International Journal of Gastroenterology
2026, Vol. 10, No. 1, pp. 39–42
https://doi.org/10.11648/j.ijg.20261001.17

Case Report

Duodenal Vascular Ectasia: Rare Cause of Gastrointestinal Bleeding

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Abstract

Duodenal vascular ectasia (DVE) is a rare but important cause of upper gastrointestinal bleeding, particularly in patients with chronic liver disease. Gastric antral vascular ectasia (GAVE) is a more commonly recognized vascular lesion associated with cirrhosis; however, vascular ectasia involving the duodenum is infrequently reported and may pose diagnostic and therapeutic challenges. We report a case of a cirrhotic patient presenting with recurrent upper gastrointestinal bleeding manifested as melena and progressive anemia. Initial evaluation suggested variceal bleeding; however, endoscopic examination revealed the presence of GAVE along with vascular ectasia involving the duodenal bulb and extending into the third part of the duodenum. Histopathological examination of duodenal biopsies demonstrated dilated vascular channels within the lamina propria, consistent with duodenal vascular ectasia. Endoscopic management was initially directed toward GAVE using argon plasma coagulation (APC). Due to persistent anemia and recurrent bleeding, APC therapy was subsequently applied to the duodenal vascular lesions with careful technique to minimize the risk of perforation. Hemostasis was successfully achieved without complications, and the patient showed sustained clinical improvement with stabilization of hemoglobin levels and no further transfusion requirement during follow-up. This case highlights duodenal vascular ectasia as a potential source of gastrointestinal bleeding in cirrhotic patients and demonstrates that argon plasma coagulation can be a safe and effective therapeutic modality when applied cautiously.

Keywords

Duodenal Vascular Ectasia, Cirrhosis, Gastrointestinal Hemorrhage

1. Introduction

Duodenal vascular ectasia is a rare condition [1] and an uncommon cause of upper gastrointestinal bleeding. It has been associated with chronic systemic diseases such as aortic valve pathology and end-stage renal disease in patients undergoing long-term hemodialysis (2-4). Gallagher et al. [5] described a case of small bowel capillary dilatation in a cirrhotic patient, suggesting that such vascular changes may be specific to portal hypertension and could contribute to gastrointestinal hemorrhage. However, only a limited number of cases of duodenal

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Received: 13 January 2026; **Accepted:** 5 February 2026; **Published:** 13 May 2026

vascular ectasia have been documented in patients with cirrhosis (5-7). Here, we report a case of upper gastrointestinal bleeding due to duodenal vascular ectasia in a cirrhotic patient, effectively treated with argon plasma coagulation (APC). It has been previously described in association with systemic disorders including aortic valve disease and renal failure [2, 4].

2. Case Report

An elderly male in early 60 was admitted with history of black colored stool, abdominal distension, bilateral feet swelling and generalized weakness since last 3 months. He visited the emergency room one year ago because of hematemesis, and an endoscopic examination revealed esophageal varices with bleeding, which were treated with endoscopic band ligation.

Physical examination revealed a distended abdomen with prominent shifting dullness.

The results of initial laboratory tests were as follows: white blood count (WBC) = 3900/mm^3, hemoglobin = 7.1 g/dL, platelets = 54 000/mm^3, prothrombin time =21.8 s, international normalized ratio = 1.8, total bilirubin= 1.9 mg/dL, direct bilirubin = 1 mg/dL, protein = 5.13 g/dL, albumin =2.73 g/dL, alanine aminotransferase = 58 IU/L, aspartate aminotransferase = 52 IU/L, gamma-glucuronyl transferase = 40 IU/L, alkaline phosphatase = 93 IU/L, glucose = 98 mg/dL and Na/K/Cl = 122/3.9/89 mEq/mL. Paracentesis revealed clear yellow-colored ascitic fluid, which on analysis showed 230/mm^3 WBC, 400/mm^3 red blood cells, 200 mg/dL glucose, and 210 mg/dL protein. The serum α-fetoprotein concentration was 4.2 ng/mL.

Bleeding from the esophageal varices was suspected and urgent endoscopic examination was performed. However, the endoscopy showed no esophageal varices. It showed GAVE, Mild portal hypertensive gastropathy (PHG) and vascular ectasia was found on the duodenal bulb and in duodenum till deep in third part (Figure 1). Endoscopic biopsy was performed from the vascular ecstatic mucosa and histological examination revealed patchy mild chronic active duodenitis with patchy mild villous blunting with mild Brunner's gland hyperplasia and lamina propria shows mild fibrosis and dilated vascular channels filled with blood and few shows thrombus suggestive of Duodenal vascular ectasia (Figure 2). We went ahead initially with APC for the GAVE and did not perform APC of duodenum in view of high risk of perforation in duodenum with APC. Patient still had complaints of black stool and drop in HB even after 2 more sessions of APC for GAVE in follow up with repeated iron and blood transfusion requirements. In view of persistent drop in HB, APC for duodenal vascular ectasia was performed twice at the interval of 1 month (Figure 3). After endoscopic treatment, his hemoglobin concentration stabilized and his anemic symptoms improved, and the patient was off iron and blood transfusion in follow-up visit. To minimize the risk of bowel perforation, we applied APC for 4–6 seconds at a power setting of 50 W, successfully controlling the bleeding without any complications.

