

CASE REPORT

Bleeding Duodenal: Varices Treatment by TIPS and Transcatheter Embolization

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Abstract

We describe our clinical experience in 4 patients with portal hypertension who presented with bleeding mesenteric varices originating from the superior mesenteric vein with retrograde filling of collaterals draining into the inferior vena cava. The clinical presentation, imaging findings, and potential therapeutic management are discussed.

Key words: Embolization—Mesenteric varices—Portal hypertension—Superior mesenteric vein—TIPS

The incidence of bleeding mesenteric and duodenal varices is low; however, they may result in severe, life threatening hemorrhage with a mortality approaching 40% [1]. The diagnosis of mesenteric varices is difficult by both barium meal and endoscopy and this disorder is frequently diagnosed only at surgery or autopsy [2]. We describe 4 patients with cirrhosis and portal hypertension who presented with bleeding superior mesenteric varices; they were successfully treated by a transjugular intrahepatic portosystemic shunt (TIPS) in combination with embolization.

Case Reports

Case 1

A 47-year-old man with a history of chronic liver disease secondary to hepatitis C presented with severe upper gastrointestinal bleeding. Upper endoscopy revealed small esophageal varices and banding was performed, but the bleeding continued. The initial diagnostic mesenteric angiogram was negative. The patient presented with a second episode of massive lower gastrointestinal bleeding 4 days after the initial bleeding episode. Exploratory laparotomy with resection of the most of the ileum and colon was performed emergently. The patient continued to have lower gastrointestinal bleeding and a second angiogram revealed opacification of large mesenteric varices. These were confirmed by a computed tomography (CT) angiogram. A portogram during the TIPS procedure performed 8 days after surgery

revealed large mesenteric varices from the superior mesenteric vein (SMV) draining into the right gonadal vein (Fig. 1). Embolization of the varices with multiple Gianturco coils (Cook, Bloomington, IN, USA) was performed (Fig. 2). The patient's condition stabilized. He was discharged and remains in a stable condition 17 months after the procedure.

Case 2

A 55-year-old white man with a history of alcoholic and hepatitis C cirrhosis presented with massive hematemesis. The patient had a history of a previous surgical splenorenal shunt which was created approximately 10 years prior to this admission. Endoscopy (EGD) demonstrated a bleeding esophageal ulcer but no active bleeding from the duodenal region. Epinephrine was injected into the ulcer. CT revealed large mesenteric collaterals draining into the inferior vena cava (IVC). Interventional Radiology was consulted and selective mesenteric angiography was performed which demonstrated no evidence of active bleeding. A portogram during the TIPS procedure revealed surgical interruption of the distal splenic vein with a recanalized paraumbilical vein and opacification of large duodenal varices draining into retroperitoneal collaterals. The splenorenal shunt was occluded. The duodenal varices were embolized with metallic coils. The patient is currently asymptomatic 10 months after the procedure without any complications.

Case 3

A 50-year-old man with a history of alcoholic and hepatitis C cirrhosis underwent endoscopic treatment of bleeding gastric varices. He was discharged but returned approximately 2 months later with recurrent hematemesis. CT scan with contrast demonstrated the duodenal varices draining into the gonadal vein (Fig. 3). A TIPS procedure was performed via a right internal jugular vein approach. A large superior mesenteric to right gonadal vein collateral was identified but not embolized. The patient has been followed up with Doppler ultrasound examinations and has been without major complication for 26 months after the procedure.

Case 4

A 42-year-old white man with a history of alcoholic and hepatitis C cirrhosis presented to the emergency room with a 3-day history of bloody stools and hematemesis. Investigation included EGD which demonstrated large duodenal varices that were actively bleeding. Attempts at endoscopic sclerotherapy and epinephrine injection were unsuccessful. The patient continued to bleed and a TIPS procedure was performed in the standard fashion. Portography during the TIPS demonstrated a large duodenal varix originating from the SMV and draining into the right gonadal vein (Fig. 4). This

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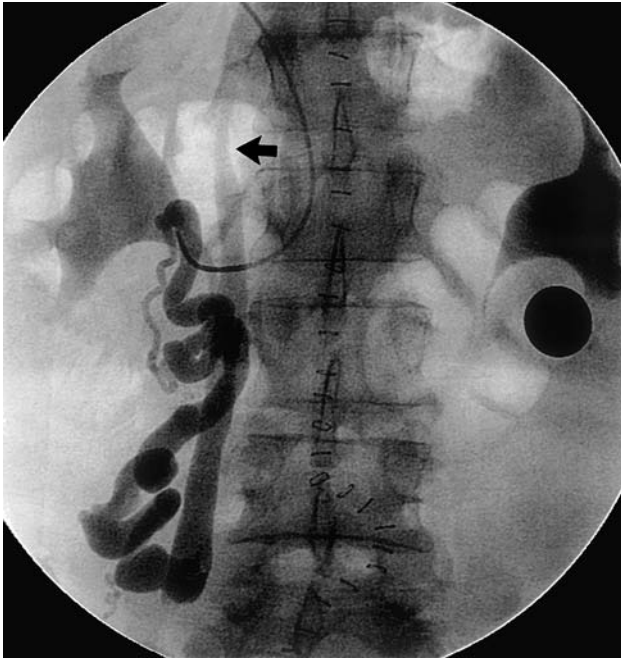


