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Laparoscopic Removal of a Large Gastric Trichobezoar Causing Gastric Outlet Obstruction Following Failed Endoscopic Retrieval

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Abstract

Large gastric trichobezoars are uncommon and may result in gastric outlet obstruction. Endoscopic extraction is often unsuccessful in cases involving large, densely compacted masses, necessitating surgical intervention. A previously healthy 22-year-old woman presented with acute severe epigastric pain and recurrent vomiting, preceded by an 18-month history of intermittent epigastric discomfort. Non-contrast computed tomography of the abdomen and pelvis revealed a large intragastric mass with a characteristic mottled gas pattern, causing gastric outlet obstruction. Upper gastrointestinal endoscopy confirmed the presence of a trichobezoar; however, attempted endoscopic extraction was unsuccessful due to its large size. The patient subsequently underwent laparoscopic gastrotomy, during which a large trichobezoar occupying the gastric body and a second, smaller trichobezoar lodged at the pylorus were identified. Both bezoars were mobilized and secured within an endoscopic retrieval bag under laparoscopic visualization, followed by extraction through a Pfannenstiel incision. The gastric lumen was thoroughly inspected and irrigated, and the gastrotomy was closed intracorporeally in two layers. The postoperative course was uneventful, and the patient was discharged on postoperative day five following psychiatric evaluation. Subsequent assessments at two weeks and one month demonstrated satisfactory clinical recovery and wound healing, with continued psychiatric follow-up.

Laparoscopic gastrotomy with protected specimen extraction through a Pfannenstiel incision represents a feasible surgical option for selected patients with large gastric trichobezoars following unsuccessful endoscopic retrieval. Thorough intraoperative inspection for additional bezoars and postoperative psychiatric assessment are important components of comprehensive management.

Categories: Other, General Surgery, Gastroenterology
Keywords: endoscopy, gastric outlet obstruction, gastrotomy, laparoscopic surgery, trichobezoar

Introduction

Trichobezoars are uncommon gastrointestinal bezoars composed of accumulated ingested hair, predominantly affecting adolescent and young adult females with a history of trichophagia. Clinical manifestations are frequently non-specific, potentially resulting in delayed diagnosis until the bezoar enlarges sufficiently to cause gastrointestinal obstruction or other complications [1-3]. Endoscopic extraction represents a minimally invasive treatment option, particularly for small and accessible trichobezoars. However, its effectiveness is limited in cases involving large or densely compacted masses, for which surgical removal by laparoscopic or open gastrotomy is generally required [4].

We present a case of a 22-year-old female with a large gastric trichobezoar causing gastric outlet obstruction after unsuccessful endoscopic retrieval. The patient was successfully managed by laparoscopic gastrotomy, with protected specimen extraction using an endoscopic retrieval bag through a Pfannenstiel incision. Intraoperative inspection also revealed a second, smaller bezoar lodged at the pylorus. These findings highlight the importance of careful intraoperative inspection for additional bezoars and controlled specimen extraction during laparoscopic management.

Case Presentation

A 22-year-old previously healthy woman presented to the emergency department with severe epigastric pain of one day's duration, associated with recurrent episodes of vomiting. She reported an approximately 18-month history of intermittent epigastric pain. She denied fever, changes in bowel habits, urinary symptoms, gastrointestinal bleeding, or a history of foreign-body ingestion. On clinical examination, the patient was conscious, alert, and hemodynamically stable. She appeared reserved and was reluctant to engage in verbal communication. Abdominal examination revealed a soft abdomen with localized epigastric fullness and tenderness, without signs of peritoneal irritation. Laboratory investigations revealed a white blood cell count of 8.4×10^9/L (reference range: 4-10×10^9/L), a hemoglobin level of 13 g/dL (reference range: 13-17 g/dL), and a mildly elevated serum amylase level of 246 U/L (reference range: 25-115 U/L). The mild elevation in serum amylase was not accompanied by clinical or radiologic evidence of acute pancreatitis.

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Liver function tests were within normal limits.

Computed tomography (CT) of the abdomen and pelvis demonstrated a large intragastric mass with a characteristic heterogeneous mottled appearance and entrapped air, consistent with a gastric bezoar causing gastric outlet obstruction (Figures *1*, *2*). Subsequent upper gastrointestinal endoscopy confirmed the presence of a gastric trichobezoar. However, attempted endoscopic extraction was unsuccessful because of the large size of the mass.



