

# Ectopic Variceal Bleed of Duodenum Successfully Treated with TIPS and 2 Years Follow-Up

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**Abstract:** *Bleeding from duodenal varices is uncommon in patients with portal hypertension, but when it occurs, it is typically severe and life - threatening. This condition is not limited to those with extrahepatic portal hypertension but can also affect individuals with liver cirrhosis. Ectopic varices, which contribute to about 5% of all variceal bleeding cases, include duodenal varices, accounting for 1–3% of varices in cirrhotic patients. These varices can appear in various locations such as the duodenum, jejunum, ileum, colon, anorectum, peristomal area, biliary tract, peritoneum, retroperitoneum, umbilicus, urinary bladder, uterus, ovaries, and others. Diagnosing and managing bleeding from ruptured duodenal varices pose significant challenges. A transjugular intrahepatic portosystemic shunt (TIPS) is an effective treatment option for controlling bleeding from duodenal varices associated with liver cirrhosis. However, interventional radiologists must be vigilant about potential risks and complications when considering this approach*

**Keywords:** Ectopic variceal bleeding; Duodenal bleed; TIPS; Transjugular intrahepatic portosystemic shunt

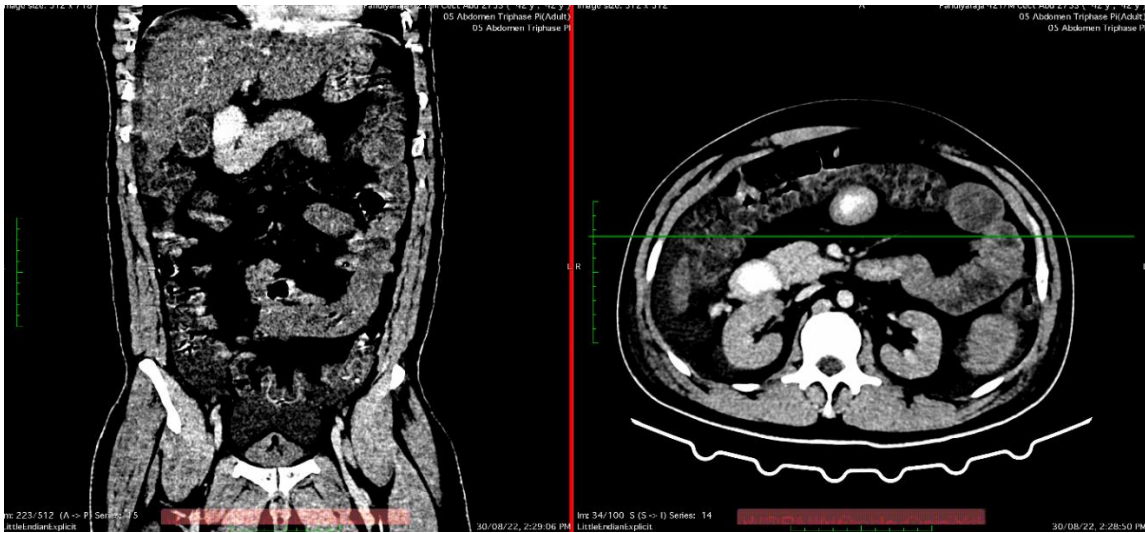
## 1. Introduction

Ectopic varices are natural bypasses that form due to portal hypertension, a progressive complication of liver cirrhosis. These varices typically develop at sites like the esophagogastric junction, rectum, and abdominal wall where the portal venous system meets the systemic venous system. Portal hypertension can lead to the reopening of embryonic channels or the reversal of blood flow in existing adult veins [14]. Esophagogastric varices are the most common complication seen in these patients. Ectopic varices refer to large portosystemic venous collaterals that can occur anywhere along the gastrointestinal tract. Although bleeding from ectopic varices is rare in patients with portal hypertension, it is usually severe and life - threatening. Current treatment options include medical management, surgical intervention, and endoscopic procedures such as ligation, sclerotherapy, or embolization [5–6]. We present a case of successful treatment of bleeding from ectopic duodenal varices using a combination of transjugular intrahepatic portosystemic shunt (TIPS) and embolization of varicose veins

## 2. Case Report

The patient is a 42 - year - old male who presented with symptoms of dark, black stool for the past two days, along with one day of nausea and vomiting. He has a history of