Fig. 1. Case 1. Selective venogram of the pancreaticoduodenal vein during the TIPS procedure, anteroposterior (AP) projection. Note the large mesenteric varices draining into the right gonadal vein (arrow).



Fig. 2. Case 2. SMV venogram after embolization, AP projection, demonstrates antegrade flow through the TIPS (arrowhead). The mesenteric varices were embolized with multiple metallic coils (arrow).

collateral was embolized using three metallic coils. The portosystemic gradient was 30 mmHg and decreased to 12 mmHg after the initial TIPS. The patient tolerated the procedure well but developed recurrence of hemate-

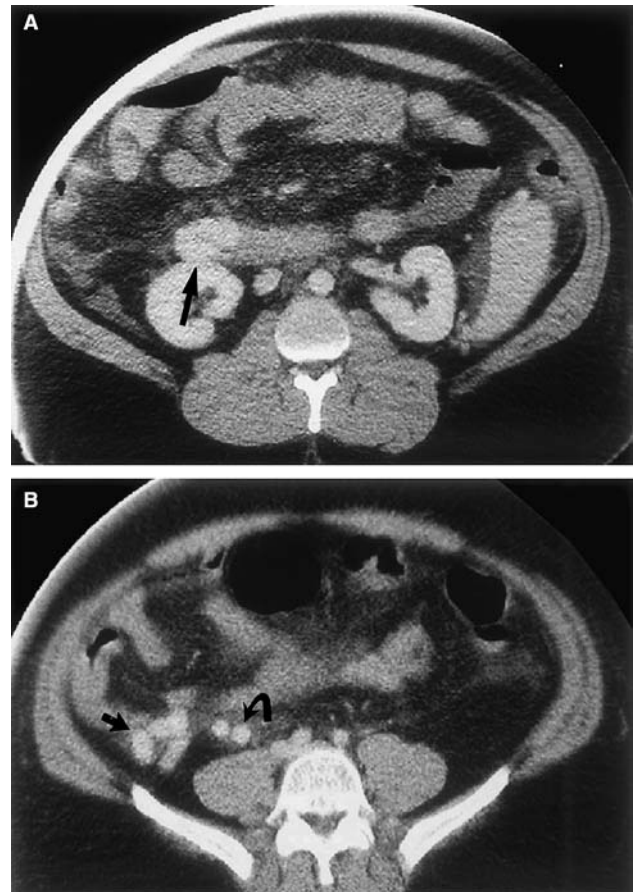


Fig. 3. Case 3. **A** Axial CT scan with intravenous contrast demonstrates large duodenal varices (arrow). **B** Axial CT scan with intravenous contrast demonstrates the mesenteric varices (arrow) draining into the right gonadal vein (curve arrow).

mesis the next day, requiring angiographic and evaluation of the TIPS. A high portosystemic gradient of 17 mmHg was noted, and TIPS revision with additional stent placement was performed. Recanalization of the duodenal varix was also noted and treated with additional placement of coils. The patient's condition stabilized and he was then discharged. The patient was lost to follow-up. Twelve months after the procedure the patient presented again with recurrent hematemesis. The TIPS was found to be thrombosed on Doppler ultrasound. TIPS revision was performed. At this time an additional large duodenal varix was noted and embolized with coils and the TIPS was revised. Although the clinical condition of the patient occurred stabilized initially, fatal recurrent massive bleeding occurred 24 hr later.

Discussion

Duodenal and other ectopic enteric varices are an unusual cause of gastrointestinal bleeding accounting for 1–5% of all variceal bleeding [3]. The most common etiology of mesenteric varices is portal hypertension, which results in retrograde splanchnic venous outflow [4]. Other rare etiologies of intestinal varices described in the literature include mesenteric venous thrombosis, congenital malformations, as well as intra-abdominal adhesions related to prior surgery [5]. The collaterals between the portal vein and the IVC at the retroperitoneum are known as the veins of Retzius [6]. Using CT during arterial portography these anastomoses were demonstrated in 50% of patients with cirrhosis and 50% without cirrhosis by Ibukuro et al. [6]. These pathways are important col-