FIGURE 1: Axial abdominal CT.

Axial non-contrast CT image demonstrating a large intragastric heterogeneous mass with a characteristic mottled gas pattern, consistent with a gastric trichobezoar. Gastric outlet obstruction was diagnosed based on the combined clinical and radiologic findings.



FIGURE 2: Coronal abdominal CT.

Coronal non-contrast CT image demonstrating a large intragastric mass with entrapped gas, consistent with a gastric trichobezoar.

Following surgical consultation, the patient underwent laparoscopic removal of the gastric trichobezoar under general anesthesia in the French position. Pneumoperitoneum was established using a Veress needle at Palmer's point. An 11-mm infraumbilical camera port was inserted, followed by a 12-mm working port in the left lower quadrant and a 5-mm working port in the right lower quadrant. Laparoscopic inspection confirmed that no entry-related injury had occurred. An anterior gastrotomy was created using a harmonic device (Guaynabo, PR: Ethicon Endo-Surgery, LLC). A large trichobezoar occupying the gastric body was identified and delivered through the gastrotomy (Figures *3A*, *3B*).

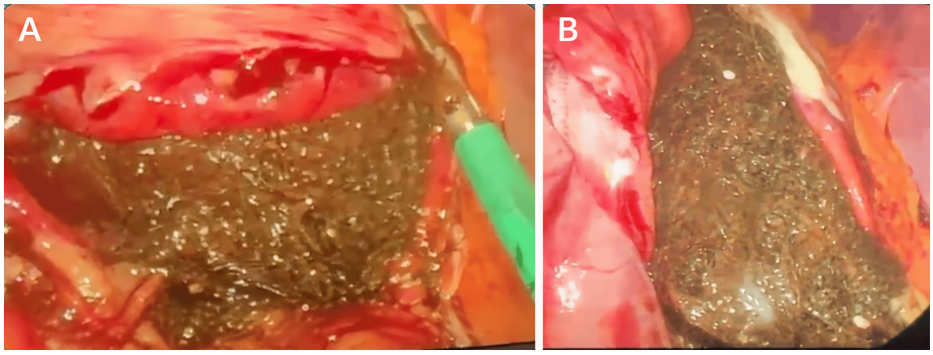


FIGURE 3: Laparoscopic view of the gastric trichobezoar.

(A) The trichobezoar visualized through the anterior gastrotomy. (B) An additional laparoscopic view of the same trichobezoar during mobilization.

The large trichobezoar was placed intact, without fragmentation, in an endoscopic retrieval bag (Inzii Retrieval System; Rancho Santa Margarita, CA: Applied Medical Resources Corporation). The bagged specimen was extracted under direct visualization through a Pfannenstiel incision. Gross examination revealed a large, densely compacted hair mass conforming to the anatomical configuration of the stomach (Figure *4*). After the Pfannenstiel fascia was closed and pneumoperitoneum was re-established, further inspection of the stomach revealed a second, smaller trichobezoar lodged at the pylorus, which was removed through the 12-mm port site. The gastric lumen was thoroughly irrigated with normal saline, and the gastrotomy was closed intracorporeally in two layers. The remaining incisions were then closed in the standard manner.



FIGURE 4: Gross appearance of the gastric trichobezoar following complete surgical extraction.

The patient experienced an uneventful postoperative course and underwent psychiatric evaluation prior to discharge. She was discharged home on postoperative day five in stable clinical condition. Subsequent follow-up assessments were performed in the surgical outpatient clinic at two weeks and one month postoperatively. At both visits, the patient demonstrated satisfactory clinical recovery, with adequate healing of the surgical wounds. She continues to receive regular follow-up care through the psychiatric outpatient clinic.

Discussion

Trichobezoars are uncommon accumulations of ingested hair within the gastrointestinal tract, predominantly affecting adolescent and young adult females. They are typically associated with trichophagia, which may occur in individuals with trichotillomania or other underlying psychiatric or behavioral conditions. Because human hair is resistant to digestion and cannot be effectively propelled through the gastrointestinal tract by gastric peristalsis, it may progressively accumulate within the stomach, forming a densely compacted mass that increases in size over time [1,2].

