# Percutaneous Management of a Pancreatitis Related Pseudoaneurysm

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## Background

Visceral artery pseudoaneurysm (PSA) formation is an uncommon but recognized sequelae of acute and chronic pancreatitis. These most commonly arise from vessels in the region of the inflamed pancreas, with splenic artery PSAs being the most common, followed by gastroduodenal, pancreaticoduodenal, gastric, and hepatic artery PSAs [1]. The most significant complication associated with visceral artery PSA is rupture, with mortality in some cases approaching 100% [2]. Signs and symptoms of visceral artery aneurysm rupture are variable and dependent on the anatomic compartment and may manifest as acute GI bleed, retroperitoneal bleed, subcapsular hepatic hematoma, or brisk bleed from a percutaneous drain.

Due to the significant morbidity and mortality associated with pseudoaneurysm rupture, treatment is considered the standard of care. A visceral artery PSA should be treated whether it is symptomatic or incidentally noted, with the goal being to exclude flow within the aneurysm sac [3]. Depending on the size and anatomy of the PSA, an endovascular or direct percutaneous embolization approach may be considered. Endovascular techniques have good technical success and may be performed after diagnostic angiography of the visceral arteries. However, in select cases, complex vascular anatomy or difficulty accessing narrow caliper vessels necessitate direct percutaneous access for injection of embolic material [4]. Direct percutaneous embolization, in conjunction with endovascular techniques, allows for accurate localization of a PSA as well as effective exclusion of flow.

## Case

A 59 year old male with a past medical history of hyperlipidemia presented to the emergency room for 10 day history of melena with a syncopal episode. Lab work revealed profound anemia, with hemoglobin of 3.5. A CTA revealed acute hemorrhagic pancreatitis with peripancreatic collection, and a 1 cm pseudoaneurysm at the level of the pancreatic head. Interventional Radiology was consulted for further management.

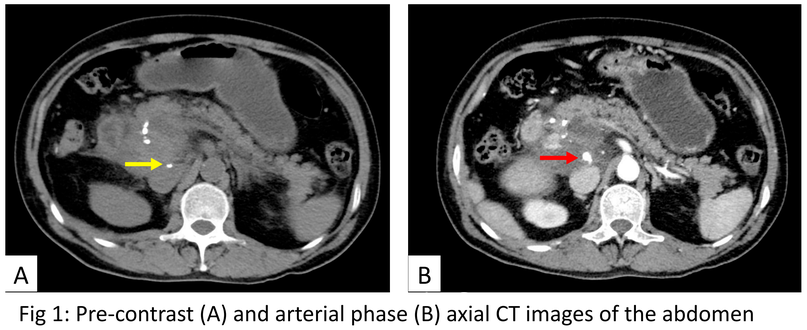


Fig 1: Pre-contrast (A) and arterial phase (B) axial CT images of the abdomen demonstrate findings consistent with acute hemorrhagic pancreatitis with large peripancreatic collection. A 1 cm area of arterial hyperenhancement in the posterior superior aspect of the collection is consistent with pseudoaneurysm (red arrow). Note calcification adjacent to the PSA on pre-contrast image (yellow arrow).

## Intervention

Via the right common femoral artery, angiograms of the celiac artery, superior mesenteric artery, and right renal artery were obtained, which revealed no evidence of pseudoaneurysm or hemorrhage.

An aortogram was then obtained which did demonstrate the PSA, likely arising from a small branch directly off the abdominal aorta, possibly the right middle adrenal artery (Fig 2A). Due to the caliper, tortuosity, and location of the feeding vessel to the PSA, and anticipated difficulty of endovascular access, the decision was made to percutaneously access the PSA for purposes of embolization.

A review of the CT scan revealed a small calcification near the PSA (Fig 1A). This was used as a fiducial for the advancement of a 21-gauge Chiba needle (Fig 2B). Once placement of the Chiba needle within the PSA was confirmed with contrast injection (Fig 2C), the PSA was embolized with 0.8 mL of Onyx-18 (Medtronic, Minneapolis, MN) (Fig 2D).

