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Case Report

Balloon-occluded antegrade transvenous obliteration via transjugular intrahepatic access for bleeding rectal varices

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ABSTRACT

Bleeding rectal varices in cirrhotic patients with portal hypertension can be difficult to treat endoscopically or surgically. Transjugular intrahepatic portosystemic shunt creation offers a minimally invasive method to effectively decompress the portal system but may be contraindicated in patients with poor hepatic reserve or hepatic encephalopathy. We present a case of a 44-year-old woman with persistent rectal variceal bleeding, who was a poor candidate for endoscopic intervention, surgery, or transjugular intrahepatic portosystemic shunt. We therefore performed balloon-occluded antegrade transvenous obliteration of the rectal varices via transjugular intrahepatic access, which effectively controlled her rectal bleeding.

Introduction

Variceal bleeding is a well-known complication of portal hypertension. Rectal varices represent portosystemic collaterals between the inferior mesenteric venous system and internal iliac venous system. They constitute the most common entity among the ectopic varices [1] and can result in clinically significant bleeding. In contrast to the management of gastroesophageal varices, that of rectal varices has been much less well established [2,3]. Transjugular intrahepatic portosystemic shunt (TIPS) creation is a minimally invasive intervention that can effectively reduce portal hypertension and thereby decrease the hemorrhagic risk of gastroesophageal and ectopic varices. [4] However, some patients are not candidates for TIPS due to their poor hepatic reserve or hepatic encephalopathy. Alternatively, direct variceal sclerosis has been employed in the management of bleeding gastric varices [5,6]. These procedures are assisted by balloon occlusion of the venous outflow or inflow of the portosystemic shunt to control and direct sclerosant injection and thus are termed balloon-occluded retrograde or antegrade transvenous obliteration (BATO: balloon-occluded antegrade transvenous obliteration; BRTO: balloon-occluded retrograde transvenous obliteration), respectively. We report our experience of applying the BATO technique in the management of

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bleeding rectal varices in a patient with contraindications to TIPS.

Case report

A 44-year-old woman with a history of decompensated alcoholic and hepatitis C cirrhosis was admitted to our hospital for a facilitated liver transplantation evaluation. The patient had a history of intermittent rectal bleeding attributed to hemorrhoids and had been admitted to an outside hospital recently for hematochezia requiring 7 units of packed red blood cell transfusion. On hospital day 2, she again developed intermittent bright red blood per rectum, which progressed over the following days in the setting of coagulopathy and thrombocytopenia. Subsequent colonoscopy revealed dilated submucosal vessels in the rectum likely representing internal hemorrhoids vs anorectal varices. While these were deemed most likely the source of her ongoing bleeding, no endoscopic treatment could be offered. Surgery was consulted for consideration of ligation, but the patient was considered too high surgical risk given her hepatic decompensation and coagulopathy.

Over the ensuing days, she had multiple episodes of hemodynamic instability due to uncontrolled rectal bleeding and required repeated intensive care unit transfers. During the first 4 weeks of her admission, she received over 30 units of packed red blood cell transfusion. Given the persistent hematochezia, interventional radiology was consulted to consider endovascular management options. Due to her history of significant hepatic encephalopathy and high Model for End-stage Liver Disease score of 27, the patient was not a candidate for TIPS. Therefore, we pursued rectal variceal sclerosis instead.

The procedure was performed under general anesthesia. The left internal jugular vein was accessed. Under intravascular ultrasound (IVUS) guidance and using Rösch-Uchida Transjugular Liver Access Set (Cook Medical LLC, Bloomington, IN), intrahepatic access from the middle hepatic vein to the left portal vein was achieved with a single intraparenchymal needle pass. A 10F sheath was advanced along the intrahepatic tract into the main portal vein (Fig. 1). Initial portal venography showed retrograde flow down the inferior mesenteric vein (IMV). Selective inferior mesenteric venogram demonstrated enlarged superior rectal veins and extensive anorectal varices (Fig. 2A and B). An 8F Merci occlusion balloon guide catheter (Stryker, Kalamazoo, MI) was situated at the IMV inflow. Using coaxial base catheter and microcatheter, access was gained further into each superior rectal vein supplying the varices. With balloon occlusion at the IMV, foamy sclerosant mixture of 3% sodium tetradecyl sulfate, lipiodol, and air in a ratio of 1:2:3 by volume was slowly injected under negative roadmap fluoroscopy and intermittent spot imaging. A total of approximately 24 cc of the sclerosant foam was injected, with confirmation of excellent penetration into the varices (Fig. 2C). Two Amplatzer Vascular Plugs (St. Jude Medical, St. Paul, MN) were deployed into the IMV trunk through the Merci catheter to prevent migration of the sclerosant toward the portal vein. With the sheath pulled back into the right atrium, portal venography was performed to confirm absence of extravasation prior to deaccessing. The procedure took approximately 2 hours to complete.

