Nailed It! A Case Report of Multiple Metallic Foreign Body Ingestion

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ABSTRACT

Intentional foreign body ingestion is often seen in individuals with psychiatric disorders, particularly mood and personality disorders. This case illustrates the substantial healthcare resources involved in managing foreign body ingestion, which may require multiple endoscopic procedures and intensive care monitoring. Endoscopic removal, while minimally invasive, carries risks such as perforation and bleeding, particularly in the upper gastrointestinal tract. Surgical intervention in psychiatric patients can inadvertently reinforce maladaptive behaviors, complicating management strategies. Therefore, a collaborative approach between psychiatry and gastroenterology is essential to address both the medical and psychological aspects of care.

KEYWORDS: intentional foreign body ingestion; endoscopic removal; healthcare cost; self-injurious behavior

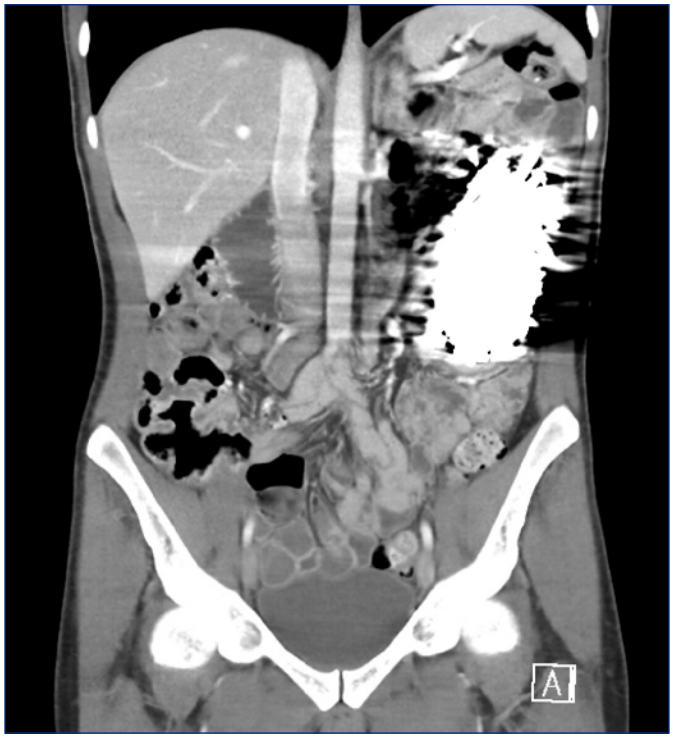
INTRODUCTION

Intentional foreign body ingestion is most often seen in patients with underlying psychiatric disorders. These patients may ingest non-food items impulsively as a means of managing psychological distress, or as a form of self-harm or attention-seeking behavior. The healthcare system faces significant challenges when managing such cases, given the complex interplay between physical and mental health concerns. This case report describes a 30-year-old male who presented with chronic gastrointestinal symptoms and was found to have ingested over 100 foreign objects. Multiple endoscopic procedures were required to safely remove the objects, underscoring the extensive medical resources and potential complications associated with such cases. This particular case highlights the importance of a comprehensive treatment plan involving both psychiatric and gastroenterological interventions to address the physical and psychological aspects of intentional foreign body ingestion.

CASE REPORT

A 30-year-old male with a past medical history of appendectomy presented to the emergency department with epigastric abdominal pain as well as associated intermittent nausea and hematemesis for about six months. He reported the ability to pass flatus, had regular bowel movements, and denied any unintentional weight loss. Vital signs revealed an afebrile, normotensive patient with tachycardia. Physical exam was notable for left upper quadrant and epigastric tenderness without any rebound or guarding. Initial labs were significant for a white blood cell count of 10.7 x 10^9 /L and positive urine toxicology screen for amphetamines and opiates. Initial computed tomography (CT) scan revealed innumerable foreign bodies distributed throughout the stomach, small intestine, and large bowel that appeared to be nails, razors, and bobby pins [**Figure 1**] without evidence of obstruction or perforation.

Figure 1. Computed tomography scan demonstrating numerous metallic objects within the gastrointestinal tract.



