

Clinical, endoscopic and endoscopic ultrasound features of duodenal varices: A report of 10 cases

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ABSTRACT

Background: Duodenal varices (DV) although an uncommon cause, are an important cause due to the severe nature of the bleed and associated adverse outcome. **Materials and Methods:** We retrospectively evaluated patients with DV seen at our institution over past 4 years. **Results:** A total of 10 patients (nine males; mean age was 35.8 ± 7.68 years) with DV were studied. Five patients had underlying cirrhosis and five had DV because of non-cirrhotic portal hypertension (four patients had extra-hepatic portal venous obstruction and one patient had non-cirrhotic portal fibrosis). Five patients presented with upper gastrointestinal (GI) bleed, whereas in the remaining five patients DV were detected on endoscopy performed for evaluation of portal hypertension. Endoscopy revealed submucosal lesion in nine patients, whereas in one patient an initial endoscopic diagnosis of Dieulafoy's lesion was made. However endoscopic ultrasound (EUS) could clearly identify DV in all patients. Of five patients presenting with upper GI bleed, three had the esophageal varices eradicated and two presented 1st time with bleed from DV and did not have esophagogastric varices. All patients with acute upper GI bleed were initially treated with intravenous terlipressin followed by glue (n-butyl cyanoacrylate) injection in 4/5 patients with one patient refusing further endoscopic therapy. The variceal obliteration was documented by EUS in all these four patients and there has been no recurrence of bleed in these four patients over a follow-up period of 4-46 months. The five non-bleeding DV were already on beta-blockers and the same were continued. Two of these five patients succumbed to progressive liver failure with none of these five patients having GI bleed on follow-up. **Conclusion:** EUS is a useful investigational modality for evaluating patients with DV and endoscopic injection of glue is an effective therapy for controlling and preventing recurrence of bleed from DV.

Key words: Endoscopic ultrasound, duodenum, varices

INTRODUCTION

Esophago-gastric location is the most common site of variceal bleeding in patients with portal hypertension and ectopic varices are responsible for 1-5% of cases of variceal bleeding.^[1,2] These may occur at any site along the gastrointestinal (GI) lumen including rectum, duodenum, small and the large intestine, but are also

reported outside the GI lumen, in the retroperitoneum, abdominal wall, along the gall bladder wall, *etc.*^[1] In a nationwide survey of ectopic varices in Japan, duodenal varices (DV) were reported to be the second most common cause of ectopic variceal bleeding after the rectal varices.^[3] DV, although commonly seen on angiography in patients with portal hypertension they are an uncommon cause of bleeding. They are most commonly noted in the duodenal bulb followed by the second part of the duodenum.^[1-3] The bleeding from duodenal varix usually occurs as a result of erosion on the varix and is usually severe because of rapid blood flow with high mortality rates.^[4-6] They are usually detected on endoscopy as submucosal

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bulge and needs further evaluation for confirmation as a duodenal varix. Endoscopic ultrasound (EUS) is an excellent investigational modality for evaluating GI submucosal lesions and DV varices as well as the feeding vessels can be evaluated on EUS. However, the published experience on DV especially the role of EUS is limited.^[4-12] We retrospectively evaluated patients with DV seen at our institution over past 4 years and analyzed their clinical, endoscopic and EUS features as well as the outcome of treatment offered to them.

MATERIALS AND METHODS

We performed a retrospective analysis of patients with DV seen at our institution over the past 4 years. We included both patients who were diagnosed to have bleeding from DV and those patients in whom DV were diagnosed routinely on endoscopy performed for the evaluation of portal hypertension. Clinical records were reviewed to identify patient symptoms and imaging findings. Patients who presented with bleeding DV underwent endoscopic therapy whilst the non-bleeders were put on beta blockers. All the patients presenting with GI bleed underwent upper GI endoscopy after resuscitation and stabilization and if there was suspicion of DV, a EUS was performed to confirm the presence of DV. The patients who presented with bleeding DV were also given intravenous terlipressin.

After confirmation of DV, all the patients underwent endoscopic injection of n-butyl-2-cyanoacrylate (1 ml undiluted injection). Following successful hemostasis, the obliteration of the DV was confirmed by the absence of flow on color Doppler on EUS done within 4-7 days of endoscopic injection. An informed consent was obtained from all patients and the study protocol has been approved by the Institutional Ethics Committee.

