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Case Report

Transcatheter embolization for stomal varices: A report of three patients

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ABSTRACT

Stomal varices are rare and ectopic varices defined as dilated portosystemic collateral veins located in sites other than the gastro-esophageal region. These sometimes cause recurrent bleedings and can be life-threatening. Optimal treatments have yet to be established. We report 3 cases of repetitive bleeding stomal varices in which resolution of bleeding was obtained over the medium term with minimally invasive approaches including balloon-occluded retrograde transvenous obliteration and variceal embolization by ultrasound-guided direct puncture. Rebleeding did not occur in any patients within 2-15 months of follow-up. Serious complications over Clavien-Dindo grade I were not found.

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Introduction

Portal hypertension is usually present when esophageal and gastric varices are identified. Generally, ectopic varices are varices at sites other than the esophagus or stomach. Stomal varix is a type of ectopic varix. Ectopic variceal bleeding accounts for 1%-5% of all variceal bleeding, and 26% of ectopic variceal bleeding involves stomal varices [1]. Recurrent bleed-

ing from stomal varices reduces the quality of lives of patients. However, optimal treatment has not yet been established. Pharmacotherapy, surgical operations such as stoma resiting and ligation, percutaneous embolization and transjugular intrahepatic portosystemic shunt (TIPS) have been reported for bleeding stomal varices. However, there are few case reports of percutaneous embolization for stomal varices. We herein present 3 cases of stomal varices treated by percutaneous embolization.

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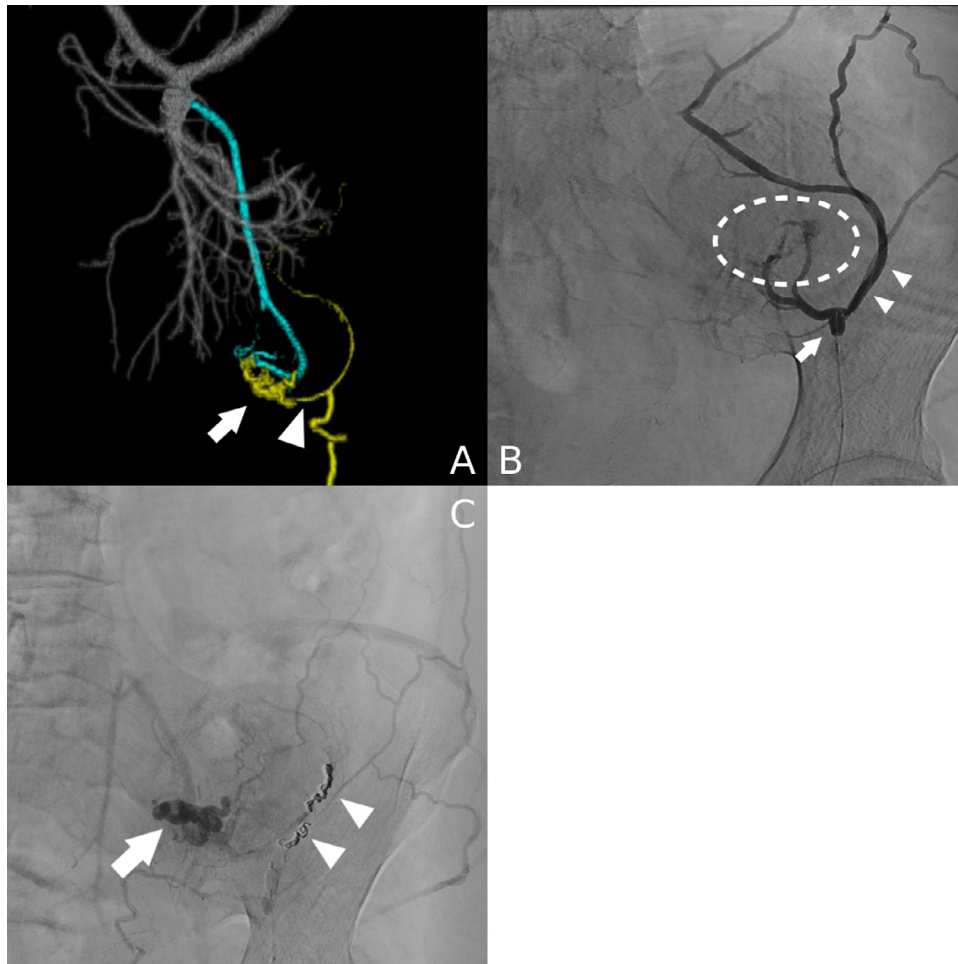


