



EUS-guided placement of coils and glue for the management of large bleeding fundic varices

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We present the case of a 58-year-old woman in whom challenging gastric fundic varices were managed successfully with endoscopic variceal obturation by the use of EUS-guided coil placement with subsequent glue injection (Video 1, available online at www.VideoGIE.org).

The patient was transferred to our tertiary referral center because of suspected gastric variceal bleeding. Upon transfer, the patient was in stable condition without active bleeding. She had a new diagnosis of cirrhosis and active hepatitis C infection. CT of the abdomen and pelvis with IV contrast material demonstrated cirrhosis of the liver with diffuse areas that were concerning for multifocal hepatocellular carcinoma. Furthermore, there was bland and tumor thrombus within the portal vein (Fig. 1) along

with a prominent, large splenorenal shunt (Fig. 2) with connection to the left renal vein. A diagnostic EGD demonstrated a cluster of isolated large gastric fundic varices with a platelet plug, indicative of stigmata of recent hemorrhage (Fig. 3). No esophageal varices were seen.

Management options were discussed extensively in a multidisciplinary fashion. Given the radiographic findings suggestive of multifocal hepatocellular carcinoma, liver transplantation was not an option. Banding of gastric varices was not an option because that procedure is seldom successful and can increase the risk of significant bleeding and mortality. Transjugular intrahepatic portosystemic shunt was not recommended, given the extensive portal vein thrombus burden. Balloon-occluded retrograde transvenous obliteration with variceal embolization would have quickly exacerbated hepatic decompensation. In the setting of a large splenorenal shunt, EUS-guided placement of coils and glue could increase the risk of embolic events. The patient desired a treatment option before going home, albeit a temporary benefit. Extensive discussions with all multidisciplinary team members were carried out to review the various treatment options, their risks, and their benefits. It was decided to proceed with EUS-guided

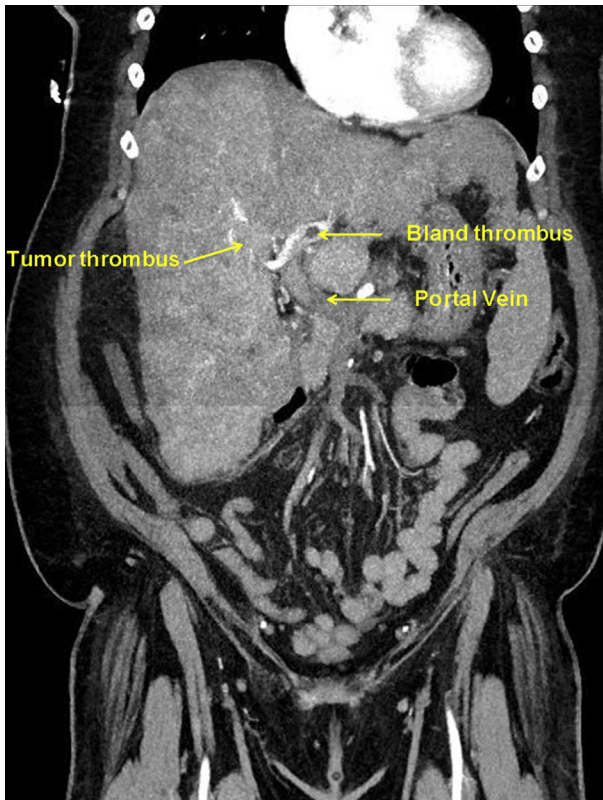


Figure 1. CT view of abdomen and pelvis with intravenous contrast material performed on admission, showing cirrhosis of the liver with diffuse multifocal areas concerning for multifocal hepatocellular carcinoma, and evidence of bland and tumor thrombi within the portal vein.

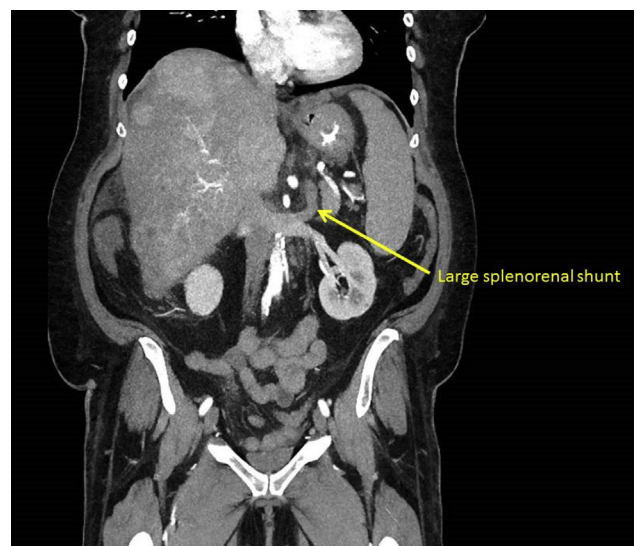


Figure 2. CT view showing a prominent, large splenorenal shunt with connection to the left renal vein.



Figure 3. Diagnostic EGD view demonstrating a large cluster of isolated gastric fundic varices with stigmata of recent hemorrhage.



