

# A Case Report on Duodenal Variceal Bleeding Treated with Glue Injection

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## Abstract

**Introduction:** We present a case of upper gastrointestinal bleeding in a woman aged 56 years with liver cirrhosis who was diagnosed with isolated duodenal variceal bleeding, which was successfully treated with histoacryl injection.

**Case Presentation:** A 57-year female cirrhotic patient presented with melena. She had been diagnosed with duodenal variceal bleeding and treated successfully with 2.4 ml histoacryl using a normal gastroscope. The patient subsequently remained stable and free of any further GI bleeding. She was discharged 48 hours later. Her hemoglobin remained stable at 9 g/L. **Conclusion:** The histoacryl glue injection provides an effective treatment. Hence, this should ideally be performed by an experienced endoscopist who is aware of and vigilant for the serious complications of this treatment option.

## Keywords

Upper Gastrointestinal Bleeding, Portal Hypertension, Duodenal Variceal Bleeding, Glue Injection

## 1. Introduction

Portal hypertension is the progressive complication of liver cirrhosis and gives rise to the development of portosystemic collaterals commonly at the esophago-gastric junction, the abdominal wall, and the rectum. Ectopic varices are a term reserved for varices that exist outside the esophagogastric region. Around 17% of ectopic varix, occur in the duodenum with the most common site of duodenal varices being the duodenal bulb, followed by the descending part of the duodenum. The bleeding provoked by ectopic dilated veins is reported for about 5% of

portal hypertension bleeding, however, the mortality rate can touch 40%. The present clinical treatment ways for bleeding from duodenal varix include medical drug treatment, surgical treatment, endoscopic treatment (endoscopic band ligation or sclerotherapy glue injection), and interventional embolization [1]. Though, there are no standard guidelines for the treatment of ectopic duodenal variceal bleeding. Our objective is to report a case of ectopic duodenal variceal bleeding treated successfully with histoacryl injection in our center in Cambodia.

## 2. Case Presentation

A 56-year-old female patient presented with melena. She had been diagnosed with alcoholic liver cirrhosis with a history taking of traditional medication.

At the time of admission, the patient's blood pressure was 99/60mm Hg, pulse rate was 102 per minute, respiratory rate was 20 per minute and basal body temperature was 37°C. Physical examination showed an acutely ill appearance with mild confusion. The patient had conjunctival pallor, no scleral icterus, and no abnormalities on chest auscultation. The abdomen was soft to palpation but was distended, and there was tenderness to palpation at the epigastrium without rebound tenderness.

Laboratory findings showed hemoglobin concentration of 5.0 g/dL, leukocytes 14.07 K/ $\mu$ L (neutrophils 76%), and platelets

Serum biochemistry showed albumin concentration 2.0 g/dL, total bilirubin 0.52 mg/dL, aspartate aminotransferase 96 IU/L alanine aminotransferase 13 IU/L, creatinine 9.7 mg/L, blood urea nitrogen 35 mg/dL, prothrombin time 27% (international normalized ratio, 2.84), while all of hepatitis B surface antigen, hepatitis B surface antibody, and anti-hepatitis C virus were negative (see **Table 1** below).