Fig. 1 – Case 1. (A) Preoperative 3D contrast-enhanced computed tomography image. The inferior mesenteric vein is admitted as a feeding vein to the varix (arrow). A superficial epigastric vein is recognized as a main drainage vein (arrowhead). (B) Balloon-occluded retrograde transvenous venography (B-RTV) using a 3.3-Fr micro balloon catheter at epigastric vein. Collateral draining (arrowheads) veins to the superior epigastric vein are observed. The varix (dotted circle) is not drawn clearly. (C) Retrieved B-RTV. Varices (arrow) appeared on second B-RTV after coil embolization (arrowheads) of collateral draining veins.

Case presentations

Case 1

A 71-year-old woman had cirrhosis and hepatocellular carcinoma (HCC)-related hepatitis C virus. She had undergone transcatheter treatment several times for HCC. Apart from that, a stoma had been constructed after she developed perforating diverticulitis of the sigmoid colon. Three years later, she experienced repeated bleeding from the stoma, necessitating frequent blood transfusions. Endovascular treatment was attempted to resolve bleeding. Preoperative Child-Pugh classification score was 8. A percutaneous transhepatic approach was difficult because HCC existed on the puncture route. Balloon-occluded retrograde transvenous obliteration (B-RTO) was chosen because a drainage vein with sufficient diameter from the varix to the superficial epigastric vein was defined on preoperative 3D contrast-enhanced

computed tomography (CECT; Fig. 1A). B-RTO was performed with the patient in a supine position under local anesthesia. The left great saphenous vein was punctured, and a 3.3-Fr temporary occlusion balloon catheter I (Masamune; Fuji Systems, Tokyo, Japan) was advanced into the left superficial epigastric vein. Balloon-occluded retrograde transvenous venography (B-RTV) showed only the draining veins (Fig. 1B). After coil embolization of other drainage veins, another attempt at B-RTV showed the varix (Fig. 1C). Next, 2.5 mL of 5% ethanolamine oleate iopamidol (EOI) was made by mixing equal amounts of 10% ethanolamine oleate (OLDAMIN; FUJI Chemical Industry, Toyama, Japan) and iopamidol 300 mg I/mL (IOPAMIDOL; HIKARI Pharmaceutical, Tokyo, Japan) and injected. After confirming intravariceal stagnation of sclerosants, coil-embolization of the draining vein was performed. After the procedure, bleeding from the stomal varices disappeared, and the patient remained free of bleeding for about 11 months until she died of liver failure.

