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Dieulafoy's Lesion: An often Missed Endoscopic Diagnosis

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Abstract

Dieulafoy's lesion (DL) is an aberrantly dilated (up to 3-mm in diameter) and tortuous submucosal artery that protrudes through the gastrointestinal mucosa. It is a rare and potentially serious cause of gastrointestinal bleeding. The difficulty in detecting these lesions remains a major challenge. Initial endoscopy may miss diagnosis in about one thirds of cases of DL. Bleeding from DL can be intermittent and may therefore be difficult to identify. Furthermore, the bleeding point can be very small, or the lesion may be covered by blood clot. Repeat endoscopy is often rewarding in diagnosis of DL. We describe three cases of gastrointestinal bleeding due to DL; two of them were diagnosed at repeat endoscopy.

Keywords: *Dieulafoy's lesion: Endoscopy; Gastrointestinal bleeding*

Introduction

Dieulafoy's lesion (DL) is a rare vascular lesion that may cause massive gastrointestinal (GI) bleeding. The difficulty in detecting DL, in the absence of active bleeding, remains a major challenge. We describe three cases of GI bleeding due to DL; two of them were diagnosed at repeat upper gastrointestinal endoscopy (UGIE).

Case Reports

The first case was a 55 year old male who presented with recurrent history of melena for past 3 years. He had past history of multiple blood transfusions. He underwent various investigations for its evaluation previously including repeated blood investigation, UGIE, colonoscopy, capsule endoscopy and abdominal CT scan with angiography. All these investigations failed to locate the source of bleeding and labelled as obscure GI bleeding. He presented to us again with history of melena. On examination, pallor was seen. Blood investigations showed reduced hemoglobin (6.5gm/dl); otherwise normal. Patient was managed with intravenous fluids, blood transfusions and other supportive measures. At our centre, UGIE was done and upon reaching the third part of duodenum, fresh blood could be seen in the lumen. After flushing with water, oozing was seen from a lesion suggestive of DL (Figure 1A). DL was managed with hemoclip application (Figure 2B, 2C). Patient had no rebleeding in the 2 year of follow-up period.

The second case was a 45 year old man who presented with complaints of hematemesis. On examination, there was severe pallor; the investigations showed reduced hemoglobin (7.8 gm/dl). Patient was managed with blood transfusions and other conservative measures. UGIE showed blood clot in fundus and body. The bleeding source was not clearly identified even after washing of clots. Repeat UGIE performed next day showed a vascular lesion surrounded with tiny mucosal defect in the body of the stomach (Fig. 2A). This lesion was managed with epinephrine injection and hemoclip application (Fig. 2B). A 4-month follow-up showed no further complication.

The third case was a 50 year old male who presented with hematemesis and melena. Past history revealed diabetes mellitus (on oral medication) since 6-years. On examination, he had hypotension and pallor (Hb-6.9 gm/dl). Patient was managed with three units of packed red cell tranfusion and other supportive measures. UGIE showed gastric mucosa smeared with blood (Figure 3A) and no bleeding point could

be identified. After continuous irrigation with normal saline, an actively bleeding DL was seen in the antrum (Figure 3B). Hemostasis achieved using epinephrine injection and argon plasma coagulation (APC) (Figure 3C). No rebleeding episode noted over follow-up period of 6-months.

