Distal Duodenal Varices: 
First Presentation of Upper Gastrointestinal Bleeding
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ABSTRACT
Varices are abnormal dilated veins which result from increased pressure in the portal circulation. Although the oesophagus and stomach are the most common sites for varices to develop, they may also occur as ectopic varices in the duodenum, rectum, and retroperitoneal areas. Isolated duodenal varices involving distal duodenum, particularly the fourth part of the duodenum, are extremely rare. However, such ectopic varices are associated with an increased risk of bleeding and mortality. Not only are they a diagnostic challenge, particularly if they present as a first manifestation of portal hypertension, they are also very difficult to treat due to their location. We present an interesting case of upper gastrointestinal bleeding where ectopic varices in the fourth part of the duodenum presented as a first manifestation of upper gastrointestinal bleeding. Gastroscopy did not reveal the source of bleeding and thus CT angiogram was performed in order to confirm the diagnosis. Radiological intervention by embolisation resulted in successful treatment.

Key Words: Upper gastrointestinal bleeding. Ectopic varices. Duodenal varices.

INTRODUCTION
Portal hypertension is associated with the formation of varices, which are dilated collateral vessels between portal and systemic circulation. They are commonly seen in the oesophagus and stomach. Ectopic varices are collateral vessels that occur anywhere along the gastrointestinal tract outside these common sites. Although rare (2%-5%), ectopic varices are associated with a four-fold increased risk of bleeding as compared to oesophageal varices and can result in a mortality rate as high as 40%.1 Isolated duodenal varices, involving distal duodenum, are extremely rare. They pose a diagnostic challenge to clinicians, especially when they present as a first manifestation of portal hypertension resulting in gastrointestinal bleeding,2 as is highlighted in this case.

CASE REPORT
A 72-year gentleman was admitted with melaena and low haemoglobin, together with a raised urea. There was a history of drinking excessive amount of alcohol for a long period of time, but without a formal diagnosis of alcoholic liver disease. Upon examination, he was stable haemodynamically and there were no stigmata of chronic liver disease. His admission blood revealed haemoglobin 4.8 g/dl (13.3 - 17.6 g/dl), urea 16.3 mmol/L (2.5 - 7.8 mmol/L) along with mildly deranged clotting with prothrombin time 14 seconds (9 - 14 seconds).

He was resuscitated with blood transfusion and once stable, underwent gastroscopy which revealed fresh blood in the duodenum; but no obvious source of bleeding was identified. There were no endoscopic signs of portal hypertension in the oesophagus or stomach. He continued to have melaena and his haemoglobin fell, necessitating further blood transfusion. A CT angiogram was performed which revealed portal-systemic collateral formation between the superior mesenteric vein (SMV) and the left common iliac vein (CIV) (Figure 1). There appeared to be active contrast extravasation from this varix into the fourth part of the duodenum.

He was referred for radiological intervention and underwent fluoroscopic embolisation after drainage of his ascites. The portal vein was accessed percutaneously through the liver and the duodenal varix was embolised...
Management of bleeding duodenal varices includes resuscitation to stabilise the patient, prophylactic antibiotics, terlipressin and gastroscopy once the patient is stabilised. If varices are within the reach of the endoscope, then sclerotherapy and band ligation can be used to achieve haemostasis.

Endoscopic treatment, however, is not possible if varices involve the distal duodenum especially the fourth part; and in such cases, interventional radiology has shown its value. Different interventional radiology modalities have been used in this context including transjugular intrahepatic portosystemic shunt (TIPPS), balloon occluded retrograde transvenous obliteration (B-RTO), and percutaneous transhepatic obliteration (PTO). PTO or fluoroscopic embolisation with cyanoacrylate is capable of directly blocking the blood supply in these cases.

The case hereby presented, is different in several aspects. First of all, there was no previous diagnosis of liver disease in our patient who presented with upper gastrointestinal bleeding. Secondly, CT revealed ectopic varices in the fourth part of the duodenum but without any evidence of portal hypertension. Finally, difficulty to access the varix from the common femoral vein further complicated management, and thus the portal vein had to be accessed percutaneously through the liver to obliterate the varix.

REFERENCES

DISCUSSION
Portal hypertension, which may be hepatic or extrahepatic in origin, causes either a reversal of blood flow within veins or reopening of the collapsed embryonic channels at sites of portal-systemic anastomosis (lower end of oesophagus, anal canal, and retroperitoneal areas), leading to the formation of varices. Although these are the most common sites for varices to develop, they may also occur as ectopic varices in the duodenum, rectum, and retroperitoneal areas.\(^1\)

Duodenal varices are rare and comprise 0.4% of all variceal bleeds.\(^2\) They are most commonly found in the duodenal bulb and less frequently in the distal duodenum. In addition to coexisting with oesophageal varices, they can also occur as isolated duodenal varices. Their anatomy is unique and they are formed by the collateral veins originating from the portal vein or SMV, draining into the inferior vena cava through retroperitoneal veins of Retzius.\(^3\)

The most common cause of duodenal varices is portal hypertension secondary to liver cirrhosis. In addition, extra-hepatic causes are responsible for up to 25% of duodenal varices and include portal or splenic vein thrombosis, pancreatitis, and retroperitoneal fibrosis.\(^4\) Furthermore, bleeding from duodenal varices can be massive and associated with significantly high mortality.\(^5\)

Diagnosis of duodenal varices can be a challenge due to difficulty in assessing this area with endoscopy, as seen in this case. Other methods, including CT angiogram and explorative laparotomy have been used in this context. CT angiogram has shown its value and accurately identifies the source of bleeding in most cases.

![Figure 2 (A): A catheter angiogram showing varix before embolization.](image1)

![Figure 2 (B): Catheter angiogram showing varix postembolization.](image2)