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An Unusual Cause of Gastric Outlet Obstruction: A Visceral Artery Pseudoaneurysm Presenting a Diagnostic Pitfall

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Abstract

Visceral artery pseudoaneurysms are rare but potentially life-threatening lesions, and their presentation as a bowel obstruction syndrome is exceptional. We report the case of a 68-year-old man with atrial fibrillation treated with apixaban who was admitted with acute abdominal pain, progressive abdominal distension, and bilious vomiting. Contrast-enhanced computed tomography (CT) revealed gastric and proximal duodenal dilatation associated with a large retroperitoneal hematoma compressing the duodenum and a vascular lesion arising from the superior mesenteric artery (SMA) territory. Angiography confirmed a pseudoaneurysm arising from a proximal branch of the SMA at the level of the pancreaticoduodenal arcade, which was treated by selective embolization. Despite initial angiographic control, subsequent hemodynamic and abdominal deterioration required emergency laparotomy, which revealed hemoperitoneum and active bleeding in the pancreaticoduodenal region. Surgical hemostasis was achieved without bowel resection, followed by a favorable postoperative course.

This case highlights that a visceral artery pseudoaneurysm may exceptionally mimic bowel obstruction through duodenal compression caused by a retroperitoneal hematoma. Early contrast-enhanced imaging and multidisciplinary management involving interventional radiology and surgery are essential.

Categories: Radiology, General Surgery, Emergency Medicine
Keywords: bowel obstruction mimic, coil embolization, gastric outlet obstruction, pancreaticoduodenal arcade, retroperitoneal hematoma, superior mesenteric artery pseudoaneurysm, visceral artery pseudoaneurysm

Introduction

Obstructive abdominal presentation is frequently encountered in the emergency department and is most frequently related to adhesions, hernias, inflammatory strictures, or malignancy. Vascular causes are considerably less common and may be overlooked when the clinical presentation is dominated by vomiting, abdominal distension, and proximal gastrointestinal dilatation.

Visceral artery aneurysms and pseudoaneurysms are rare conditions, with a reported incidence ranging from 0.01% to 2%, depending on the series and diagnostic methods [1,2]. Unlike true aneurysms, which involve all layers of the arterial wall, pseudoaneurysms result from disruption of the arterial wall, with blood contained by the surrounding tissues. Their inherent fragility accounts for their propensity to rupture and generally warrants treatment upon diagnosis, regardless of their diameter [2,3]. Rupture of a visceral arterial lesion may result in potentially severe intra-abdominal hemorrhage [4].

The splenic and hepatic arteries are the most frequently involved sites, whereas involvement of the gastroduodenal and pancreaticoduodenal arteries, as well as the superior mesenteric artery (SMA) territory, is less common [1,2]. The pancreaticoduodenal arcade provides an important collateral connection between the celiac and SMA territories through anastomoses between the superior pancreaticoduodenal arteries, arising from the gastroduodenal artery, and the inferior pancreaticoduodenal arteries, arising from the SMA. Lesions involving the SMA remain rare but may be associated with severe hemorrhagic complications [5].

Exceptionally, hemorrhage from a visceral artery pseudoaneurysm may produce a retroperitoneal hematoma large enough to compress adjacent gastrointestinal structures and mimic proximal gastrointestinal obstruction [6,7]. In this report, the term “gastric outlet obstruction” is used in its broader clinical sense to encompass extrinsic obstruction of the proximal duodenum, resulting in impaired gastric emptying.

Case Presentation

A 68-year-old man presented to the emergency department with acute abdominal pain associated with progressive abdominal distension, recurrent bilious vomiting, and inability to tolerate oral intake. His

medical history included atrial fibrillation treated with apixaban 5 mg twice daily and arterial hypertension treated with perindopril/amlodipine.

