

## Case Series

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# Haemosuccus pancreatitis: A rare cause of GI bleed, diagnosis on CT Angiography – Case series & review of literature

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## Abstract

Haemosuccus pancreatitis also known as Pseudohaemobilia or haemoductal pancreatitis, is defined as upper gastrointestinal hemorrhage originating from the pancreatic duct into the duodenum via the Ampulla of Vater, or major pancreatic papilla.

A triad of epigastric pain, intermittent gastro intestinal bleeding and hyperamylasemia [1,2].

We present three cases of chronic pancreatitis presenting as upper GI bleed and with epigastric pain and sudden drop in Hematocrit.

One had bleed from pseudo aneurysm arising from hepatic artery leaking into pseudo cyst, second had erosion of wall of splenic vein leaking into pancreatic duct through small pseudocyst and the third patient was post cystojejunostomy with who bled into cyst, probably from a vessel in wall of cyst, well demonstrated on venous phase of CT angiography and later responded to conservative management.

Hemorrhage from the pancreatic duct, i.e. Haemosuccus Pancreaticus (HP), is a rare cause of gastrointestinal bleeding. Pancreatic Haemosuccus is usually due to the rupture of an aneurysm of a visceral artery, most likely the splenic artery, in chronic pancreatitis. Other causes of HP are rare.

**Keywords:** haemosuccus pancreaticus; pseudo aneurysm; pancreatic pseudocyst; upper gastrointestinal bleeding; embolization.

## Introduction

Hemosuccus pancreaticus occurring from pseudo aneurysm rupture into a pseudocyst is an infrequent cause of life-threatening haemorrhage. It remains a challenge in diagnosis and it should be considered in every patient with a history of chronic pancreatitis who presents with acute or intermittent gastrointestinal hemorrhage.

Hemorrhage from the papilla of Vater *via* the pancreatic duct, known as haemosuccus pancreaticus, is a rare cause of intermittent upper gastrointestinal bleeding. This condition was first reported in 1931 by Lower and Farrell who mentioned bleeding from an aneurysm of the splenic artery [3]. The expression "haemosuccus pancreaticus" was named by Sandblom in 1970 [4]. Until now, reports on hemosuccus pancreaticus have been quite limited. Difficulties in determining the location

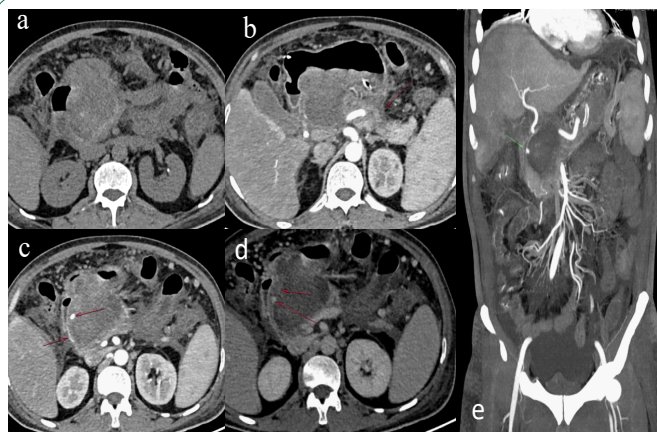
of bleeding sometimes cause delay of treatment and critical condition of patients.

We herein report three cases of hemosuccus pancreaticus and discuss problems and pitfalls for managing this disease.

### Case presentations

#### Case I

A 50 year old gentleman, chronic alcoholic with repeated episodes of pancreatitis in past, presented with intermittent episodes of haematamesis and upper abdominal pain, referred for CT contrast study and angiography, on plain CT, there was a large pseudocyst in head region showing hyperdense contents (density 47 to 52 HU), Arterial angiography phase - Showed a small saccular aneurysm measuring 5 X 4 mm, seen in cyst wall, probably arising from branch from common hepatic artery, with free leak of contrast from aneurysm into pseudocyst on venous and delayed images. The obvious direct communication with pancreatic duct could not be established on CT images.

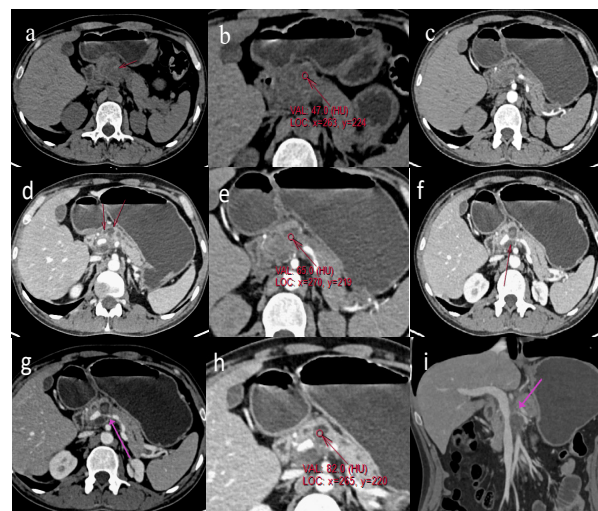


**Figure 1:** (a) Pancreatic pseudo cyst with hyper dense contents. (b) Angiographic phase showing right common hepatic artery. (c) Pseudo aneurysm from branch of common hepatic artery. (d) Pseudo aneurysm leaking into cyst. (e) Pseudo aneurysm from branch of common hepatic artery.