RESULTS

A total of 10 patients (nine males; mean age was 35.8 ± 7.68 years) with DV were studied [Table 1]. Five patients had underlying cirrhosis and five had DV because of non-cirrhotic portal hypertension (four patients had extra-hepatic portal venous obstruction [EHPVO] and one patient had non-cirrhotic portal fibrosis [NCPF]). Five patients presented with upper GI bleed, whereas in the remaining five patients DV were detected on endoscopy performed for evaluation of portal hypertension. Of five patients presenting with upper GI bleed, three had the esophageal varices eradicated and two presented 1st time with bleed from DV and did not have esophagogastric varices.

Endoscopy revealed submucosal lesion in the duodenum nine patients, whereas in one patient an initial endoscopic diagnosis of Dieulafoy's lesion was made. The patients with duodenal submucosal lesion under went further evaluation by EUS whereas patient with suspicion of Dieulafoy's lesion underwent hemoclip application. However, this patient rebled and a repeat endoscopy revealed a submucosal bulge beneath the small rent in the mucosa. Subsequently performed EUS demonstrated DV in the first part of the duodenum [Figure 1].

Four of these five patients with GI bleed underwent injection of n-butyl-2 cyanoacrylate with cessation of bleeding. Follow-up EUS after injection of glue revealed complete absence of flow in the DV. The variceal obliteration was documented by EUS in all these four patients and there has been no recurrence of bleed in these four patients over a follow-up period of 4-46 months. The five non-bleeding DV were already on beta-blockers and the same were continued. Two of these five patients succumbed to progressive liver failure with none of these five patients having

Table 1. Profile of patients with duodenal varices

| Case | Age | Gender | Diagnosis | Esophageal varices | Location | Bleeder | Management |
|------|-----|--------|---------------------|--------------------|----------------|---------|--------------|
| 1 | 35 | M | EHPVO | Eradicated | D1 | Yes | Glue |
| 2 | 45 | M | Alcoholic cirrhosis | Absent | D1 | Yes | Supportive |
| 3 | 32 | M | NCPF+EHPVO | Eradicated | D1 | No | Beta-blocker |
| 4 | 27 | M | EHPVO | Absent | D1 | Yes | Glue |
| 5 | 38 | M | Alcoholic cirrhosis | Eradicated | D1 | Yes | Glue |
| 6 | 28 | M | EHPVO | Eradicated | D1 | Yes | Glue |
| 7 | 46 | M | Alcoholic cirrhosis | Eradicated | D1 | No | Beta-blocker |
| 8 | 34 | F | EHPVO | Eradicated | D1 | No | Beta-blocker |
| 9 | 46 | M | Alcoholic cirrhosis | Eradicated | D1 | No | Beta-blocker |
| 10 | 27 | M | Alcoholic cirrhosis | Eradicated | D1-D2 junction | No | Beta-blocker |

EHPVO: Extra-hepatic portal venous obstruction, NCPF: Non-cirrhotic portal fibrosis

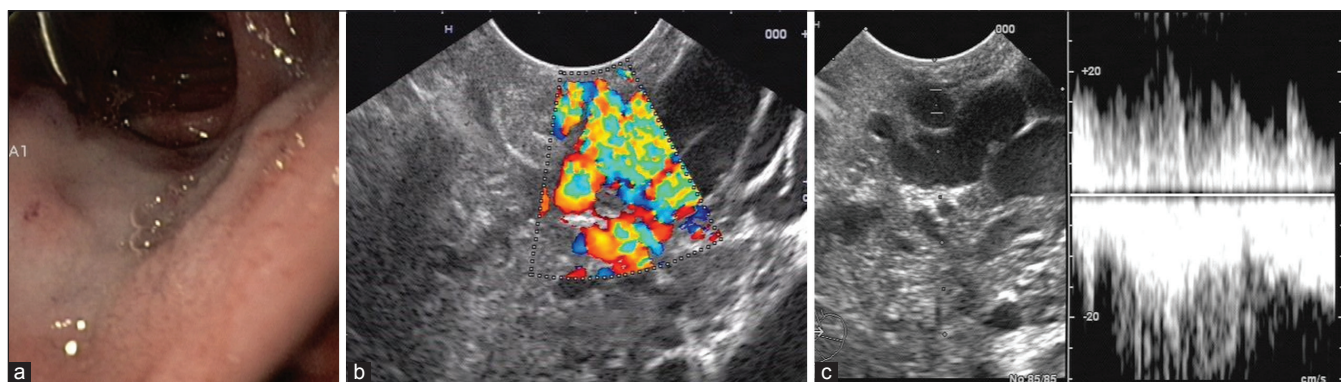


Figure 1. (a) Endoscopic image showing a submucosal lesion with a hemoclip; (b) endoscopic ultrasound (EUS) with color Doppler showing duodenal varices with collaterals; (c) EUS with pulse Doppler showing venous waveform

