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Laparoscopic Removal of Gastric Trichobezoar with Rapunzel Syndrome: A Case Report

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Abstract

Background: Trichobezoars are rare gastrointestinal masses formed from the ingestion of indigestible substances, most commonly hair. They are often associated with underlying psychiatric disorders such as trichotillomania or other compulsive behaviors. A particularly uncommon variant, Rapunzel syndrome, occurs when the trichobezoar extends from the stomach into the small intestine, which can lead to complications such as bowel obstruction, abdominal pain, nausea, vomiting, and weight loss.

Diagnosis typically involves imaging studies such as abdominal ultrasound, computed tomography (CT), or endoscopy. Surgical removal is often required for large trichobezoars or when obstruction occurs. Because these patients frequently have an underlying psychiatric condition, psychiatric evaluation and ongoing therapy are crucial to prevent recurrence. Multidisciplinary management, including gastroenterology, surgery, and mental health services, provides the best outcomes for these patients.

Case presentation: In this case report, we describe the clinical presentation, diagnostic approach, and surgical management of a large trichobezoar in a young female patient with a psychiatric disorder. Different surgical strategies are discussed, highlighting considerations for safe and effective removal.

Conclusion: This short report highlights the crucial role of a multidisciplinary team's collaborative efforts in preventing a potentially life-threatening outcome.

Keywords: Trichobezoar, Bowel obstruction, Trichophagia, Obsessive–compulsive disorder, Rapunzel syndrome.

Introduction

Bezoars are aggregates of indigestible materials that accumulate within the gastrointestinal tract. Based on their composition, they are classified as phytobezoars (plant fibers), pharmacobezoars (medications such as antacids), lactobezoars (milk products), and trichobezoars, which are composed primarily of hair. Bezoars are most commonly located in the stomach, particularly in individuals with a history of gastric surgery. However, in patients without prior surgical intervention, underlying psychiatric conditions are frequently implicated.[1]

Trichobezoars represent the most common type of bezoar in humans and are composed predominantly of ingested hair, though other indigestible materials may also be present. Unlike other bezoar types, their formation is not associated with gastrointestinal motility disorders but is strongly linked to psychiatric conditions. They are most often observed in young females and typically arise from trichophagia, a compulsive behavior involving hair ingestion, which is commonly preceded by trichotillomania, the recurrent urge to pull out one's own hair.[2,3]

Additional psychiatric associations include post-traumatic stress disorder, often related to childhood trauma or neglect, as well as mood disorders. [4,5] While the diagnostic evaluation and surgical management of trichobezoars are well established, the psychiatric mechanisms underlying their development remain poorly understood and are largely inferred from anecdotal evidence. [6]

Case

An 18-year-old female presented with a one-year history of intermittent left upper abdominal pain associated with occasional non-projectile vomiting containing food particles. She reported early satiety, loss of appetite, and dull, aching abdominal pain that was continuous, worsened after food intake, and relieved by vomiting or medications.

The patient had a known history of obsessive-compulsive disorder (OCD) with trichophagia and trichotillomania since childhood, managed with daily fluoxetine. She also reported amenorrhea for six months, for which gynecological evaluation was performed, and a urine pregnancy test was negative. There was no history of diabetes mellitus, hypertension, or prior abdominal surgery.

On examination, the patient appeared ill-built and malnourished, weighing 40 kg, with pallor noted. Vital signs were stable, and she was optimized preoperatively. Abdominal inspection revealed a flat abdomen with a visible swelling in the epigastric and left hypochondrial regions, roughly conforming to the shape of the stomach (greater curvature), moving with respiration. The overlying skin was normal, with no scars, sinus, or engorged veins.

On palpation, a firm, smooth, non-tender mass measuring approximately 3 × 3 cm was noted in the epigastrium and left hypochondrium, moving with respiration. The upper border of the swelling was not palpable.

USG WA -A large well defined hyperechoic structure within the gastric lumen of approx. 8x8 cm present with no internal vascularity.

