

Co-existing Perforated Duodenal Ulcer and Ruptured Gastroduodenal Artery Aneurysm

Chin-Ta Lin¹, Chung-Bao Hsieh², De-Chuan Chan³, Jyh-Cherng Yu⁴, Guo-Shiou Liao⁵

ABSTRACT

Gastroduodenal artery (GDA) aneurysm is a rare and life threatening visceral artery aneurysms. We report a case of perforated duodenal ulcer accompanied with ruptured aneurysm of gastroduodenal artery. To our knowledge, this case is not yet reported in the literature with presentation of postoperative shock due to ruptured GDA aneurysm after perforated duodenal ulcer operation. Moreover, with awareness of ruptured GDA aneurysm and early treatment with transarterial embolization, the patient leads a good result after treatment.

KEY WORDS: Aneurysm, Gastroduodenal artery, Embolization, Angiography.

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INTRODUCTION

Aneurysms of the splanchnic arteries are very rare with challenging diagnosis and management. Transarterial embolization of bleeding artery has recently been advocated as a definitive therapy and can be attempted as the initial measure to control bleeding. We herein report a case of perforated duodenal ulcer with ruptured aneurysm of gastroduodenal artery which was successfully controlled with transarterial embolization.

CASE REPORT

A 79-year-old male presented to our emergency department (ED) with a three-day history of intermittent epigastric pain. There were no changes in his

appetite and body weight. In the medical history, he had received exploratory laparotomy with simple closure and omentum coverage due to gastric ulcer with bleeding one year ago. At ED, his vital signs revealed temperature of 38.5°C, pulse of 112 /min and blood pressure of 107/56 mmHg. Physical examination showed no abdominal mass, but local tenderness with rebounding pain over epigastric region was observed. There is no remarkable finding on digital examination. Blood tests, including complete blood count, liver and renal function tests, and amylase level, were all normal with initial hemoglobin level of 12.4 g/dL. The patient underwent exploratory laparotomy due to acute abdomen with suspected peritonitis. At laparotomy, an ulcerative hole, about 1cm in diameter at anterior wall of 1st portion of duodenum with turbid ascites, about 500ml in peritoneal cavity. The postoperative course was uneventfully. Unfortunately, postoperative hypotension with pulse of 116 /min and blood pressure of 98/54 mmHg was observed. Due to the persisted appearance of fresh blood in the abdominal drain with hemoglobin level of 9.4 g/dL, emergent computed tomographic angiography (CTA) of abdomen was performed. CTA showed a contrast extravasation lesion about 2.4 x 1.1 cm in duodenal bulb, consisted with aneurysm (Fig-1). Celiac artery angiography was immediately performed and showed active bleeding from the duodenal branch of the gastroduodenal artery (Fig-2a). Superselective emboliza-

1. Chin-Ta Lin,
 2. Chung-Bao Hsieh,
 3. De-Chuan Chan,
 4. Jyh-Cherng Yu,
 5. Guo-Shiou Liao,
- 1-5: Division of General Surgery, Dept. of Surgery, Tri-Service General Hospital, National Defense Medical Center, Taipei, Taiwan, Republic of China.

Correspondence:

Guo-Shiou Liao, MD,
No. 325, Cheng-Kung Rd, Sec 2, Neihu 114, Taipei,
Taiwan, Republic of China.
E-mail: aarondakimo@yahoo.com.tw

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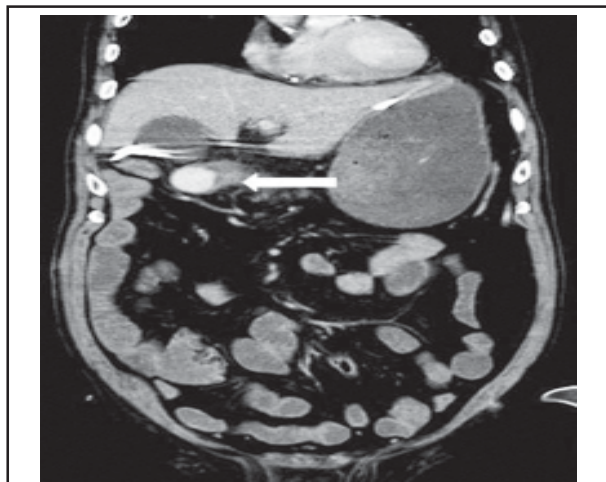


Fig-1: CTA showed a contrast extravasation lesion about 2.4 x 1.1 cm in duodenal bulb, consisted with aneurysm.

tion was performed into the aneurysm cavity using six fibered platinum microcoils (Fig-2b). The patient recovered well without further incident at 12 months follow-up.

DISCUSSION

Gastroduodenal artery (GDA) aneurysms are particularly rare and only 1.5% of all visceral artery aneurysms in the literature.¹ The possible etiologies of GDA aneurysms are vascular abnormality such as fibromuscular dysplasia, systemic lupus erythematosus, polyarteritis nodosa, and predisposing events, which included pancreatitis, abdominal trauma, or major abdominal operation.² The clinical presentation can vary widely, including asymptomatic anemia, a palpable pulsatile mass, gastric outlet obstruction and fatal gastrointestinal bleeding.³

To date there are no large studies in the literature of substantial experience with GDA aneurysms. GDA aneurysms should be treated regardless of size and symptoms, although the risk is higher for large-diameter aneurysms rupture is also frequent for small-diameter aneurysms.⁴ Computed tomographic angiography (CTA), Doppler sonography and magnetic resonance imaging provide the best tools for the diagnosis and treatment planning.

In hemodynamically stable patients, preoperative angiography can facilitate the localization of the aneurysm. Surgical repair remains the treatment of choice with a minimal failure rate.⁵ However, mortality after emergency surgery is as high as 40%, compared with negligible mortality after elective repair.⁶ Endovascular techniques have many possible advantages such as accurate localization of the aneurysm and easy assessment of collateral circulation.

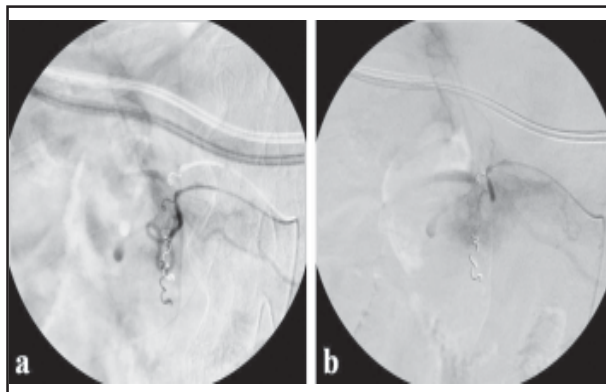


Fig. 2:

- a. Celiac artery angiography was immediately performed and showed active bleeding from the duodenal branch of the gastroduodenal artery.
- b. Superselective embolization was performed into the aneurysm cavity using six fibered platinum microcoils.

Transarterial embolization as a definitive treatment for bleeding aneurysm had also been reported with success rate as high as at least 80%.⁷ Moreover, endovascular techniques can treat multiple aneurysms and more accessible and repeatable than surgery.

To conclude, gastroduodenal artery aneurysms are extremely rare, there is only a limited knowledge concerning the clinical presentation and best treatment. The importance of these aneurysms is the risk of rupture and associated mortality. Transarterial embolization can be used as a first line treatment for GDA aneurysms in view of their relative advantages. However, one should be alert of this entity as it could present with perforated duodenal ulcer causing unstable hemodynamics after surgery.

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