Trichobezoar Causing Small Bowel Obstruction: Case Report

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Abstract

We describe a case of a previously healthy 6-year-old-girl presenting with a one-day history of bilious emesis, periumbilical pain, and feeding intolerance. Initial abdominal radiographs were unremarkable. Following continued episodes of bilious vomiting, an upper GI series was performed, which demonstrated coating of a non-occlusive intraluminal mass within the proximal jejunum. Serial abdominal radiographs document movement of the mass from the left upper quadrant to the right lower quadrant along with progressive dilatation of the proximal small bowel, suggesting small bowel obstruction. An abdominal CT confirmed a small bowel obstruction at the level of the barium coated intraluminal mass. At surgery, the obstruction was discovered to be due to a jejunal trichobezoar. Upon further retrieval of clinical history, it was determined that the patient had a history of eating her hair and couch cushions. A jejunal bezoar is a rare cause of small bowel obstruction. It can be a diagnostic challenge and can lead to significant complications if there is a delay in diagnosis. Throughout this case, we describe the clinical presentation of the patient and demonstrate the progression of radiographic findings of a small bowel trichobezoar.

Introduction

Bezoars are collections or concentrations of indigestible material in the gastrointestinal tract that can impair motility and cause intestinal obstruction.[1] There are several bezoar subtypes depending on the predominant components. These include pharmacobezoars, which are mostly undigested tablets or semi-liquid masses of drugs, phytobezoars, which are caused by non-digestible plant material, lactobezoars, which are exclusively found in infants and contain undigested mild curds, and trichobezoars, which are caused by ingestion of large amounts of hair.[2,3] Trichobezoars are the most common, comprising 55% of all bezoars.[4] In addition to dietary and psychiatric history, previous gastric surgery can predispose to bezoar formation.[5,6]

Trichobezoars usually occur in patients with a history of trichotillomania, a compulsive behavior disorder of pulling one's hair, combined with trichophagia, the compulsive ingestion of hair.[7-9] Trichobezoars typically occur in the stomach and rarely affect the small intestine.[8] Common clinical symptoms include abdominal pain, nausea, vomiting, and weight loss.[7] However, the majority of trichobezoars present late due

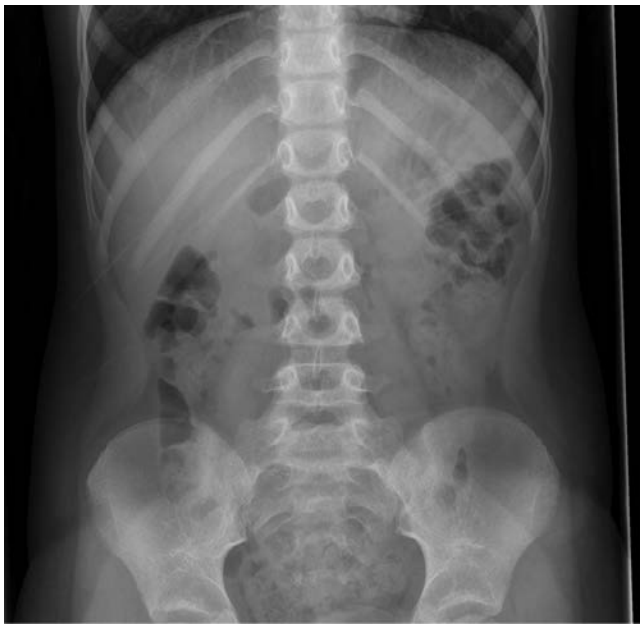

Figure 1. Normal abdominal radiograph on Day 1 of admission with no signs of bowel obstruction.

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to low clinical suspicion. Though intestinal obstruction due to trichobezoars is rare, as the bezoar progresses in size, obstructive symptoms along with hematemesis, perforation, or peritonitis may arise.[10]

Fluoroscopy, ultrasound, and computed tomography are all imaging modalities used to diagnose the presence of a trichobezoar. Although endoscopic management is available for proximal trichobezoars, surgical treatment is required for intestinal trichobezoars.

In this report, we describe a case of an atypical localization of a trichobezoar in a 6-year-old girl who presented with small bowel obstruction. The clinical presentation, radiographic findings, and clinical management are discussed.