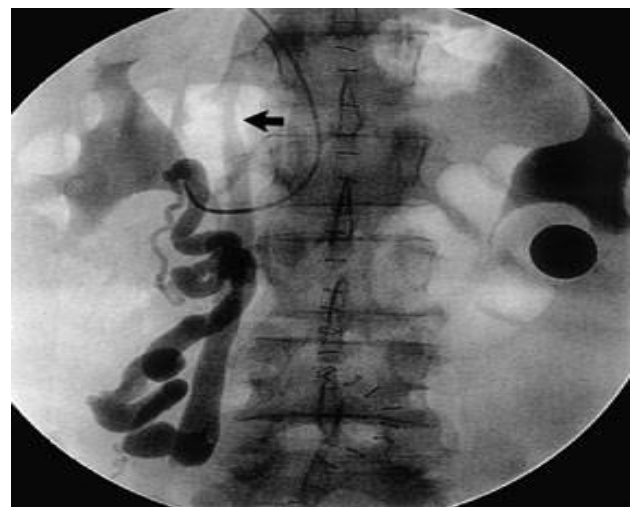
alcohol abuse spanning ten years. There was no significant family history. An ultrasound revealed cirrhotic changes in the liver, mild hepato - splenomegaly and multiple pericholecystic, retroperitoneal, perisplenic, para duodenal and splenorenal collaterals. On physical examination, the liver was non - palpable and the spleen was enlarged, measuring approximately 13.5 cm. Shifting dullness was negative, but there was slight edema in both lower extremities. Computed tomography revealed hepatosplenomegaly, edematous gallbladder, multiple pericholecystic, retroperitoneal, perisplenic, para duodenal and splenorenal collaterals, hyperdensity was noted in the lumen of the duodenum – represents acute bleed and IVC appears slit like due to volume loss (Figure 1). Computed tomography venography (CTV) revealed that tributaries of the superior mesenteric vein encircle the duodenum and merge into the right renal vein. Esophagogastroduodenoscopy (EGD) identified one varicose vein in the stomach fundus and three nodular varicose veins approximately 27 cm from the incisors. Duodenal varices were confirmed via transjugular direct portal venography and selective catheterization of the superior mesenteric vein. Additionally, esophageal varices were noted, with contrast - agent extravasation into the duodenum indicating signs of ongoing variceal bleeding. Multiple varicose veins were also observed in the descending part of the duodenum.



**Figure 1:** CT coronal and axial section shows slit like IVC, hyperdense area indicating bleed in duodenum, hepatosplenomegaly

In summary, the patient was diagnosed with duodenal variceal bleeding, primary biliary cirrhosis, and classified as Child - Pugh grade B. Following consent from the patient and his family, treatment involved a transjugular intrahepatic portosystemic shunt (TIPS) and venous embolization to prevent rebleeding. In cases where decompression is not suitable, a transjugular approach can provide direct access to varices without creating a shunt. Following preoperative preparation using CT portal vein (portography), a 5F Cobra catheter was inserted into the patient's varices. Embolization was carried out using absolute alcohol, gelfoam, and steel coils as embolic agents. Complete embolization was achieved when the variceal vessels were occluded or showed very slow blood flow. Subsequently, the catheter was withdrawn, and the sheath was retracted to the edge of the spleen parenchyma. The puncture site was embolized using gelfoam and steel coils until the main stem of the splenic vein was no longer visualized upon injection of contrast medium.

Post - operatively, hepatic function and hematocrit levels were monitored on days 2 and 5 following the procedure. Abdominal symptoms and body temperature were also closely observed. Follow - up imaging with ultrasound, CT, or MRI was scheduled one week after embolization. In cases where there are portal vein stenoses or thromboses, correction with stents may be necessary to achieve sufficient decompression and restore hepatopetal flow.



**Figure 2:** Contrast in pancreatico - duodenal vein while TIPS procedure. A large mesenteric varices noted.

After conducting preoperative assessments including serum electrolytes, a complete blood count, kidney and liver function tests, an electrocardiogram (EKG), and chest X - ray, and confirming the absence of allergic reactions to contrast, Digital Subtraction Angiography (DSA) guided TIPS procedure was performed using a 0.035 - inch guide wire (TERUMO) under the guidance of SIEMENS SOMATOM imaging equipment. The RUPS - 100 catheter (COOK Medical) was advanced to the left branch of the portal vein through the hepatic parenchyma. Radiographic images revealed a large tortuous ectopic varicose vein originating from the superior mesenteric vein and draining into the right renal vein, which was embolized using a releasable spring coil (Interlock). Venogram of pancreatico - duodenal vein was obtained and a large mesenteric varices was noted (Figure 2). Additionally, a tortuously expanded gastric coronary vein was treated with tissue gel. Subsequently, a shunt was created using an 8mm covered stent combined with an 8mm bare stent, leading to the disappearance of duodenal varices and gastric coronary veins. The hepatic vein pressure gradient (HVPG) decreased from 14 to 7 mmHg.

