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Case Report

Transjugular intrahepatic portosystemic shunt (TIPS) as rescue therapy for endoscopic glue migration and bleeding gastric varices ☆,☆☆,★

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ABSTRACT

Gastric variceal (GV) bleeding is an important and fatal complication for cirrhotic patients which has historically been controlled with sclerosants and band ligation. Cyanoacrylate glue therapy has emerged as a more favorable option with bleeding control of up to 90% and low complication rates; however, several reports show possible ectopic systemic glue migration, most commonly into the portomesenteric system and leading to portal hypertension. To decompress portal pressures and mitigate future complications, transjugular intrahepatic portosystemic shunt (TIPS) placement may be a viable rescue therapy. We present two cases of TIPS placement for an 18-year-old and 51-year-old male in the setting of endoscopic glue migration into the portomesenteric system that demonstrate feasibility and success in temporizing acute variceal bleeding. Both cases demonstrated decompressing portovenous pressures but may result in need for re-intervention.

Introduction

Gastric variceal (GV) bleeding is a fatal condition occurring in about one fifth of cirrhotic patients, often initially treated with endoscopic sclerotherapy or band ligation [1,3]. N-butyl-2-cyanoacrylate glue is an emerging alternative with reported bleeding control of up to 90% but complications include systemic embolization, pulmonary embolism, and rare septic emboli [1-4]. Transjugular intrahepatic portosystemic shunt (TIPS) has been used as rescue therapy or for prophylaxis [5]. The current report presents successful TIPS placement for portal hypertension and refractory variceal bleeding risks in the setting of endoscopic glue migration in two patients. The

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Fig. 1 – Abdominal radiograph confirmed glue material throughout the main portal and splenic veins. [Case 1].

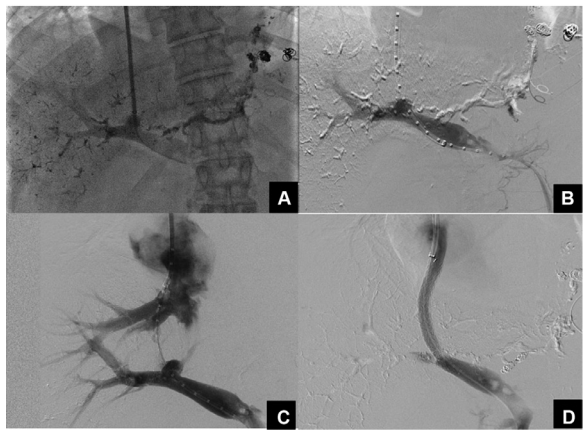

Fig. 2 – Pre-TIPS injection showed glue material within the portal venous system (A). Pre-TIPS digital subtraction angiography showed no splenic venous flow and retrograde flow down the superior mesenteric vein (B). Alignment of right hepatic and main portal vein. Post TIPS insertion showing patent stent with brisk flow through the mesenteric vein into the main portal vein with preferential flow through the portosystemic shunt (D). [Case 1].

authors' IRB does not require approval for case report studies. Informed consent forms were completed prior to all procedures.

Case 1

An 18-year-old male with history of acute lymphocytic leukemia with bone marrow transplant (complicated by graft-versus-host disease) presented to the emergency room for several days of ileostomy bleeding. Physical exam showed a non-bloody ostomy bag and no signs of acute bleeding, vitals were stable with slight tachycardia to 110 beats per minute. Labs were hemoglobin 7.0g/dL; white blood cell count 25.9 $\times$ 10^3/mm^3, creatinine 2.3 mg/dL, bilirubin 1.0 mg/dL, and INR 1.0; MELD score 17. Three nights later, patient developed acute hematemesis. Emergent esophagogastroduodenoscopy (EGD) showed brisk bleeding from Type 1 isolated fundal GV poorly visualized due to active extravasation. Bleeding was controlled with endoscopic glue and coil embolization. Post-intubation chest radiograph incidentally showed radiopaque material in the splenic and portal veins suggesting ectopic glue migration, confirmed with abdominal radiograph (Fig. 1). Days later, patient had repeat hematemesis and EGD showed gastric blood clots without active bleeding. Due to high rebleeding risk, patient underwent TIPS placement.

TIPS procedure was performed under general anesthesia. The right portal vein was accessed and control expansion polytetrafluoroethylene (e-PTFE)–covered stent (Viatorr CX; W.L. Gore and Associates, Flagstaff, Arizona) was inserted from the right hepatic vein branch to the right portal vein (Fig. 2 A-D). Five days later, patient had rebleeding and TIPS evaluation showed a patent stent and portal pressures less than 8 mmHg. Repeat coronary vein varix embolization was performed with sclerosant and coils and there were no further reports of bleeding. Patient ultimately passed from other active medical issues.

