

Case 10218

Splancnic Hypertension following a Whipple Procedure - Interdisciplinary approach

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Section: Interventional Radiology

Published: 2012, Jul. 27

Patient: 49 year(s), male

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Clinical History

A 49 year old male with previous history of cystojejunostomy for pancreatic pseudocyst was diagnosed in a follow up evaluation with a non-invasive intraductal papillary mucinous carcinoma of the head of the pancreas.

Two years after pancreatoduodenectomy he was admitted in the emergency room with massive hematemesis and shock.

Imaging Findings

A cystic mucinous neoplasm of the head of the pancreas was diagnosed after a CT scan and transduodenal puncture guided by endoscopic ultrasound (Fig. 1-3).

Two years after surgery he was admitted in the ER with massive hematemesis and shock due to gastric varices with signs of recent hemorrhage but with no active bleeding (Fig. 4).

CT revealed thrombosis of the superior mesenteric vein (SMV) with extensive collateral drainage by the greater omentum and splenic veins, latter confirmed by DSA (Fig. 5). A mesenteroportal

stent was placed (Fig. 6).

Two years later he was readmitted by massive hematemesis due to actively bleeding gastroesophageal varices. Angio-CT revealed patency of the mesenteroportal stent, splenic vein thrombosis, splenomegaly and intense collateral perisplenic and perigastric circulation (Fig. 7). Selective proximal splenic artery embolization with coils was successful (Fig. 8) and he has been asymptomatic since with no evidence of malignant recurrence (Fig.9).

Discussion

Superior mesenteric vein (SMV) thrombosis is a rare event with unspecific clinical signs and symptoms, which typically delays the diagnosis. In the acute onset, abdominal pain is prominent and there is a risk of bowel infarction and abdominal sepsis. In the chronic forms, patients are often asymptomatic [1].

With an insidious onset, collateral venous drainage can be seen through the spleen, duodenal and gastric veins. This can minimize the bowel oedema and ischemia, being the patients almost asymptomatic. On the other hand, collateral venous drainage may be responsible for oesophageal or gastric varices. Thus, upper gastrointestinal (GI) bleeding can be the first manifestation of chronic SMV thrombosis [2-4].

This case reports a chronic SMV thrombosis two years after cephalic pancreatoduodenectomy, with massive upper GI bleeding as the first clinical evidence.

The known risk factors were the two previous abdominal surgeries (two and five years before) and a previous episode of acute pancreatitis (five years before). He was a non-smoker and hematologic study for pro-coagulation disorders was negative.

This case reflects an unusual pathophysiology for upper GI bleeding, where venous hypertension secondary to the superior mesenteric vein and later also splenic vein thrombosis led to an extensive perigastric collateral venous flow and varicose gastric and oesophageal veins. The option for endoluminal thrombolysis and stenting tries to re-establish the normal physiology of venous drainage.

Long-term anticoagulation is recommended for venous thrombosis in patients with primary pro-thrombotic disease. Since our patient had thrombocytopenia, upper GI bleeding and the stent was placed in a large vein it was decided not to use oral anticoagulation. A second episode of massive upper GI bleeding was due to collateral varices secondary to splenic vein thrombosis. Splenic artery was selectively embolized diminishing the splenic vein input, as described in other case reports [2-7]. Spleen preservation was important, since it works as a splanchnic reservoir and a pressure tampon.

In this patient the interventional radiologic procedure was effective. A surgical approach, with emergent gastric resection, as it was initially considered in the ER for the upper GI bleeding with shock would remove collateral circulation, the main pathway for splanchnic venous return, probably with a worst prognosis.

The effective interdisciplinary discussion, involving gastroenterology, surgery and interventional radiology was likely the main factor for the success in this case.

Final Diagnosis

gastroesophageal varices due to SMV occlusion

Differential Diagnosis List

Chronic Liver Disease with hypertension, Peptic ulcer disease

Figures

Figure 1 Two years follow up abdominal CT scan



Two years follow up abdominal CT scan with venous contrast showing a cystic lesion in the head of the pancreas (arrow).