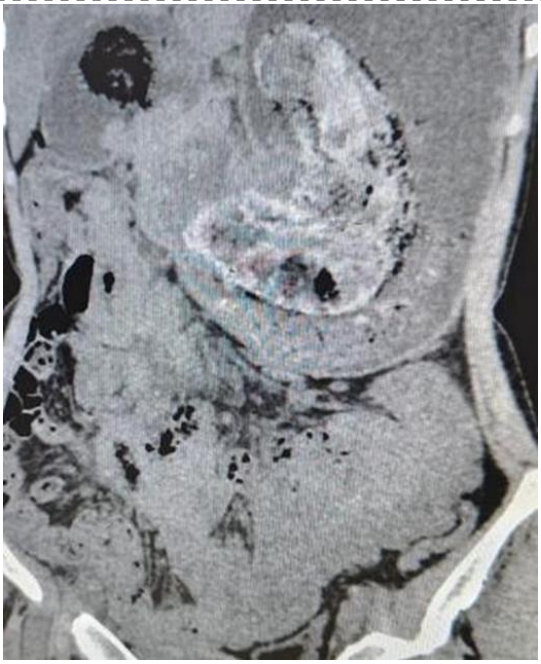

Figure 1:

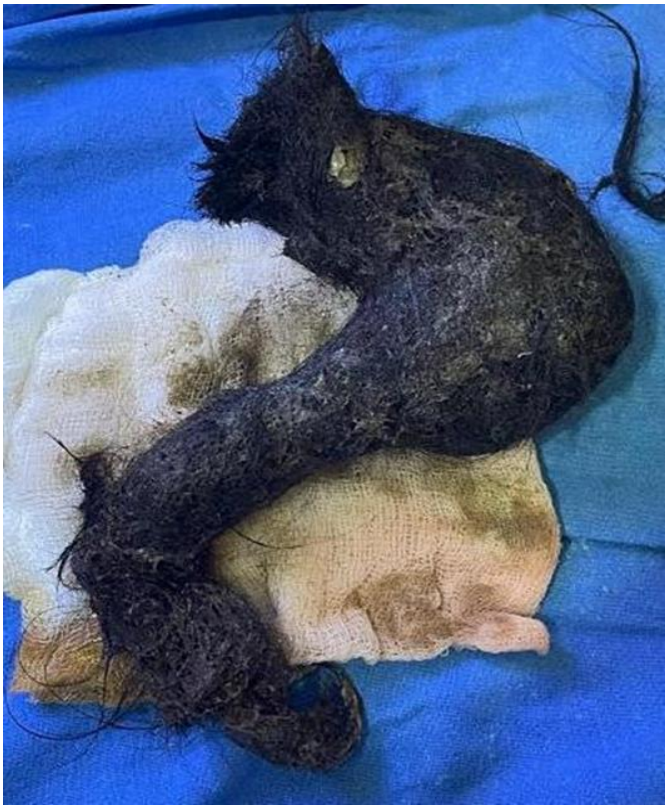

Figure 2:

NCCT WA showing a mass in stomach Excised trichobezoar of size 23*14 cm and 6cm height. Laparoscopic port sites with pfaennensteil incision

Figure 3:

Figure 4:

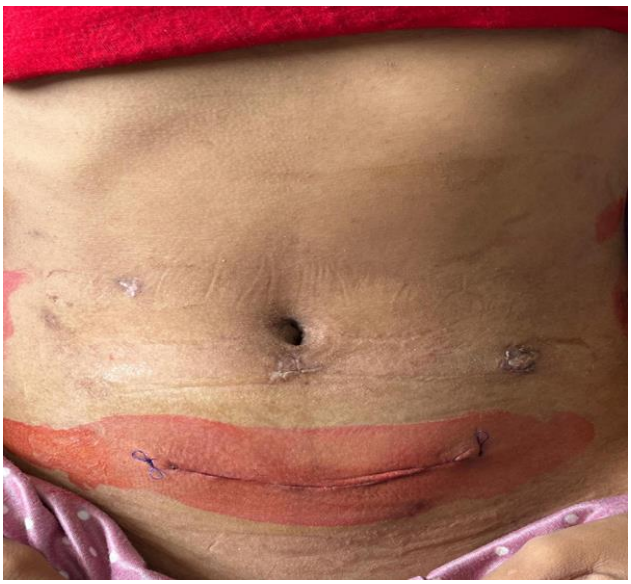

Figure 5: Intra op picture showing trichobezoar Post op day 12 pic of operated site.

CECT W/A S/O- Large heterogenous intraluminal mass with mottled gas pattern in the stomach, extending through the pylorus upto second part of duodenum with similar appearing in the jejunum at the right lumbar region- suggestive of trichobezoar.