On initial examination, the abdomen was markedly distended and tender, without clear signs of peritoneal irritation. The patient was hemodynamically stable, with a blood pressure of 137/85 mmHg and a heart rate of 84 beats/min. Initial laboratory investigations showed a hemoglobin level of 11.6 g/dL and a lactate level of 1.3 mmol/L. Although the patient had no known history of renal insufficiency, admission laboratory tests showed acute renal impairment, with a serum creatinine level of 4.31 mg/dL and an estimated glomerular filtration rate of 13.1 mL/min. Coagulation studies showed a prothrombin time of 68%, an international normalized ratio (INR) of 1.24, an activated partial thromboplastin time (aPTT) of 39.2 seconds, and a fibrinogen level of 4.88 g/L. Based on the clinical presentation, proximal bowel obstruction was initially suspected.

Despite recurrent vomiting and poor oral intake, emergency contrast-enhanced abdominal computed tomography (CT) demonstrated persistent marked dilatation of the stomach and proximal duodenum (Figure *1*), associated with a large retroperitoneal hematoma adjacent to the posterior aspect of the duodenum. A vascular abnormality within the SMA territory was consistent with an acute hemorrhagic process. The hematoma exerted significant extrinsic compression on the duodenum, resulting in gastric outlet obstruction. Imaging showed no findings suggestive of an underlying malignancy (Figure *2*).

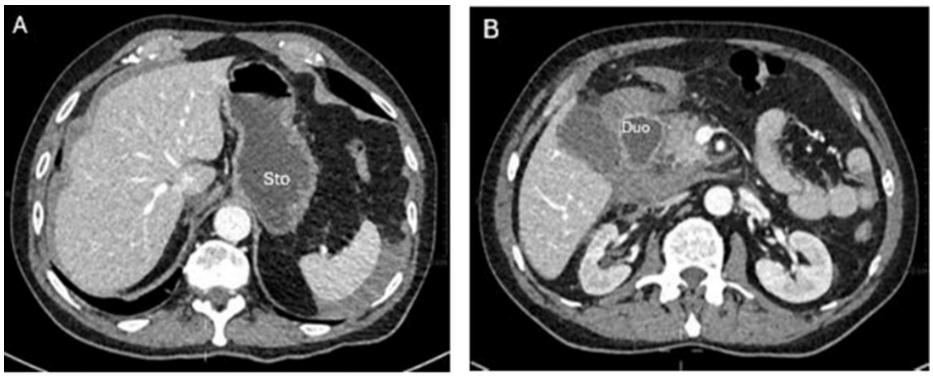


FIGURE 1: Gastric and proximal duodenal dilatation on contrast-enhanced abdominal CT

(A) Gastric dilatation. (B) Proximal duodenal dilatation

Sto, stomach; Duo, duodenum

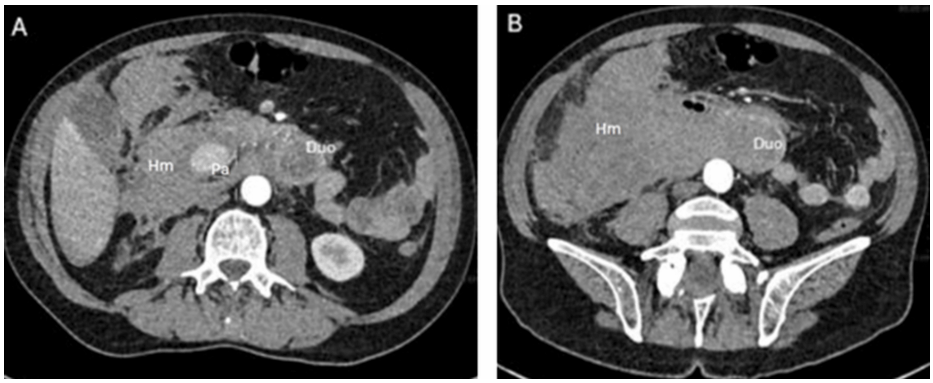


FIGURE 2: Pseudoaneurysm with associated retroperitoneal hematoma and duodenal compression

(A, B) Pseudoaneurysm surrounded by a large retroperitoneal hematoma causing extrinsic compression of the duodenum.

