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Ectopic Duodenal Varices as a Rare Cause of Bleeding

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ABSTRACT

Ectopic varices are dilated veins resulting from portosystemic venous collaterals that appear anywhere in the gastrointestinal mucosa except the gastroesophageal region. Gastrointestinal bleeding caused by this type of varices accounts for 5% of all variceal hemorrhages, making it an unusual cause with a high mortality rate. The optimal treatment for gastrointestinal bleeding due to ectopic duodenal varices has not been well established because of its rarity. Various treatment options have been analyzed for cases with active bleeding, with endoscopic treatment in its various modalities being the preferred choice for achieving initial hemostasis. Additionally, endoscopic treatment can be complemented with therapy guided by interventional radiology, which helps reduce the rate of rebleeding.

Keywords: Duodenal varix, Gastrointestinal bleeding, Variceal bleeding.

INTRODUCTION

Ectopic varices are defined as dilated veins resulting from portosystemic venous collaterals that can appear anywhere in the gastrointestinal mucosa except in the gastroesophageal region. [1,2].

Gastrointestinal bleeding caused by ectopic varices accounts for 5% of all variceal hemorrhages, making it an unusual cause, with a reported mortality rate of 40% during the initial bleeding episode [1,3,4,5].

Up to 40% of patients with intrahepatic portal hypertension develop ectopic duodenal varices, and 10% of them develop anorectal varices [1,6].

Duodenal varices often present with melena or hematochezia and may be associated with hematemesis. In the United States, the most common site for duodenal varices is the duodenal bulb, while in Japan, the second portion of the duodenum is the most common site [7].

In a clinical study conducted in Japan with a total of 173 cases, it was found that the most common afferent vessel for duodenal varices was the inferior pancreaticoduodenal vein in 41%, followed by the superior mesenteric vein. The most frequent efferent vessel was the gonadal vein [8].

The simultaneous presence of esophagogastric varices with ectopic varices is more common in rectal varices than in duodenal varices [8].

The optimal treatment for bleeding duodenal varices has not yet been well established due to their infrequency. However, in cases of acute hemorrhage, urgent endoscopic treatments are preferred [2].

MATERIALS AND METHODS

This study was a multicenter retrospective analysis of individual clinical cases presenting a subset of patients with bleeding ectopic duodenal varices, which were managed with endoscopic treatment. Articles published in indexed international journals from January 2012 to March 2024 were included. Additionally, a case presentation resolved in our medical unit is included.

STATISTICAL ANALYSIS

The cases were evaluated using quantitative variables, expressed as means, and qualitative data, expressed as percentages. The statistical method used for qualitative variables involved 2x2 contingency tables with a cohort design, analyzing differences using Fisher's exact probability test and Chi-squared (X^2) analysis.

Inclusion and Exclusion Criteria

Articles with studies and case reports related to ectopic duodenal varices, clinical presentation, treatment, rebleeding rate, and mortality were included. Exclusion criteria consisted of clinical cases presenting anal ectopic varices and those lacking information specified in the inclusion criteria.

Results

A total of 26 cases of duodenal varices were evaluated, of which 15 (58%) were men and 11 (42%) were women. The mean age at presentation was 57.5 years for men and 47.5 years for women.

The most common location of duodenal varices was in the second portion of the duodenum, observed in 11 patients (42.3%), followed by the bulb in 5 patients (19.2%), the third portion in 3 patients (11.5%), the ileum in 1 patient (3.8%), and unspecified portions of the duodenum in 6 patients (23%). (Table 1)

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Table 1: Location of Ectopic Duodenal Varices

Location	**Cases (n)**	**(%)**
Total	26	
Duodenal bulb	5	19.23
Second portion of duodenum	11	42.31
Third portion of duodenum	3	11.54
Ileum	1	3.85
Unspecified	6	23.08

The most common associated comorbidity was alcoholic liver cirrhosis, reported in 9 cases (35%), followed by neoplasms (15%), viral cirrhosis (12%), thrombotic events (12%), and portal hypertension (8%). (Table 2)

Table 2: Associated Comorbidities in Patients with Ectopic Varices

Comorbidity	**Cases (n)**	**(%)**
Alcoholic liver cirrhosis	9	35
Viral cirrosis	3	12
Thrombotic events	3	12
Portal hypertension	2	8
Diabetes Mellitus	1	4
Systemic Arterial Hypertension	1	4
Neoplasms	4	15
Unspecified	4	15

The most frequently used endoscopic treatment was the injection of N-butyl-2-cyanoacrylate in combination with another endoscopic therapy, such as band ligation or even with interventional-guided therapies, applied in 45.8% of cases. This was followed by the injection of N-butyl-2-cyanoacrylate as a standalone treatment in 25% of cases. Thirdly, band ligation was used in 12.5% of cases.