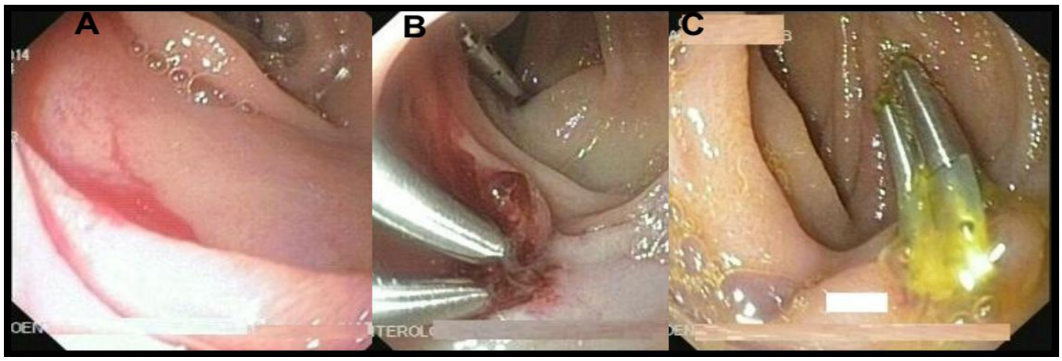

Figure 1. *Oozing DL at distal duodenum **(A)**, Hemoclip application **(B)**, Relook endoscopy **(C)***

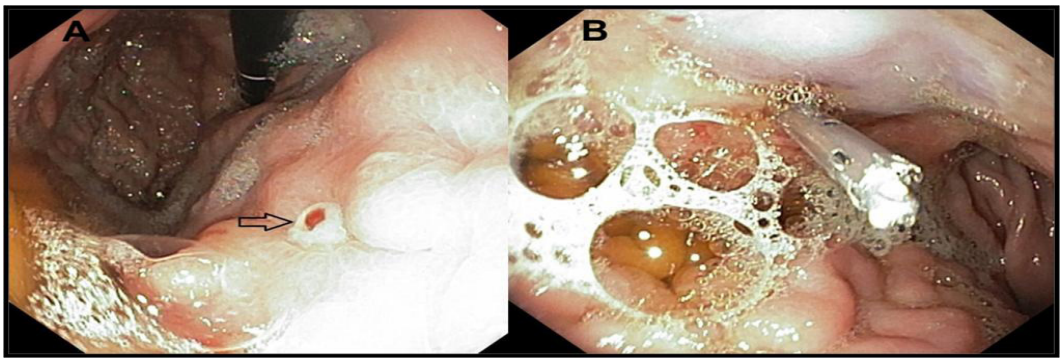

Figure 2. *Gastric DL **(A)**, Epinephrine injection and Hemoclip application **(B)***

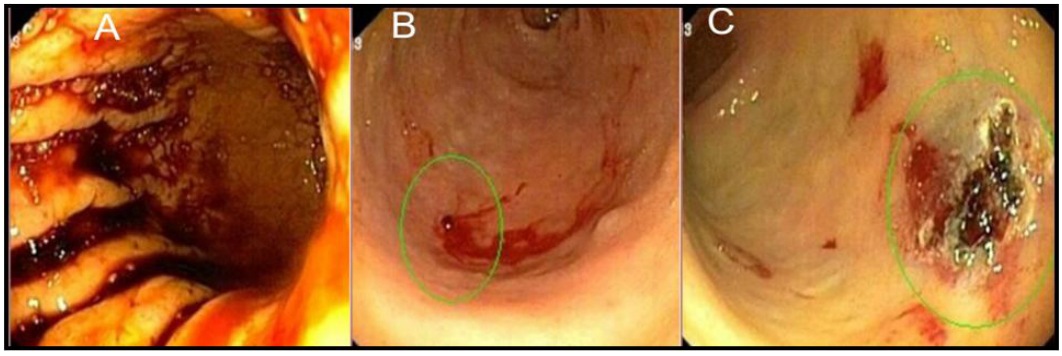

Figure 3. *Gastric mucosa smeared with blood **(A)**, DL visible after saline irrigation **(B)**, Post-APC **(C)***

Discussion

DL is defined as an aberrantly dilated (up to 3-mm in diameter) and tortuous submucosal artery that erodes overlying GI mucosa in the absence of other anatomical defects such as ulcer, aneurysm, or intrinsic mural abnormality[1]. Unlike normal arteries, DL has uniform arterial calibre without distal tapering in submucosal location within the GI wall [2]. This lesion has been named after Paul Georges Dieulafoy who described this lesion in in 1898.

