



## Case report

## A pseudoaneurysm in an 84-year-old European woman following ingestion of liquid bleach – Case report

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## ABSTRACT

**Introduction:** To our knowledge, we describe the first case of a pseudoaneurysm arising from a branch of the gastroduodenal artery following the ingestion of liquid bleach.

**Presentation of case:** An 84-year-old woman presented with neck pain and vomiting after suicide attempt involving the ingestion of liquid bleach. Initial endoscopy revealed caustic esophagitis and gastritis. On day 9, a contrast-enhanced CT revealed a pseudoaneurysm arising from a pancreaticoduodenal artery. Spontaneous complete occlusion of the pseudoaneurysm was observed on arteriography delayed until day 45 for logistical reasons. The follow-up imaging at 16 months confirmed complete resolution.

**Clinical discussion:** Pseudoaneurysms of splanchnic vessels are rare but potentially life-threatening, with a high risk of rupture. They typically arise from pancreatitis, trauma, or iatrogenic injury, but have not previously been reported following bleach ingestion. Despite the spontaneous thrombosis observed in this case, endovascular or surgical management is generally required.

**Conclusion:** This case expands the known spectrum of complications associated with caustic ingestion. Follow-up imaging should be considered in patients with gastric mucosal injury following the ingestion of caustic products.

## 1. Introduction

Arterial pseudoaneurysms arise from a breach in the arterial wall, resulting in a contained rupture through the adventitia, unlike true aneurysms which involve dilatation of all three layers [1]. Pseudoaneurysms of the splanchnic arteries are rare and can affect almost all visceral arteries [2]. The most common sites include the splenic artery (37.7 %), gastroduodenal artery (23.6 %), pancreaticoduodenal artery (8.3 %), left gastric artery (3.3 %), and superior mesenteric artery (3.3 %) [3].

Patients typically present with gastrointestinal bleeding or abdominal pain; only 7.5 % of cases are asymptomatic [4], as in our case. The majority (68 %) of visceral pseudoaneurysms results from pancreatitis and pseudocyst formation; 10 %–17 % of patients with chronic pancreatitis develop pseudoaneurysms [5]. Enzymatic irritation and mechanical erosion are likely mechanisms [5]. Other causes include trauma, iatrogenic injury, alcohol use and peptic ulcers [1,2]. Except for trauma, these etiologies usually involve chronic and repeated exposure

to chemical irritation.

These pseudoaneurysms carry a significant risk of rupture with life-threatening hemorrhage, often without warning. Early detection and rapid intervention are critical.

We report the first case of a pseudoaneurysm arising from a branch of the gastroduodenal artery following ingestion of liquid bleach, a caustic product commonly used at home. The caustic injury resulted in upper gastrointestinal mucosal damage, complicated by pseudoaneurysm formation. The patient was managed in an academic institution with a multidisciplinary approach. Her clinical course was favorable, and she recovered without invasive treatment. To our knowledge, this is the first reported case of a spontaneously thrombosed pseudoaneurysm of the gastroduodenal artery branch following caustic ingestion.

The work has been reported in line with de SCARE criteria [6].

## 2. Case presentation

An 84-year-old woman with a known history of anxiety, depression,

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hypertension, dyslipidemia, atrial fibrillation (on anticoagulant therapy), and early-stage Alzheimer's disease was transferred to our emergency department 4 h after a suicide attempt involving the ingestion of approximately 100 mL of liquid bleach.