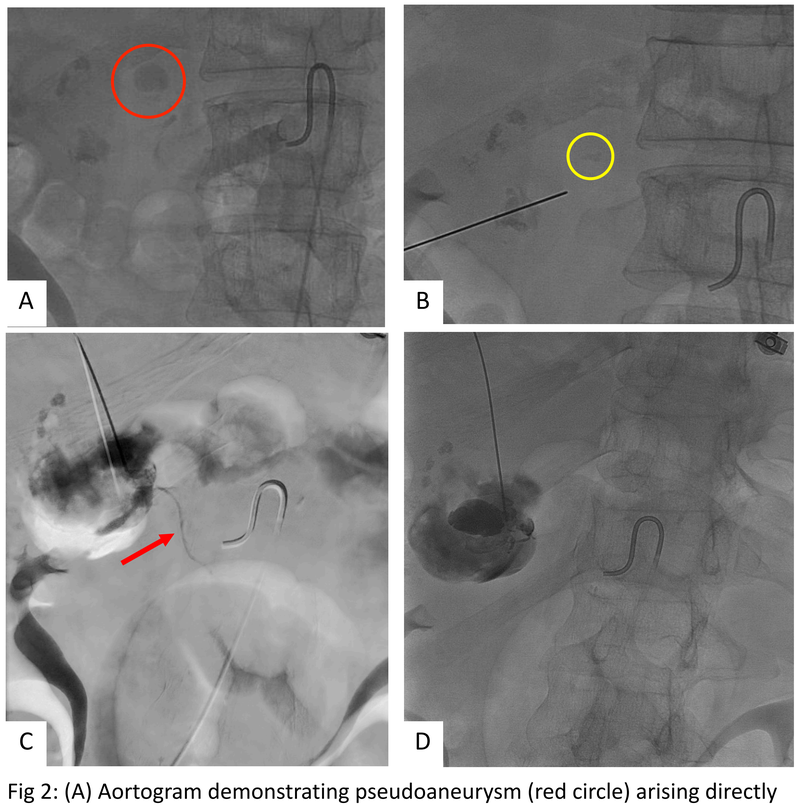


Fig 2: (A) Aortogram demonstrating pseudoaneurysm (red circle) arising directly off of an aortic branch vessel, possibly the right middle adrenal artery. (B) 21-gauge Chiba needle directed toward calcification noted on pre-contrast CT (yellow circle). (C) Confirmation of Chiba needle within the PSA, with thin feeding vessel noted (red arrow). (D) Post-embolization image with Onyx-18 within the PSA.

## Intervention

Cone beam CT demonstrated onyx within the hemorrhagic peripancreatic collection and pseudoaneurysm (Fig 2E). The patient tolerated the procedure well, and was discharged after 48 hours.

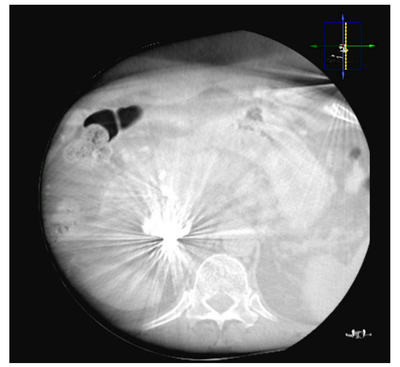

Fig 3: Cone-beam CT demonstrating Onyx-18 liquid embolic at the site of the PSA.

## Discussion

This case represents an ideal scenario for the use of direct percutaneous embolization. Once the aortogram revealed the PSA to arise from a narrow, tortuous vessel directly off the aorta, it was felt that a prolonged attempt at accessing the feeding vessel would significantly increase the time spent and radiation dose to the patient and operator. Direct percutaneous access was aided by the presence of calcification at the PSA site, noted on CTA and fluoroscopy, which served as a fiducial marker for placement of the Chiba needle.

It should be noted that given the technical success rate of percutaneous methods, direct percutaneous embolization may be considered in other scenarios where endovascular-only embolization may be technically difficult or prolonged. Examples of cases amenable to direct percutaneous embolization include superficial PSAs, PSAs with a narrow neck, large PSAs, or PSAs which may be visualized on ultrasound or CT and it is felt that angiography may be deferred [3].

## Conclusion

Early consideration of percutaneous embolization of a visceral artery pseudoaneurysm may be suitable instead of, or in conjunction with, an endovascular approach, when there is complex vascular anatomy or difficult endovascular access. This approach should be considered early, to avoid excessive radiation exposure to the patient and operator.

## References

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