

Case Report

Percutaneous Endoscopic Gastrostomy: A Possible Trigger for Dieulafoy's Lesion

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Abstract

Introduction

Upper gastrointestinal (GI) bleeding is a medical condition commonly seen in clinical practice due to variable etiologies and a multitude of presentations. The patients can present with hematemesis, melena, or hematochezia in case of severe bleeding. The initial evaluation should involve assessing the hemodynamic status with adequate resuscitation followed by diagnostic tests to identify the source and potentially treat it. Dieulafoy's lesion, sometimes referred to as Dieulafoy's disease, is a rare cause of upper GI bleeding with no clear risk factors, which makes it a diagnostic conundrum. Here we describe an unusual case of Dieulafoy's lesion developing following percutaneous endoscopic gastrostomy (PEG) placement.

Case Presentation

We describe a case of a 70-year-old female patient with a past medical history of hyperlipidemia, well-controlled hypertension, and an ischemic cerebrovascular accident, which caused neurologic dysphagia and placement of a PEG tube 3 weeks prior. She presented to the emergency department due to melena, with hypotension of 90/50 mmHg, tachycardia of 126 beats/minute, and hemoglobin of 5.6 g/dl. An endoscopy revealed a Dieulafoy's lesion on the lesser curvature of the stomach just across the PEG tube, which was managed with epinephrine and hemoclips.

Conclusion

This is a rare case of Dieulafoy's lesion on the lesser curvature of the stomach, potentially developing due to PEG placement.

Keywords

acute upper gastrointestinal (GI) bleeding; Dieulafoy's lesion; percutaneous endoscopic gastrostomy (PEG)

Introduction

Acute upper gastrointestinal (GI) bleeding is one of the most common medical emergencies with the potential of causing significant morbidity and mortality. It affects 50 to 100 per 100 000 persons per year in the general population with incidence highest in people with low socioeconomic status. The most common causes include peptic ulcer disease (35-50%), gastro-duodenal erosions (8-15%), esophagitis (5-15%), variceal bleeding (5-10%), and Mallory Weiss tear (15%). Rare causes account for 5% of all patients with acute upper GI bleeding.¹

These causes, sometimes referred to as obscure causes of GI bleeding, are difficult to diagnose and locate through routine methods of investigation due to their unique pathology and size.²

Dieulafoy's lesion (DL), initially reported by French surgeon Dieulafoy in 1898, is a rare condition causing submucosal vasculature in the GI tract to abnormally dilate, making it a potentially serious condition.³ It is described as an abnormal submucosal artery that has a larger-than-usual caliber and is tortuous and

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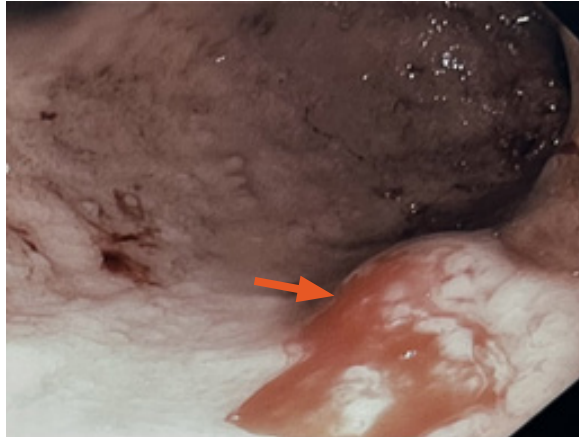


Figure 1. An upper endoscopy showed a Dieulafoy's lesion on the lesser curvature of the stomach (orange arrow).

persistent. Therefore, the artery does not taper upon reaching the mucosa, making its diameter 10 times larger than a normal artery would be at this mucosal level.^{4,5} Histologically, the artery protrudes through a mucosal defect of 2-5 mm and shows ulceration that is limited to the overlying mucosa, sparing the surrounding mucosa.^{4,5} It is usually found on the lesser curvature of the stomach within 5 cm of the esophagogastric junction, but it has been reported in other areas of the GI tract, including the esophagus, duodenum, cecum, and colon.⁶⁻⁹ It is usually overlooked in the differential diagnosis of acute GI bleeding, but according to one estimate, it involves 1-2% of cases of acute GI bleeding. It can be life-threatening; therefore, it should be considered in the etiologies of GI bleeding.²

Case Presentation

A 70-year-old female, with a past medical history of hyperlipidemia, well-controlled

hypertension, and an ischemic cerebrovascular accident, which caused neurologic dysphagia and placement of a percutaneous endoscopic gastrostomy (PEG) tube 3 weeks prior. She presented to the emergency department due to a large black stool, with hypotension of 90/50 mmHg and tachycardia of 126 beats/minute. Hemoglobin was found to be 5.6 g/dl, along with a white blood cell count of 15 600 and a platelet count of 328 000. Therefore, the patient was given intravenous fluids, packed red blood cell transfusion, and transferred to the intensive care unit. An endoscopy was performed, which showed brisk bleeding from the lesser curvature with raised mucosa without ulceration (**Figure 1**). This was suggestive of DL just across from the PEG tube, which was partially clogged with a clot and had to be removed. There was an active bleeding of about 10 mL, which was controlled with local injections of epinephrine. This was reinforced with 2 endoscopic hemostatic clips (**Figure 2**).