The clinical presentation of gastric trichobezoars is frequently non-specific, with patients commonly reporting chronic epigastric pain, early satiety, nausea, and intermittent vomiting. Consequently, diagnosis

may be delayed until the mass becomes sufficiently large to produce mechanical obstruction or other complications. These may include gastric outlet obstruction, mucosal ulceration, gastrointestinal bleeding, and gastric perforation. Extension of a gastric trichobezoar beyond the pylorus into the small intestine may result in Rapunzel syndrome [3]. In the present case, the patient experienced intermittent epigastric pain for approximately 18 months before presenting with acute symptoms of gastric outlet obstruction, highlighting the potential for delayed recognition.

Computed tomography (CT) and upper gastrointestinal endoscopy play important roles in the diagnosis of gastric trichobezoars. CT typically demonstrates a well-defined intraluminal mass with a heterogeneous, mottled appearance and entrapped air, while upper gastrointestinal endoscopy allows direct visualization and confirmation of the diagnosis. Although endoscopic fragmentation and retrieval may be attempted in selected patients with smaller trichobezoars, the effectiveness of this approach is limited in cases involving large, densely compacted masses. Consequently, surgical removal is generally required for large or complicated gastric trichobezoars [5,6].

Open gastrotomy through laparotomy has traditionally been the most established surgical approach for the removal of large gastric trichobezoars, allowing direct extraction and assessment of the gastrointestinal tract for additional bezoars. However, laparoscopic and laparoscopic-assisted approaches have increasingly been described as feasible alternatives in appropriately selected patients. Potential advantages of minimally invasive surgery include reduced abdominal wall trauma, smaller incisions, improved cosmetic outcomes, and potentially faster postoperative recovery. These potential advantages are based on previously published reports and were not comparatively assessed in the present case.

Nevertheless, these approaches may be technically challenging, particularly when managing large, densely compacted trichobezoars. Intraoperative concerns include difficult specimen manipulation, fragmentation of the hair mass, intraperitoneal contamination, and incomplete retrieval. Careful operative planning and controlled specimen extraction are therefore important considerations [7-9].

In the present case, laparoscopic gastrotomy was performed following unsuccessful endoscopic extraction of a large gastric trichobezoar causing gastric outlet obstruction. The larger trichobezoar was secured within an endoscopic retrieval bag and extracted through a Pfannenstiel incision, providing a controlled method of specimen retrieval while limiting the need for a conventional upper abdominal laparotomy [8]. After pneumoperitoneum was re-established, inspection of the gastric lumen revealed a second, smaller trichobezoar lodged at the pylorus, which was removed through the 12-mm port site. This finding emphasizes the importance of careful intraoperative inspection to identify additional bezoars that could otherwise remain undetected and potentially contribute to persistent or recurrent obstructive symptoms [6]. Although the patient experienced an uneventful short-term recovery, this single case does not permit conclusions regarding the comparative effectiveness of laparoscopy versus open surgery.

Psychiatric evaluation and ongoing behavioral management are important components of comprehensive treatment, particularly when trichophagia or an associated psychiatric disorder is identified. Surgical removal addresses the mechanical complication but does not necessarily eliminate the underlying behavior responsible for bezoar formation. Therefore, multidisciplinary management involving surgical and psychiatric services may help address factors associated with recurrence [6]. In the present case, psychiatric assessment was performed before discharge, and the patient continued regular psychiatric follow-up. Her postoperative recovery was uneventful, with satisfactory clinical outcomes documented at two weeks and one month following surgery. Nevertheless, longer-term follow-up is required to assess sustained recovery and potential recurrence.

Conclusions

Large gastric trichobezoars should be considered in young female patients presenting with chronic upper gastrointestinal symptoms and recurrent vomiting. When endoscopic extraction is unsuccessful, laparoscopic gastrotomy with protected specimen retrieval may represent a feasible option in appropriately selected patients, with successful short-term outcomes in this case. Careful intraoperative inspection for additional bezoars, controlled specimen handling to minimize intraperitoneal contamination, and postoperative psychiatric evaluation with continued follow-up are important components of comprehensive management. Longer-term follow-up is required to assess sustained recovery and potential recurrence.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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Drafting of the manuscript: Hala Abdulrahman Albadrani, Amal Alqarafi

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Disclosures

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