**Table 1.** The initial labs result.

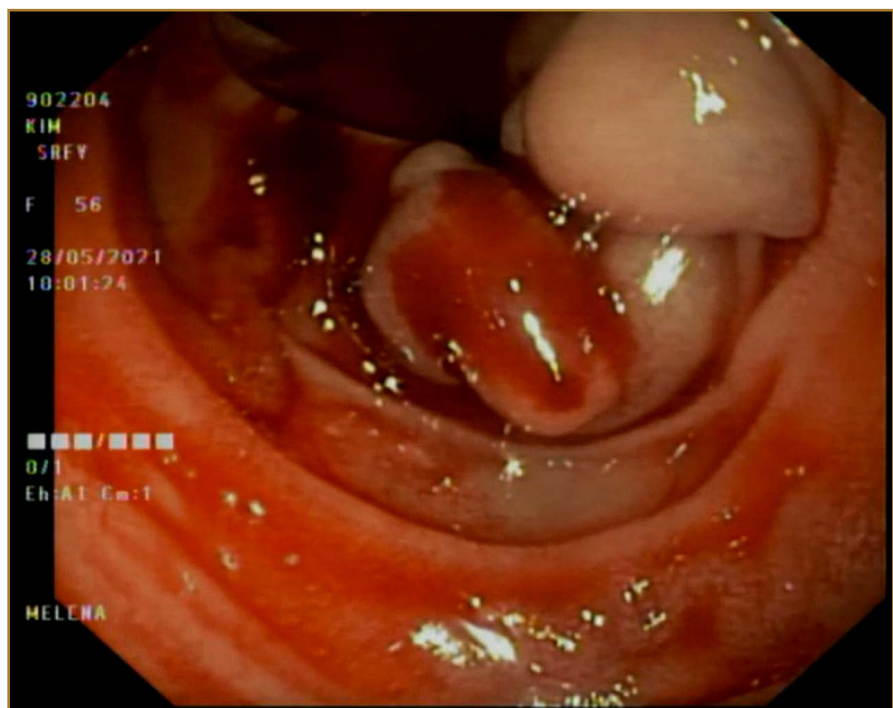
TEST	RESULT
White blood cells (WBC)	14.07 K/ $\mu$ L
Hemoglobin	5.0 g/dL
Platelet	145 K/L
Albumin	2.0 g/dL
Total bilirubin	0.52 mg/dL
Aspartate aminotransferase	96 IU/L
Alanine aminotransferase	13 IU/L
Creatinine	9.7 mg/L
Blood nitrogen urea	35 mg/dL
Prothrombin time	27%
Hepatitis B surface antigen	Negative
Hepatitis C anti-body	Negative

After resuscitation, an emergency upper gastrointestinal endoscopy was performed on the day of the patient's admission. It showed grade I esophageal varices without red color sign from all along the mid to lower esophagus. Apart from signs of congestive gastropathy, there were no other lesions suggestive of bleeding. Along the entire wall of the duodenal descending part was a pulsating blue varix with oozing bleeding (**Figure 1**). This was considered to be a bleeding focus, so the glue injection was performed without immediate complication. At our center, 0.5 mL glue aliquots (histoacryl) are mixed with 0.8 mL of lipiodol in small syringes. First, saline is injected into the variceal lumen to confirm an intra-luminal position at this point.

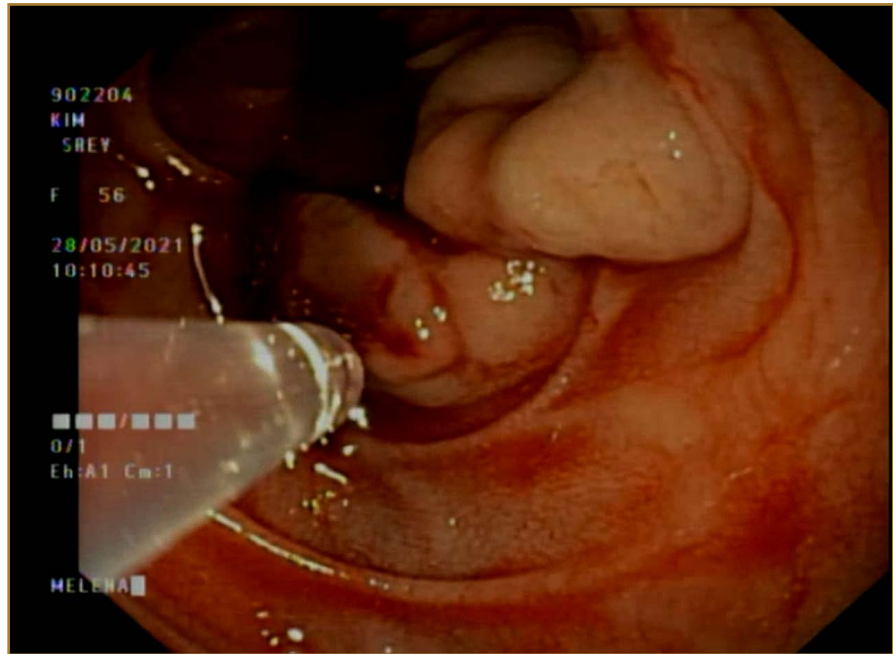
Then Glue/lipiodol mixture is injected 2.4 mL at a time (**Figure 2**). Further saline is instilled which separates the glue from the end of the needle and decreases the risk of tearing the glue through the variceal wall on removal of the needle. The hemostasis was achieved successfully with single session injection using a normal gastroscope. The patient subsequently remained stable and free of any further GI bleeding. She was discharged 48 hours later. Her hemoglobin remained stable at 9 g/L without any bleeding manifestation during follow-up within 6 months.