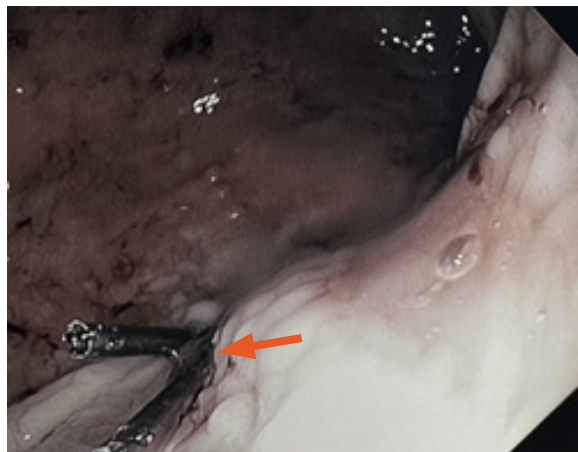


Figure 2. The endoscopic procedure is shown for the application of hemostatic clips (orange arrow).

Discussion

DL is a rare condition, and it carries a significant risk of morbidity and mortality. It is a dilated submucosal vessel in the wall of the gut that can result in GI hemorrhage, leading to life-threatening complications.¹⁰ The etiologies of this condition and the triggers causing this severe bleeding are not well documented, but generally, it is found in men with underlying comorbidities, including hypertension, cardiovascular disease, diabetes mellitus, chronic kidney disease, or alcohol abuse.⁶ Nonsteroidal anti-inflammatory drug use has also been seen in patients with DL, and they are believed to trigger bleeding by mucosal atrophy.⁷ There has been no association with any particular age groups, but it is mostly seen in the fifth decade.^{4,11} These lesions can develop anywhere in the GI tract, including the esophagus (8%), stomach (72%), small bowel (16%), colon (2%), and rectum (2%).¹² Several mechanisms have been reported to explain the sudden rupture of the submucosal artery and subsequent hemorrhage. One mechanism suggests that thrombosis within the artery leads to necrosis of the wall, subsequently causing arterial rupture.^{4,13,14} Another theory suggests that pulsation within the artery puts pressure on the overlying epithelium, eventually leading to vascular rupture.^{4,11,14} Clinically, DL presents as painless bleeding causing melena, hematochezia, or hypotension in case of massive hemorrhage.^{4,14}

Endoscopy is used as the main diagnostic technique in identifying DL. The criteria to diagnose DL involve visualizing active arterial bleeding or a protruding vessel without active bleeding, or the appearance of a fresh clot with a slim attachment point, through a mucosal defect of less than 3 mm or normal GI mucosa.¹⁵ Due to intermittent bleeding from these lesions and their small size, 33% of patients have to undergo more than one endoscopy for accurate diagnosis of the bleeding source.^{4,16} If endoscopy fails to identify the DL, angiography can be used, and a diagnosis is based on the appearance of the tortuous artery.^{2,4,7,14} Endoscopy is also used as first-line management, with various techniques such as local epinephrine injections, sclerotherapy, thermal coagulation, endoscopic banding, and hemostatic clipping.^{4,10} Epinephrine injections are given around the lesion to control bleeding and to decrease the

chances of bleeding during band ligation or clipping, as was performed in this case.^{4,16}

PEG is the favored method of providing nutritional support to patients who require long enteral nutrition and have a functional GI tract. The complications associated with PEG placement can be divided into minor and major. The commonly associated minor complications include granuloma formation, local wound infection, peristomal leakage, tube dislodgement, and gastric outlet obstruction. The major complications include bleeding, aspiration pneumonia, internal organ injury, buried bumper syndrome, and necrotizing fasciitis.¹⁷ Hemorrhage from the mesenteric vein, PEG tract, gastric artery, and splenic artery have been reported in the literature, but no case of bleeding from DL has been found.^{17,18}

Conclusion

To our knowledge, this is the first reported case of Dieulafoy's lesion after a patient was placed on PEG tube feedings. Due to the lack of association with other reported risk factors of the disease, with no prior history of GI bleeding and no history of peptic ulcer disease, gastro-duodenal erosions, or variceal bleeding, the association with PEG placement was considered. This association has not been widely investigated, and its awareness through this report will hopefully alert gastroenterologists to consider this as a diagnostic possibility.

Conflicts of Interest

The authors declare they have no conflicts of interest.

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