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Case Report

Successful Treatment of Small Bowel Phytobezoar Obstruction with Endoscopic Fragmentation Using Single-Balloon Enteroscopy

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SUMMARY

An 89-year-old male patient with a complex medical history presented with symptoms of postprandial bilious vomiting, abdominal discomfort, and constipation. Diagnostic imaging revealed a potential bezoar obstructing the distal ileum, which led to obstruction. The patient underwent a single-balloon enteroscopy, which successfully fragmented and removed the bezoar, relieving the obstruction.

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1. Introduction

Though rare, intestinal bezoars cause severe bowel obstruction, potentially leading to serious complications. While historically treated surgically, recent advances in endoscopy offer less invasive approaches. In this case report, we present a successful management of bezoar-induced obstruction in an 89-year-old male patient using single-balloon enteroscopy. The case highlights the potential for endoscopic intervention as an alternative to surgery in selected patients, and provides insights into the diagnosis, treatment, and prevention of bezoar-induced obstruction.

2. Case presentation

An 89-year-old male with a complex medical history, including type 2 diabetes mellitus, hypertension, peptic ulcer perforation requiring surgical intervention, and atrial fibrillation managed with non-vitamin K antagonist oral anticoagulants, presented to the emergency department with postprandial bilious vomiting lasting for three days, left upper abdominal pain, and constipation for six days. He had visited the emergency department twice before and was discharged after temporary relief of symptoms. However, the symptoms persisted and were accompanied by dizziness, shortness of breath, and decreased urine output. On the same day, he fell and suffered a head contusion and was subsequently admitted to our emergency department again.

The patient was assessed for the possibility of an acute abdomen. Upon physical examination, the abdomen was distended but remained soft upon palpation, without rebound tenderness. Percussion produced a tympanic sound. After nasogastric tube insertion, bile juice and feces-like content were found. Laboratory tests indi-

cated metabolic acidosis, the hemoglobin level of 10.3 g/dL, white blood cell (WBC) count at 16,300/uL, lactate concentration at 69.8 mg/dL, and C-reactive protein (CRP) at 5.4 mg/dL. Radiological investigations, including a cranial CT scan, chest radiograph, and abdominal CT scan, were performed. The cranial CT scan revealed a potential subdural hemorrhage, while the chest radiograph showed normal findings. The abdominal CT scan revealed bowel dilation, with the enhancement of the bowel wall appearing unattenuated. Feces-like material was observed in the distal jejunal or proximal ileal loops, causing a transitional zone of dilated bowel (Figure 1). However, no volvulus, strangulation, adhesive bands, or ascites were noted. Review of the patient's history revealed persimmon consumption, raising suspicion of a bezoar being retained in the small bowel.

After consultation with the general surgery team, a conservative management approach was recommended for the patient due to his advanced age, multiple comorbidities, and absence of indications for emergency surgery at the time. Empiric antibiotic therapy using flomoxef sodium, intravenous fluid resuscitation, and nasogastric decompression were initiated, which resulted in a decrease in lactate levels and improvement in symptoms. The patient was diagnosed with small bowel obstruction and admitted to the medical ward for ongoing evaluation and management.

However, the patient continued to experience fecal-smelling vomiting without any bowel movements, and there was no clinical improvement. This led us to perform a single-balloon enteroscopy (SBE) for diagnostic purposes and intervention for the suspected bezoar impaction. We administered a water enema and laxatives from the anal route to ensure that the stool content became liquid. The SBE was performed, revealing a large phytobezoar, 5 × 10 cm in size, formed due to persimmon consumption and lodged in the distal ileum. Snare fragmentation was successfully used to remove the bezoar and, and numerous ulcers were observed in the affected area. The total procedure time was about 5 hours, including advanc-

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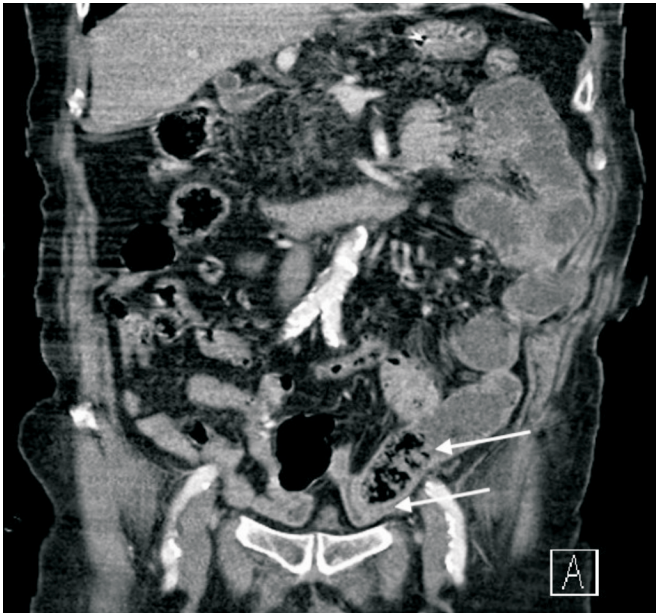


Figure 1. Feces-like content in distal jejunal or proximal ileal loops at LLQ of abdomen, with upstream jejunum dilatation (arrow head).

ing the scope into the distal ileum (Figure 2), fragmentation, and removing the debris from the ileus to the cecum. A subsequent small intestine series showed no remaining obstructive lesions or filling defects. Following the small bowel series, the patient was started on a rice soup diet and later advanced to a soft diet in the following days. With the resolution of the obstruction, the patient was discharged.