Hm, hematoma; Pa, pseudoaneurysm; Duo, duodenum

Following imaging, a nasogastric tube was inserted, allowing evacuation of gastric contents, with

decompression and transient clinical improvement. Apixaban was discontinued upon admission. Reversal with prothrombin complex concentrate was considered but not administered because the patient remained hemodynamically remarkably stable, without hypotension or tachycardia, with no elevated lactate on blood gas analysis, and no significant decrease in hemoglobin, and was being transferred directly for angiography and endovascular embolization.

Given the suspected vascular origin, the patient was transferred directly from the emergency department to the angiography suite before admission to the intensive care unit. Selective angiography, performed approximately three hours after presentation, confirmed a pseudoaneurysm arising from a proximal branch of the SMA within the pancreaticoduodenal arterial territory. The patient remained hemodynamically stable at the time of angiography. As the guidewire could not be advanced beyond the neck of the pseudoaneurysm, coils were deployed proximally rather than using a front-door/back-door embolization technique. An additional approach through the gastroduodenal artery was considered but not performed because of marked vascular tortuosity, satisfactory immediate angiographic findings, and the patient's hemodynamic stability. Final angiographic control showed no visible opacification of the pseudoaneurysm at the previously identified site (Figure *3*). No anticoagulation reversal or blood products were administered before or during the endovascular procedure.

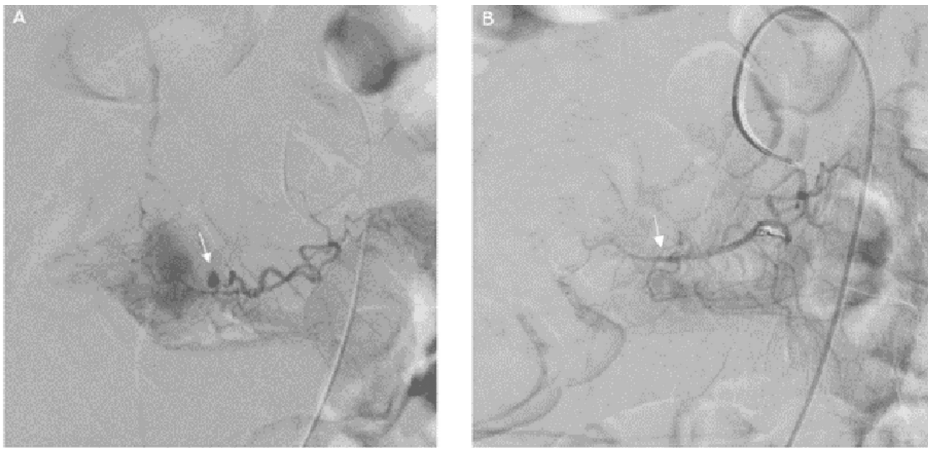


FIGURE 3: Angiographic identification and embolization of the pseudoaneurysm

(A) Selective angiography demonstrating the pseudoaneurysm arising from a proximal branch of the superior mesenteric artery (white arrow). (B) Post-embolization angiography showing complete disappearance of the pseudoaneurysm opacification (white arrow), indicating successful immediate angiographic exclusion.

The patient was subsequently admitted to the intensive care unit for close hemodynamic and abdominal monitoring. A follow-up contrast-enhanced CT scan performed 24 hours after coil embolization showed a pseudoaneurysm that remained stable in size, with decreased but persistent contrast enhancement, suggesting residual perfusion (Figure *4*).



FIGURE 4: Follow-up contrast-enhanced abdominal CT 24 hours after embolization

The CT shows a stable pseudoaneurysm size with decreased but persistent post-contrast enhancement, suggesting residual perfusion. There is persistent retroperitoneal hematoma. The embolization coils are now visible (arrow).

Hm, hematoma; Pa, pseudoaneurysm

Later that same day, while in the intensive care unit, the patient developed acute hemodynamic instability, with a blood pressure of 74/40 mmHg, a heart rate of 117 beats/min, an increase in lactate from 1.3 to 3.0 mmol/L, and a decrease in hemoglobin from 11.6 to 9.0 g/dL. These findings, together with worsening abdominal signs, raised concern not only for persistent bleeding but also for possible bowel compromise related to the large retroperitoneal hematoma. Given the acute clinical deterioration, emergency surgical exploration was favored over repeat angiography or further endovascular treatment. Prior to surgery, the patient received two units of packed red blood cells and one unit of fresh frozen plasma.