Gastroenterology was consulted, initially recommending conservative management with high-dose laxative to aid passage with daily abdominal X-rays to monitor progress. Initial X-ray revealed that the majority of metallic objects were confined to the gastric body [**Figure 2**]. Despite multiple days

Figure 2. Abdominal radiograph demonstrating the metallic foreign bodies outlining the gastric body.

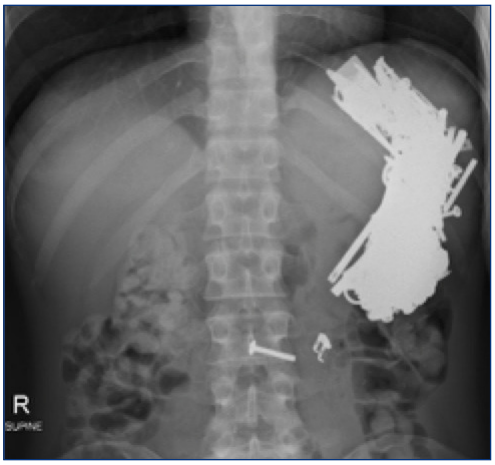


Figure 3. Metallic objects visualized in the stomach on initial esophagogastroduodenoscopy.

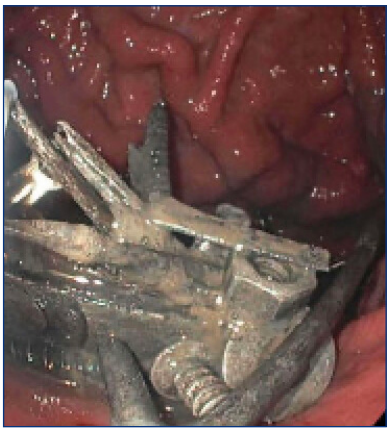


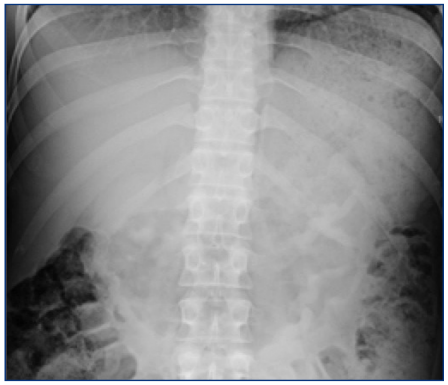
Figure 4. Successful removal of 60 metallic objects including screws, nuts, bolts and keys. Procedure had to be stopped given duration with plan for repeat endoscopy the following day for further removal.

of conservative management, the foreign bodies remained in the stomach and an esophagogastroduodenoscopy(EGD) was planned for removal. Upon intubation of the stomach, over 100 metallic objects were discovered, including magnets, nails, screws, bolts, a switchblade knife, and tweezers [**Figure 3**].

A total of 60 objects were successfully removed on the initial endoscopy [**Figure 4**]; however, the procedure was aborted due to the prolonged duration. Repeat EGD was performed the following day with an additional 20 objects removed using Roth net and snare. The patient required intubation during these procedures and was monitored in the surgical intensive care unit (SICU). Despite a week of conservative management, daily abdominal X-rays [**Figure 5**] continued to demonstrate high foreign object burden in the stomach. Two more EGDs were performed a week later with an additional 30 objects retrieved. At this time, one superficial, non-bleeding gastric ulcer in the incisura was appreciated. Two weeks after the final EGD, abdominal imaging [**Figure 6**] demonstrated clearance of all metallic objects from the gastrointestinal tract. The Psychiatry service evaluated the patient, and he was ultimately diagnosed with stimulant-induced psychosis. Subsequently, he was admitted to the inpatient Psychiatry unit for further care and management of his psychiatric condition.

Figure 5. Abdominal radiograph monitoring the migration of foreign bodies through the gastrointestinal tract.

Figure 6. Final inpatient abdominal radiograph 14 days after final endoscopic intervention.