Among the 26 isolated cases reported, adequate initial hemostasis was achieved in 24 of them, while 2 patients died due to hypovolemic shock. The overall mortality rate was 19.2%, occurring within the first hours or days following treatment with duodenectomy, coil embolization, N-butyl-2-cyanoacrylate, band ligation, transjugular intrahepatic portosystemic shunt (TIPS), or a combination of these. Adverse effects were observed in 5 patients (15.3%), including bacteremia secondary to the injection of N-butyl-2-cyanoacrylate and a duodenal perforation reported during combined treatment with band ligation, embolization, and sclerotherapy. The main cause of variceal bleeding is liver cirrhosis, which is why patients with duodenal varices may also present with esophagogastric varices. Eleven (42.3%) patients had both esophageal and duodenal varices concurrently. (Table 3)

Table 3: Treatments Used for Bleeding Ectopic Duodenal Varices and Outcomes

	Total N= 26 (%)	EBL n= 3	CA n=6	E.Coil n= 2	TIPS n= 1	HC n=1	Combined n= 13	p
Initial Hemostasis	24 (92.3)	3	6	2	1	1	11	NS
Treatment Success	21 (80.7)	3	5	2	1	1	9	NS
Rebleeding	5 (19.2)	0	1	0	0	0	4	NS

Adverse Events	4 (15.3)	0	2	0	0	0	2	NS
Mortality	5 (19.2)	0	1	0	0	0	4	NS
History of Esophagogastric Varices	11 (42.3)	0	4	0	1	1	5	0.04
EBL: Endoscopic band ligation; CA: N-butyl-2-cyanoacrylate; E. Coil: Coil Embolization; TIPS: Transjugular Intrahepatic Portosystemic Shunt; HC: Hemoclip; NS: Not Significant.								

Rebleeding occurred in 5 patients (19.2%), with symptoms such as hematemesis, hematochezia, or melena reported in the first few days following the initial treatment. Among these cases, one patient received treatment with N-butyl-2-cyanoacrylate, achieving adequate hemostasis, while the others required combined treatments, both endoscopic and interventional. Ordinal groups were compared in a multivariate analysis, where rebleeding was associated with the severity of the underlying disease and the presence of esophagogastric varices, using Fisher's exact probability test and Chi-square (X^2). No statistical difference was found between those with esophagogastric varices and those without, with a p-value of 0.0434.

Discussion

Duodenal varices are rare, and when they present with active bleeding, endoscopic treatment is preferred to achieve initial hemostasis. There is a wide range of options, among which the most commonly used are N-butyl-2-cyanoacrylate injection, band ligation, and the placement of hemostatic clips. Different adverse effects have been associated with each of these treatments, such as bacteremia, thrombosis, and migration for N-butyl-2-cyanoacrylate, and the risk of submucosal necrosis for band ligation due to the thinner wall of the duodenum compared to the esophagus and stomach. The endoscopic approach can be particularly challenging due to the anatomy of the duodenum, especially when the variceal path is in close proximity to the ampulla [8].

Other options that have shown good results in achieving hemostasis in duodenal varices include coil embolization, transjugular intrahepatic portosystemic shunt (TIPS), and balloon-assisted transvenous obliteration (B-RTO). No treatment has proven to be ideal for this condition; however, endoscopic treatments are the most commonly used.

CASE PRESENTATION

A 73-year-old male was admitted to the emergency department with hypovolemic shock secondary to upper gastrointestinal bleeding, characterized by melena. The patient had a history of alcoholic liver cirrhosis classified as Child-Pugh class A, in addition to hyperuricemia.

Upon arrival, he presented with hypotension (90/60 mmHg) and tachycardia (110 beats per minute). On physical examination, pallor of the skin was observed, but there was no evidence of ascites. Laboratory results showed a hemoglobin level of 6.7 g/dL, total bilirubin of 0.6 mg/dL, albumin of 3.5 g/dL, and an INR of 1.3, indicating the need for erythrocyte concentrate transfusion.

An urgent esophagogastroduodenoscopy (EGD) was performed, which revealed the presence of an ectopic variceal path in the second portion of the duodenum with active jet bleeding

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(Figure 1), which subsided. Two white nipple signs were then observed (Figure 2). Band ligation was performed at both sites, successfully stopping the bleeding (Figure 3). No evidence of esophagogastric varices was found.