About 2% of the total cases of upper GI bleeding are caused by DL[3]. DL is often a branch of the left gastric artery, therefore usually located within 6 cm of the gastroesophageal junction. Stomach (71%) followed by duodenum (15%) and esophagus (8%) are most common location of DL. Rectum (2%), colon (2%), and jejunum-ileum (1%) are other rare locations of DL[1,4].

Various conditions associated with DL include, older age, male sex; and multiple comorbidities such as diabetes mellitus, cardiovascular disease, hypertension,

and chronic kidney disease. Other risk factors include: anticoagulants and antiplatelet agents such as non-steroidal anti-inflammatory drugs, aspirin, and warfarin [1,5].

Patients with DL typically presents with overt GI bleeding such as hematemesis, melena or hematochezia. Patient may present with recurrent bleeding, usually within 72 hours of the first bleeding[2]. Delayed recurrent bleeding is not uncommon in patients with DL. Recurrent bleeding is often severe, which emphasizes the importance of identification of lesion and treatment at the initial endoscopy. Patients of DL rarely presents with chronic occult GI bleeding.

DL is mostly diagnosed by endoscopy. DL is characteristically seen as an isolated protruding vessel surrounded by normal mucosa or a very small mucosal defect (<3 mm). The lesion could be visualised as spurting or oozing from a tiny mucosal defect or normal mucosa. In absence of active bleeding, it may also be seen as a pinpoint red dot or small blood clot. Initial UGIE is diagnostic in only approximately two thirds of cases of DL. DL is frequently missed in initial endoscopy due to multiple reasons, including small size, blood clot, location between folds or endoscopic blind spot, pool of blood or gastric contents and intermittent bleeding [6]. As the detection of DL frequently missed in cases without active bleed, early endoscopy during active bleeding is important for diagnosis of DL. In comparison to delayed endoscopy (done 24 hour after symptom onset), DL is detected significantly more frequently in emergency endoscopy patients (40.7% vs. 0.9%) [7]. Sometimes, several endoscopies may be required in patients to establish the diagnosis. Repeated endoscopy is the most sensitive and cost-effective method for diagnosis of DL. The first case in this case series, highlights that a DL may be missed by when there is no active bleeding from the lesion as it could not be identified in the previous several endoscopies. Fortunately, we were able to detect the lesion because of early endoscopy and actively bleeding lesion. In our second case study, lesion was missed in first endoscopy due to pool of blood and clot in stomach.

Other investigations used are colonoscopy, balloon enteroscopy, capsule endoscopy, angiography and radionuclide imaging. Endoscopic ultrasound is useful in diagnosis and treatment of DL. Recent endoscopic advancement has increased the detection rate of DL and survival. Mortality rate has decreased from 80% to 9% [4].

Treatment consists of supportive measures like volume resuscitations, and correction of coagulopathy. Endoscopic hemostatic treatment is preferred method of therapy. Successful hemostasis can be achieved after endotherapy in approximately 90% of patients with DL[8]. Thermal endotherapy (electrocoagulation, heat probe coagulation and APC) is the most frequently performed treatment, followed by injection (epinephrine injection and sclerotherapy) and mechanical endotherapy (banding and hemoclip). Mechanical endoscopic methods are appeared to be more effective in achieving hemostasis when compared to injection or thermal treatment methods [9]. Combination therapy is frequently used. Rebleeding is less common in those treated with combined endoscopic therapy[1,8]. Tattooing at initial endoscopy is useful to help localisation if re-bleeding occurs.

Selective angiography with embolisation may be required in cases of failed endotherapy, lesions beyond reach of therapeutic endoscopy, and poor candidates for surgery. Surgery may be required if the lesion cannot be located with endoscopic or angiographic procedures [4].

In conclusion, DL is rare and potentially serious cause of GI bleeding. Although a treatable condition, the difficulty in detecting these lesions remains a major challenge. DL is best seen at the time of active bleeding and may be missed due to multiple reasons. Repeat endoscopy is often rewarding in diagnosis of Dieulafoy's lesion.

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