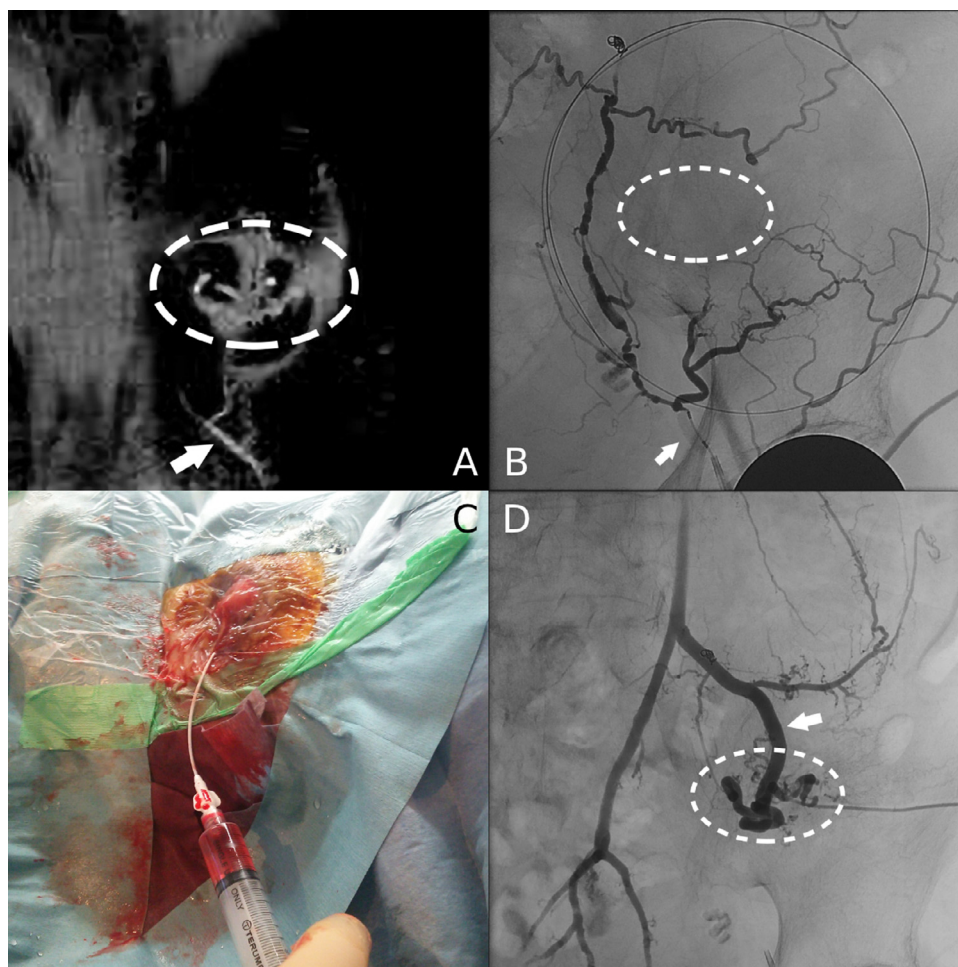


Fig. 2 – Case2. (A) Preoperative contrast-enhanced computed tomography coronal image (section thickness and interslice interval are respectively 0.625 mm). The superficial epigastric vein (arrow) as drainage vein seems to be continuous to the varices (dotted circle). The diameter is very small. (B) Balloon-occluded retrograde transvenous venography (B-RTV) using a 3.3-Fr micro balloon catheter at the superficial epigastric vein. B-RTV shows numerous epigastric veins, but does not show the varices (dotted circle) in spite of coil embolization and manual compression of collateral drainage veins. (C) Sheath placement after direct puncture of the varices. Ultrasonic-guided puncture is performed. (D) B-RTV after ultrasound-guided direct puncture. The varices (dotted circle) and inferior mesenteric vein (arrow) as an afferent vein are shown.

Case 2

An 85-year-old woman with idiopathic portal hypertension underwent construction of a stoma after surgery for sigmoid colon cancer. Six years later, intermittent bleeding from a stomal varix was seen, and blood transfusion therapy was provided. Preoperative Child-Pugh classification score was 8. CECT showed continuity with varices, but the diameter was very small (Fig. 2A). Although B-RTO was attempted first, B-RTV from the left superficial epigastric vein did not show varices because of outflow of contrast medium from many collateral draining veins (Fig. 2B). Direct puncture of the varix under ultrasound guidance was therefore performed (Fig. 2C). Digital subtraction angiography showed the varix and inferior mesenteric vein as an afferent vein (Fig. 2D). The varices were embolized using 3 mL of 5% EOI and tract embolization was performed using gel-formed gelatin sponge. After the embolization, no bleeding has been seen with 15 months of follow-up.