### 3. Discussion

The duodenal varices, first described by Alberti [2]. The prevalence of duodenal varices is associated with the cause of portal hypertension and the technique used to display the varices; up to 40% of patients with portal hypertension undergoing angiography showed duodenal varices. Although the frequency of bleeding is



**Figure 1.** Nodular aspect of descending duodenum (D2) with oozing bleeding on dilated vein.



**Figure 2.** Glue injection on dilated vein with oozing bleeding.

low, when it does bleed, it can be fatal with a mortality of 35% to 40% [1]. The most common cause (30%) of duodenal varices is portal hypertension due to liver cirrhosis. Other causes include occlusion of the splenic vein due to pancreatitis, tumors, or thrombosis (25%), and occlusion of the portal vein due to thrombosis, infection, and tumors (25%) [3].

In our case review, the clinical characteristics of patients with duodenal variceal bleeding included the following: 1) cirrhosis-related intra-hepatic portal hypertension that was the main cause of patients with duodenal variceal bleeding; 2) the most frequent location of duodenal varices was the descending portion of the duodenum; 3) a majority of patients with duodenal variceal bleeding (53.5%) occurred in conjunction with gastric varices or esophageal varices.

Those clinical characteristics were comparable to the recent systemic review study conducted by Wan Yipeng *et al.* published in 2021 [4].

The etiology and position of duodenal varices persist debated. In Western countries, duodenal varices located in the duodenal bulb were found most frequently followed by duodenal varices located in the descending part of the duodenum [5] [6]. In contrast, in Asian countries, such as Japan and China, the descending part of the duodenum was the main location of duodenal varices followed by the duodenal bulb [7] [8] [9]. Remarkably, in Western countries, extra-hepatic portal hypertension was the most common cause of ectopic varices; on the other hand, cirrhosis-related portal hypertension was the most frequent cause in Asian countries [8] [9]. This difference may be related to the different causes and ethnicities of patient populations [10].

Regarding the treatment, medical therapy always comes first to resuscitate and stabilize the patient's condition just like in our case that we preferably do it be-

fore an endoscopy. In the past, surgical treatment methods such as variceal ligation, variceal excision, splenorenal shunting, and partial duodenectomy were used, but the rate of postsurgical mortality was as high as 30% and such methods are not commonly used in recent years. Recently, sclerotherapy, endoscopic ligation, and radiological intervention procedures as well as TIPS and balloon-occluded retrograde transvenous obliteration have been used for treatments [11]. In our center, we performed glue injection with the combination of cyanoacrylate (histoacryl) and lipiodol that is similar to the study done in Portugal conducted by Mariana Costa *et al.* [12]. Bhagani S *et al.* has published also the successful bleeding control done by glue injection on duodenal bleeding site with the same quantity of histoacryl with 2.4 ml as our center [13]. More recently in 2021, there was a systemic review that confirmed this histoacryl glue injection in term of control of the bleeding due to duodenal variceal bleeding [14].

#### 4. Conclusion

We all know that the injection of histoacryl glue is effective in terms of stopping the bleeding from duodenal varix but its harmful effect needs to take into account. In our case, we did not see any complications especially related to pulmonary embolism. Hence, this should ideally be performed by an experienced endoscopist.

#### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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