#### Case II

A 45 year old chronic alcoholic with past history of pancreatitis with pseudocyst presented as bleeding per rectum, dizziness and shock, on investigation found to have severe anemia on haemogram, Colonoscopy revealed fresh blood in descending and sigmoid colon. No obvious active bleeding point was identified. Upper GI scopy reveals- Traces of blood in duodenum.

Patient referred for CT angiography and CT Enterography, which revealed two small pseudo cyst, seen communicating with pancreatic duct, the lower cyst (density 23 HU) was seen closely abutting the splenic vein, just before confluence of portal vein with focal wall irregularity and increase in density of cyst contents (76 HU) on venous & delayed phase, representing leak of venous blood, from splenic vein.

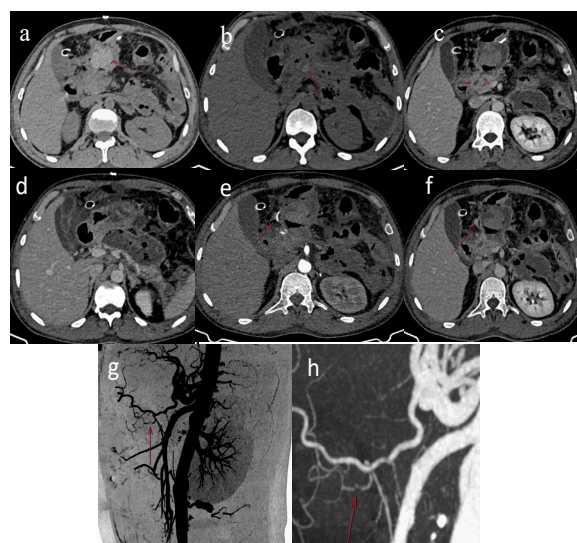


**Figure 2:** (a) Hyper dense contents in pancreatic pseudocyst. (b) Density 47 HU. (c) Arterial phase. (d) communicating with pancreatic duct. (e) Arterial phase density 65HU. (f) Venous phase. (g) Irrregularity and narrowing of splenic vein with suspicious leak. (h) Venous phase density 82 HU. (i) Splenic vein wall irregularity and narrowing at site of contact with pseudo cyst.

#### Case III

A 42 yr old gentle man having repeated episodes of pancreatitis in past, had large pseudocyst, underwent cystojejunostomy, was doing well, on day 5 of surgical procedure presented with bleeding per rectum.

Referred for emergency contrast CT, which revealed-hyper-dense hemorrhagic fluid contents in cyst and pancreatic duct on plain scan (Figures 3a,b). Contrast study reveal direct communication between cyst and pancreatic duct (Figures 3c).



**Figure 3:** (a) hyper dense hemorrhagic contents. (b) Blood within dilated duct. (c) Cyst communicating with pancreatic duct. (d) Peri pancreatic WON. (e) Angiographic phase showing branch of gastroduodenal artery in wall of cyst. (f) Small out pouching from artery on venous phase. (g) Branch of gastro duodenal artery along wall of pseudo cyst showing wall irregularity and small outpunching. (h) Magnified image.

CT Angiographic phase shows focal wall irregularity & small blister (Figures 3 f,h,i) in branch from gastro duodenal artery along wall of cyst with adjacent focal leak on venous phase seen as fusiform hyper density (Figures 3g). Patient was managed with blood transfusion and responded well to conservatively treatment.

## Discussion

### Etiology & demographics

Hemosuccus pancreatitis is a rare cause of upper gastrointestinal bleeding due to hemorrhage from the ampulla of Vater via the pancreatic duct. First described by Sandblom in 1970, it occurs in approximately one in 1500 cases and is often life threatening due to massive bleeding [4,5]. It is most frequently caused by the rupture of a splenic artery pseudoaneurysm into the pancreatic duct on a background of chronic pancreatitis [6-8]. This is thought to be due to pancreatic enzymes destroying the architecture and elastic tissue of the vessel wall leading to pseudoaneurysm formation [8]. Less frequently other peripancreatic vessels such as the gastro duodenal, pancreaticoduodenal, hepatic and left gastric arteries have been implicated [9]. A review of literature has highlighted some uncommon causes of bleeding into the pancreatic duct. Pancreatic neoplasms such as mucinous cystic neoplasm and microcystic adenomas have been identified as potential sources of bleeding [10-13]. Benign causes such as pancreatic pseudocysts and pancreatolithiasis have also been identified as causes [14,15]. Direct pancreatic injury with bleeding secondary to abdominal trauma or iatrogenic causes like biopsy have also been described in case reports [16,17]. The demographics of hemosuccus pancreatitis is not well understood due to the rarity of the condition. A review of patients over 15-years by Rammohan found a mean age of 32 and a male: female ratio of 43: 8-9 [6].