Fig. 4. Case 4. **A** Digital subtraction portogram during the TIPS procedure, AP projection, shows the main portal vein and its branches are patent. There is retrograde filling of large mesenteric varices (arrow) originating from the SMV (arrowhead). **B** Selective digital subtraction venogram of the pancreaticoduodenal vein demonstrates large duodenal and mesenteric varices. **C** Delay

phase of the selective venogram reveals drainage of the mesenteric varices (arrow) into the right gonadal vein (arrowhead). **D** Digital subtraction portogram after TIPS creation and embolization of the varices with coils, AP projection, shows antegrade flow of the contrast through the TIPS (arrow). The mesenteric varices are no longer opacified.

laterals for the origin of mesenteric and duodenal varices in patients with portal hypertension and in patients with IVC obstruction. The most common pathway described is a communication of the ileocolic vein draining into the IVC, or the right renal vein via the right gonadal vein. Other less common pathways include the

pancreaticoduodenal vein draining into the IVC, proximal branches of the SMV draining into the left gonadal vein, and the ileocolic vein draining directly into the IVC [6].

Duodenal varices are considered dilated veins of Retzius around the pancreaticoduodenal region. Duodenal varices usually consist

of a single vessel with associated afferent and efferent vessels which form a retroperitoneal portosystemic shunt [4]. The afferent vessel arises either from the superior or inferior pancreaticoduodenal vein or from the SMV [4]. The efferent vessel is thought to arise from one of the many retroperitoneal veins and commonly drains into the inferior vena cava. The varices usually lie in the posterior wall of the duodenal bulb [6].

Therapeutic options for bleeding duodenal varices include endoscopy with sclerotherapy, the use of vasoactive drugs, segmental bowel resection, portosystemic shunt surgery, oversewing of the varices, and TIPS procedures with or without focal variceal embolization [3]. Recently retrograde balloon-occluded obliteration of duodenal varices using a venous approach has also been described [7]. Sclerotherapy and vasoactive drug therapy are readily accepted as the first line of therapy in managing bleeding esophageal varices. Sclerotherapy appears to be less effective in the management of duodenal varices [3, 8]. Visualization of intestinal varices endoscopically is limited as a result of their small diameter and short length, as well as their location which is often deep within the duodenal mucosa. In the 4 cases we have described, duodenal varices were visualized by endoscopy in only 1 patient. CT clearly demonstrated the ectopic varices in the 2 patients in which it was performed. CT angiography with the use of multidetectors may play an increasingly important role in detecting ectopic intestinal varices in patient with cirrhosis and gastrointestinal bleeding [9].

TIPS alone or with embolization of varices is accepted as a means of effectively treating acute variceal hemorrhage in patients refractory to sclerotherapy, and in those who are poor surgical candidates; however, due to the rarity of bleeding duodenal varices, large randomized trials concerning the best management of this condition are not available [3, 5]. Superior mesenteric arteriography or direct portography generally demonstrates large collaterals in the duodenal area. Extravasation of contrast at the bleeding site is rare and often missed even in cases of massive gastrointestinal bleeding [2, 3, 5]. TIPS is a relatively safe and effective means of controlling acute variceal bleeding, allowing the lowering of portal venous pressure [5]. TIPS has been very effective in controlling variceal bleeding from ectopic varices of the small and large bowel. Haskal et al. reported successful control of bleeding using TIPS in 9 patients with intestinal varices, 6 patients with small bowel varices, and 3 patients with varices of the colon. In this report concomitant coil embolization of varices was performed in 2 patients [5]. Embolization of focal bleeding of duodenal varices and superior mesenteric varices using a transhepatic approach has been described in several case reports and is an accepted alternative for the management of life threatening bleeding [2, 10]. The goal of the embolization procedure is not to occlude the bleeding site but to occlude the feeding vessel with agents such as metallic coils, gelfoam, isobutyl-cyanoacrylate, and iodized oil. Embolization is a temporary measure in that it does not alter portal pressures,

allowing new collaterals to develop or pre-existing varices to recanalize [2, 11, 12]. It is probable, as in the case bleeding esophageal varices, that successful control of the portal hypertension with the creation of a TIPS is sufficient to control mesenteric variceal bleeding in most cases. However, enough clinical reports have been published to indicate a need to study the added benefit of embolization to TIPS in order to provide for a longer efficacy and improved patient outcome due to the control of both the portal hypertension and the source of the bleeding [1, 5, 9].

In summary, bleeding duodenal varices are a rare and potentially lifethreatening condition. The diagnosis of this disorder is difficult and can be missed on endoscopy, and it should be suspected in all cases of gastrointestinal hemorrhage, especially in the absence of bleeding esophageal and/or gastric varices. Our limited clinical experience in the management of this disorder suggests that TIPS together with embolization of the varices is an effective and safe method of controlling the gastrointestinal bleeding.

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