Case Report

Our patient was a 6-year-old previously healthy, immunized, and developmentally normal female. She presented with a one-day history of 5-6 episodes of bilious emesis, periumbilical pain, and intolerance to fluids or solids. The emergency room physician was particularly struck by how foul the emesis smelled and how unusual it looked. She had two isolated incidents of nonbilious emesis in the past three weeks. The patient had no bowel movements for two days but was flatulent. The patient had a history of constipation. There was no family history of inflammatory bowel disease or celiac disease, but her mother did have a history of irritable bowel syndrome. On physical examination, the patient was afebrile and demonstrated periumbilical tenderness. Bowel sounds were present and her abdomen was nondistended. Laboratory investigations revealed a mild leukocytosis, with otherwise normal inflammatory markers. The patient was admitted into hospital, during which she had intermittent bilious vomiting. General pediatrics, gastroenterology, general surgery, and radiology services were involved in the care of this patient.

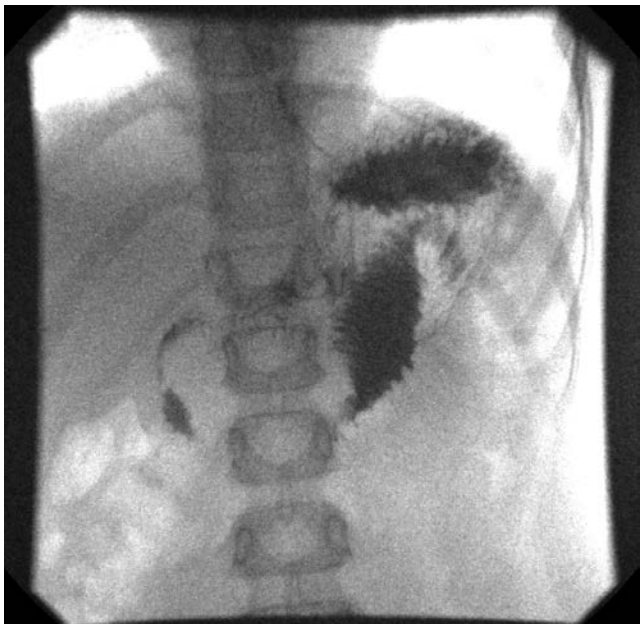

Figure 2. Upper GI series on Day 1 demonstrated slow transit with contrast in dilated proximal jejunum and mild mural thickening.

Imaging Findings

While admitted, numerous investigations (Abdominal x-ray, upper GI and small bowel series, abdominal ultrasound, upper GI endoscopy, and CT abdomen) were ordered to determine the etiology of her symptoms. On Day 1 of admission, an abdominal radiograph was normal, showing no signs of obstruction (Figure 1). An upper GI series follow-up demonstrated slow transit with contrast accumulating in a dilated jejunal loop with mild mural thickening (Figure 2). On Day 2, ultrasound examination demonstrated a mildly dilated, fluid-filled proximal bowel loop with mild wall thickening and no free fluid (Figure 3). The pediatric gastroenterology

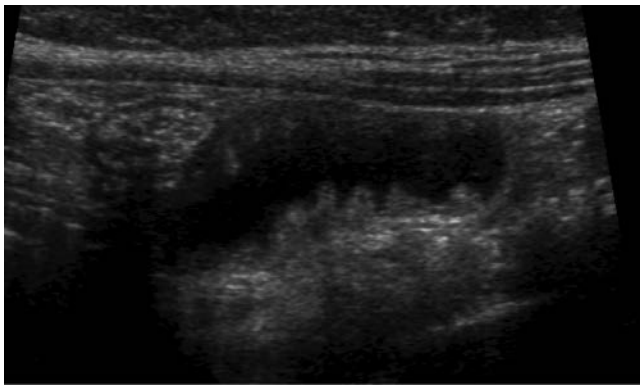

Figure 3. Sonographic image on Day 2 demonstrated mildly dilated, fluid-filled proximal bowel loop with mild wall thickening.