Emergency laparotomy revealed hemoperitoneum, with approximately 1 L of old blood evacuated, and a large retroperitoneal hematoma. A Kocher maneuver exposed active bleeding from the posterior aspect of the pancreatic head. The duodenum appeared flaccid and mildly ischemic. Following dissection of the hepatic hilum, the gastroduodenal artery was clipped. As active bleeding persisted from the posterior intrapancreatic region, direct hemostasis was achieved with a figure-of-eight 2-0 Surgipro suture. A pressurized methylene blue test performed through the gastric tube advanced into the duodenum showed no evidence of duodenal perforation. No bowel resection was considered necessary.

The postoperative course was favorable, with progressive hemodynamic stabilization and no recurrent hemorrhage or clinical evidence of bowel ischemia or recurrent obstruction. Follow-up imaging demonstrated regression of the collection without evidence of persistent active bleeding (Figure *5*). The patient was discharged 16 days after surgery. At discharge, hemoglobin was 9.6 g/dL, while renal function had markedly improved, with a serum creatinine level of 1.46 mg/dL and an estimated glomerular filtration rate of 48 mL/min. His clinical condition was favorable, and resumption of apixaban was authorized.

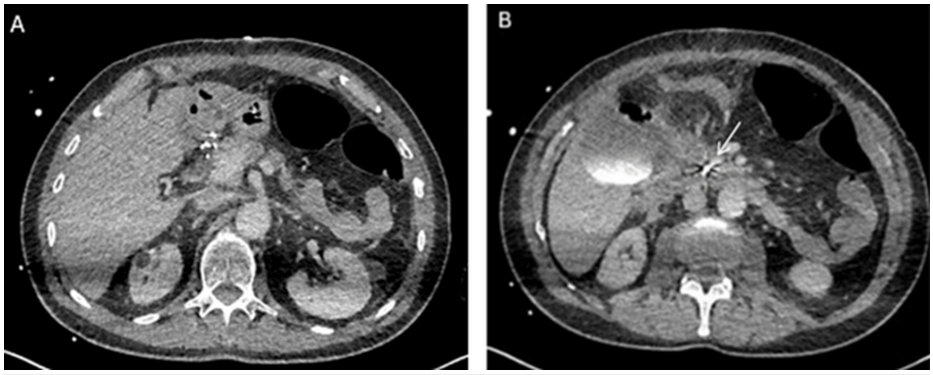


FIGURE 5: Postoperative follow-up contrast-enhanced abdominal CT

(A) Partial regression of the retroperitoneal hematoma, with no evidence of persistent active bleeding. The obstructive pattern has resolved, and the pseudoaneurysm is no longer visible. (B) The arrow indicates the embolization coils, which have shifted rightward, consistent with relief of the previous mass effect.

Discussion

This case illustrates a rare and misleading presentation of a visceral artery pseudoaneurysm. Although the initial clinical picture suggested proximal bowel obstruction, the gastric and duodenal dilatation was in fact caused by extrinsic duodenal compression from a retroperitoneal hematoma secondary to arterial bleeding.

Unlike true aneurysms, which involve all layers of the arterial wall, pseudoaneurysms result from a focal arterial wall disruption, with blood contained by the surrounding tissues rather than by the vessel wall itself. This structural fragility accounts for their risk of rupture regardless of size and generally warrants treatment upon diagnosis [2,3]. Pseudoaneurysms involving branches of the SMA are particularly rare. Furthermore, the pancreaticoduodenal arcades form a rich collateral network between the celiac axis and the SMA [8].

The pseudo-obstructive presentation represents the main distinctive feature of this case. Rare comparable cases have been reported in the literature in which pancreaticoduodenal or gastroduodenal artery pseudoaneurysms caused duodenal or gastric outlet obstruction through compression by a retroperitoneal hematoma [6,7]. Retroperitoneal hemorrhage should therefore be considered among the unusual differential diagnoses of proximal gastrointestinal obstruction, as its management differs fundamentally from that of conventional mechanical obstruction.

