

Gastrotomy for Removal of an Expanding Polyurethane Foam Foreign Body Following a Suicide Attempt: A Case Report

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Abstract: Suicide attempts represent a major public health concern in Brazil, with a wide variety of methods employed. Early recognition and prompt management of complications are essential to reduce morbidity and mortality. We describe the case of a patient who presented with hematochezia and abdominal pain after ingesting expanding polyurethane foam. Initial imaging studies demonstrated gastric wall thickening. Upper gastrointestinal endoscopy revealed a large intragastric foreign body, and the patient subsequently underwent gastrotomy for surgical removal of the foreign body, followed by ulcer repair secondary to the gastric lesion. The postoperative course was uneventful, with progressive clinical improvement. The patient was subsequently managed for both medical and psychiatric conditions and was discharged after recovery. This case highlights the clinical consequences of expanding polyurethane foam ingestion, the associated gastrointestinal complications, and the surgical management required in this uncommon presentation.

Keywords: Foreign Bodies; Acute Abdomen; Depression; Stomach; Case Report.

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1. Introduction

Suicide attempts represent a growing public health concern in Brazil. Between 2011 and 2022, the annual rate of suicide attempts increased by 21% in the general population [1]. According to the most recent national data, exogenous intoxication accounts for approximately 64% of these attempts [1]. We report the case of a patient who presented with epigastric pain after ingesting expanding polyurethane foam approximately two weeks before hospital admission, according to the patient's report. The diagnosis was confirmed by upper gastrointestinal endoscopy, which identified the foreign body but was unsuccessful in removing it. A review of the medical literature revealed only a few reports of similar ingestions, as well as limited evidence regarding the surgical management and removal of this type of material.

2. Case Report

A 65-year-old man presented to the emergency department of Conjunto Hospitalar do Mandaqui, São Paulo, Brazil, in April 2026 with severe epigastric abdominal pain. During the initial evaluation, the patient reported having intentionally ingested expanding polyurethane foam two weeks earlier in a suicide attempt. His past medical history was significant for diabetes mellitus and depression.

On physical examination, the patient appeared in fair general condition, was acyanotic and anicteric, exhibited signs of pain, and was tachycardic. Pulmonary examination was unremarkable. Abdominal examination revealed diffuse tenderness to palpation

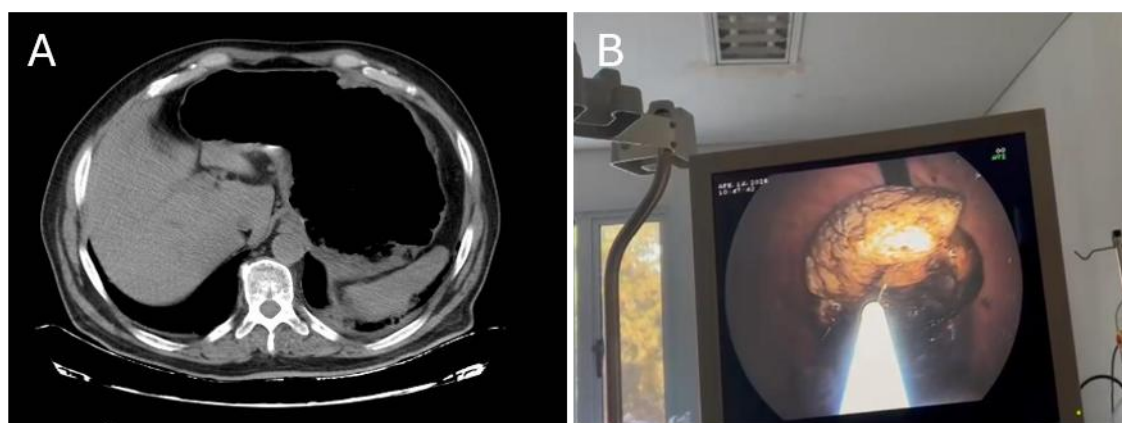
without signs of peritoneal irritation. Digital rectal examination showed no evidence of gastrointestinal bleeding. Laboratory tests were obtained on admission, and the results are summarized in Table 1.

Table 1. Resultados de exames laboratoriais do paciente.

Laboratory Parameter	Admission	First Postoperative Day (POD 1)	Third Postoperative Day (POD 3)
Hemoglobin (g/dL)	8.1	7.8	8.7
Hematocrit (%)	24.6	24.2	26.3
Leukocytes (cells/mm ³)	26.53	12.65	12.4
Band Neutrophils (%)	–	–	–
Urea (mg/dL)	44	44	34
Creatinine (mg/dL)	1.1	0.9	0.8
C-reactive Protein (CRP) (mg/L)	8.2	28.5	15.3

Contrast-enhanced computed tomography (CT) of the abdomen and pelvis initially demonstrated marked gastric distension with nonspecific intragastric contents and irregular thickening of the gastric wall (Figure 1A). To confirm the presence of the suspected foreign body, upper gastrointestinal endoscopy was subsequently performed, revealing a large intragastric foreign body causing complete gastric outlet obstruction (Figure 1B). Endoscopic retrieval was attempted; however, due to the physical characteristics of the ingested polyurethane foam, its hardened consistency, and the large volume occupying the gastric lumen, endoscopic removal was unsuccessful.

