**Supplementary Material**

**Supplemental methods**

***Treatment***

As previously described, the whole urgent endoscopic procedures were performed by expert endoscopists having performed more than 200 urgent endoscopic hemostasis. Initial stabilization in all patients included broad-spectrum antibiotics, vasoactive drugs, fluid and packed cell administration, and endoscopic treatment according to the Baveno VI criteria. Vasoactive drugs (octreotide 50 mg bolus followed by 50 mg/h, terlipressin 6-12 mg intravenously per day, or somatostatin 250 mg bolus followed by 250 mg/h) were started at admission for 3-5 days. The endoscope used was either a GIF-260 or a GIF-290 gastroscope (Olympus Corporation, Tokyo, Japan). The methods of endoscopic hemostasis included variceal band ligation or tissue adhesive injection therapy. Ligation is the recommended endoscopic therapy for acute esophageal variceal bleeding (EVB), and endoscopic therapy with tissue adhesive is recommended for acute bleeding from isolated gastric varices (IGV) and those gastroesophageal varices type 2 (GOV2) that extend beyond the cardia. The ligature was 6 bursts of ligatures (Cook Mediacl Inc., Bloomington, IN, USA). The injection of tissue adhesive was based on the “sandwich” method. The injection needle used was a MTW 23-25G disposable hardening needle, and the N-butyl cyanoacrylate (0.5 ml/ branch), was obtained from Braun-Aesculap AG (HistoAcryl; B. Braun, Melsungen, Germany) and the iodinated oil injection (10 ml/ branch) was produced from the Chinese company. Successful endoscopic therapy was determined by a 5-minute visual confirmation of hemostasis.

**Supplementary Figure Legends**

**Supplementary figure 1 TIPS for the prevention of rebleeding in cirrhotic advanced HCC patient who are receiving Lenvatinib and presented with variceal bleeding.** (A) A 59-year-old male patient, hepatocellular carcinoma (HCC，a diameter of 7 cm) with portal vein tumor thrombosis, AFP of 19650μg/L. He presented with acute variceal bleeding 49 days after lenvatinib treatment. (B) Urgent endoscopic injection sclerotherapy was performed when treated with vasoactive drugs. (C) Stabilization and successful vasoactive drugs plus endoscopic hemostasis. (D-E) the axial position of different layers in the contrast-enhanced imaging of magnetic resonance imaging: a large lesion in the right lobe of the liver with tumor thrombus in the main portal vein and both right and left branches; (F) injection of a small amount of contrast agent demonstrated the main portal vein was obviously filled with defects, branches were occluded and collateral vessels were formed; (G) tumor thrombus was biopsied with a biopsy forceps. (H) the appearance of a “grid-like outline” in the tumor thrombus interspaces, or occasionally, small branches were considered to indicate successful puncture of the portal system. (I) hepatic arteriography show there was an arteriovenous fistula with contrast agent entering the portal vein were embolized with coils. (J) hepatic arteriography showed that the arteriovenous fistula disappeared after embolization. (K-L) post TIPS subsequent keeping lenvatinib treatment, level of AFP declining to 1967μg/L at May 2019 (post-TIPS six months); (M) adherence to lenvatinib treatment, significant reduction of lesion in the right lobe of the liver, level of AFP declining to 467μg/L at November 2019 (post-TIPS one year). (N-O) the patient was alive and continued to be treated with lenvatinib at November 2021(post-TIPS three years).

**Supplementary figure 2 Flow chart of enrolled patients.**