Amongst our Three patients of HP: Case 1 has rupture of common hepatic arterial pseudo aneurysm into pseudocyst., case 2 had a communication between the splenic vein with pancreatic duct via small pseudocyst and case 3 had acute hemorrhage post cysto Jejunostomy probably vessel in the wall of cyst-a branch from gastro duodenal artery.

### Clinical & imaging findings

The clinical diagnosis of Hemosuccus pancreatitis is difficult due to its intermittent nature and obscured source of bleeding. Patients often present with multiple episodes of upper gastrointestinal bleeding causing melena and occasionally haematemesis [18]. There may be a characteristic intermittent crescendo-decrescendo epigastric pain, secondary to pancreatic duct distension from bleeding or a clot [19]. A history of chronic pancreatitis and chronic alcohol abuse are also associated with the diagnosis [18]. Blood tests often show chronic anemia; however liver markers, amylase and lipase levels are rarely elevated except in cases with acute pancreatitis. Upper GI endoscopy that shows fresh bleeding from the ampulla of Vater allows for a positive diagnosis [20]. However due to the intermittent nature of bleeding, blood is often noted in the duodenum with no identifiable source of bleeding. CECT imaging is very helpful in the diagnosis of hemosuccus pancreatitis. It allows for the identification of pancreatitis and pseudoaneurysms which are predisposing factors. In patients with intermittent bleeding, clotted blood within the pancreatic duct or "sentinel clot" may suggest the diagnosis [21]. In cases of active bleeding, contrast opacification of the pancreatic duct is suggestive of hemosuc-

cus pancreatitis. The cause, size and site of bleeding into the pancreatic duct can be accurately identified to assist intervention planning. Factors that may complicate treatment such as abnormal vascular anatomy or pancreatic lesions can also be identified. Angiography is the diagnostic standard and first line therapeutic intervention for Hemosuccus pancreatitis [22,23]. It is able to detect small or intermittent bleeds into the pancreatic duct and accurately identifies the vessel involved. Vascular anatomy and collateral supply of the bleeding vessel as well as pseudo aneurysm size and features can also be evaluated.

### Treatment & prognosis

The management for HP should be aimed to eradicate the source of bleeding completely. The options for hemostasis in hemosuccus pancreatitis are angiography with endovascular therapy or surgery. Angiography with coil embolization or stent placement is the preferred option in patients who are hemodynamically stable and have a demonstrable source of bleeding [24]. Covered stents retain the patency of the vessel but require enough length on both sides of the pseudoaneurysm for an adequate seal. Also, tortuosity or sharp angulations of the vessel preclude stent placement [25]. Endovascular therapy has been shown to achieve successful hemostasis in 75-100% of the cases with a low post procedure mortality [24,26]. Potential complications include bowel ischemia, splenic infarction and coil or stent migration [27]. Surgery is preferred in hemodynamically unstable patients or when angiography does not demonstrate a source of bleeding. It is also used in cases where there is failure of embolization or rebleeding after embolization. Surgical techniques vary according to the site and cause of bleed and include ligation of the bleeding vessel, pancreatic resection and bypass grafting [24]. For the patient with HP who has a pancreatic disease such as pancreatic pseudocyst, surgical treatment may be appropriate. Surgical success rates of 70-85% and operative mortality rates of 10-50% have been reported. Risk of recurrent bleeding after surgery is between 0-5% [28].

### To summaries teaching points

Hemosuccus pancreatitis should be considered in the differential list for upper gastrointestinal bleeding in patients with a history of chronic pancreatitis. Contrast enhanced CT and CT Angiography on multislice CT scanner are very helpful as non invasive tool in many cases for localizing the cause and site of bleed in hemosuccus pancreatitis.

Contrast opacification of the pancreatic duct and pseudoaneurysm formation in peripancreatic vessels on contrast-enhanced computed tomography imaging or angiography are characteristic imaging findings.

Interventional radiological therapy should be tried at first for HP. Only when angiography shows no abnormal findings and interventional radiological therapy is not successful, surgical treatment is considered. Intra operative ultrasonography are often performed at surgery to confirm the origin of hemorrhage.

### Differential diagnosis

Haemosuccus pancreatitis presents with a clinical picture of intermittent upper gastrointestinal bleeding and chronic anemia. The differential include, Erosive gastritis, Peptic ulcer disease, Gastric carcinoma, Gastric and esophageal varices, Mallory Weiss tear, Metastatic deposits in the upper gastrointestinal tract, bleeding Diverticuli, Angiodysplasia.



## Declarations

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