Case 2

A 51-year-old male with history of HCV cirrhosis with multiple prior endoscopic interventions for variceal bleeds was transferred from an outside hospital for acute hematemesis. On arrival, patient had stable vitals, mild abdominal distention with no signs of active bleeding. Labs were hemoglobin 10.4 g/dL, creatinine 0.9 mg/dL, total bilirubin 1.3 mg/dL, INR 1.4; MELD score 11. Chest radiograph demonstrated a malpositioned Blakemore with glue material in the portal venous system. EGD revealed grade II GV and a full thickness esophageal tear with subsequent bedside endoscopic esophageal stent placement. CTA revealed a nonocclusive thrombus in the main portal vein extending into the left portal vein presumably related to glue migration from prior endoscopic glue embolization (Fig. 3A). The patient underwent TIPS with mechanical thrombectomy.

TIPS procedure was done under general anesthesia. Indirect portography with carbon dioxide showed partial main portal venous thrombus and ectopic glue. Access was obtained from the right hepatic vein into the right portal vein and Viatorr CX stent was placed. Repeat venography showed a patent TIPS stent with new thrombus formation in the proximal splenic and main portal veins (Fig. 3B-D). Balloon venoplasty, bare metal self-expanding stent extension into the main portal vein, and mechanical thrombectomy were performed with post procedure portal gradient of 11mmHg. Residual gastric varices were coil embolized. One month follow up imaging revealed stent restenosis. TIPS revision was performed with balloon venoplasty and stent placement extending cranially and caudally. Several months later, patient

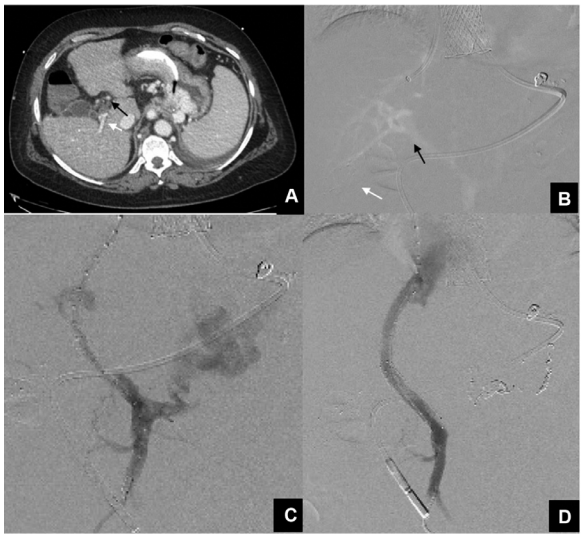

Fig. 3 – CT angiography showing partially thrombosed main portal vein (black arrow) and ectopic glue (white arrow) (A). Indirect carbon dioxide portography redemonstrated partial thrombosis of the main portal vein (black arrow) and ectopic glue (white arrow) (B). Post TIPS insertion showing new TIPS stent thrombus and preferential flow through GV (C). Post TIPS angioplasty/thrombectomy and GV embolization venography of the superior mesenteric vein showing preferential flow through a patent TIPS stent (D). [Case 2].

represented with hematemesis and TIPS reocclusion. Attempt was made for repeat revision but patient refused intervention.

Discussion

Upper gastrointestinal bleeding is a significant cause of morbidity and mortality. Gastric varices (GV) are less common but more fatal than esophageal varices [1,3]. Endoscopic banding and sclerotherapy have greater success in esophageal varices due to smaller size and location [6]. Thus, glue therapy has become a more favorable option for GV management. Despite reports of high bleeding control up to 90% and low complication rates of 0.5%-5%, devastating systemic complications can occur [7,8]. Part of the pitfall is from technical difficulties in endoscopically identifying glue migration. It is hard to discern afferent versus efferent veins in the varix, thus embolizing the efferent vessel can cause ectopic, nontarget embolization [1]. Another important consideration is the lipiodol to glue dilution, with higher ratios increasing embolic risk [2,6]. If glue extends into the portal system, portal hypertension may be worsened thereby increasing rebleeding risks. In the current reported cases, TIPS can help lower portosystemic pressures from portal vein stenosis caused by ectopic glue and serve as access for direct embolization of gastric varices. The main limitation is that re-intervention and revision were necessary in both cases and long term follow up was lacking. In conclusion, TIPS placement is feasible for endoscopic glue migration in the portomesenteric system with refractory GV bleeding however may carry higher risk of re-intervention.

Disclosures

None.

Author contributions

All the authors have made substantial contributions to the work including manuscript preparation and review.

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