The patient underwent follow - up evaluations at 1, 3, and 6 months post - procedure, and subsequently every 6 months. During these follow - ups, medical history review, physical examinations, hematological tests, biochemical analyses, and abdominal ultrasound were conducted. No adverse events were reported during the follow - up period, and ultrasound examinations indicated smooth blood flow through the TIPS stent. Esophagogastroduodenoscopy (EGD) at 1 - and 6 - month follow - ups, and computed tomography venography (CTV) of the portal vein at 24 - month follow - up, confirmed complete resolution of the duodenal varices.

### 3. Discussion

The cause of upper gastrointestinal bleeding can typically be identified through endoscopy, but diagnosing obscure bleeding (where both upper and lower GI endoscopies are normal) can be challenging. Ectopic varices are a rare underlying reason for such bleeding and account for approximately 5% of cases. Among ectopic varices, duodenal varices are the most common to bleed [3]. Liver cirrhosis is the primary cause of ectopic varices, followed by conditions like extrahepatic portal vein obstruction, idiopathic portal hypertension, and less commonly by factors such as liver metastasis, biliary stricture, and biliary atresia [4]. Intraabdominal adhesions resulting from prior abdominal surgeries can also contribute to collateral vessel formation in unusual locations, leading to ectopic varices.

Duodenal varices often stem from liver cirrhosis, portal vein thrombosis, or obstruction of the splenic vein and inferior vena cava [2]. Less frequently, conditions like schistosomiasis, postoperative shunt thrombosis, and veno - occlusive disease can also cause duodenal varices [2]. Typically, the inflow vessel is the pancreaticoduodenal vein originating from the trunk of the portal vein or superior mesenteric vein, while the outflow veins drain into the inferior vena cava [2, 3]. These connections between intestinal or retroperitoneal tributaries of the superior and inferior mesenteric veins with the inferior vena cava are known as veins of Retzius [7]. Therefore, duodenal varices are dilated veins of Retzius located in the pancreaticoduodenal region. Conventional contrast - enhanced CT is a powerful modality for expeditiously evaluating the overall status of portosystemic vessels in patients with portal hypertension [6, 7]. Moreover, CT is considered to be superior to angiography in revealing paraumbilical and retroperitoneal varices [7]. The diagnostic value of CT in this setting may be increased by use of multi slice helical CT. The faster scanning speeds and narrow collimation increase contrast opacification in the mesenteric, retroperitoneal, and portal vasculature, improving one's ability to identify and evaluate these vessels on both axial source images and multiplanar reformations. As we saw in the case of our patient, high - quality representations of anatomic detail may be obtained by multi slice helical CT. Treatment of variceal hemorrhage in the upper gastrointestinal tract is largely standardized [6, 8]. Endoscopy is of paramount importance in the treatment of duodenal varices because it allows accurate identification of the source of bleeding and direct therapeutic intervention [8].

The transjugular intrahepatic portosystemic shunt (TIPS) procedure effectively reduces elevated portosystemic pressure gradients [8]. However, there is limited experience with percutaneous embolization therapy for treating ectopic varices [6]. Our approach to embolizing ectopic varices focuses not on occluding the bleeding site itself but on blocking the feeding vein [6].

### 4. Conclusion

In summary, our experience with the patient described demonstrates the effectiveness of multislice helical CT in identifying duodenal varices as the cause of severe upper gastrointestinal bleeding. Multislice helical CT also played a crucial role in guiding tailored treatment, including percutaneous embolization and transjugular intrahepatic portosystemic shunt placement. Given that the transjugular approach can be utilized for both embolization of ectopic varices and placement of a TIPS, these treatment modalities can be combined in a single session.

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### Conflict of Interest

The authors declare that there is no conflict of interests.

### Data and Materials Availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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### Authors' Contribution

**Nisarga B V:** Writing, Investigation, Analysis, Review and Editing.

**Baskar A:** Conceptualization, Supervision, Methodology, Resources, Data Collection, Writing and Formal analysis.