Discussion

Bezoars are accumulations of indigestible material within the gastrointestinal tract, most commonly occurring in the stomach, with potential extension into the small intestine. Based on composition, they are classified as phytobezoars (plant material), trichobezoars (hair), lactobezoars (concentrated milk products), pharmacobezoars (medications), and food bolus bezoars. Among these, trichobezoars are rare and predominantly affect young females with underlying psychiatric disorders. They arise from pathological hair ingestion, which remains undigested in the stomach due to its smooth surface and resistance to peristalsis. [7] Only approximately 1% of individuals with trichophagia progress to develop a trichobezoar. [8,9]

Trichobezoars are uncommon, and most evidence comes from isolated case reports and small case series. A 120-year systematic review identified 1,248 reported cases, underscoring the rarity of this condition.[10] Surgical removal remains the mainstay of treatment for large trichobezoars. While laparoscopic and laparoscopic-assisted techniques have been increasingly described, historically, open gastrotomy has been the most successful approach. Reported success rates for laparoscopic extraction vary, with some reviews noting approximately 75% success; however, the total number of published laparoscopic cases remains limited. [11]

Trichobezoars typically form in the stomach, often near the pylorus, where gastric peristalsis promotes entanglement and progressive accumulation of hair. The masses are usually coated with gastric mucus, giving them a smooth, shiny appearance. Gastric acid exposure alters hair proteins, resulting in a characteristic dark coloration, while trapped food particles may decompose, occasionally causing halitosis. [12,13]

Clinical presentation depends on the size and extent of the bezoar. Patients may remain asymptomatic for years, with symptoms appearing as the mass enlarges and causes obstruction. Common manifestations include epigastric pain, nausea, vomiting, early satiety, weight loss, and a palpable abdominal mass, which is the most frequent presenting sign.[14] Complications can include gastric ulceration, bleeding, perforation, intestinal obstruction, intussusception, obstructive jaundice, and acute pancreatitis.[15,16] Malabsorption may lead to iron-deficiency anemia, vitamin B12 deficiency, protein-losing enteropathy, and failure to thrive.

Diagnostic evaluation relies on clinical suspicion, imaging, and endoscopy. Contrast-enhanced radiography, ultrasonography, computed tomography (CT), and upper gastrointestinal endoscopy are commonly employed. While radiation exposure is a consideration, particularly in pediatric patients, CT imaging is highly valuable in determining the size, extent, and multiplicity of bezoars and is critical for preoperative planning. [17]

Management strategies include endoscopic fragmentation, laparoscopic extraction, or open surgery. Endoscopic techniques, sometimes aided by chemical dissolution, may be effective for small bezoars but are generally inadequate for large or complicated trichobezoars. Extensive masses have traditionally required laparotomy; however, with advancing expertise, laparoscopic removal has become a feasible and minimally invasive alternative in selected cases, although it requires considerable surgical skill. [18–20]

In the present case, laparoscopic gastrotomy was successfully performed to remove a large trichobezoar

extending from the stomach into the third part of the duodenum. The mass was extracted through a Pfannenstiel incision, and the postoperative course was uneventful, with return of bowel function by postoperative day five. Early psychiatric intervention was initiated to address the underlying behavioral disorder and reduce the risk of recurrence.

If you want, I can combine this entire discussion with your introduction and case presentation into a single, fully formatted, journal-ready case report. This would make it ready for submission with smooth transitions between sections. Do you want me to do that?

Conclusion

Trichobezoars are rare gastrointestinal masses composed predominantly of ingested hair, most commonly observed in adolescent females with underlying psychiatric disorders such as trichotillomania, trichophagia, and pica. While often asymptomatic in the early stages, these masses may progressively enlarge, potentially leading to serious complications, including gastric outlet obstruction, perforation, peritonitis, and other life-threatening conditions if diagnosis and treatment are delayed.

Upper gastrointestinal endoscopy is pivotal in confirming the diagnosis and evaluating the size and extent of the bezoar, particularly in Rapunzel syndrome, where the mass extends into the small intestine.

Surgical intervention remains the treatment of choice for large or complicated trichobezoars, whereas endoscopic management may be feasible for smaller lesions. However, recurrence is a significant concern, highlighting the importance of identifying and addressing the underlying psychiatric and behavioral disorders.

Successful management requires a multidisciplinary approach that extends beyond surgical removal. Early diagnosis, timely surgical intervention, and long-term psychiatric follow-up are essential to ensure favorable outcomes and prevent recurrence.

If you want, I can now integrate this with your previous introduction, case presentation, and discussion into a single, polished, journal-ready case report that flows seamlessly from background to conclusion. This would be fully ready for submission.

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