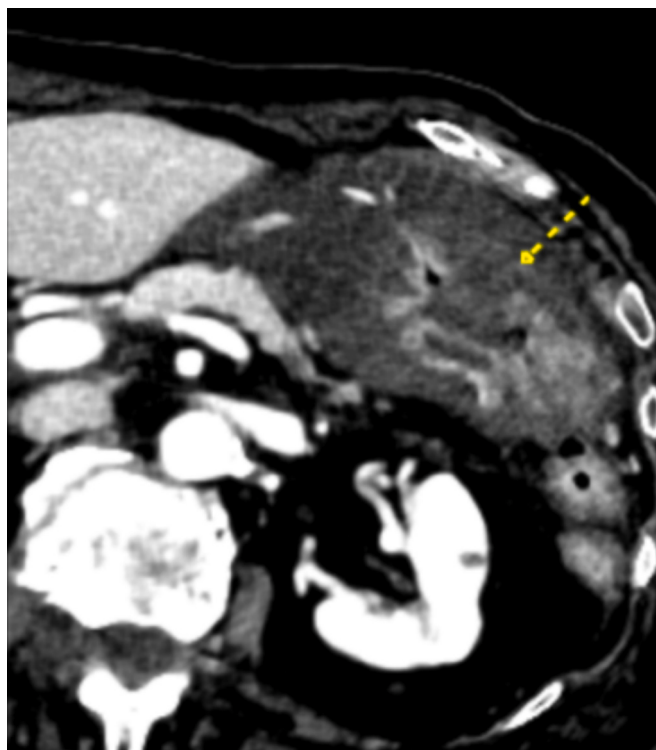
On arrival, she reported neck pain and vomiting. Her voice was hoarse, but there were no signs of respiratory distress. Bilateral rhonchi were noted on chest auscultation. Vital signs were stable, and the remainder of the physical examination was unremarkable. Initial laboratory tests revealed a white blood cell (WBC) count of  $16.51/\mu\text{L}$  (normal range  $3.90\text{--}11.10/\mu\text{L}$ ) and moderate hyponatremia of  $130\text{ mmol/L}$  (normal range  $137\text{--}145\text{ mmol/L}$ ).

A contrast-enhanced cervico-thoraco-abdominal CT scan, performed in the emergency department, revealed edema at the level of the oropharyngeal sphere and in the larynx, thickening of the esophageal and gastric mucosa, submucosal edema, hypoenhancement of the gastric body mucosa (Fig. 1), and bilateral pulmonary consolidations.

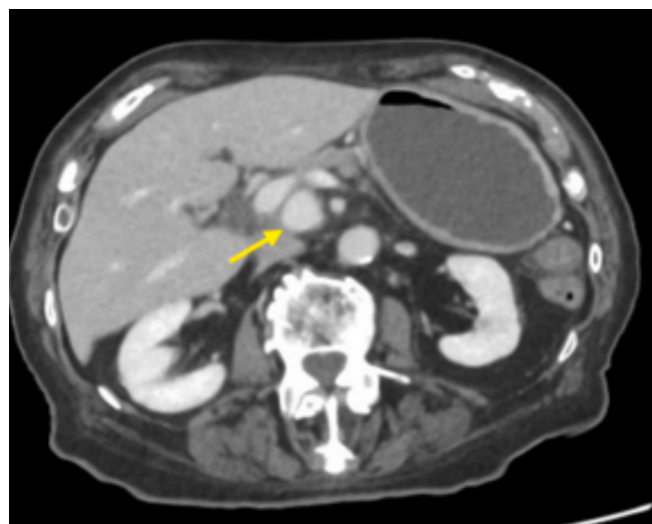
Esophagogastroscopy revealed caustic esophagitis (Zargar Grade IIa) and caustic gastritis (Zargar Grade IIa/IIIa) [7]. The patient was admitted to the intensive care unit, kept nil per os (NPO) and started on high-dose proton pump inhibitors. A 10-day course of empirical antibiotic therapy by Amoxicillin-clavulanic acid was also initiated for the suspected middle lobe pneumonia.

The patient's clinical condition improved. A contrast-enhanced CT scan was performed 48 h after admission and showed resolution of gastric wall thickening. Gastroscopy demonstrated worsening of the caustic gastritis in the gastric body (Zargar Grade IIb). Parenteral nutrition was initiated and she was transferred to the geriatric department on day 3 of hospitalization.