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Area of Interest: Abdomen; Contrast agents; Gastrointestinal tract;
Imaging Technique: CT-Angiography;
Procedure: Imaging sequences;
Special Focus: Neoplasia;

Figure 2 Endoscopic ultrasonography



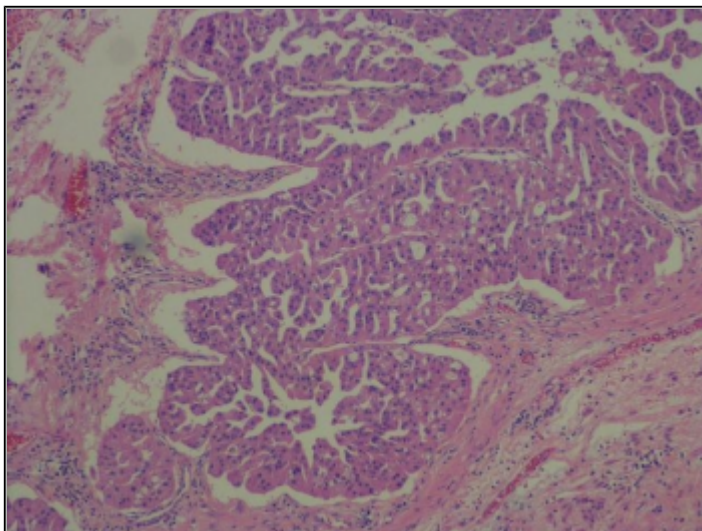
Endoscopic ultrasonography transduodenal puncture showing a cystic lesion with 2,8 by 2,2 cm, with multiple septa and intracystic vegetations. A thick mucous fluid was successfully drained.

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Area of Interest: Abdomen;
Imaging Technique: Ultrasound;

Procedure: Cholangiography;
Special Focus: Neoplasia;

Figure 3 H&E 10x

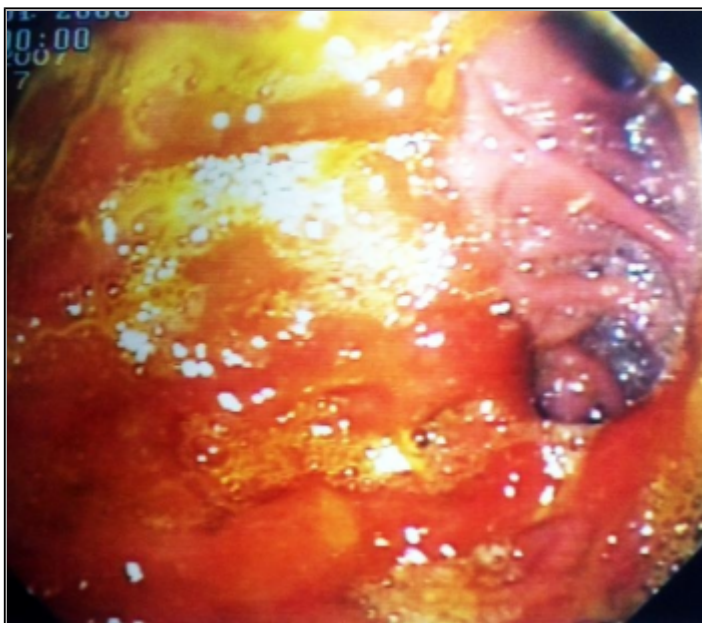


Mucinous cystic tumor with foci of adenocarcinoma. H&E 10x papillary and oncocytic epithelial cells lining a pancreatic duct.

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Area of Interest: Abdomen;
Imaging Technique: PACS;
Procedure: Endoscopy;
Special Focus: Neoplasia;

Figure 4 Emergent esophagogastrosocopy



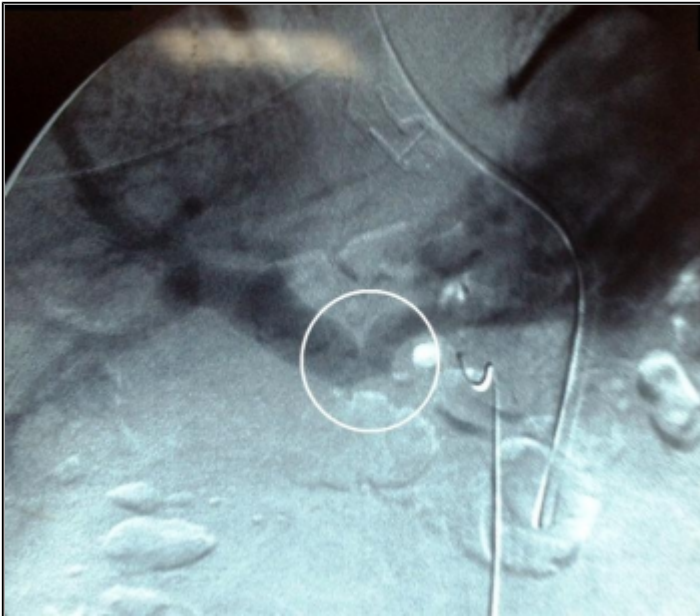
Emergent esophagogastrosocopy showing gastric varices with no active bleeding but with stigma of recent bleeding.

