Targeting the perforator vein: EUS-guided coil embolization for the treatment of bleeding rectal varices

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A 71-year-old man with alcohol-induced cirrhosis, complicated by portal hypertension, esophageal and rectal varices, and chronic portal vein thrombosis, presented to the hospital with rectal bleeding. This was his fourth presentation over the past year, with multiple diagnostic colonoscopies revealing rectal varices as the source of the bleeding and no therapeutic interventions performed. He was hemodynamically stable with unremarkable physical examination findings. Laboratory results revealed hemoglobin of 9.6 g/dL, platelet count of 103 × 10^9/L, and international normalized ratio of 1.4. The remainder of his laboratory workup was within normal limits.

The patient was managed conservatively, and a colonoscopy was performed. This confirmed the presence of large rectal varices extending from the anorectal junction superiorly with stigmata of recent bleeding (Fig. 1A). The patient was deemed to be high risk for interventional radiology (IR)-guided therapies such as transjugular intrahepatic portosystemic shunt and for surgical intervention. After multidisciplinary input, the plan was to proceed with EUS-guided coil therapy (Video 1, available online at www.VideoGIE.org).

On EUS, a dense network of multiple hypoechoic tubular structures with Doppler venous flow was encountered (Fig. 1B). The decision was made to proceed with EUS-guided coil injection. The coil was loaded into the EUS-FNA needle (Fig. 2). The largest varix measured 4 mm in cross-sectional diameter. The perforator vein, responsible for feeding the various variceal nests, was identified traversing the muscularis propria (Fig. 3). One 0.035-in × 14-mm × 20-cm embolization coil was placed into the perforator vein through a 19-gauge FNA needle (Fig. 4). Doppler confirmed significant reduction in blood flow at 2 and 5 minutes (Fig. 5). The patient tolerated the procedure well. At the 6-month follow-up, he had no recurrent bleeding, admission, or need for transfusion (Fig. 6), with repeat colonoscopy revealing significantly diminished rectal varices and EUS confirming markedly reduced Doppler flow (Fig. 7A and B).

DISCUSSION

Rectal varices occur as an adverse event of portal hypertension and are associated with lower GI bleeding. Although the prevalence rate in patients with cirrhosis may be as high as 56%, significant bleeding occurs in less than 5% of patients.1,2 Diagnosis usually requires endoscopy alone or concomitant EUS. Endoscopic treatment options include variceal band ligation and endoscopic sclerosant injections, such as glue or thrombin (which can be injected alone or as adjunctive therapy with coils). Although effective in bleeding cessation, they are associated with adverse events and risk of recurrence.3 Nonendoscopic treatment options include IR-guided therapies, such as transjugular intrahepatic portosystemic shunts and balloon retrograde transvenous obliteration.1 For cases refractory to IR and endoscopic measures, surgery can be performed. This includes suture ligation, vein occlusion, and shunt surgery.1 Surgery, however, has

Figure 1. A, Colonoscopy revealing the presence of large rectal varices extending from the anorectal junction superiorly with stigmata of recent bleeding. B, Dense network of multiple hypoechoic tubular structures with Doppler venous flow consistent with rectal varices.
been associated with mortality rates as high as 80%. Although EUS-guided coil injection has been described in the past, this usually entails injection of coils into the variceal nests. There are limited data highlighting this technique of targeting the perforator vein to promote hemostasis and variceal thrombosis. The perforator vein is thought to supply the variceal nest; by targeting this vessel instead of the variceal nest directly, hemostasis may be more easily achieved with fewer coils.

**CONCLUSION**

EUS-guided coil embolization by targeting the feeder or perforator vein is feasible and effective for the treatment of bleeding rectal varices in patients considered to be poor candidates for IR-guided or surgical therapies. This modality can result in fewer coils used to promote hemostasis, prolonged bleeding-free time, and reduced episodes of rectal bleeding.

**DISCLOSURE**

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Abbreviation: IR, interventional radiology.
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Figure 6. Graph illustrating admission for rectal bleeding, transfusion, and colonoscopy before and after EUS-guided coil therapy of rectal varices.

Figure 7. A, Repeat colonoscopy at 6 months revealing significantly diminished rectal varices. B, Radial EUS at 6-month follow-up confirming collapsed varices with absent Doppler flow.

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