Pseudoaneurysm of the replaced right hepatic artery with arterio venous fistula to the portal vein

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A 51-year-old man, a chronic smoker and consumer of alcohol, presented with recurrent upper abdominal pain, vomiting on and off and loss of weight and appetite for 2.5 years. There was no fever, jaundice or gastrointestinal bleeds. He was diagnosed to have severe chronic obstructive airway and his general condition was very poor.

He had been diagnosed in 1982 to have ankylosing spondylitis with significant spine deformities.

CT scan revealed partially atrophied pancreatic parenchyma with dilated main pancreatic duct and replaced right hepatic artery (RRHA) arising from the superior mesenteric artery (SMA) (Fig. 1). There was a thrombosed pseudoaneurysm of right hepatic artery just distal to its origin with fistulous communication with the main portal vein. There was extensible acute thrombosis of the main portal vein but intrahepatic portal branches were not thrombosed. There was chronic thrombosis of the distal splenic vein.

We feel that the RRHA had to be preserved, the pseudoaneurysm exclude and the fistulous communication embolise as the main portal vein had thrombus within. It was hence planned to treat the hepatic artery portal venous fistula with a stent graft. The other option would have been to stent the RRHA and coil the fistula through the struts of the stent preserving the RRHA.

He was advised the above to prevent the life threatening complication of rupture. He however refused treatment.

Pancreatitis may be associated with the formation of visceral artery pseudoaneurysms in about 10% of cases. This is due to the leakage of pancreatic enzymes from an inflamed pancreas resulting in enzymatic degradation of arterial wall. Rupture of pseudoaneurysms can have mortality in excess of 50%. Due to its contiguity with the pancreas, the splenic artery is the most commonly involved vessel (45%) in pseudoaneurysm formation in pancreatitis followed by the gastroduodenal (17%) and pancreaticoduodenal (11%) arteries [1].

In Michels' classic autopsy series on the anatomy of the liver and variations in its blood flow, 45% of cases had a variant pattern. The RRHA was the most common variation, arising in 11% from the superior mesenteric artery (type 3)

Fig. 1 Contrast enhanced CT scan showing a thrombosed pseudoaneurysm of the replaced right hepatic artery (RRHA)

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Fig. 2 Contrast enhanced CT scan (Coronal reconstruction) showing fistulous communication of the RRHA pseudoaneurysm with the main portal vein

and in 1% occurring with a replaced left hepatic artery arising from the left gastric artery (type 4).

Pseudoaneurysms arising from a replaced right hepatic artery are extremely rare. There is one report of a pseudoaneurysm of the RRHA following pancreaticoduodenectomy [2].

The traditional surgical treatment for pseudoaneurysms is laparotomy with ligation of the feeding vessel or partial pancreatectomy. The mortality associated with surgical management in such cases is up to 37% [1]. Transcatheter angio-embolization of pseudoaneurysms complicating pancreatitis is a minimally invasive procedure with high success rates (80%) and low morbidity. Morbidity could be due to necrosis of portions of the liver, spleen or bowel. It is the treatment of choice in the management of pseudoaneurysms complicating pancreatitis even in hemodynamically unstable patients [1].

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