Coil-assisted retrograde transvenous obliteration for the treatment of duodenal varix

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Duodenal variceal bleeding is a rare but potentially life-threatening complication of portal hypertension. Endoscopic therapy is usually the initial treatment option for bleeding duodenal varices, but it is not always feasible or successful. We present a technique of coil-assisted retrograde transvenous obliteration in a patient with duodenal varices originating from the inferior pancreaticoduodenal vein and draining into the right ovarian vein.

Technique

A 79-year-old female with a history of right hepatic lobectomy for intrahepatic cholangiocarcinoma presented with hematochezia. An emergency endoscopy showed tortuous blue varices with a cherry red spot in the third portion of the duodenum, suggesting a recent bleeding episode. The varices were not amenable to band ligation or endoscopic injection sclerotherapy due to their location and extent. Contrast-enhanced computed tomography (CT) revealed duodenal varices with markedly dilated veins at the third portion of the duodenum (Fig. 1a). The inferior pancreaticoduodenal vein (one of tributary of superior mesenteric vein) was the feeder of the duodenal varices, and the right ovarian vein was detected as an efferent vein (Fig. 1b).

After obtaining informed consent, we initially planned retrograde venous approach via right ovarian vein to perform BRTO. Procedure was performed in the angiography suite under intravenous sedation and local anesthesia. After obtaining right internal jugular access with micropuncture access set (Cook Medical), 9 F Flexor RTPS guiding sheath (Cook Medical) was advanced to the inferior vena cava. After selection of the right ovarian vein with 5 F Torcon NB (C2) catheter (Cook Medical), we tried to advance occlusion balloon catheter into draining vein deep enough to avoid injecting sclerosing agent into a non-target vessel. However, 5 F catheter and 0.035-inch guidewire (Radiofocus, Terumo) could not be advanced into the distal efferent vein because of severe vascular tortuosity. Therefore, we...
The development of duodenal varices is usually associated with a locoregional component (6). These include mesenteric vein stenosis or thrombosis, congenital malformation, intraabdominal adhesion, and/or altered anatomy related to prior surgery (7). Although we did not observe vascular stenosis or thrombosis on contrast-enhanced CT, the patient’s prior right lobectomy might have resulted in hemodynamic change from altered splanchic venous anatomy. Duodenal varices consist of a single dilated “true vein” surrounded by the pancreaticoduodenal region with associated afferent and efferent veins that form a retroperitoneal portosystemic shunt (6, 7).

The afferent veins of duodenal varices are commonly superior and inferior pancreaticoduodenal veins, cystic branches of the superior mesenteric veins, gastroduodenal veins, and the pyloric vein (6). Gonadal veins and renal capsular veins are usually the efferent veins of duodenal varices and drain into the inferior vena cava (6).

Because of accessibility issues and the invasiveness of endoscopic therapy, endovascular treatments such as TIPS, BRTO, and PTO have been applied for duodenal variceal bleeding (2). TIPS is accepted as a safe and effective method for both esophageal and gastric varices in the event of bleeding. However, its use for ectopic varices is not well established (2). Although TIPS is less invasive than a surgical shunt, both shunt surgery and TIPS are aimed at relieving portal hypertension, so liver failure and hepatic encephalopathy may develop as a consequence of diminished portal blood flow (8). Moreover, TIPS cannot be applied in patients with unfavorable venous anatomy or in patients with a low hepatic venous pressure gradient. In recent years, BRTO has been reported as a useful endovascular treatment for duodenal variceal bleeding (2, 9). In most reported cases, however, BRTO was performed with sclerotherapy using ethanolamine or cyanoacrylate, which can cause serious complications (2).

CARTO uses a coil for vascular occlusion which avoids some of the complications and difficulties associated with indwelling balloon catheters (5). In this case, it was not feasible to advance the balloon catheter into the efferent vein because of vascular tortuosity. We overcame this difficulty by using a double microcatheter system, advancing to a more proximal portion of the efferent vein as far as possible. Unlike gastric varices with gastrorenal shunt, selection of the right ovarian vein is more difficult than selection of left renal vein. In addition, duodenal varices with mesenterogonadal shunt have more tortuous and longer collateral pathway to approach the efferent vein. Use of an angled introducer sheath set in the direction of the right ovarian vein orifice can facilitate the selection of right ovarian vein and enhance the catheter support. Moreover, we used gelfoam particles to avoid complications associated with sclerosant use, such as pulmonary embolism, pulmonary edema, portal vein thrombosis, renal failure, and anaphylactic reaction. The patient had no major complications asso-
Associated with gelfoam use. Drawback of this technique was that we could not visualize the entire vascular structure before coil embolization because we used a retrograde approach. However, duodenal varices can be successfully embolized as long as microcatheters advance deep enough to avoid embolization of large collateral veins because small accessory collateral veins are easily embolized with gelfoam.

In conclusion, we report that CARTO is a useful treatment modality for duodenal varices with mesenterogonadal shunt. Advantages of this technique include overcoming vascular tortuosity and avoiding complications related to sclerosant use.

Conflict of interest disclosure
The authors declared no conflicts of interest.

References