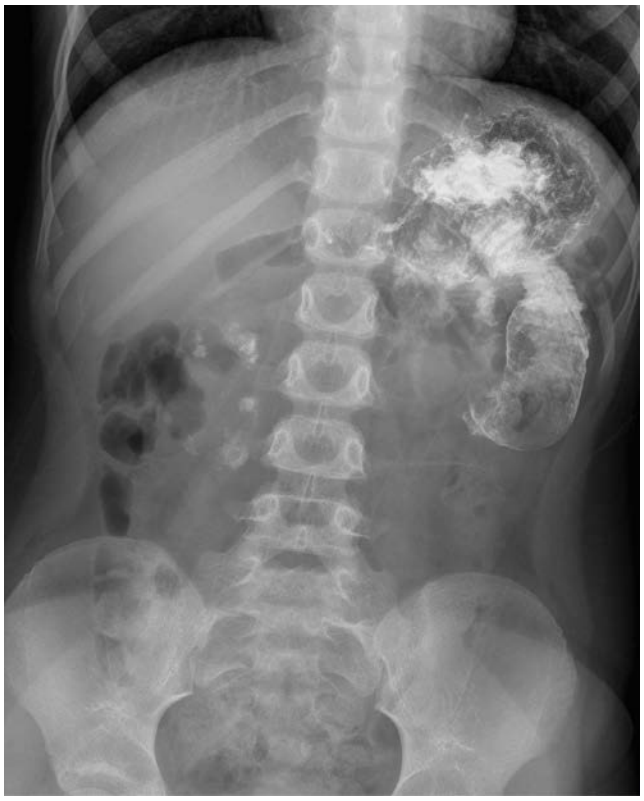

Figure 4. Abdominal radiograph on Day 3 demonstrated a barium-coated mass in the left upper quadrant and a few dilated proximal small bowel loops.

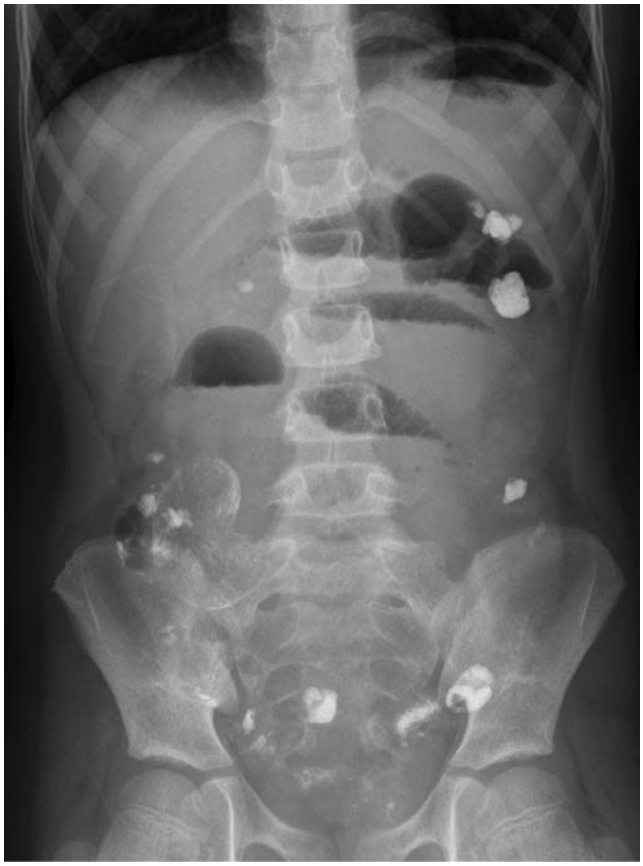

Figure 5. Abdominal radiograph on Day 5 noted multiple air fluid levels consistent with bowel obstruction and shift of intraluminal mass from LUQ to RLQ.

service was consulted at this point and an upper endoscopy was performed which was found to be normal. Radiograph performed on Day 3 following the upper endoscopy demonstrated a barium-coated mass in the left upper quadrant and a few dilated proximal small bowel loops (Figure 4). On the subsequent radiograph on Day 5, the barium coated intraluminal mass (from upper GI series) was noted to have moved from the left upper quadrant to the right lower quadrant and multiple central air fluid levels were present suggestive of bowel obstruction (Figure 5). No evidence of pneumatosis or pneumoperitoneum was seen on plain radiographs. On Day 6, a contrast-enhanced computed tomography (CE-CT) of the abdomen and pelvis was completed without oral contrast, as per normal protocols at our facility. This demonstrated a barium-coated mass (from upper GI study contrast) with a heterogeneous internal density in the distal jejunum/proximal ileum with no central contrast enhancement (Figure 6). There was a barium-coated "tail" extending distally from the mass (Figure 7). No gastric bezoar was noted.

General surgery was consulted, and the patient was taken to the operating room for a laparotomy. A periumbilical laparotomy was performed and a mass in the jejunum was discovered. Edema and dilatation of the proximal bowel was present, with collapse of the bowel distally (Figure 8). The mass could not be milked. A transverse enterotomy in the jejunum

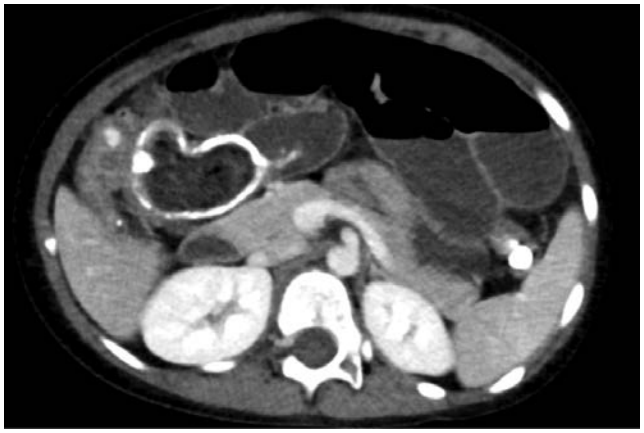

Figure 6. On Day 6, contrast enhanced CT was performed which showed a barium-coated mass with a heterogeneous internal density in the distal jejunum with no central enhancement.