Case 3

A 73-year-old man had suffered liver cirrhosis and HCC due to hepatitis C virus. Two years prior to admission to our hospital, Hartmann operation and surgical stoma construction were performed for rectal cancer. Bleeding from stomal varices appeared 1 year and 10 months later and the patient needed blood transfusion therapy. Although temporary hemostasis was obtained sometime by manual compression or surgical ligation, the varices showed rebleeding in a few days. Transcatheter embolization was therefore performed. Preoperative Child-Pugh classification score was 10. CECT showed stomal varices continuing the inferior mesenteric vein (Fig. 3A). The left inferior epigastric vein and left superficial epigastric vein were assumed to be the main drainage pathways, but continuity with the varices was confirmed as extremely fine (Fig. 3B). B-RTO was attempted first, but the drainage veins were too fine to insert micro balloon catheter. Under manual compression instead of balloon-occlusion of the superficial epigastric

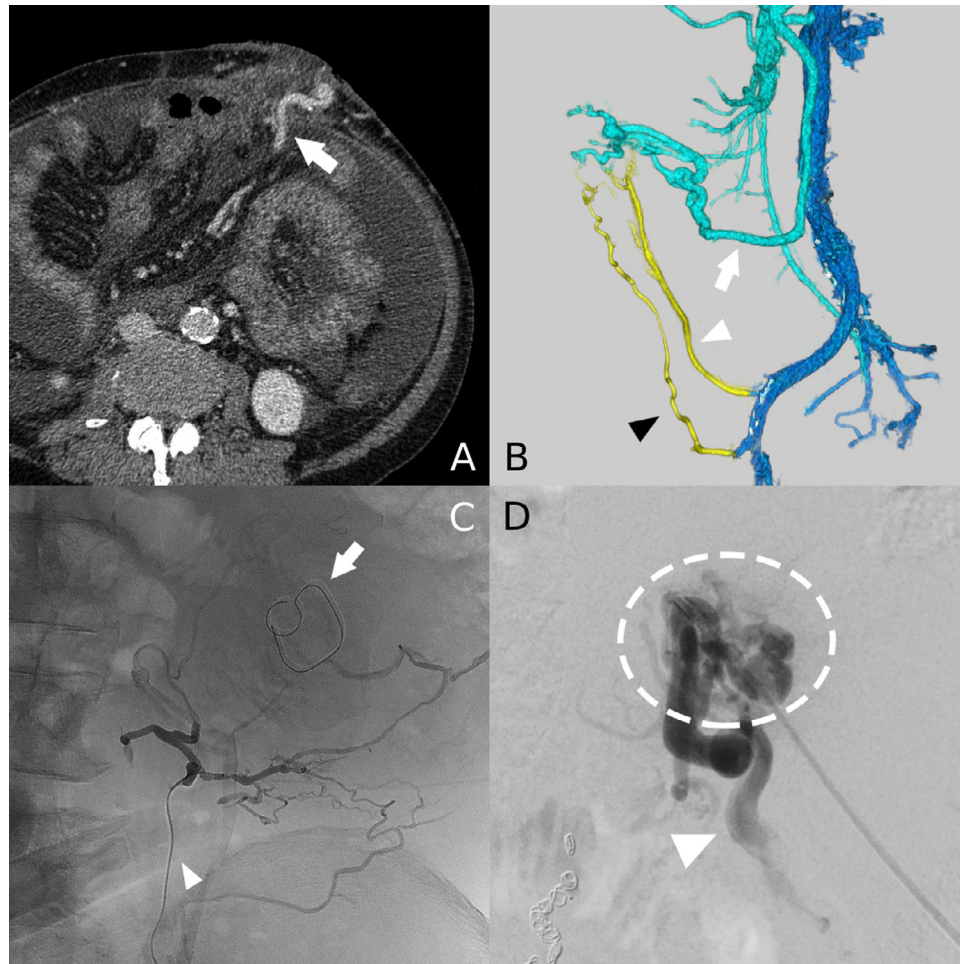


Fig. 3 – (A) Preoperative contrast-enhanced computed tomography (CECT). Dilated and tortuous inferior mesenteric vein (arrow) facing the stomal mucosa is observed. **(B)** Left lateral view (270° rotated) of 3D image based on preoperative CECT. Although left inferior epigastric vein (white arrowhead) and left superficial epigastric vein (black arrowhead) continue to the varices are confirmed, they are focally very narrow near the varices. The inferior mesenteric vein (white arrow) is seen as an afferent vein. **(C)** Retrograde transvenous venography using a 1.9-Fr microcatheter at the superficial epigastric vein. Retrograde transvenous venography is performed under temporary compression of the superficial epigastric vein instead of balloon occlusion (arrow head) and manual compression of other drainage vein (arrow). The varices are not found, but numerous other drainage veins are seen. **(D)** Digital subtraction angiography after ultrasound-guided direct puncture. Stomal varix (dotted circle) and the inferior mesenteric vein (arrowhead) as an afferent vein are found.

vein, the varices were not seen on retrograde transvenous venography using a 1.9-Fr microcatheter at the superficial epigastric vein. Retrograde transvenous venography performed again with added compression of other drainage veins still did not show varices (Fig. 3C). Direct puncture of the varices under ultrasound guidance was performed. Digital subtraction angiography showed varices and the inferior mesenteric vein as a feeding vein (Fig. 3D). After coil embolization of the feeding vein to achieve stasis of blood flow, 14 mL of 5% EOI was injected. After the procedure, bleeding from the stomal varix disappeared. The patient died of liver failure about 2 months after treatment.

