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Case Report

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Endoscopic band ligation of a proximal duodenal varix; Case report (with video)

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Abstract

Duodenal varices are a rare consequence of portal hypertension, which constitute 17% of ectopic varices, if these varices bleed, the mortality is around 40%. Medical therapies, including vasopressin, have limited success in controlling active duodenal variceal bleeding. We present a case of a 52 y-o woman who presented with hematochezia and deep anemia requiring multiple transfusions. She has a history of being diagnosed with cirrhosis, FMF, hemochromatosis and factor V Leiden mutation with multiple deep vein thrombosis. The abdomen computer tomography (CT) revealed active bleeding vat the proximal duodenum. She underwent emergent esophagogastroduodenoscopy, which showed actively pulsatile bleeding duodenal varices. Endoscopic hemostasis was achieved successfully with variceal band ligation. Endoscopic band ligation is an effective intervention for actively bleeding duodenal varices, especially for those located in the proximal duodenum, which were more accessible endoscopically than the distal ones.

Keywords: duodenal varices, variceal bleeding, liver cirrhosis, band ligation

1. Introduction

The most common reason for mortality due to liver disease worldwide is liver cirrhosis (LC) (1). Some of the main factors that lead to LC include chronic infection by hepatitis B or C virus, excessive alcohol consumption, non-alcoholic fatty liver disease, autoimmune disorders affecting the liver, and liver damage caused by drugs. Cirrhosis mortality worldwide is largely attributed to hepatitis virus infection, alcohol-related liver disease, and non-alcoholic steatohepatitis (2, 3). The prognosis of patients with liver cirrhosis (LC) depends on the different stages they go through, the main ones being the compensated and decompensated stages. The onset of complications such as ascites, variceal bleeding and overt hepatic encephalopathy marks the clinical transition from the compensated to the decompensated stage (4). The esophagus and stomach are common locations of varices induced by portal hypertension. Ectopic varices are characterized by the dilation of portosystemic collateral veins situated in anatomically non-conventional locations, diverging from the typical gastroesophageal region. This clinical entity represents a relatively uncommon occurrence, contributing to 1% to 5% of variceal hemorrhages observed in individuals with intrahepatic portal hypertension, with 17% of them being duodenal varices (5). They are an extremely rare consequence of portal hypertension, but once they bleed, their mortality can increase up to 40% (6-8). The success of medical therapy in the treatment of duedenal varices is limited. Other methods, such as endoscopic sclerotherapy, band ligation, glue injection, radiological embolization or TIPSS, can be tried in treatment. Endoscopic sclerotherapy involves injecting a chemical agent into the varices to cause them to shrink and stop bleeding. Band ligation is a similar procedure that uses rubber bands to tie off the varices. Glue injection is another option that uses a special glue to seal the varices. Radiological embolization is a minimally invasive technique that blocks the blood flow to the varices using coils or particles. TIPSS stands for transjugular intrahepatic portosystemic shunt, which is a procedure that creates a new pathway for blood to flow from the portal vein to the hepatic vein, bypassing the liver and reducing the pressure in the varices (9-11). In this case report, we will present the successful duodenal band ligation of a 52-year-old female patient.

2. Case report

A 52-year-old female patient presented to our emergency department with complaints of syncope and bloody stools. The patient's medical history revealed a chronic portal venous thrombosis associated with factor V Leiden mutation for the past ten years. Until three years ago, the patient had a non-cirrhotic course; however, subsequently, liver cirrhosis developed. Recent abdominal imaging revealed widespread and extensive venous collaterals around the duodenum. She had no previous episodes of gastrointestinal variceal bleeding until this admission. Previous upper endoscopy, endoscopic

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ultrasonography and angio-CT showed grade 1-2 esophageal varices and prominent duodenal varices. Upon physical examination, the patient appeared lethargic, responded to verbal stimuli, had an arterial blood pressure of 70/50, a tachycardic heart rate of 130 beats per minute, and exhibited cold and dry skin. No ascites was detected during the abdominal examination. Rectal examination revealed hematochezia. Other physical examination findings were within normal limits. The patient's laboratory results upon admission to the emergency room revealed a hemoglobin level of 4 g/dL, a platelet count of 80,000, normal renal function, AST (aspartate aminotransferase) at 50 U/L, ALT (alanine aminotransferase) at 45 U/L, GGT (gamma-glutamyl transferase) within normal limits, and a total bilirubin level of 1.8 g/dL. Other values were within the normal range.

