operating room for a laparotomy. We successfully removed the lead point of the intussusception via a small enterotomy and she did well postoperatively.

Conflict of interest

The authors declare that they have no competing interests. We have no personal or financial conflicts of interest related to the preparation and publication of this manuscript.

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Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contributions

Yana Puckett: writing manuscript; Jon Nathan: data collection, editing manuscript; Sharmila Dissanaik: writing and editing manuscript.

Key learning points

- Bezoars are an extremely rare cause of intussusception in adults.
- Risk factors for bezoar formation include previous gastric surgery, diabetes, and mastication problems.
- Computed tomography is a good imaging modality for visualization of small bowel obstruction secondary to bezoar.
- Open surgical removal of bezoar via enterotomy and manual reduction of the intussusception can be performed.

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