

Endoscopic Ultrasound-Guided Management of Bleeding Rectal Varices

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ABSTRACT

Rectal variceal bleeding, though rare, can pose significant morbidity and mortality in the wake of treatment failure. Conventional treatment utilizing endoscopic glue injection might not be feasible in all cases due to poor visualization and inadvertent missing of variceal source of bleed. Endoscopic ultrasound (EUS)-guided rectal variceal management is a promising and effective modality. We provide real-time images and a video of EUS-guided precision management of rectal variceal bleed using coiling and glue in a cirrhotic.

INTRODUCTION

There is a lack of definitive consensus regarding the management of rectal varices. Current strategies include endoscopic options such as injection sclerotherapy, cyanoacrylate glue, and band ligation. Rectal varices are dilated, submucosal, portosystemic collaterals extending from mid-rectum to the anorectal junction and are distinct from internal hemorrhoids. The most frequent afferent vessel is the inferior mesenteric vein, followed by the superior rectal vein, and the efferent vessels for rectal varices are the internal iliac vein and the inferior rectal vein.¹

CASE REPORT

A 48-year-old man diagnosed with cirrhosis secondary to non-alcoholic fatty liver disease presented with rectal bleeding and postural symptoms lasting one day without jaundice, hepatic encephalopathy, or fever. Clinical examination was relevant for pallor, tachycardia, and hypotension (mean arterial pressure 60 mm Hg). Laboratory investigations revealed hemoglobin 8.7 g/L, total leukocyte count 9,900/L, platelet count $1.2 \times 10^5/L$, total bilirubin 1.3 mg/dL, aspartate aminotransferase 52 U/L, alanine aminotransferase 39 U/L, serum albumin 3.2 g/dL, prothrombin time 15.6 seconds (control 11.3 seconds), and international normalized ratio 1.32. Intravenous terlipressin and prophylactic antibiotics were started, and blood transfusions were initiated.

Proctoscopy was non-contributory due to blood in the rectum and poor visualization. Sigmoidoscopy revealed blood clots within the rectum and a large rectal varix with white nipple and extensive feeder/collaterals (Figure 1). Radial endoscopic ultrasound (EUS) confirmed large rectal varix with submucosal collaterals that were then targeted and punctured using a forward-viewing linear array EUS and a 22-gauge needle, followed by deployment of a 10-mm embolization coil (Figure 2). Subsequently, 1 mL *N*-butyl 2-cyanoacrylate was injected into the residual feeding collaterals. Repeat color Doppler revealed the absence of flow within the collateral system (Figure 3). Repeat sigmoidoscopy confirmed the disappearance of large feeders and the collapse of the rectal varix on sigmoidoscopy (Figure 4). One month after the procedure, no re-bleeding episodes were noted (Video 1).

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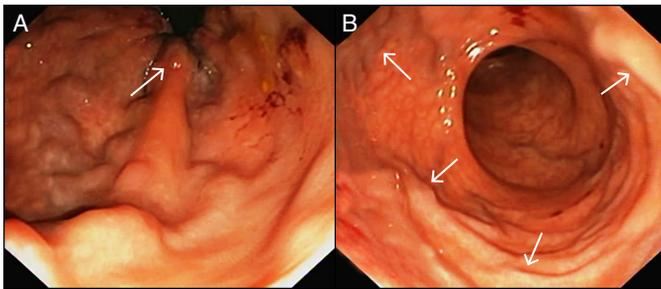


Figure 1. Sigmoidoscopy revealing (A) blood clots within rectum and large rectal varix with white nipple and (B) extensive feeder/collaterals (arrows) within the rectum.

Video 1. Follow-up sigmoidoscopy 1 month after the procedure showing no re-bleeding. Watch the video: <http://s3.gi.org/media/links/PhilipsVideo.mp4>.