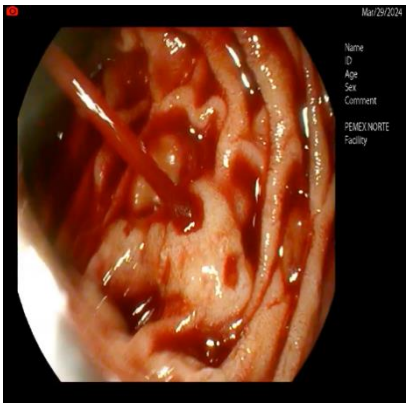

Figure 1: Bleeding duodenal varix

Figure 2: White nipple sign

Figure 3: Band ligation of duodenal variceal tract

Three days later, a follow-up EGD was performed, which showed superficial ulcers at the band ligation sites, with no signs of bleeding (Figure 4). On follow-up at one month, the patient had no episodes of rebleeding, and a stellate scar was observed at each band ligation site on the follow-up EGD (Figure 5).

Figure 4: Superficial ulcers covered with fibrin at the band ligation sites

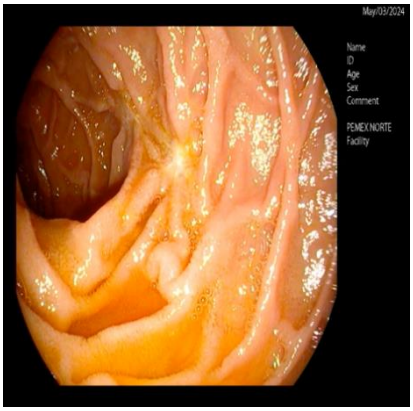

Figure 5: Stellate scar in the second portion of the duodenum

CONCLUSION

Endoscopic treatment for bleeding duodenal varices has been successful in most cases. Although N-butyl-2-cyanoacrylate has been used more frequently in the cases reported in this study, band ligation has shown good results in the short and medium term. Rebleeding management can be approached with a new EGD or interventional radiology-guided treatment. However, the limited number of cases studied represents a limitation of the study. It is emphasized that the ideal management is achieved through a multidisciplinary approach.

References

[1] Norton ID, Andrews JC, Kamath PS. Management of ectopic varices. Hepatology. 1998 Oct;28(4):1154-8. doi: 10.1002/hep.510280434. PMID: 9755256.

[2] Watanabe N, Toyonaga A, Kojima S, Takashimizu S, Oho K, Kokubu S, Nakamura K, Hasumi A, Murashima N, Tajiri T. Current status of ectopic varices in Japan: Results of a survey by the Japan Society for Portal Hypertension. Hepatol Res. 2010 Aug;40(8):763-76. doi: 10.1111/j.1872-034X.2010.00690.x. PMID: 20649816

[3] Martins Mendes T, Fonseca T, Pereira Anjos D. Bacteriemias Recorrentes após Escleroterapia de Varizes Ectópicas Duodenais com Cianoacrilato [Recurrent Bacteremia after Cyanoacrylate Sclerotherapy of Ectopic Duodenal Varices]. Acta Med Port. 2024 Feb 1;37(2):136-141. Portuguese. doi: 10.20344/amp.19444. Epub 2023 Jun 30. PMID: 37387411.

[4] Michielan A, Vieceli F, Pravadelli C, Moser L, Agugiaro F, Luppi G, Gatti FL, Costa L, Rozzanigo UM. Combination of transjugular intrahepatic portosystemic shunt and antegrade through-the-TIPS coil

URL: http://dx.doi.org/10.14738/bjhr.1201.18248.

embolization for bleeding mixed-type ectopic ileal varices. Clin J Gastroenterol. 2023 Oct;16(5):668-672. doi: 10.1007/s12328-023-01830-w. Epub 2023 Jul 15. PMID: 37452994; PMCID: PMC10539418.

[5] Kim HW, Yoon JS, Yu SJ, Kim TH, Seol JH, Kim D, Jung JY, Jeong PH, Kwon H, Lee HS, Lee SH, Choi JS, Park SJ, Jee SR, Lee YJ, Seol SY. Percutaneous Trans-splenic Obliteration for Duodenal Variceal bleeding: A Case Report. Korean J Gastroenterol. 2020 Dec 25;76(6):331-336. doi: 10.4166/kjg.2020.123. PMID: 33361709.