A follow-up CT scan performed on day 9 showing regression of gastric wall thickening but revealed a new enhancing nodular image measuring  $16 \times 18\text{ mm}$  near the pancreatic uncus. The rapid appearance of this nodular lesion strongly suggested a pseudoaneurysm originating from the gastroduodenal artery (Fig. 2). An arteriography with therapeutic intent was recommended but could not be performed until day 45



**Fig. 1.** An abdominal CT scan showing hypoenhancement of the mucosa at the level of the gastric body in an 84-year-old woman, obtained on the day of admission (yellow arrow).



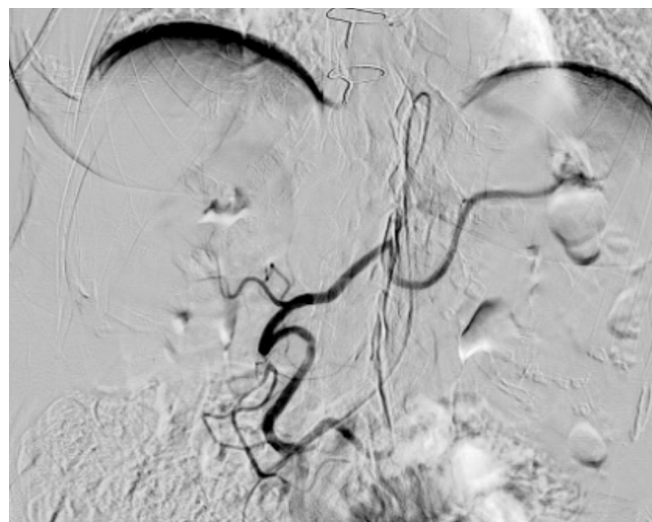
**Fig. 2.** An abdominal CT scan in the axial section showing a newly pseudoaneurysm of the pancreaticoduodenal artery on day 9 following bleach ingestion (yellow arrow).

due to logistical delays.

Meanwhile, due to stable clinical evolution and reassuring endoscopic findings, oral feeding was carefully resumed on day 15. The patient was discharged home on day 24, with instructions to continue high-dose proton pump inhibitors and gradually transition to a normal diet. The interventional radiology and psychiatry departments were contacted for follow-up.

Delayed arteriography revealed a 1-cm occlusion at the origin of the celiac trunk, which was being retrogradely perfused by the gastroduodenal branch of the superior mesenteric artery. Spontaneous complete occlusion of the pseudoaneurysm arising from a pancreaticoduodenal artery was observed (Fig. 3), confirmed by post-angiography CT imaging (Fig. 4).

A CT scan performed at 16 months, during an evaluation for pneumonia, showed complete involution of the thrombosed pseudoaneurysm.



**Fig. 3.** An arteriography of the superior mesenteric artery with retrograde opacification through the arcade; the pseudoaneurysm of the pancreaticoduodenal artery was not visualized.



**Fig. 4.** An abdominal CT scan in arterial phase showing spontaneous thrombosis of a pseudoaneurysm of the pancreaticoduodenal artery on day 45 following bleach ingestion (yellow arrow).

### 3. Discussion

To the best of our knowledge, this is the first case of a pseudoaneurysm arising from a branch of the gastroduodenal artery following ingestion of sodium hypochlorite (liquid bleach). Although vascular complications following caustic ingestion are rare, this case underscores the need for close imaging follow-up in patients with extensive mucosal injury. Sodium hypochlorite can cause severe gastrointestinal injuries (e.g., perforation, mediastinitis) [8] and systemic complications such as metabolic acidosis, hyponatremia, hyperchloremia [9]. While vascular lesions have been reported with button batteries and acids, no such cases had been previously described with bleach.

The pseudoaneurysm was incidentally discovered on a day-9 CT scan, without signs of bleeding or hemodynamic instability. Although pseudoaneurysms of the gastroduodenal and pancreaticoduodenal arteries are rare, they have a high risk of rupture and usually require urgent treatment. In our case, the angiography delay was a limitation in care, driven by logistical challenges. Nevertheless, follow-up imaging confirmed spontaneous thrombosis, a rare but favorable outcome. CT scans are highly sensitive for identifying pseudoaneurysms, but arteriography remains the gold-standard for diagnosis and treatment [4].