Figure 6. Endoscopic view after intervention, demonstrating no active bleeding and a few coils that had partially migrated out into the gastric lumen.



Figure 4. EUS view showing a large cluster of fundic gastric varices.

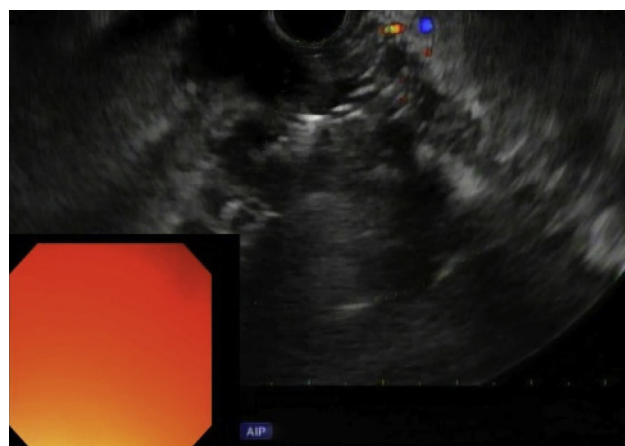


Figure 7. EUS view showing postacoustic shadowing from coils and glue injection; little to no flow identified within the treated gastric varices, indicating adequate treatment, with the caveat that coil and glue artifact could potentially obscure some areas of vascular flow.

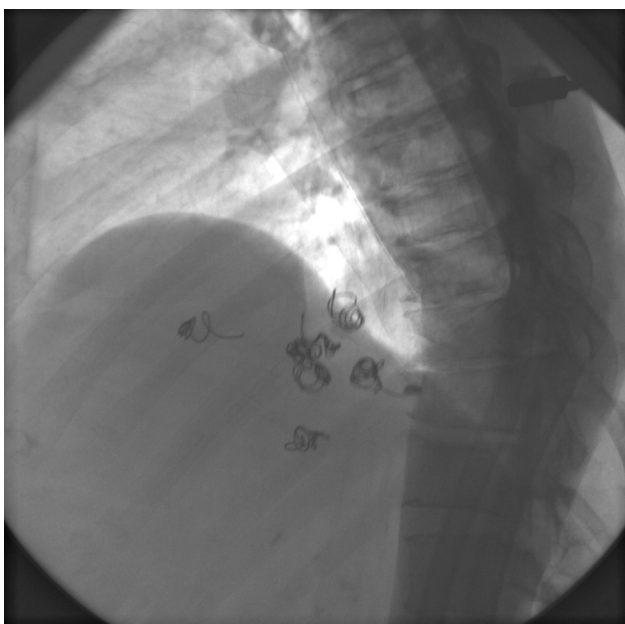


Figure 5. Placement of a total of 11 coils under EUS and fluoroscopic guidance, followed by injection of 12 mL cyanoacrylate glue.

placement of coils, first into the gastric varices, followed by injection of glue. In this way, the coils would serve as a scaffold to which the glue could anchor, to reduce the risk of glue embolization.

Intravenous antibiotics were continued, and with the patient under endotracheal intubation, EUS was performed. The large cluster of fundic gastric varices was identified (Fig. 4). Coiling was first carried out. A 19-gauge fine aspiration needle was inserted into a therapeutic linear echoendoscope. The deeper gastric varices were first targeted by puncturing the needle deep into the variceal cluster, followed by deployment of a coil that had a tapering diameter of 10 mm to 4 mm. Coils were repeatedly placed into the varices, working into the more superficial vessels. Once coiling was complete, cyanoacrylate injection was performed, also starting with the deeper clusters of gastric varices. In total, 11 coils were placed,

followed by 12 mL cyanoacrylate glue (Fig. 5). After deployment of coils and injection of glue, EUS demonstrated significantly diminished lack of flow within the variceal cluster.

Endoscopic views after intervention demonstrated no active bleeding and a few coils that had partially migrated into the gastric lumen (Fig. 6). The patient's postprocedure hospital course was uneventful, with no clinical evidence of recurrent bleeding. Four days later, repeated EGD and EUS were performed to evaluate the response to therapy and demonstrated stable findings of recent coiling and glue injection. On EUS, postacoustic shadowing from the coils and glue injection were visible, and little to no flow was identified within the treated gastric varices, indicating adequate treatment (Fig. 7). The patient remained in stable condition for the remainder of the hospital course. She was deemed to be in medically stable condition and was transferred back to the local hospital the following day for ongoing care, with the ultimate plan that she would then go home for hospice care.

In summary, endoscopic variceal obturation appears to be highly promising in achieving hemostasis in active bleeding and prophylaxis of primary and secondary bleeding.¹⁻⁴ Nonetheless, gastric fundic varices are challenging to manage, and a multidisciplinary approach with careful, extensive discussion must be taken in determining the best treatment option.

DISCLOSURE

Dr Wallace is the recipient of research funds from Olympus. Dr Gómez is a consultant for Olympus. The other author disclosed no financial relationships relevant to this publication.

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