



## Trans-hepatic trans-portal selective angioembolization; a management option for severe acute variceal bleeding of ileal conduit stoma

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### ABSTRACT

We present a case of severe acute variceal bleeding in an ileal conduit stoma successfully managed with *trans*-hepatic *trans*-portal selective angioembolization as a lifesaving measure. Despite repeated transfusions, the patient's hemoglobin continued to be unstable. The patient underwent transhepatic embolization of ileal stoma varicose veins. Angioembolization was followed up with excision of ileal conduit stoma and creation of cutaneous ureterostomy for definitive treatment management of hemorrhage. In conclusion, *trans*-hepatic *trans*-portal embolization is an effective option for management of severe acute variceal bleeding in an ileal conduit stoma as a lifesaving measure and can be followed by excision of the conduit.

### 1. Introduction

Variceal bleeding in an ileal conduit stoma is an uncommon complication of urinary diversion that is often associated with portal hypertension.<sup>1</sup> Bleeding can be persistent and result in significant morbidity with recurrent hospitalizations and transfusions and even a mortality of 3%–4%.<sup>2</sup> There is a wide diversity of treatments that have been described including ligation, sclerotherapy, shunt formation, and embolization.<sup>3</sup> We present a case of severe acute variceal bleeding in an ileal conduit stoma successfully managed with *trans*-hepatic *trans*-portal selective angioembolization as a lifesaving measure.

### 2. Case presentation

The patient is a 71-year-old male who presented complaining of an episode of severe bleeding from his ileal conduit stoma causing severe anemia and a hemoglobin of 4.9 g/dL. The patient has a history of bladder cancer that was managed with radical cystectomy and ileal conduit urinary diversion 7 years prior to presentation. He reported experiencing intermittent bleeding per stoma for approximately a year. Acute active bleeding stopped shortly by the time the patient was admitted. Physical examination showed an extensive variceal network. The patient was resuscitated with 2 units of pRBC. Abdomen and pelvis

CT scan with contrast was performed and we noted multiple dilated abnormal varicose veins from the ileal conduit segment draining into the superior mesenteric vein (SMV) immediately proximal to the confluence with the splenic (Fig. 1: A,B). After the patient was stabilized and his hemoglobin was 8 g/dL, he was discharged home with a plan to perform diagnostic looposcopy to fully evaluate the extent of the varicose veins and exclude malignant recurrence. He shortly presented and was readmitted the next day after discharge with a second episode of severe stomal bleeding. His hemoglobin was 6.5 g/dL; thereafter, he was resuscitated with 2 units of pRBC. The case was discussed with the Interventional Radiology team and the decision was made for visceral angiogram with attempting of transhepatic embolization of ileal conduit varicose veins.

Prior to embolization, a superior mesenteric arteriogram was performed to evaluate for active bleeding or arterio-venous malformation, which was negative. Using ultrasound guidance, the right portal vein was identified and accessed with a 21 G needle and access was completed with a 6 Fr access set. *Trans*-hepatic portogram was performed, revealing a large complex varix at the ileostomy. Portal vein pressure was measured, and it was 33 mm Hg confirming the concern for portal hypertension. Portal venography showed abnormal blood flow with direction of the flow away from the portal vein. Two abnormal dilated veins were noted to be branching from the SMV with abnormal