Contrast-enhanced CT plays a central role in this clinical scenario because it can simultaneously identify gastrointestinal dilatation, the hematoma, the vascular lesion, and their anatomical relationships. CT angiography can further characterize the pseudoaneurysm and detect active contrast extravasation. Interventional angiography complements this assessment by providing dynamic evaluation of the culprit vessel while enabling immediate endovascular treatment [2,9].

Embolization is currently considered a first-line therapeutic strategy for many visceral artery pseudoaneurysms in sufficiently stable patients. Published series have reported high technical success rates for endovascular treatment [3,10]. This approach has also been widely described for pseudoaneurysms involving the gastroduodenal artery territory [11]. In our case, rapid identification of the vascular origin allowed direct transfer from the emergency department to the angiography suite and selective coil embolization.

However, a satisfactory immediate angiographic result does not necessarily guarantee complete or durable exclusion of a pseudoaneurysm. In our case, the inability to advance the guidewire beyond the pseudoaneurysm neck prevented a front-door/back-door embolization, and coils were deployed proximally. Although no further pseudoaneurysm opacification was visible on final angiography, follow-up CT performed 24 hours later demonstrated decreased but persistent enhancement, suggesting residual perfusion. The rich collateral network of the pancreaticoduodenal arcade may have contributed to persistent or recurrent perfusion, particularly in the absence of distal embolization. However, the precise mechanism could not be established without repeat angiography. At surgery, clipping of the gastroduodenal artery did not completely control the hemorrhage, and additional direct hemostasis of persistent intrapancreatic bleeding was required. This case highlights the technical challenges of embolization in complex collateral vascular territories and the importance of early clinical and imaging reassessment. Moreover, embolization does not immediately resolve the mass effect of a large hematoma. Persistent hemodynamic instability, worsening abdominal findings, or suspected bowel compromise should therefore prompt early consideration of surgical intervention [3,10,12].

The need for laparotomy following initial embolization in our patient illustrates the complementary roles of endovascular and surgical approaches, particularly when technical limitations prevent complete vascular isolation or when clinical deterioration necessitates urgent surgical exploration. Evidence regarding salvage surgery supports its role when endovascular exclusion is impossible, incomplete, or insufficient to control complications [12]. The underlying etiology of the pseudoaneurysm remained undetermined in this case, as no dedicated etiological work-up was performed. Therefore, a specific causal mechanism cannot be established.

Chronic treatment with apixaban is another relevant consideration. There is no evidence to establish a causal relationship between anticoagulation and the formation of the pseudoaneurysm. However, anticoagulation may have exacerbated the bleeding and contributed to expansion of the hematoma. In an anticoagulated patient presenting with unexplained abdominal pain associated with signs of hemorrhage or a retroperitoneal abnormality, the threshold for contrast-enhanced vascular imaging should therefore remain low.

A limitation of this report is the absence of longer-term clinical and vascular imaging follow-up after hospital discharge, which precludes assessment of late recurrence.

Finally, this case emphasizes the importance of coordinated management involving emergency medicine, diagnostic and interventional radiology, intensive care, and surgery. The key challenge lies in the early recognition of the vascular mechanism and the ability to rapidly adapt the therapeutic strategy according to the patient's clinical course.

Conclusions

Visceral artery pseudoaneurysms are rare but potentially life-threatening lesions that may present atypically. Involvement of an SMA branch within the pancreaticoduodenal territory may cause retroperitoneal hemorrhage and extrinsic duodenal compression, mimicking gastric outlet obstruction. Contrast-enhanced CT and angiography are essential for identifying the vascular origin and guiding appropriate management.

Endovascular embolization represents a preferred first-line strategy in appropriately selected hemodynamically stable patients. However, technical limitations and the complex collateral anatomy of the pancreaticoduodenal arcade may prevent complete vascular exclusion, emphasizing the importance of close clinical and imaging follow-up. Persistent bleeding, hemodynamic deterioration, or suspected bowel compromise may necessitate surgical intervention. This case underscores the importance of multidisciplinary management and individualized therapeutic decisions.