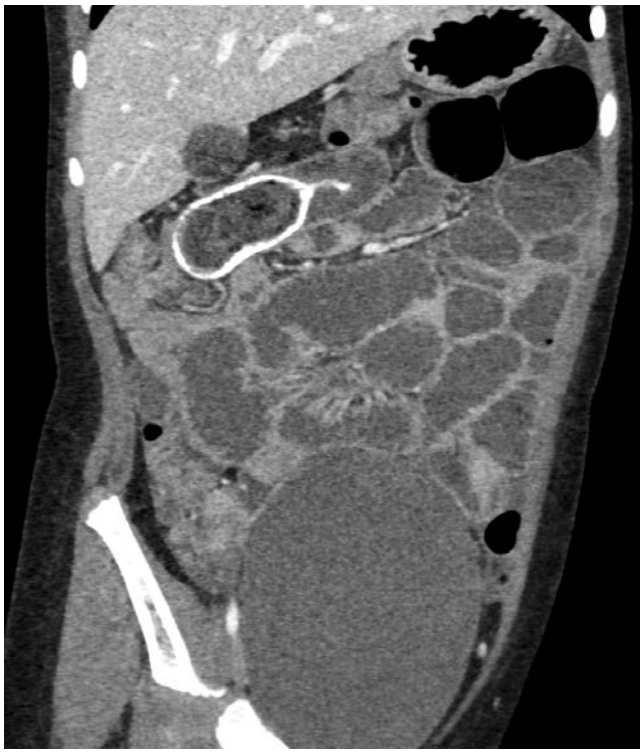

Figure 7. Coronal reformat demonstrated same barium-coated mass in distal jejunum in the RUQ with barium tail extending distally.

revealed a trichobezoar adhering to the mucosa (Figure 9). The trichobezoar was removed and bowel was closed. There were no other visceral abnormalities upon surgical investigation.

Post-operatively, upon further discussion with parents, clinicians were notified that their daughter had a history of eating her hair and the couch pillows one year ago. It was believed that she was no longer doing this. The patient had an uncomplicated post-operative course. She was seen a month later in the general surgery clinic for follow-up and was doing well. A psychiatric referral has been arranged.

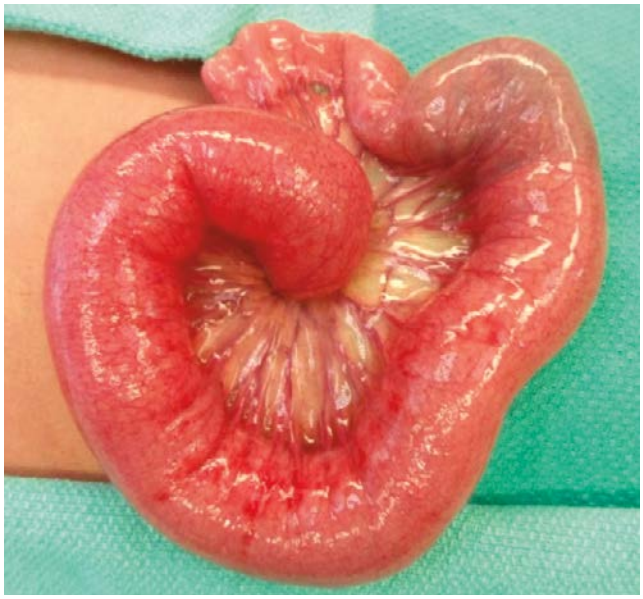

Figure 8. Intraoperative visualization of distal small bowel obstruction secondary to jejunal bezoar.