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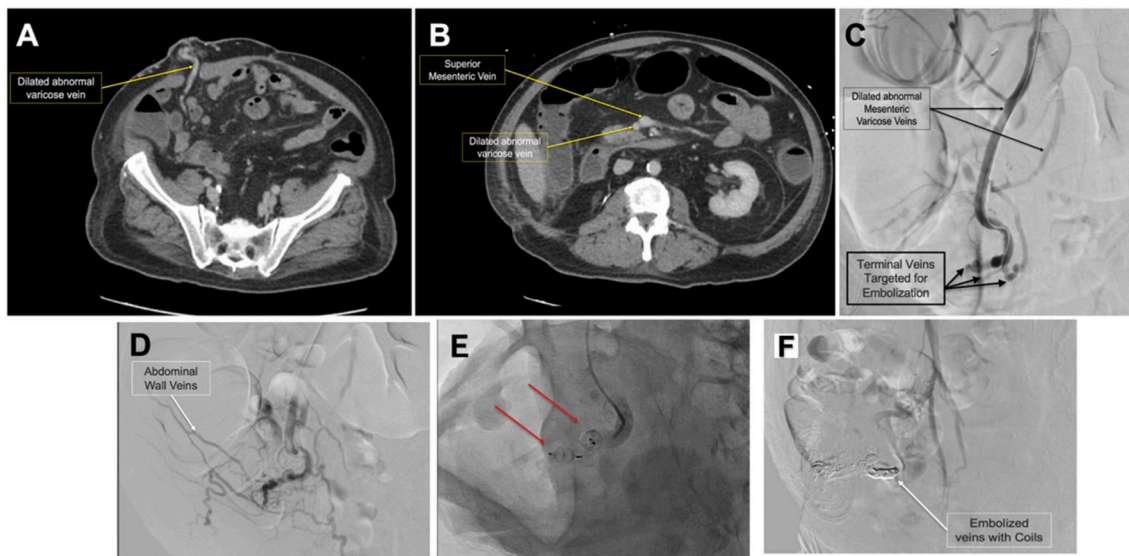
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**Fig. 1.** (A) CT scan showing varicose vein arising from the conduit stoma. (B) CT showing abnormal varicose vein draining into the SMV. (C) Venogram showing two abnormal veins from the stoma & targeted veins for embolization. (D) Abnormal collaterals to anterior abdominal wall. (E) Targeted veins for embolization. (F) Embolization with plugs. (F) Embolization with coils.

connection to abdominal wall veins at the level of the stoma (Fig. 1: C, D). The access set was then exchanged for a 5 Fr vascular sheath, a 4 Fr catheter was advanced over a wire into the varix arising from the SMV. The varix was then embolized with foam slurry and it was enforced with Vascular plugs (Fig. 1: E). Same procedure was repeated in the adjacent draining vein of the varix. A follow-up superior mesenteric venogram was performed showing near complete resolution of the complex varix at the site of the ileostomy.

On follow-up, the patient states that he continues to have intermittent small bleeding episodes. Repeat imaging showed persistent collateral vasculature surrounding the ileal stoma and a plan was made for repeat embolization. After establishing *trans*-hepatic access, the venogram revealed residual communication between the ileal conduit veins and abdominal wall collaterals at the stoma site. Repeat embolization was performed with gel foam slurry and microcoils (Fig. 1: F). Follow-up superior mesenteric venogram was performed showing resolution of flow into the varix.

At 6 months follow up, the patient did not have recurrence of significant bleeding except minor bleeding episodes that did not require blood transfusion or hospital admission. After discussion about definitive management options with the patient, a shared decision was made for definitive treatment with ileal conduit excision and cutaneous ureterostomy urinary diversion to avoid recurrence of severe bleeding giving the risk of recurrence due to portal hypertension. The patient was evaluated by a gastroenterologist, who performed esophagogastroduodenoscopy and discovered Grade I esophageal varices. Currently, there is no TIPS procedure or other surgical management planned for the patient's portal hypertension at this time.

### 3. Discussion

Bleeding from an ileal conduit stoma is typically due to ectopic variceal bleeding from the formation of collateral vessels at the stoma.<sup>2</sup> Variceal bleeding is often seen in patients with portal hypertension and can arise anywhere from intact intestine or from the ileostomal site.<sup>4</sup> Due to the limited number of cases available to study, no standard management has been established for stomal variceal bleeding. Compression and other conservative care have been used to manage minor variceal hemorrhage. As in gastro-esophageal varices, band ligation and sclerotherapy have been attempted with some success, but ultimately the risk of potential necrosis, perforation, or recurrence

precludes its use as standard management.<sup>4</sup> Stomal revision has been shown to have moderate success in certain conditions; however, its use is limited by the high rate of recurrence and further complications.<sup>1,2</sup> Shunt creation, as in the *trans*-jugular intrahepatic porto-systemic shunt (TIPS), has been found to be effective in treating stomal variceal hemorrhage due to the reduction in portal pressures.<sup>3</sup> However, this shunt can lead to hepatic encephalopathy and worsening of liver function making it contraindicated in certain patients.<sup>4</sup> An option that has been widely used is embolization via the percutaneous transhepatic route or *trans*-jugular transhepatic route. Embolization has been described in several cases via coiling or using glue embolization and was found to be effective in the setting of abnormal or complex vasculature.<sup>4</sup>

### 4. Conclusion

*Trans*-hepatic *trans*-portal embolization is a feasible option as an urgent intervention for management of severe acute variceal bleeding in an ileal conduit stoma as a lifesaving measure and can be followed by elective excision of the ileal conduit.

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### Declaration of competing interest

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