DISCUSSION

Intentional foreign body ingestions are relatively infrequent and typically occur in individuals with psychiatric disorders. In these patients, psychiatric symptoms may contribute to impulsive or maladaptive behaviors that lead to the ingestion of non-food items, either as a form of distress management or a cry for help.[1] The hospital course of this patient underscores the significant resources involved in managing intentional foreign body ingestion. Throughout his 45-day hospitalization, the patient received 37 abdominal X-rays, required SICU level of care and observation for airway protection, four EGDs, as well as consultation of surgery, gastroenterology, and psychiatry. As intentional foreign body ingestion is relatively rare in the adult population, the healthcare system incurs substantial costs for each case, particularly when repeated procedures are indicated. A review of the literature estimates that the cost of managing foreign body ingestion can exceed $5,000 per patient, with added expenses for

diagnostic imaging, endoscopy, and potential surgical interventions.[2] In this case, the cost of the hospitalization was likely over $100,000 given the length of his hospitalization and the multiple procedures required.

Endoscopic removal of foreign bodies is a common technique used in both the gastrointestinal and airway tracts, as it allows for a minimally invasive approach. Studies suggest 20% of foreign body cases require endoscopic removal and account for 4% of urgent endoscopies.[3] Criteria for very high-risk foreign body ingestion that require urgent endoscopic extraction, regardless of full stomach, include foreign body in the upper third part of the esophagus, complete esophageal obstruction, or sharp foreign body, batteries, or magnets. In this case, given initial radiographic findings showed sharp foreign bodies it would have been appropriate for urgent endoscopic intervention. However, if the sharp foreign body has passed into the stomach without perforation of the esophagus, the risk of perforation is decreased and it is recommended for extraction if the foreign body fails to pass the pylorus in 3–4 weeks.[3] Given this patient's unclear ingestion timeline, it was appropriate to start with conservative management and escalate to endoscopic intervention after observation. The risk of complications during removal, such as perforation, bleeding, or mucosal injury, is present, particularly in cases where the object is large, sharp, or impacted.[4] Complications are more likely to occur when attempting removal in the upper gastrointestinal tract, especially when there are prior conditions like strictures or inflammation. To reduce these risks, tools like the Roth Net and Alligator forceps are commonly recommended.[5] The use of a fluoroscopy-guided endoscope or direct visualization techniques can also help in improving accuracy and minimizing injury. Overall, while endoscopic removal is generally safe, it requires appropriate skill and preparation, and the choice of tools depends on the type and location of the foreign body.

In addition to complex interventional management, foreign body ingestion involves multidisciplinary care. Due to considerable artifacts on initial CT imaging, it was unclear on the exact location of the foreign body; the gastric body where gastroenterology could provide intervention or the colon where the patient may need general surgery intervention. The first X-ray provided clarity of the objects' primary location in the stomach. Though in this case the foreign bodies were successfully removed endoscopically, the surgery team needed to remain involved as the endoscopic removal of sharp objects carries high risk. Given most foreign body inciting factors remain psychological, psychiatrists and gastroenterologists often work in tandem to assess the patient's mental health and develop a comprehensive treatment plan that balances both psychological and medical interventions. From a psychological perspective, surgery acts as a form of reward for some patients so it is often preferred to initially attempt endoscopic or non-invasive procedures, which can address the medical issue without reinforcing these behaviors, especially in the case of repeat foreign body ingestion.[6] Gastroenterology and psychiatry should continue to collaborate after discharge to ensure patient stability and reduce repeat episodes.

In conclusion, this case highlights the complex interplay between gastrointestinal and psychiatric disorders in the context of intentional foreign body ingestion. Endoscopic retrieval is achievable in the majority of intentional foreign body cases and able to avoid surgical intervention, in this case, several endoscopies were required to remove over 100 objects. Though endoscopic retrieval was successful, a significant amount of hospital resources were used and it remains of utmost importance for continued efforts to address psychiatric behavior that leads to self-injurious actions to reduce the occurrences and financial burden of such cases.

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Disclosures

Declaration of Conflicting Interests: The authors declare no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

Informed Consent: Patient consent was obtained for the publication of this case report.

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