[6] Lee KK, Park JY, Choi WS, Cho YY. Plug-Assisted Retrograde Transvenous Obliteration for the Treatment of Duodenal Variceal Bleeding - A Case Report and Literature Review. Korean J Gastroenterol. 2023 Dec 25;82(6):295-299. doi: 10.4166/kjg.2023.105. PMID: 38129999.

[7] Jin-Dominguez F, Elangovan A, Lindsey AS, Satyavada S, Wong RCK. A case of duodenal variceal bleeding treated by Doppler-guided endoscopic cyanoacrylate injection. VideoGIE. 2023 Aug 31;8(11):459-461. doi: 10.1016/j.vgie.2023.07.008. PMID: 38026717; PMCID: PMC10665211.

[8] Yipeng W, Cong L, Sizhe W, Chenkai H, Anjiang W, Xuan Z. Effectiveness and safety of endoscopic treatment for duodenal variceal bleeding: a systematic review. Eur J Gastroenterol Hepatol. 2021 Apr 1;33(4):461-469. doi: 10.1097/MEG.0000000000001819. PMID: 32576766; PMCID: PMC7908861.

[9] Michielan A, Vieceli F, Pravadelli C, Moser L, Agugiaro F, Luppi G, Gatti FL, Costa L, Rozzanigo UM. Combination of transjugular intrahepatic portosystemic shunt and antegrade through-the-TIPS coil embolization for bleeding mixed-type ectopic ileal varices. Clin J Gastroenterol. 2023 Oct;16(5):668-672. doi: 10.1007/s12328-023-01830-w. Epub 2023 Jul 15. PMID: 37452994; PMCID: PMC10539418.

[10] João M, Trigo A, Gravito-Soares M, Gravito-Soares E, Lopes S, Figueiredo P. Duodenal variceal bleeding as a presentation of hepatocellular carcinoma. Rev Esp Enferm Dig. 2022 Dec;114(12):749-750. doi: 10.17235/reed.2022.8914/2022. PMID: 35638757.

[11] Kim HW, Yoon JS, Yu SJ, Kim TH, Seol JH, Kim D, Jung JY, Jeong PH, Kwon H, Lee HS, Lee SH, Choi JS, Park SJ, Jee SR, Lee YJ, Seol SY. Percutaneous Trans-splenic Obliteration for Duodenal Variceal bleeding: A Case Report. Korean J Gastroenterol. 2020 Dec 25;76(6):331-336. doi: 10.4166/kjg.2020.123. PMID: 33361709.

[12] Jin-Dominguez F, Elangovan A, Lindsey AS, Satyavada S, Wong RCK. A case of duodenal variceal bleeding treated by Doppler-guided endoscopic cyanoacrylate injection. VideoGIE. 2023 Aug 31;8(11):459-461. doi: 10.1016/j.vgie.2023.07.008. PMID: 38026717; PMCID: PMC10665211.

[13] Xie BS, Zhong JW, Wang AJ, Zhang ZD, Zhu X, Guo GH. Duodenal variceal bleeding secondary to idiopathic portal hypertension treated with transjugular intra-hepatic porto-systemic shunt plus embolization: A case report. World J Clin Cases. 2018 Dec 26;6(16):1217-1222. doi: 10.12998/wjcc.v6.i16.1217. PMID: 30613686; PMCID: PMC6306627.

[14] Lee KK, Park JY, Choi WS, Cho YY. Plug-Assisted Retrograde Transvenous Obliteration for the Treatment of Duodenal Variceal Bleeding - A Case Report and Literature Review. Korean J Gastroenterol. 2023 Dec 25;82(6):295-299. doi: 10.4166/kjg.2023.105. PMID: 38129999.

[15] Khor V, Soon Y, Aung L. A case report of bleeding from a duodenal varix: Rare cause of upper gastrointestinal bleeding. Int J Surg Case Rep. 2018;49:205-208. doi: 10.1016/j.ijscr.2018.06.031. Epub 2018 Jun 28. PMID: 30029079; PMCID: PMC6077164.

[16] Tayyem O, Krill T, Bagherpour A. Refractory bleeding due to duodenal varices. Ann Gastroenterol. 2018 Nov-Dec;31(6):750. doi: 10.20524/aog.2018.0309. Epub 2018 Sep 14. PMID: 30386128; PMCID: PMC6191872.

[17] Dzwonkowski M, Iqbal U, Kaufer SW, Khan YI, Kumar K. Endoscopic Band Ligation of Bleeding Duodenal Varices. Cureus. 2022 Feb 8;14(2):e22009. doi: 10.7759/cureus.22009. PMID: 35340508; PMCID: PMC8913514.