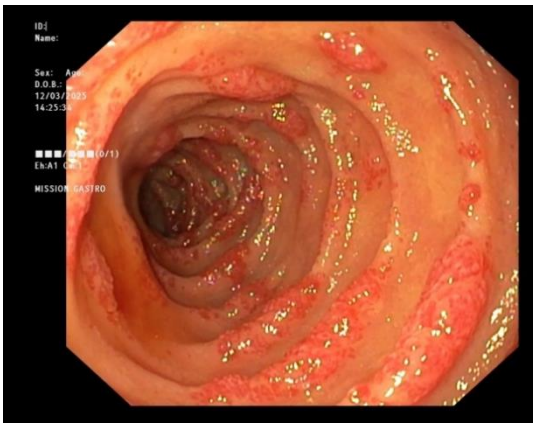

Figure 1. *Endoscopic image showing vascular ectasia in the second part of duodenum.*

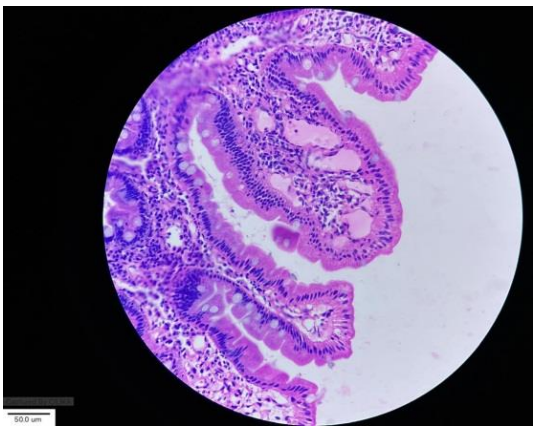

Figure 2. *Histological image showing patchy mild chronic active duodenitis with patchy mild villous blunting with mild Brunner's gland hyperplasia and lamina propria shows mild fibrosis and dilated vascular channels filled with blood and few shows thrombus within suggestive of Duodenal vascular ectasia (DVE).*

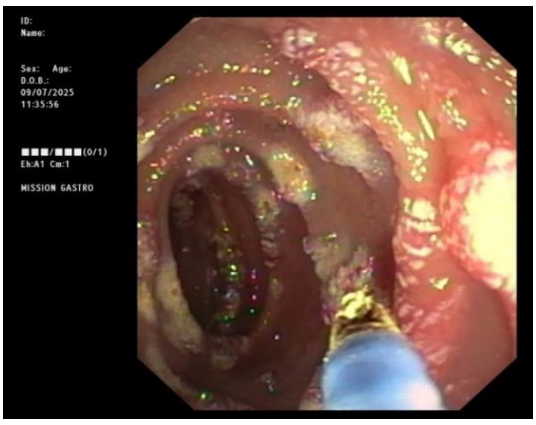

Figure 3. *Endoscopic image showing Argon plasma coagulation (APC) of the duodenal vascular ectasia (DVE).*

3. Discussion

Upper gastrointestinal bleeding is a common and serious complication in the clinical course of liver cirrhosis, contributing significantly to morbidity and mortality. [8] Gastroesophageal varices are the most frequent source of bleeding in cirrhotic patients, accounting for 59.1% of cases in a recent study. [9] Similar rates have been reported in other studies, with esophageal variceal bleeding occurring in 49% to 72% of patients. [10, 11] Peptic ulcer bleeding ranks as the second most common cause, responsible for 15.7% of bleeding episodes. [9].

Upper gastrointestinal vascular ectasia is increasingly recognized as a significant source of gastrointestinal bleeding, presenting either as overt bleeding or as a cause of obscure gastrointestinal blood loss. [3, 12, 13] Gastric antral vascular ectasia (GAVE) is a distinct form of vascular abnormality predominantly affecting the gastric antrum, characterized endoscopically by linear, friable red streaks radiating from the pylorus. In contrast, angiodysplastic lesions typically appear as discrete, flat or slightly elevated, bright-red spots measuring 2–10 mm, often with fern-like borders and a pale surrounding halo. [14] Clinically, these lesions may manifest as chronic low-grade bleeding, frequently resulting in iron-deficiency anemia, or as acute bleeding with hematemesis or melena. Patients often experience recurrent bleeding episodes, necessitating multiple blood transfusions and potentially leading to transfusion dependency. [14].

To date, only a limited number of cases of duodenal vascular ectasia have been reported in patients with cirrhosis. [5-7] Arendse et al. [6] described a fatal case of duodenal vascular ectasia in a cirrhotic patient, diagnosed postmortem. To our knowledge, the present case is the first to document successful hemostasis of duodenal vascular ectasia in a cirrhotic patient using argon plasma coagulation (APC).

Prior to the widespread adoption of therapeutic endoscopy, vascular ectasia was managed primarily through surgical resection. [15, 16] APC is a non-contact electrocoagulation method that delivers high-frequency monopolar alternating current to tissue via ionized argon gas. [17, 18] This technique offers several advantages, such as the ease of treating broad mucosal areas, controlled depth of coagulation, and faster healing of treated regions, allowing for a more efficient achievement of therapeutic goals. [17, 18].

4. Conclusion

In conclusion, duodenal vascular ectasia should be considered a potential source of upper gastrointestinal bleeding in patients with cirrhosis. Argon plasma coagulation appears to be a safe and effective therapeutic modality for achieving hemostasis in such cases.

Abbreviations

APC	Argon Plasma Coagulation
DVE	Duodenal Vascular Ectasia
GAVE	Gastric Antral Vascular Ectasia
GI	Gastrointestinal
PHG	Portal Hypertensive Gastropathy
WBC	White Blood Cell Count

Author Contributions

Dhaval Gupta: Conceptualization, Methodology, Project administration, Resources, Supervision, Writing – original draft

Sachin Patel: Data curation, Formal Analysis, Investigation, Methodology, Writing – review & editing

Maulik Kapadiya: Formal Analysis

Pratin Bhatt: Investigation, Data curation

Chirag Shah: Investigation, Writing – original draft

Vidish Sheth: Formal Analysis, Investigation

Vishal Modi: Investigation

Conflicts of Interest

The authors declare no conflicts of interest.

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