Figure 1. (A) Contrast-enhanced abdominal computed tomography (axial view) demonstrating marked gastric distension with diffuse thickening of the gastric wall, findings suggestive of inflammatory changes secondary to prolonged intragastric foreign body retention. (B) Upper gastrointestinal endoscopy revealing a large intragastric expanding polyurethane foam foreign body occupying the gastric lumen. The endoscopic examination confirmed the presence of the foreign body and was performed as the initial therapeutic approach prior to surgical intervention.



Based on the patient's clinical presentation, laboratory findings, and imaging studies, an exploratory laparotomy was indicated. A supraumbilical midline incision was performed using a No. 22 scalpel, followed by layer-by-layer dissection with electrocautery. Intraoperative examination revealed a markedly distended stomach containing hardened intragastric material (Figure 2A). Two gastric body ulcers were identified: one healed ulcer measuring approximately 0.5 cm and covered with fibrin, and a second perforated ulcer measuring approximately 1.0 cm. The remainder of the abdominal cavity was unremarkable.

An oblique gastrotomy measuring approximately 10 cm was performed, allowing successful surgical removal of the foreign body (Figure 2B). The extracted specimen consisted of a hardened polyurethane foam mass measuring approximately 20 × 15 cm (Figure 2C). Following complete removal of the foreign body, the gastrotomy was closed primarily, restoring the gastric anatomy (Figure 2D).

Figure 2. (A) Intraoperative view demonstrating marked gastric distension caused by a large intragastric expanding polyurethane foam foreign body before gastrotomy. (B) Surgical removal of the foreign body through gastrotomy, demonstrating its hardened consistency and irregular shape after expansion and prolonged retention within the gastric lumen. (C) Gross specimen of the removed foreign body, measuring approximately 20 × 15 cm, showing a solid, irregular appearance following polymerization within the stomach. (D) Final intraoperative view after complete removal of the foreign body, demonstrating primary closure of the gastrotomy and restoration of the gastric anatomy.



The excised material was submitted for histopathological examination. The pathology report described a whitish, sponge-like material that was unsuitable for histological processing. Ulcer repair was performed, followed by closure of the gastrotomy using a continuous anchored running suture with a second-layer seromuscular reinforcement (Figure 2D). The abdominal cavity was thoroughly irrigated with warm 0.9% saline solution. A tubular-laminar drain was placed in the subphrenic space and exteriorized through the left flank.

During the postoperative period, the patient was evaluated by the oral and maxillo-facial surgery team, who recommended prolonged antibiotic therapy because the same material had also been identified within the paranasal sinuses. In addition, the patient underwent psychiatric evaluation and, upon discharge, was referred for follow-up at the PAI-ZN (Northern Region Intensive Mental Health Care Center).

3. Discussion and Conclusion

Acute abdomen most commonly presents with the sudden onset of abdominal pain, which may be severe and is often accompanied by guarding and impairment of the patient's general condition [2]. During the initial evaluation of these patients, careful clinical assessment, laboratory investigation, and imaging studies are essential. As illustrated in the present case, perforated acute abdomen may present with a rigid abdomen [3], rebound tenderness [3], and pneumoperitoneum [4], in addition to systemic manifestations such as tachycardia [3], fever [3], and nausea [5].

In the present case, we believe that gastric wall ulceration resulted from the presence and expansion of the ingested foreign body, which promoted local ischemia, inflammation, and tissue fragility. The absence of pneumoperitoneum on admission imaging suggests that complete perforation had not yet occurred at that time. Therefore, endoscopic manipulation likely precipitated the perforation of a pre-existing friable ulcer rather than representing the primary cause of ulcer formation. Ischemia induced by the expansion of the foreign body, together with its adherence to the gastric wall, probably contributed to the development of the ulcer and its subsequent progression to perforation.

Reports of expanding polyurethane foam ingestion and its toxicity are exceedingly rare in medical literature. The systemic consequences of gastric obstruction and the chemical injury caused by isocyanates, which may induce tissue necrosis and perforation of the affected gastrointestinal wall [6,7], can result in hemodynamic instability and potentially death. Furthermore, because the foreign body remained within the stomach for an extended period, it could have served as a primary source of infection, ultimately leading to septic shock.

This case highlights the unique characteristics of expanding polyurethane foam as an ingested foreign body, its systemic consequences, and the surgical management required for successful treatment. The prolonged interval between ingestion and hospital presentation further distinguishes this case. Only a limited number of reports describing polyurethane ingestion have been published, and little is known regarding the long-term consequences of this type of injury, making this an uncommon and clinically relevant case.

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Conflicts of Interest: All other authors declare no conflicts of interest.

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