Discussion

Stomal varices are rare, ectopic varices combined with portal hypertension. The most frequent indication for stoma creation is ulcerative colitis (88%) in ileostomy, and rectum cancer (87%) in colostomy [2]. Causes of portal hypertension in patients with stoma are primary sclerosing cholangitis in 73% and alcoholic hepatitis in 18% for ileostomy, and metastatic colorectal cancer in 27% for colostomy [2]. For patients with advanced chronic liver failure who have undergone stoma construction, bleeding from stomal varices is seen in 27% [3].

Bleeding stomal varices is often clinically problematic, requiring transfusion therapy in 42.9% [4]. The mortality rate due to bleeding is 3%–4% [5].

Manual compression as conservative treatment is first tried for bleeding stomal varices. Liver transplantation, surgical resiting of the stoma, surgical ligation, medication, TIPS, and transcatheter embolization are also considered. The rebleeding rate for local operative treatments such as surgical stoma reconstruction and surgical ligation is 81%, which are only temporary treatments [4]. In fact, surgical ligation was performed twice in Case 3, but the stoma ruptured within a few days.

For prevention of rebleeding from varices, management of portal hypertension is important. Beta-blockers lower portal blood pressure by decreasing blood flow to splanchnic organs, promoted by splanchnic vasoconstriction and reduction of cardiac output [6]. In patients with large esophageal varices, beta-blockers decrease the risk of variceal bleeding by 40%–50%, so all cirrhosis patients with large esophageal varices should be administered beta-blockers [7]. However, the efficacy in patients with stomal varices is unknown. TIPS decrease portal hypertension by draining portal blood into the systemic circulation. The rebleeding rate with TIPS is 20% for stomal varices, and TIPS shows better results than conventional local treatments such as surgical ligation [4]. However, decreased portal blood flow due to TIPS causes failure of metabolic filtration, appearance or exacerbation of hepatic encephalopathy in 30%–46%, hepatic function declines in 10%, and liver kidney syndrome on rare occasions [8].

