Introduction: BRTO & BATO

Varices due to portal hypertension can occur throughout the gastrointestinal tract. These include esophageal, gastric, duodenal, mesenteric (small bowel, large bowel, and stomal), and internal hemorrhoids (piles). Patients with portal hypertension–related variceal bleeding require a multidisciplinary-team approach that includes gastroenterologists or hepatologists, diagnostic radiologists, and interventional radiologists. This is especially true for upper gastrointestinal variceal management. Upper gastrointestinal endoscopy is the first-line diagnostic and therapeutic tool for bleeding esophageal and gastric varices. Traditionally, in the West (Europe and the United States) when endoscopy fails to control esophageal or gastric variceal bleeding, a transjugular intrahepatic portosystemic shunt (TIPS) is commonly performed along the traditional teachings of decompressing the hypertensive portal circulation. However, TIPS has not shown to be as effective in controlling gastric variceal bleeding as it has with esophageal variceal bleeding. Moreover, TIPS has known morbidities such as hepatic encephalopathy and the toll it has on the hepatic reserve. For the past 20 years, balloon-occluded retrograde transvenous obliteration (BRTO) has become the standard of practice in Asia (Japan and Korea) for the management of gastric varices and, to a lesser extent, duodenal and mesenteric varices. In recent years, the BRTO procedure has been gaining popularity in the United States. BRTO has shown to be effective in controlling gastric variceal bleeding with low bleeding recurrences. Moreover, BRTO has many advantages over TIPS that includes its less invasiveness compared with TIPS and can be performed on patients with poor hepatic reserve or those suffering from hepatic encephalopathy or both. In fact, BRTO may even improve the hepatic synthetic function and help resolve hepatic encephalopathy. However, the consequence of the BRTO procedure is traditionally the occlusion of a spontaneous hepatofugal (TIPS equivalent) shunt (usually a gastrorenal shunt). This is contrary to the traditional doctrine of portal decompression. Indeed, BRTO causes increase in portal hypertension with exacerbation of esophageal varices and transudative complications (ascites or hydrothorax or both). Herein lies the controversy: BRTO vs TIPS (to sclerose or to decompress).

This is the second part of 2 issues of Techniques in Vascular Interventional Radiology that discusses the detailed technique for BRTO, the preoperative and postoperative imaging, and patient management of gastric varices. The following issue will discuss anatomy, hemodynamics, and the detailed technical aspects of BRTO (Balloon-occluded RETROGRADE Transvenous Obliteration) along with BATO (Balloon-occluded ANTEGRADE Transvenous Obliteration) for gastric and non-gastric (duodenal, mesenteric & stomal) varices.

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