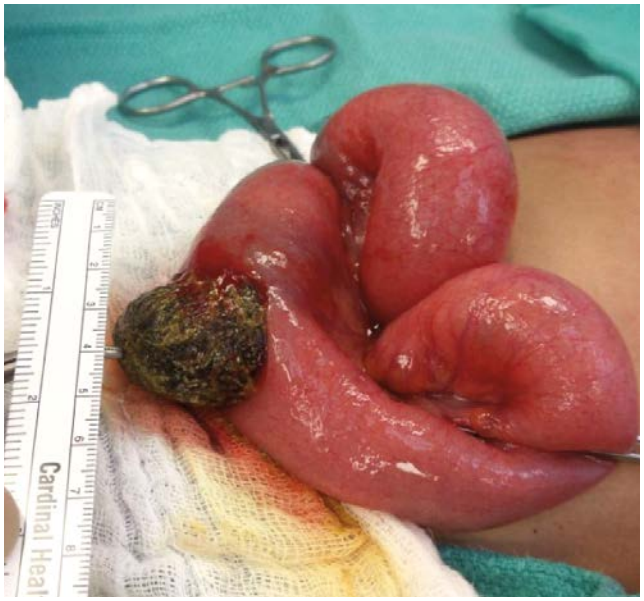

Figure 9. Transverse enterotomy for trichobezoar resection.

Discussion

Trichobezoars mostly originate at the level of the stomach, as the stomach is unable to move the hair out of the lumen because the friction surface is not sufficient for propulsion by peristalsis.[8] Detachment of a portion of a gastric bezoar, with subsequent distal movement in the GI system, results in the creation of a Small bowel bezoar.[9] Rarely are small bowel trichobezoars seen without associated gastric bezoars, as in our case.[9] The most common sites of obstruction for bezoars are the gastric outlet or duodenum, with obstruction at distal parts of the small bowel or large bowel being extremely rare.[9] Rapunzel syndrome is a reference to a specific distribution of a trichobezoar with a tail extending from the stomach to the jejunum, ileum, or the ileocecal junction.[4]

Common presenting symptoms of bezoars are abdominal pain, nausea, vomiting, weight loss, malnutrition, hematemesis, diarrhea, or constipation.[3] On physical examination, an epigastric mass may be palpated. In patients with suspected trichobezoar or history of trichotillomania, clinicians should examine patients for alopecia.[3]

Upon presentation, most patients will undergo a series of imaging studies to determine the etiology of their pain. On plain film, a mass of opaque soft tissue with a calcified rim in the region of the bezoar is often seen and if the bezoar causes bowel obstruction, air fluid levels with distended bowel loops may be noted.[7,9] Ultrasound and CT imaging are especially helpful in the diagnosis.[3] On ultrasound examination, a bright echogenic band and shadow over the region of the bezoar may exist.[3] CT scan is the most useful diagnostic modality because it reveals the localization of the obstruction and it demonstrates a heterogeneous, mottled intraluminal mass with low attenuation in the transition zone of the obstruction.[11] CT scan may also demonstrate a mottled gas pattern representing air bubbles within the bezoar.[12] As CT scans are high radiation dose modalities, they should be used judiciously given the rarity of this condition presenting either acutely or chronically. More recently, researchers have recommended magnetic resonance imaging (MRI) for the evaluation of small bowel-disease, which displays the bezoar as a luminal small bowel mass containing mottled and confluent low signal intensities on both T1 and T2 weighted images.[13]

Several management options exist for the treatment of bezoars. Endoscopy has been used in the diagnosis and management of proximal, small trichobezoars. However, it comes with a small risk of bowel perforation.[9] Although more invasive, both laparoscopy and laparotomy have been successfully utilized to treat bezoars.[14,15] Patients treated laparoscopically have been found to have fewer post-operative complications and reduced hospital stays. However, major drawbacks of laparoscopy have included abdominal spillage with concomitant contamination and longer operative times.[14,15] Regardless of the chosen surgical approach, it is mandatory to do a thorough investigation of the small intestine and the stomach looking for retained bezoars.[16] Conservative treatment is reserved for patients who have no signs of acute abdomen.[17] Although not often used, Huang et al. have described the successful use of laser ignited mini-explosive technique.[18]

Trichobezoars commonly occur in patients with psychiatric disturbances who chew and swallow their own hair, but only 50% have a history of trichophagia.[4] Although the diagnosis of trichobezoar is often discussed alongside trichotillomania and trichophagia, the exact relationship is often not statistically detailed. Frey et al. describe that only 30% of patients with trichotillomania will engage in trichophagia, and of these, only one percent will ingest their hair to the point of requiring surgical removal.[19] Nonetheless, psychiatric follow-up is recommended for patients presenting with a trichobezoar to prevent recurrences.

Conclusion

Trichobezoars are a rare clinical entity but should be on the differential for patients with abdominal complaints, particularly with a history of trichophagia or trichotillomania. The majority present in the stomach, with very few seen in the small bowel. Patients often present with nonspecific gastrointestinal symptoms and rarely present with an acute abdomen. Various imaging modalities can be used to localize and diagnose the bezoar. Surgical management is required for intestinal trichobezoars. Psychiatric referral is helpful in preventing recurrences.

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