Based on the patient's history and clinical presentation, terlipressin was initiated, suspecting variceal bleeding. The hemoglobin level was increased to 7 g/dL through multiple transfusions. When she became hemodynamically stable, she underwent angio-CT and upper gastrointestinal endoscopy by the gastroenterology team.

The patient's angio-CT showed dilated vascular structures in the duodenum, which were reported as duodenal varices, and there was also an area of active bleeding in the duodenal bulb (Fig. 1).

Fig. 1. Abdominal contrast enhancement CT shows actively bleeding varix in the first part of bulb

The upper gastrointestinal endoscopy revealed grade 1 and 2 esophageal varices with no active bleeding, a small amount of blood in the stomach, and portal hypertensive gastropathy without varices in the gastric mucosa. A spurting duodenal varix was seen in the duodenal bulb (Fig. 2) (video 1). Band ligation was performed on the varix, and the bleeding was controlled (video 2). Two days later, the patient had a repeat endoscopy due to a suspicious decrease in the hemoglobin level. The duodenal variceal band was intact, and there was no evidence of rebleeding (Fig. 3).

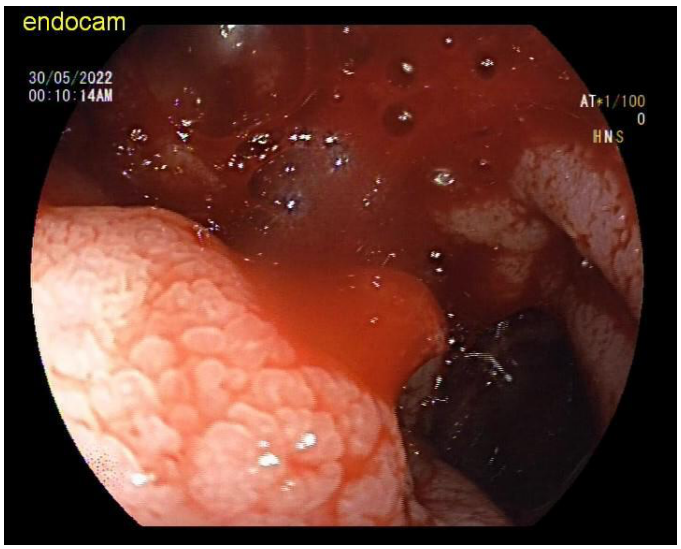

Fig. 2. Endoscopic view of varix in bulb of duodenum

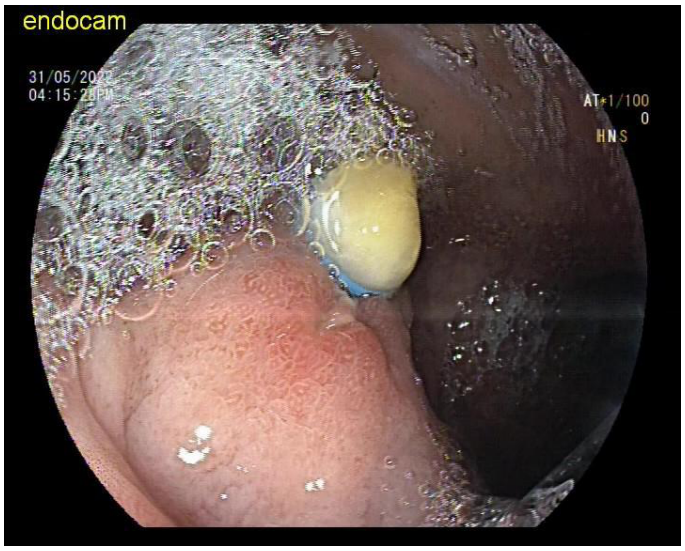

Fig. 3. Endoscopic view of the duodenal varix on the second day of banding; the band is intact and there are no signs of bleeding