GI bleed on follow-up. One of the five patients with upper GI bleed refused consent for endoscopic glue injection and was managed conservatively with usual resuscitative measures and intravenous terlipressin and improved and was discharged. Thereafter, he has been lost to follow-up.

DISCUSSION

DV are an uncommon cause of bleeding in spite of high angiographic presence possibly because of deeper location and small size. Although they bleed infrequently, but whenever they bleed, they have higher mortality. DV usually co-exist with varices in esophagus and stomach or the varices have been eradicated earlier and bleeding 1st time from DV is very rare.^[4-12] Two of our patients presented 1st time with bleed from DV.

The DV can occur in association with any cause of portal hypertension including cirrhosis and non-cirrhotic. A case of duodenal variceal bleeding secondary to chronic pancreatitis has also been reported.^[13] In their series of 14 patients, Liu *et al.* have noted that 13 patients had underlying cirrhosis and one had EHPVO.^[8] In our 10 patients, five had underlying cirrhosis, four had EHPVO and one had NCPF as the cause of portal hypertension. As reported by earlier studies, all of our patients had DV located in the first part of duodenum.^[4-14]

The role of endoscopic therapy in non-bleeding DV is not clear. Of the five bleeders, four were treated with injection of glue (n-butyl-2 cyanoacrylate) which resulted in cessation of bleeding. This was followed by EUS demonstration of variceal obliteration. Some of the authors have reported successful application of bands for ligation of DV.^[15,16] Others have

questioned the usage of band ligation on the basis of animal studies, which suggest a higher likelihood of perforation.^[17] A case of fatal re-bleeding after band ligation of DV has also been reported.^[18] Endoscopic injection of glue has been shown to be safe and effective therapeutic modality for DV but complications such as re-bleeding or thromboembolic complications have also been reported.^[8,19]

As previously described by us, EUS may help in correct diagnosis, targeted injection of sclerosant and confirmation of variceal obliteration.^[14] EUS may also help delineate the anatomy of DV and communications with other vessels.^[20] If re-bleeding does occur after endoscopic therapy, intervention radiological techniques provide a therapeutic opportunity to manage bleeding.^[21] Balloon-occluded retrograde transvenous obliteration of varices (BROTO) has been utilized for management of gastric and DV and involves targeted embolization of varices using sclerosants such as ethanolamine oleate and cyanoacrylate.^[22,23] Transjugular intrahepatic portosystemic shunt (TIPS) has also been used to control bleeding from DV, which rebled after BROTO.^[24]

Notably, four of our five patients presenting with bleeding DV had undergone endoscopic therapy for eradication of esophageal varices earlier and were on beta-blockers. Earlier reports have indicated that endoscopic therapy of esophageal varices might predispose to occurrence of ectopic varices as this may open alternate route of drainage of portal flow.^[18]

CONCLUSION

DV represent an important, but uncommon cause of bleeding in patients with portal hypertension.

Endoscopic therapy with glue is a reasonable initial approach to treat these lesions. EUS can help confirm the diagnosis and also guide glue injection and confirm variceal obliteration. BROTO and TIPS represent approaches for rescue therapy. The role of beta-blockers in primary or secondary prophylaxis is uncertain.