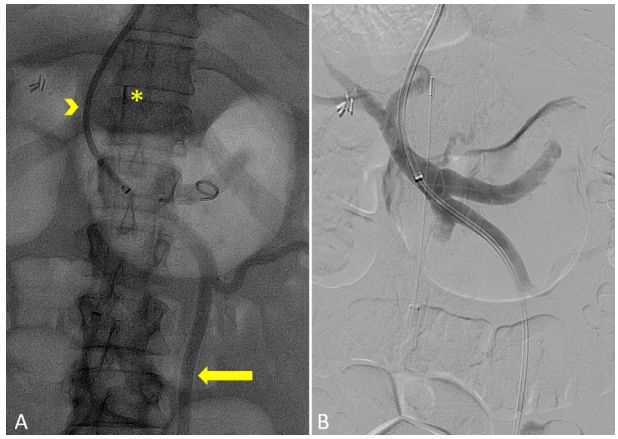

Fig. 1 – Transjugular intrahepatic portal access. Fluoroscopic (A) and digital subtraction angiography (B) images of the portomesenteric venous access show a long 10F sheath (arrowhead) coursing from the middle hepatic vein to the left portal vein then into the main portal vein. The IMV (arrow) is enlarged and demonstrates retrograde flow. An IVUS probe (asterisk) was placed into the intrahepatic inferior vena cava to guide the initial needle access into the portal system. IMV, inferior mesenteric vein; IVUS, intravascular ultrasound.

The patient's rectal bleeding immediately resolved. However, 36 hours after the procedure, she developed hematemesis, which was effectively managed with endoscopic banding of esophageal varices. Concomitant sigmoidoscopy demonstrated interval decrease in size of her anorectal varices without evidence of bleeding (Fig. 3). Over the ensuing days, she had intermittent small volume hematochezia and epistaxis in the setting of ongoing coagulopathy and thrombocytopenia. She underwent liver transplantation 19 days following the BATO procedure and was discharged 8 days later. At her 6-month clinic follow-up, she reported no additional episodes of hematochezia or any other bowel symptoms.

Discussion

While TIPS has been well established in the management of variceal bleeding in cirrhotic patients with portal hypertension, it may be contraindicated in cases of severe hepatic decompensation. Transvenous variceal sclerosis via BRTO or BATO has been increasingly used as an alternative or adjunctive method to treat bleeding gastric varices, but its use in ectopic varices in general, and rectal varices in particular, has been very limited.

To our knowledge, 4 similar cases of BATO for bleeding rectal varices have been reported, only one of which was performed in the United States. [7–10] All 4 cases used percutaneous transhepatic approaches to gain access into the portal system. We instead chose a transjugular intrahepatic