3. Discussion

Duodenal varices bleeding is rare, but it is often a severe condition. The formation of duodenal varices involves the development of collateral veins between the trunk of the portal vein or the superior mesenteric vein and the inferior vena cava (8, 11, 12). The duodenal anatomy, which made it hard to see the lesion fully and determine the varix size, posed more difficulties for endoscopic intervention in stopping duodenal varices bleeding than esophageal varices bleeding (13). Currently, there exists a dearth of data pertaining to the primary prophylaxis of duodenal varices; nevertheless, beta-blockers have been administered in attempts to mitigate rebleeding, notwithstanding the absence of substantiating evidence (14). Some possible ways to manage the bleeding varices are TIPS, BRTO, and endoscopic therapies, including mechanical therapies (band ligation) and injection therapies (sclerotherapy with sclerosants or tissue adhesives) (15). Nevertheless, the administration of cyanoacrylate is not devoid of potential hazards. The documented complications encompass

pulmonary emboli, thrombosis in the portal and splenic veins, cerebrovascular incidents, as well as recurrent bleeding subsequent to the extrusion of the cast and impaction of the injector needle within the varix. This rephrased version maintains an academic tone and restructures the sentence for clarity while addressing the risk associated with cyanoacrylate injection (14).

According to Gunnerson et al., who conducted a comprehensive literature review, endoscopic band ligation (EBL) was ineffective for duodenal variceal bleeding, achieving successful hemostasis in only 3 out of 19 cases (15.8%). However, endoscopic band ligation (EBL) can be used as a first-line therapy and followed by additional modalities for the treatment of duodenal varices (11). Nevertheless, a recently published review found the opposite; thus compared the endoscopic techniques for duodenal variceal bleeding: endoscopic band ligation (EBL), endoscopic injection sclerotherapy (EIS), and endoscopic cyanoacrylate (ECA). The results showed that the overall rates of initial hemostasis and treatment success were 89.1% and 81.2%, respectively. The overall rates of rebleeding and mortality were 8.9% and 13.9%, respectively. ECA and EBL had higher treatment success rates among the subgroups than EIS (86.8%, 83.3%, and 68.2%, respectively). However, ECA had more adverse events than EBL and EIS (36.8%, 20.0%, and 27.3%, respectively) (16). The literature reports successful case series of EBL for varices, especially those located in the proximal duodenum, which were more accessible endoscopically than the distal ones. Due to the rarity of duodenal varices, there is a notable absence of specific guidelines for the management of bleeding foci accessible through endoscopy. Unfortunately, no universally recommended method exists for addressing duodenal variceal bleeding. As a result, endoscopists encountering such instances rely on their clinical acumen and expertise to select an appropriate intervention method (13, 17, 18). In our case bleeding varix was in the proximal duodenum, so it can be easily manipulated by endoscope. For proximal varices, endoscopic injection of glue is also a safe and effective therapeutic modality, but it also carries some complications, such as rebleeding or thromboembolic events. Therefore, it is important to monitor the patients closely after the procedure and to evaluate the outcomes and adverse effects. The optimal dose, frequency and duration of glue injection are still under investigation and may vary depending on the type and location of the varices. Glue injection should be performed by experienced endoscopists familiar with the technique and the potential risks (19-21). Endoscopic intervention is effective, less invasive, and easier and faster to perform compared with interventional radiology and surgical procedures, and endoscopic treatment of bleeding duodenal varices may have fewer complications than glue injection (22). Our case does not infer the unequivocal superiority of band ligation as the optimal approach for duodenal varices. Conversely, within the subset of duodenal varices accessible through endoscopy, the application of band ligation to the varix may be considered a judicious and appropriate intervention. In our case, no complications was observed and the patient discharged completely relieved.

Our case report is a single observation that cannot be generalized to the population. Further investigations are needed to confirm our findings and to explore the underlying mechanisms. We suggest conducting case series and retrospective analyses to provide more evidence.

Informed consent

We obtained written informed consent from the patient to use her photograph and laboratory results in our manuscript.

Conflict of interest

The authors declare that they have no conflict of interest regarding the research, authorship, and publication of this article.

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None to declare.

Authors' contributions

Concept: O.K., Design: O.K., Data Collection or Processing: H.E., Analysis or Interpretation: U.A., Literature Review: H.E., U.A., Drafting: O.K.,

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