Abdominal foreign body migration causing cardiac tamponade: A case report





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Abstract

Chronic asymptomatic retention of an intragastric foreign body can pose a life-threatening scenario. In the event of migration, it may result in perforation, as shown in our unique case of pericardial perforation through the fundus.

Beyond illustrating a rare condition, this case prompts us to engage in a debate about whether to retain or remove asymptomatic foreign bodies in the gastrointestinal tract. It is a 28-year-old male patient, a prisoner, with a history of recurrent foreign body ingestion leading to five previous interventions, presented a year ago to our emergency department after ingesting four metal rods. Despite recommendations, the patient refused the intervention. After I year, he presented to our emergency department for respiratory distress. On examination, he had tachycardia, cardiac auscultation revealed a high-pitched sound signing a pericardial knock and abdominal palpation revealed epigastric tenderness. An abdominal X-ray revealed the presence of metallic foreign bodies located in the gastric area. An electrocardiogram showed a low voltage. Given these findings, there was a strong suspicion of rod migration from the stomach to the thoracic cavity with a cardiac tamponade. An emergency CT scan revealed that the rod had pierced through the stomach and pericardium, causing pericardial effusion. The patient was promptly transported to the operating room to discover the tip of the rod out of the stomach and penetrating the left diaphragm and the pericardial layer. The foreign body was removed.

Keywords

Foreign body ingestion, stomach perforation, cardiac tamponade

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Introduction

Foreign body ingestion in adults is a common occurrence, often accidental and uneventful.¹ However, complications can arise, particularly with long and sharp objects.² In this case report, we describe an exceptional instance of intentional ingestion of a metallic foreign body as a self-harm attempt. Remarkably, the foreign body remained asymptomatic for a year before migrating through the stomach, ultimately causing cardiac tamponade.

Case report

A 28-year-old male patient, a prisoner, with a history of recurrent foreign body ingestion leading to five previous surgical interventions, presented 1 year ago to our emergency department after ingesting four metal rods. Despite recommendations, the patient refused surgical intervention to remove these foreign bodies.

He returned to our emergency department with symptoms of dyspnea, orthopnea, tachycardia, and thoracic pain: it was a central chest pain behind the sternum. On examination, oxygen saturation (SaO_2) was at 90% in ambient air, tachycardia was noted at 120 beats per minute, and blood pressure was at 100/60 mmHg. Cardiac auscultation revealed a muf-fled heart sound, pulmonary auscultation was normal, and abdominal palpation revealed epigastric tenderness.

An X-ray revealed the presence of metallic foreign bodies located in the gastric area (Figure 1). An electrocardiogram showed widespread saddle-shaped ST segment elevation, raising suspicion of a pericardial reaction. Given these findings,

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An emergency thoraco-abdominal CT scan unexpectedly revealed that the rod had pierced through the stomach and pericardium, causing pericardial effusion (Figure 2).



Figure 1. Metallic foreign bodies as seen in upper abdomen X-ray: located in the stomach area.

On the CT, there were no signs of myocardial lesions. A cardiac ultrasound was conducted, revealing a pericardial effusion. The tip of the rod was observed within the pericardial space. Within the scope of the examination, there was no evidence of myocardial lesions. Nevertheless, recognizing the potential for underlying myocardial injury, the patient was promptly transferred to the operating room. So we were in front of a dilemma: Is there any evidence of myocardial injury, and if so, how can it be managed and the foreign bodies safely extracted? For that aim, the cardiac surgeons were consulted and informed about the risk of a myocardial lesion. The surgical approach was deliberated, and in consultation, the abdominal midline was deemed suitable. Cardiac surgeons were alerted, as well as the intensivists, that we were about to begin, and we had prepared red blood cell concentrates in case a transfusion became necessary. A midline incision was made and for pericardial exposure, dissection of the retrosternal space (Marfan's cleft) was performed. A puncture was carried out, yielding a sero-sanguineous effusion.

Subsequently, the rod, which was found protruding from the fundus and penetrating the left diaphragm and the pericardial layer, was successfully removed without any bleeding from the thorax. After that, a gastrotomy was performed to extract all intragastric metallic foreign bodies (Figure 3). There were three metallic rods of 8 cm each joined together.

The postoperative follow-up was uneventful, with a regression of the pericardial effusion observed on cardiac ultrasound follow-ups. In addition, the patient was referred to a psychiatric consultation for follow-up, and the prison caretakers were informed about the incident.



Figure 2. A CT scan reconstruction where we can see the rods transpiercing the stomach going in contact with the pericardic sac.



Figure 3. Protrusion of the metallic foreign body through the fundus to perforate the diaphragm: a per-operative view. On the right: the removed rods: three metallic rods of 8 cm each joined together.

*The metallic rod.

Discussion

We report a highly unusual case in which a long and sharp foreign body pierced through the fundus and diaphragm, reaching the pericardial sac. This led to pericardial tamponade with prominent respiratory symptoms. Pericardial tamponade caused by foreign bodies is exceptional, and making a preoperative diagnosis is challenging.

Typically, such incidents occur more frequently in the pediatric population and less commonly in adults.² In adults, voluntary ingestion of foreign bodies is often associated with psychiatric illnesses or occurs among prisoners.³ Our case involves a patient with a history of intentional foreign body ingestion, highlighting the prevalence of this behavior in certain populations.

In contrast, accidental foreign body ingestion is more common in adults.¹ It is rare for a migrating foreign body to cause cardiac tamponade^{4–10} and even rarer for it to migrate from the stomach to reach the pericardial sac.^{5,6,8} The preoperative diagnosis becomes more challenging, especially when the incident is forgotten or occurs accidentally.

In the literature, only a few cases describe a similar situation. One case involved a patient with mental disorders who ingested a pen in a self-harm attempt. The pen pierced the fundus and caused pericardial tamponade. To our knowledge, this is the only case closely resembling ours.⁸ Other cases involve accidental swallowing of toothpicks and needles.^{5,9} A case describes migration to the pericardium through vascular pathways.¹⁰

Our case is distinct as the patient was aware of the presence of the sharp object in the stomach for over a year but declined intervention. This prompts the question: Should every sharp object in the stomach, even if asymptomatic, be removed?

A comprehensive but not exhaustive review of the literature addresses this question. Sharp and long objects exceeding 7 cm pose a higher risk of obstruction and perforation, as they struggle to pass through the stomach and duodenum.^{2,8} Guidelines from the American Society for Gastrointestinal Endoscopy suggest that sharp objects in the stomach usually pass through the gastrointestinal tract without complications.² However, complications can arise, especially with sharp or pointed metallic objects, animal or fish bones, or toothpicks, with an estimated complication rate of 35%.² In such cases, endoscopic removal is attempted when deemed safe. Otherwise, surgery is recommended if the objects fail to progress within 3 days.²

Conclusion

Our case is exceptional as it highlights a rare occurrence of a metallic rod migrating from the fundus to the pericardial sac, resulting in tamponade.

The preoperative diagnosis was facilitated by imaging, a challenge particularly in the presence of prominent respiratory symptoms.

The rod was successfully removed, and the postoperative follow-up was uneventful.

This case underlines the importance of considering the removal of ingested sharp objects, even in asymptomatic individuals.

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Author contributions

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