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Area of Interest: Gastrointestinal tract;
Imaging Technique: PACS;

Procedure: Diagnostic procedure;
Special Focus: Neoplasia;

Figure 5 Transhepatic portal venous angiography



Transhepatic portal venous angiography showing an almost occlusive superior mesenteric vein thrombosis (encircled).

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Area of Interest: Gastrointestinal tract; Interventional vascular; Liver;
Imaging Technique: Catheter venography;
Procedure: Stents;
Special Focus: Obstruction / Occlusion;

Figure 6 Transhepatic portal venous angiography



Transhepatic portal venous angiography after placing a portomesenteric stent.

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Area of Interest: Abdomen;

Imaging Technique: Catheter venography;

Procedure: Stents;

Special Focus: Obstruction / Occlusion;

Figure 7 Abdominal CT scan



Abdominal CT scan showing extensive perigastric and perisplenic collateral venous flow, splenomegaly and partial thrombosis of the splenic vein.

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Area of Interest: Abdomen;

Imaging Technique: CT;

Procedure: Stents;

Special Focus: Obstruction / Occlusion;

Figure 8 Proximal selective splenic artery embolization

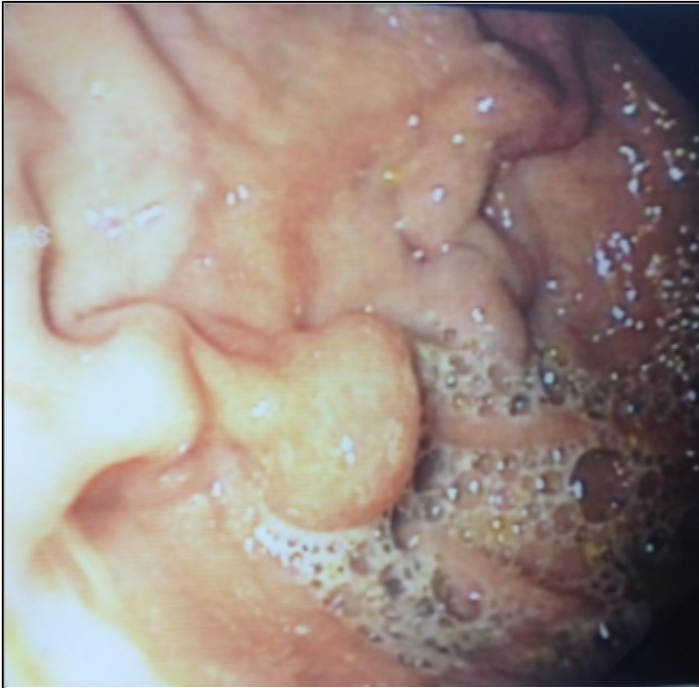


Proximal selective splenic artery embolization with coils (encircled).

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Area of Interest: Interventional vascular;
Imaging Technique: Catheter arteriography;
Procedure: Embolisation;
Special Focus: Varices;

Figure 9 Esophagogastroscopy



Nowadays esofagogastroscopy showing esophagogastric varices.

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Area of Interest: Gastrointestinal tract;
Imaging Technique: PACS;
Procedure: Diagnostic procedure;
Special Focus: Varices;

MeSH

Esophageal and Gastric Varices [C06.552.494.414]

Dilated blood vessels in the ESOPHAGUS or GASTRIC FUNDUS that shunt blood from the portal circulation (PORTAL SYSTEM) to the systemic venous circulation. Often they are observed in individuals with portal hypertension (HYPERTENSION, PORTAL).

Hypertension, Portal [C06.552.494]

Abnormally increased pressure in the portal venous system; frequently seen in cirrhosis of the liver and in other conditions which cause obstruction of the portal vein.

Arterial Occlusive Diseases [C14.907.137]

Diseases in which arterial vessels are partially or completely obstructed or in which the blood flow

through the vessels is impeded.

Embolectomy [E04.100.814.445]

Surgical removal of an obstructing clot or foreign material which has been transported from a distant vessel by the bloodstream. Removal of a clot at its original site is called THROMBECTOMY.

Angioplasty, Transluminal, Percutaneous Coronary [E04.100.814.050.060.100]

Dilatation of an occluded coronary artery (or arteries) by means of a balloon catheter to restore myocardial blood supply.

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Citation

Gomes AP, Guedes Pinto E, Sousa MD Rocha R, Rosa L, Appleton T, Pignatelli N, Nunes VM. (2012, Jul. 27)

Splancnic Hypertension following a Whipple Procedure - Interdisciplinary approach {Online}

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