Vascular injuries from other caustic agents, such as button batteries, have been linked to electrochemical burns and chemical leakage [10]. Aorto-esophageal fistulae have been well documented, usually within two weeks post-ingestion [11]. Other agents, such as hydrochloric acid pellets [12], arsenic-based depilatory products [12], sulfuric acid [12], or detergent containing 30 % sodium hydroxide [13] have also been implicated in rare vascular injuries. This case demonstrates that bleach ingestion can also result in vascular injury, expanding the known spectrum of potential complications.

Our patient's pseudoaneurysm resolved spontaneously, an unusual but favorable outcome. Spontaneous thrombosis of splanchnic artery pseudoaneurysm is rare but has been documented in isolated cases [14–16]. Nevertheless, early treatment is generally indicated due to the high risk of rupture, regardless of lesion size [17].

Endovascular approaches, including coiling, glue, or covered stents, are effective options. Coiling requires access distal to the aneurysm and normal coagulation [3]. Glue or copolymer injection may be faster than, or complementary to, coil placement [18,19], and is particularly useful in case of coagulopathy. Covered stents maintain distal perfusion but

may be technically challenging and carry the risk of secondary pseudoaneurysm [20]. In the event of rupture and hemodynamic instability, surgery is necessary. In the absence of rupture or in case of rupture with hemodynamic stability, endovascular options should be considered [4].

The strengths of our management include early endoscopic assessment, adequate supportive care, and timely imaging. The primary limitation remains the delayed endovascular management, which was ultimately unnecessary. However, this should not be generalized, as pseudoaneurysms are unpredictable and dangerous.

The 16-month follow-up CT confirmed complete resolution of the pseudoaneurysm. According to the ESVS (2017), follow-up of patients in whom pseudoaneurysm of a gastrointestinal artery has been excluded is necessary only when the underlying etiology persists (Class IIb; Level of evidence– C) [21]. In this case, mucosal healing and absence of ongoing risk factors supported the decision to end vascular surveillance. This case highlights the importance of long-term follow-up after caustic injury, especially when vascular involvement is suspected.

### 4. Conclusion

This case illustrates the first documented instance of a spontaneously thrombosed pseudoaneurysm arising from a branch of the gastroduodenal artery following ingestion of liquid bleach. While vascular injuries are a known but rare consequence of caustic ingestion, this report expands the current understanding of such complications by demonstrating a delayed yet severe vascular event.

The pseudoaneurysm was discovered incidentally on follow-up imaging nine days after ingestion, underscoring the value of repeat imaging even in clinically stable patients with extensive mucosal injuries. The delayed but spontaneous thrombosis of the pseudoaneurysm, although favorable in this case, must not obscure the fact that pseudoaneurysms of the gastrointestinal arteries carry a high risk of rupture and require prompt recognition and management.

This case also illustrates the importance of multidisciplinary coordination in both acute and follow-up care. Despite the delay in intervention, early resuscitation, early endoscopic assessment, and imaging surveillance enabled a successful conservative outcome. However, such an outcome remains the exception rather than the rule and should not justify delayed management in similar cases.

Furthermore, pseudoaneurysms must be considered for early endovascular treatment regardless of clinical symptoms, given the unpredictable risk of rupture.

### Consent

Written informed consent was obtained from the patient's daughter for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

### Ethical approval

Internal ethics committee No.: 33.2025.

### Guarantor

Leroux Aurélie.

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### Author contribution

Aurélie LEROUX: investigation; visualization; writing – original

draft.

Sammy TAWK: resources; writing – review and editing.

Asmae BELHAJ: conceptualization; methodology; writing – review and editing; supervision.

## Declaration of competing interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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