DISCUSSION

Ectopic varices (EVs) are dilated portosystemic collateral veins at unusual sites other than the gastroesophageal region and includes isolated gastric varices type 2. Bleeding EVs are most commonly found in the duodenum, jejunum, colon, and anorectal region, and they occur infrequently at sites such as the peritoneum, vagina, and ovary. A review of 169 cases of bleeding EVs showed that 17% occurred in the duodenum, 17% in the jejunum or ileum, 14% in the colon, and 8% in the rectum. EVs account for only 1–5% of all variceal bleeding episodes. There is a paucity of data regarding the incidence and severity of EV bleeding with regard to each site.²

Rectal varices are portosystemic collaterals manifesting as dilated submucosal veins between the superior rectal veins (inferior mesenteric system) and the middle inferior rectal veins (iliac system). Bleeding rectal varices are defined as dilated veins that originate more than 4 cm above the anal verge, are distinct from hemorrhoids, and are not contiguous with the anal columns and pectinate line.³ The prevalence of rectal varices in patients with cirrhosis is between 38% and 56%, whereas their prevalence in extrahepatic portal vein

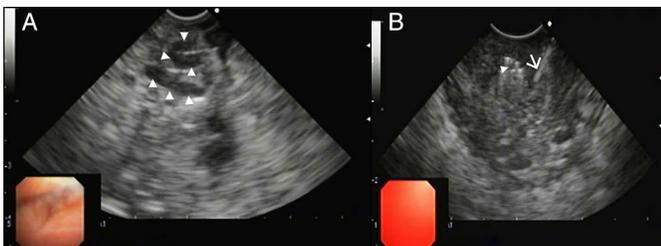


Figure 2. (A) Radial endoscopic ultrasound (EUS) showing large rectal varix with submucosal collaterals (arrows). (B) EUS-guided needle puncture (arrow) and deployment of a 10-mm embolization coil (arrowhead).

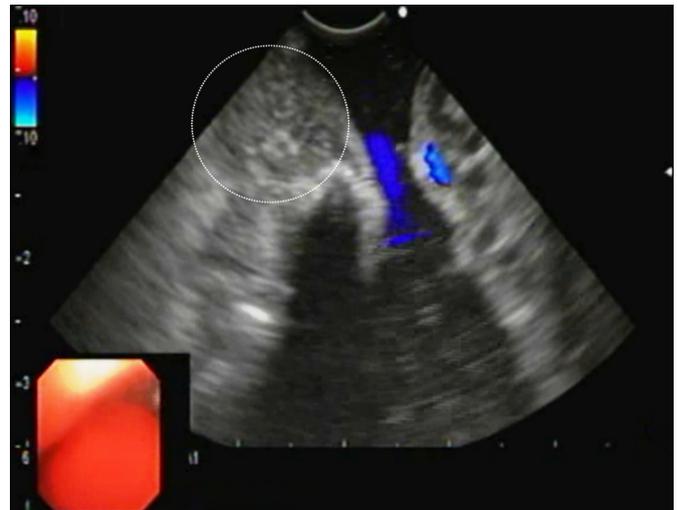


Figure 3. Repeat color Doppler showing absence of flow within variceal complex (circle).

obstruction was reported between 63% and 94%, and clinically significant bleeding occurs in 0.5–5% of patients.^{4–6} Rectal varices are visualized as blue tinted submucosal elevations located near the anus. Conventional EUS shows rectal varices as rounded, oval, or longitudinal echo-free structures in the submucosa. Bleeding can occur from varices that are visible endoscopically, as well as those that are not visible with endoscopy. The latter are best visualized and managed using EUS techniques.

The management of bleeding from EVs is challenging as the bleed site is often difficult to identify, and there is no strong

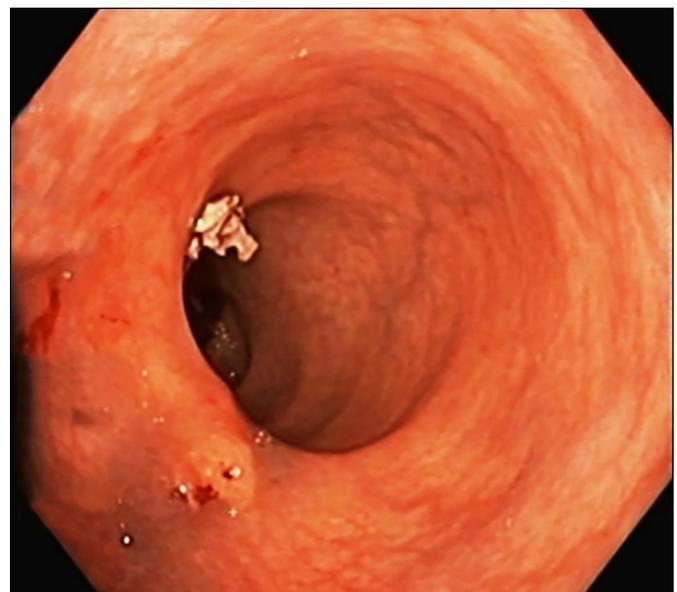


Figure 4. Repeat sigmoidoscopy showing disappearance of large feeders and collapse of rectal varix.