Three different approaches can be applied for percutaneous embolization: percutaneous transhepatic sclerotherapy (PTS) via a feeding vein; B-RTO via a drainage vein; and sclerotherapy with direct puncture of varices. Percutaneous embolization overall has an almost 45% rebleeding rate, but achieves a longer nonrebleeding term than local treatments such as surgical ligation [4]. Maciel et al reported embolization of stomal varices by PTS achieved resolution of bleeding in 6 months of follow-up [9]. However, PTS contains a risk of serious complications such as hemoperitoneum or hemobilia. Furthermore, PTS is not recommended for cases with malignant hepatic tumor or cysts on the puncture route, or in cases with ascites.

All cases we experienced stopped bleeding with a minimally invasive approach such as B-RTO or direct puncture. In Case 1, which showed resolution of bleeding from the stomal varix by B-RTO, continuity of the varix and main drainage vein was confirmed on preoperative CECT. A microcatheter could be advanced near the varices through the drainage vein, as had been expected. B-RTO was completed. In Cases 2 and 3, continuity of varices and drainage veins was seen on CECT before B-RTO, but the diameter was very fine. B-RTO had not been completed as a result, however ultrasound-guided direct puncture alternatively enabled embolism of varices from the donor side. In cases with narrow drainage veins, direct puncture may be a feasible option for embolization.

Serious complications over Clavien-Dindo grade I were not found in any of the cases. In Case 1, coexistence of esophageal varices had been known by endoscopic survey, and ascites had been known from CT in Case 2 before endovascular treatment. Neither case showed exacerbation after the procedures.

In Case 3, exacerbation of ascites and increased superior mesenteric venous thrombus were observed after embolization. Bleeding from esophageal varices which had been known before the procedure also occurred 1 month later. However, aggravation of HCC and portal vein tumor thrombosis of vp3 were found simultaneously. The causal relationship between exacerbation and the procedure remains undefined.

Some case reports have described resolution of bleeding under ultrasound-guided direct puncture of varices [10–12]. In 7 cases reported by Thouveny, patients achieved a mean nonbleeding period of 11.6 months without complications [10]. In other reports, no complications were seen and a medium no-bleeding term of 1–6 months was obtained [11, 12]. Resolving bleeding from stomal varices without complications is meaningful, especially in patients whose condition is less than good.

Deipolyi et al divided 10 cases of bleeding stomal varices into 2 groups according to treatment: a group with only TIPS; and a group with adjunctive embolization of varices from supplying veins via TIPS at the same time. No advantage was seen with either method in terms of rebleeding rate [13]. However, patients underwent embolization of only the main supplying vein via TIPS using mainly coils, or in some cases gelatin compressed sponge. There is a possibility of proximal embolization or incomplete obliteration of varices, because the stomal varices were supplied with blood from other feeding veins. We deduce that intravariceal thrombus formation is important to stop bleeding over the long term. Vangeli et al reported 19 cases that had undergone TIPS for ectopic variceal bleeding [14]. Seven of these 19 cases underwent embolization using coils and/or 100% alcohol and/or gelatin compressed sponge at the same time. Two of the 7 cases (28%) of TIPS with simultaneous variceal embolization showed rebleeding, lower than the frequency for TIPS, which showed rebleeding in 5 of 12 cases (42%). However, that case report of ectopic varices included only 5 cases of stomal varices. Moreover, approach routes to variceal embolization were not described in detail. The efficacy of adjunctive variceal embolization with TIPS needs more discussion. Furthermore, we still have to discuss treatment options, because no reports have compared sufficiently large groups with TIPS alone and groups with adjunctive embolization from drainage veins or embolization by direct puncture of varices after TIPS. We thus have to accumulate more cases.

Conclusion

B-RTO or sclerotherapy using a direct puncture approach for stomal varices was feasible and effective in 3 patients. Resolution of bleeding was obtained in each case. Rebleeding did not occur in any patients within 2–15 months of follow-up. Serious complications over Clavien-Dindo grade I were not found.

Patient consent statement

Informed consent was obtained from the patients for publication of this report and accompanying images.

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