3. Discussion

Bezoars are masses of indigestible material that accumulate in the gastrointestinal tract. They are classified into different types based on the material that makes up the mass. The four main types of bezoars are phytobezoars, trichobezoars, pharmacobezoars, and lactobezoars.¹ Phytobezoars, the most common type, are formed from indigestible vegetable fibers. Trichobezoars, pharmacobezoars, and lactobezoars are formed from hair, medications, and milk curds and mucus, respectively. Other types include foreign body bezoars, formed from parasitic worms, plastic, paper, and polystyrene foam cups.²

According to a study, bezoars are responsible for 0.4%–4% of cases of mechanical intestinal obstruction. The clinical findings of bezoar-induced obstruction do not differ from those of mechanical intestinal obstruction due to other causes.³ The appearance and location of bezoars can be detected through various imaging methods, with CT scans or small bowel series typically used to diagnose obstructions.³

Treatment for bezoar-induced obstruction hinges on the bezoar's location. While non-surgical methods may suffice for some, intestinal bezoars, frequently causing obstruction, usually necessitate surgical removal. Laparoscopy presents a minimally invasive surgical option for managing such gastrointestinal bezoars.^{4,5} Endoscopic fragmentation has often been applied for gastric bezoars. Various types of endoscopy devices including biopsy forceps, alligator forceps, a polypectomy snare, a basket catheter, an argon plasma coagulation device and an electrohydraulic lithotripsy device have been used for fragmentation.^{6,7} Recently, there have been few reports discussing the successful treatment of intestinal bezoars using balloon-assisted enteroscopy.^{8–10}

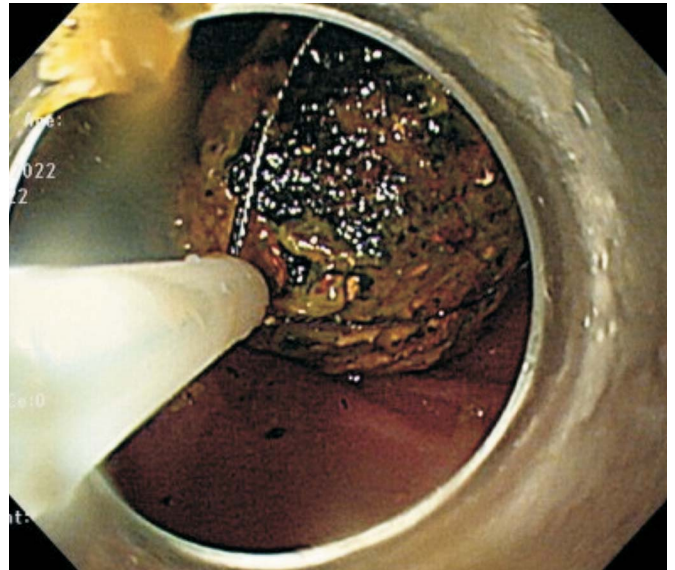


Figure 2. Snare fragmentation was successfully performed under single balloon enteroscopy assistance during the procedure.

Considering patient safety, no cases of bowel perforation during SBE for bowel obstruction have been reported in patients with no pre-existing inflammatory bowel wall pathology. Moreover, a prospective study observed no complications in diagnostic SBE procedures, further supporting its safety as a diagnostic tool.¹¹ In one case report, a 69-year-old patient was diagnosed with small bowel obstruction caused by a phytobezoar. Single-balloon enteroscopy was used to successfully diagnose and treat the obstruction by gradually fragmenting the bezoar into pieces using a snare and injecting a sodium bicarbonate solution into the lumen during the fragmentation process. The article proposes that balloon-assisted enteroscopy, a safe, effective, convenient, and minimally invasive technique, can serve as an alternative to surgery for addressing this clinical issue.¹²

To prevent bezoars, maintaining good gastric motility is crucial. Patients with risk factors, including prior gastric surgery, peptic ulcer disease, chronic gastritis, Crohn's disease, gastrointestinal tract carcinoma, dehydration, and hypothyroidism, require careful monitoring. Additionally, those with neuropathy or myotonic dystrophy, who are at higher risk, also warrant close observation.¹

4. Conclusion

An 89-year-old male with bezoar-induced terminal ileum obstruction was successfully treated using SBE, highlighting its potential as a safe and convenient approach. Further research and observations are needed to fully establish its effectiveness in such cases.

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