evidence as to the best treatment method. No randomized controlled trials have been conducted, and most of our current knowledge on this matter is from case reports, small case series, and retrospective studies that include various treatment options, such as endoscopic modalities like band ligation or injection sclerotherapy, transjugular portosystemic shunting (TIPS), embolization through a radiological approach, balloon- (or plug- or coil-) occluded retrograde transvenous obliteration, and surgery. An endoscopic approach and radiological embolization do not decompress the portal venous system, so rebleeding rates may be high after 1 year, whereas surgical options are associated with a high postoperative morbidity and mortality.³

Per guidelines from both Baveno VI and the American Association for the Study of Liver Diseases, band ligation is the initial treatment of choice in bleeding esophageal varices.^{7,8} However, strong recommendations and guideline-based utility of band ligation in rectal varices is lacking. Studies have shown that band ligation for rectal varices can be met with high recurrence rates.^{9,10} In a study of sclerotherapy versus band ligation in the management of rectal varices, the former was found to be more effective, and the recurrence rate was less with sclerotherapy than with band ligation [33.3% vs 55.6%].¹⁰ Rectal varices, unlike esophageal varices, have a richer collateral circulation. Initially, sclerotherapy was shown to have good efficacy in control of rectal variceal bleeding. However, because of complications, such as systemic embolization and large-volume use of sclerosant for obliteration, recommendations were weak. This changed with the arrival of glue therapy, whereby immediate hemostasis was obtained with smaller injection quantities. With glue therapy, systemic embolization was still a concern in the presence of the rich collateral network. The use of coils provided a scaffold to retain glue within the varix, thereby minimizing the risk of embolization and allowing for a decreased volume of glue injection for variceal obliteration, which paved way for dual therapy in the management of rectal varices (endoscopic glue injection with EUS guided coiling of collaterals).¹¹ For this reason, we preferred glue injection and coiling in our patient as an initial strategy even though this strategy is not part of current guidelines. TIPS is considered a salvage therapy in the presence of uncontrolled bleeding or in case of repeat bleeding that was initially managed with endoscopic band ligation or sclero/glue therapy.^{7,8}

In 6 relatively large series involving 100 patients and case reports involving 41 additional patients with EV bleeding, TIPS (110 patients) with or without embolization (31 patients) of varices was performed. Rebleeding from EV varied from 11% to 37%. Because EVs may rebleed despite a reduction of the portosystemic pressure gradient to < 12 mm Hg or despite a 25–50% reduction from baseline gradient, adding embolization to TIPS could better control bleeding.

Comparing TIPS alone vs. TIPS with embolization, a meta-analysis showed a relative risk of 1.29 (95% CI: 0.40–1.90) for bleeding and a relative risk of 1.31 (95% CI: 0.46–3.07) for mortality. These observations and analyses did not specifically look at rectal variceal bleeding.¹²

There is little discussion of the safety and effectiveness of EUS-guided coiling and/or glue injection to treat rectal varices. Benefits include easy visualization of all regional collaterals, precision management of the variceal complex, and the ability to target therapy without luminal content hindrance followed by confirmation of the absence of flow after therapy using color Doppler.^{8,13,14} Serious adverse events with glue injection therapy include systemic embolization and sepsis, which are reported secondary to embolized glue acting as a septic focus, and embolization into the arterial circulation, which may result in multiple organ infarction.

Management of bleeding rectal varices is mostly driven by the anatomical and hemodynamic complexity and at times is not controlled well with conventional guidelines. The best management modality for rectal variceal bleeding is still a matter of debate, with treatment options differing between centers. This case report shows real-time imagery of precision treatment of bleeding rectal varices utilizing EUS-guided coiling and glue therapy. Large case control studies that encompass treatment options including portosystemic pressure gradient reduction with or without regional hemodynamic management in specific subsets of patients versus conventional treatments are an unmet need in this regard.

DISCLOSURES

Author contributions: CA Philips wrote the manuscript and is the article guarantor. P. Augustine collected the data and edited the manuscript.

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Informed consent was obtained for this case report from the patient's next of kin.

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