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.

Concept and design: Mehdi Bouakline, Nadia Bouchouka, Antonio Oliveri, Gery Donck, Fabien Guerisse

Acquisition, analysis, or interpretation of data: Mehdi Bouakline, Nadia Bouchouka, Antonio Oliveri, Gery Donck, Fabien Guerisse

Drafting of the manuscript: Mehdi Bouakline, Nadia Bouchouka, Antonio Oliveri, Gery Donck, Fabien Guerisse

Critical review of the manuscript for important intellectual content: Mehdi Bouakline, Nadia Bouchouka, Antonio Oliveri, Gery Donck, Fabien Guerisse

Supervision: Mehdi Bouakline, Nadia Bouchouka

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. Meyer A, Uder M, Lang W, Croner R: [Visceral artery aneurysms] [Article in German]. Zentralbl Chir. 2010, 135:416-20. 10.1055/s-0030-1262544
2. Abdelgabar A, d'Archambeau O, Maes J, Van den Brande F, Cools P, Rutsaert RR: Visceral artery pseudoaneurysms: two case reports and a review of the literature. J Med Case Rep. 2017, 11:126. 10.1186/s13256-017-1291-6
3. Tulsyan N, Kashyap VS, Greenberg RK, Sarac TP, Clair DG, Pierce G, Ouriel K: The endovascular management of visceral artery aneurysms and pseudoaneurysms. J Vasc Surg. 2007, 45:276-83; discussion 283. 10.1016/j.jvs.2006.10.049
4. Matsuo S, Yamaguchi S, Miyamoto S, et al.: Ruptured aneurysm of the visceral artery: report of two cases . Surg Today. 2001, 31:660-4. 10.1007/s005950170103
5. Borazan E, Yılmaz L, Aytekin A, Gökaslan G, Kervancıoğlu S: A rare case of non-traumatic acute intraabdominal hemorrhage: ruptured superior mesenteric artery aneurysm. Acta Chir Belg. 2018, 118:64-7. 10.1080/00015458.2017.1302702
6. Seng WP, Chua HW, Toh BC: An unusual cause of gastric outlet obstruction . Gastroenterology. 2022, 163:e6-9. 10.1053/j.gastro.2022.01.050
7. Zhou YY, Wang SC, Seak CJ, Huang SW, Cheng HT: Case report: Duodenal obstruction caused by gastroduodenal artery pseudoaneurysm with hematoma: an unusual case and literature review. Front Med (Lausanne). 2023, 10:1198378. 10.3389/fmed.2023.1198378
8. Nesgaard JM, Stimec BV, Bakka AO, Edwin B, Ignjatovic D: Navigating the mesentery: part II. Vascular abnormalities and a review of the literature. Colorectal Dis. 2017, 19:656-66. 10.1111/codi.13592
9. Athavale VS, Sudhatri CR, Bakare VN, Reddy NS, Nithin N: Ruptured left gastric artery pseudoaneurysm due to acute-on-chronic pancreatitis: a case report with literature review. Ann Afr Med. 2026, 25:S122-5. 10.4103/aam.aam_649_25
10. Sachdev U, Baril DT, Ellozy SH, et al.: Management of aneurysms involving branches of the celiac and superior mesenteric arteries: a comparison of surgical and endovascular therapy. J Vasc Surg. 2006, 44:718-24. 10.1016/j.jvs.2006.06.027
11. Amro AM, Deeb S, Jaber M, Maraqa M, Sabarna W, Alhusseini R: Endovascular treatment of gastroduodenal artery pseudoaneurysm in a low-risk young female: case report with literature review. Int J Surg Case Rep. 2025, 131:111346. 10.1016/j.ijscr.2025.111346
12. Lin YC, Liao TC, Lin CT, et al.: Salvage surgeries for splanchnic artery aneurysms after failed endovascular therapy: case series. Int J Surg. 2023, 109:1842-51. 10.1097/JS9.0000000000000442