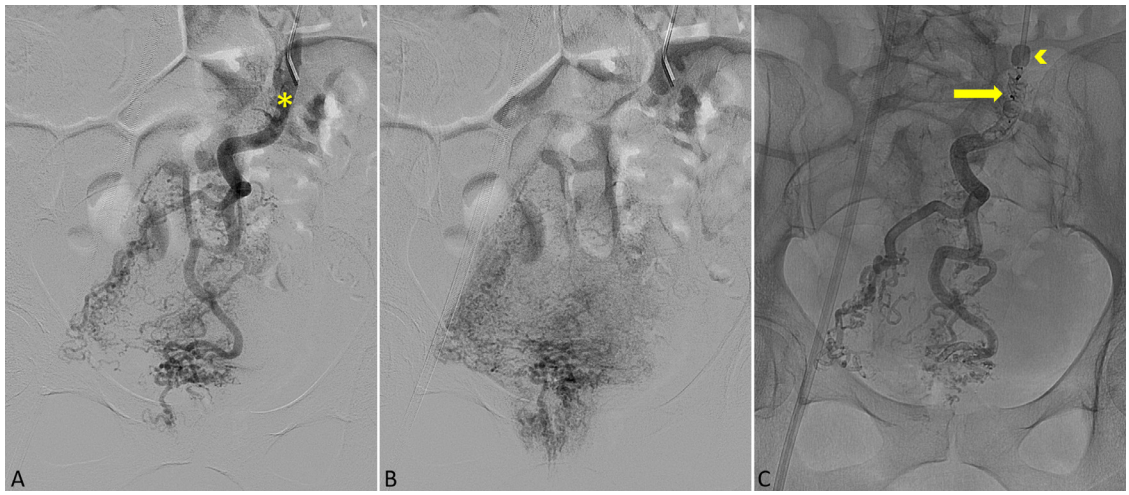

Fig. 2 – Rectal varices. Digital subtraction angiography images (A: early, B: delayed) demonstrate retrograde flow of the IMV (asterisk) which supplies extensive submucosal anorectal varices. A final fluoroscopic spot image (C) confirms sclerosant distribution within the IMV and rectal varices following injection with balloon occlusion (arrowhead). Two vascular plugs (arrow) were placed through the occlusion catheter to avoid spillage of the sclerosant into the portal system once the balloon catheter is removed. IMV, inferior mesenteric vein.

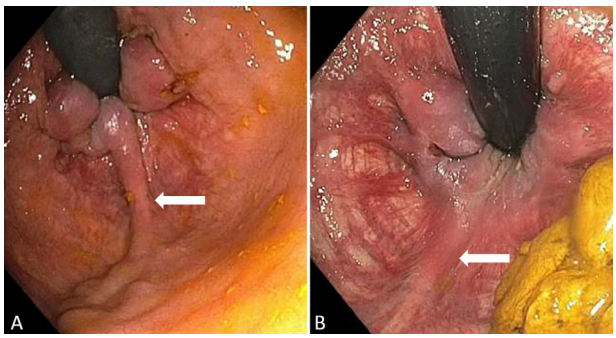

Fig. 3 – Treatment response. Endoscopy prior to the BATO procedure (A) demonstrates a large anorectal varix (arrow). Follow-up endoscopy 2 days post procedure (B) demonstrates interval substantial reduction in size of the varix (arrow).

approach to reach the IMV in our patient with coagulopathy, thrombocytopenia, and large ascites because it avoids traversal of liver capsule and thus confers a lower risk of hemorrhagic complications. The bleeding risk was further mitigated by using IVUS guidance to visualize the intrahepatic needle passage real time and avoid extrahepatic penetration. Given that the access tract was entirely within the liver parenchyma, we were able to safely remove our sheath without leaving any stent (ie, TIPS) or embolics along the tract.

Occlusion of one portosystemic collateral can yield progression of others. BRTO of bleeding gastric varices has been shown to increase the rate of hemorrhage in coexisting esophageal varices [11]. We believe this was the case in our patient who experienced esophageal variceal bleeding shortly after the rectal variceal sclerosis. However, esophageal varices are usually more amenable to effective endoscopic management than rectal varices. While it is undesirable to trade one variceal bleeding for another, we still believe that our procedure was warranted given that no other treatment options were available to control the patient's severe rectal variceal bleeding.

Our case demonstrates a successful management method for bleeding rectal varices in a cirrhotic patient with portal hypertension who is too decompensated to undergo TIPS. Performing BATO via IVUS-guided transjugular intrahepatic access is a newer technique that can achieve control of rectal variceal bleeding while minimizing the risk of access-related hemorrhagic complications. Further studies are needed to establish long-term safety and efficacy of BATO in the management of bleeding ectopic varices.

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