REFERENCES

- Norton ID, Andrews JC, Kamath PS. Management of ectopic varices. *Hepatology* 1998;28:1154-8.
- Sato T, Akaike J, Toyota J, et al. Clinicopathological features and treatment of ectopic varices with portal hypertension. *Int J Hepatol* 2011;2011:960720.
- Watanabe N, Toyonaga A, Kojima S, et al. Current status of ectopic varices in Japan: Results of a survey by the Japan Society for portal hypertension. *Hepatol Res* 2010;40:763-76.
- Linder S, Wiechel KL. Duodenal varicose veins. *Surg Endosc* 1991;5:31-5.
- Khan MQ, Al-Momen S, Alghssab A. Duodenal varices causing massive lower gastrointestinal hemorrhage. *Ann Saudi Med* 1999;19:440-3.
- Khouqeer F, Morrow C, Jordan P. Duodenal varices as a cause of massive upper gastrointestinal bleeding. *Surgery* 1987;102:548-52.
- Kakizaki S, Toyoda M, Ichikawa T, et al. Clinical characteristics and treatment for patients presenting with bleeding duodenal varices. *Dig Endosc* 2010;22:275-81.
- Liu Y, Yang J, Wang J, et al. Clinical characteristics and endoscopic treatment with cyanoacrylate injection in patients with duodenal varices. *Scand J Gastroenterol* 2009;44:1012-6.
- Matsui S, Kudo M, Ichikawa T, et al. The clinical characteristics, endoscopic treatment, and prognosis for patients presenting with duodenal varices. *Hepatogastroenterology* 2008;55:959-62.
- Rana SS, Bhasin DK, Singh K. Duodenal varix diagnosed by endoscopic ultrasound. *Clin Gastroenterol Hepatol* 2010;8:A24.
- Bhasin DK, Sharma BC, Sriram PV, et al. Endoscopic management of bleeding ectopic varices with histoacryl. *HPB Surg* 1999;11:171-3.
- Ghidirim G, Mishin I, Dolghii A, et al. Ruptured duodenal varices successfully treated by mini-loop ligation; Report of a case. *Chirurgia (Bucur)* 2009;104:625-9.
- Kao WY, Wu WC, Chen PH, et al. Duodenal variceal bleeding caused by chronic pancreatitis. *Gastrointest Endosc* 2012;75:922-3.
- Rana SS, Bhasin DK, Rao C, et al. Endoscopic ultrasound-guided treatment of bleeding duodenal varix. *Indian J Gastroenterol* 2011;30:280-1.
- Schmeltzer PA, Smith MT. Duodenal variceal bleeding successfully treated with endoscopic banding (with video). *Gastrointest Endosc* 2011;74:716-7.
- Sousa HT, Gregório C, Amaro P, et al. Successful endoscopic banding after cyanoacrylate failure for active bleeding duodenal varix. *Rev Esp Enferm Dig* 2008;100:171-2.
- Kakutani H, Sasaki S, Ueda K, et al. Is it safe to perform endoscopic band ligation for the duodenum? A pilot study in *ex vivo* porcine models. *Minim Invasive Ther Allied Technol* 2013;22:80-3.
- Machida T, Sato K, Kojima A, et al. Ruptured duodenal varices after endoscopic ligation of esophageal varices: An autopsy case. *Gastrointest Endosc* 2006;63:352-4.
- Miyakoda K, Takedatsu H, Emori K, et al. N-butyl-2-cyanoacrylate (histoacryl) glue in the right atrium after endoscopic injection for a ruptured duodenal varix: Complication of histoacryl injection. *Dig Endosc* 2012;24:192.
- Rana SS, Bhasin DK, Rao C. Communication of duodenal varix with pericholedochal venous plexus demonstrated by endoscopic ultrasound in a patient of portal biliopathy. *Endosc Ultrasound* 2012;1:165-6.
- Zamora CA, Sugimoto K, Tsurusaki M, et al. Endovascular obliteration of bleeding duodenal varices in patients with liver cirrhosis. *Eur Radiol* 2006;16:73-9.
- Hashimoto R, Sofue K, Takeuchi Y, et al. Successful balloon-occluded retrograde transvenous obliteration for bleeding duodenal varices using cyanoacrylate. *World J Gastroenterol* 2013;19:951-4.
- Saad WE, Sze DY. Variations of balloon-occluded retrograde transvenous obliteration (BRTO): Balloon-occluded antegrade transvenous obliteration (BATO) and alternative/adjunctive routes for BRTO. *Semin Intervent Radiol* 2011;28:314-24.
- Kim MJ, Jang BK, Chung WJ, et al. Duodenal variceal bleeding after balloon-occluded retrograde transverse obliteration; Treatment with transjugular intrahepatic portosystemic shunt. *World J Gastroenterol* 2012;18:2877-80.

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