[18] Costa M, Ramos G. Duodenal Variceal Bleeding Successfully Treated by Endoscopic N-butyl-2-cyanoacrylate Injection. GE Port J Gastroenterol. 2015 May 5;22(4):180-181. doi: 10.1016/j.jpge.2015.03.008. PMID: 28868403; PMCID: PMC5580191.

[19] Hori A, Watanabe Y, Takahashi K, Tonouchi T, Kimura N, Setsu T, Ikarashi S, Kamimura H, Yokoyama J, Terai S. A rare case of duodenal variceal bleeding due to extrahepatic portal vein obstruction successfully treated with endoscopic injection sclerotherapy. Clin J Gastroenterol. 2022 Jun;15(3):617-622. doi: 10.1007/s12328-022-01627-3. Epub 2022 Apr 4. PMID: 35378714.

[20] Mullish BH, Mathew S, Dhar A. Gastrointestinal: Duodenal variceal bleeding secondary to thrombophilia-related portal vein thrombosis. J Gastroenterol Hepatol. 2018 Feb;33(2):336. doi: 10.1111/jgh.13982. PMID: 29372608.

[21] O'Neill RS, Wang WJ, Chan P, Ho V, Verdon C, Turner I, Acharya P. An obscure cause of gastrointestinal bleeding: Recurrent duodenal variceal hemorrhage treated with intramuscular octreotide in the absence of portal hypertension. JGH Open. 2022 Dec 12;7(1):78-80. doi: 10.1002/jgh3.12847. PMID: 36660056; PMCID: PMC9840189.

[22] Cocchia R, Chianese S, Lombardi G, Romano L, Capone V, Amitrano L, Bennato R, Ranieri B, Russo G, Mauro C, Bossone E. Severe Stenosis of Mitral Bioprosthetic Valve Thrombosis in a Patient with HCV-Related Cirrhosis and Duodenal Variceal Bleeding: The Deadly Triad. Clin Pract. 2022 Aug 29;12(5):686-691. doi: 10.3390/clinpract12050071. PMID: 36136865; PMCID: PMC9498389.

[23] Kubo T, Takao H. Retrograde n-Butyl Cyanoacrylate Embolization of Massive Bleeding from Duodenal Varices. J Vasc Interv Radiol. 2023 Feb;34(2):325. doi: 10.1016/j.jvir.2022.10.025. PMID: 36702569.

[24] Alsabban AM, Almatrafi MJ, Malik ZM, Khiji IY, Shariff MK. An Unusual Case of Isolated Duodenal Varices With Superior Mesenteric Vein Thrombosis. Cureus. 2023 Aug 20;15(8):e43783. doi: 10.7759/cureus.43783. PMID: 37731413; PMCID: PMC10507424.

[25] Gunnerson AC, Diehl DL, Nguyen VN, Shellenberger MJ, Blansfield J. Endoscopic duodenal variceal ligation: a series of 4 cases and review of the literature (with video). Gastrointest Endosc. 2012 Oct;76(4):900-4. doi: 10.1016/j.gie.2012.05.020. Epub 2012 Jul 27. PMID: 22840294.

[26] Bhasin DK, Sharma BC, Sriram PV, Makharia G, Singh K. Endoscopic management of bleeding ectopic varices with histoacryl. HPB Surg. 1999;11(3):171-3. doi: 10.1155/1999/35272. PMID: 10371062; PMCID: PMC2423963.

[27] So H, Park do H, Jung K, Ko HK. Successful Endoscopic Ultrasound-Guided Coil Embolization For Severe Duodenal Bleeding. Am J Gastroenterol. 2016 Jul;111(7):925. doi: 10.1038/ajg.2016.73. PMID: 27356819.

[28] Martins Mendes T, Fonseca T, Pereira Anjos D. Bacteriemias Recorrentes após Escleroterapia de Varizes Ectópicas Duodenais com Cianoacrilato [Recurrent Bacteremia after Cyanoacrylate Sclerotherapy of Ectopic Duodenal Varices]. Acta Med Port. 2024 Feb 1;37(2):136-141. Portuguese. doi: 10.20344/amp.19444. Epub 2023 Jun 30. PMID: 37387411.

[29] Park SB, Lee SH, Kim JH, Lee HJ, Jang SP, Lee JN, Hwang JH. Successful treatment of duodenal variceal bleeding by endoscopic clipping. Clin Endosc. 2013 Jul;46(4):403-6. doi: 10.5946/ce.2013.46.4.403. Epub 2013 Jul 31. PMID: 23964340; PMCID: PMC3746148