

Giant Left Gastric Artery Aneurysm (LGAA): Case Report and Review of LiteratureEmiliano C¹, Mariagnese M¹, Gianluca M^{2*}, Tommaso L³, Claudio R⁴, Federico G⁴ and Stefano M⁵¹Department of Vascular Surgery, San Giovanni di Dio Hospital, Florence, Italy²Resident in Vascular surgery, University Hospital Careggi, Florence, Italy³Resident in Vascular surgery, San Giovanni di Dio Hospital, Florence, Italy⁴Department of Interventional radiologist, San Giovanni di Dio Hospital, Florence, Italy⁵Chief of Vascular surgery, San Giovanni di Dio Hospital, Florence, Italy***Corresponding author:**

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1. Abstract

LGAAAs are a rare entity, with higher incidence in patients suffering from chronic pancreatitis and stomach cancer. Their clinical presentation is predominantly asymptomatic; however, they can lead to rupture and death. Diagnosis is often incidental, by CT angiography performed for other pathologies or in case of acute abdominal pain following rupture.

A 60-year-old man was investigated for anemia. Workup revealed a previously unknown LGAA. He was then treated with embolization with a good postoperative outcome.

According to the literature, the treatment is mainly endovascular, however many cases of open surgical treatment are described, especially when major bleeding complications occur, or when endovascular treatment results in incomplete exclusion of the aneurysmal sac.

In patients with chronic pancreatitis or polyaneurysmal disease, LGAAAs should be investigated. Endovascular treatment remains the first choice; however, it remains essential to be aware of the principles of open surgical treatment.

2. Introduction

Visceral Artery Aneurysms (VAAs) incidence is estimated at 0.01-2%. Gastric Artery Aneurysms (GAAs) form a small proportion of VAAs, approximately 4-5% [1, 5, 11]. Risk factors primarily include inflammatory mechanisms, systemic (LES) or local (pancreatitis, cholecystitis, gastric and pancreatic tumours). Atherosclerosis seems to have a secondary role [5-7]. Similar complications are gastric fistulas and pseudoaneurysms, with even greater risk of

rupture [19, 20, 25].

Clinical picture is characteristically asymptomatic. A pulsatile mass can be noticed. In most cases (90%) clinical picture turns symptomatic in a context of rupture, with gastrointestinal bleeding (70%) quite more common than intraperitoneal rupture (30%) [5, 6]. The haemorrhagic shock following rupture represents the main mortality cause of this pathology [1, 10, 21-23, 26]. Early diagnosis and treatment are important as up to 70% of patients with rupture die [5].

Less frequently, the clinical picture presents with chronic abdominal pain and indirect signs of bleeding (anemia, melaena and hematochezia) [26].

The first-choice exam is CT angiography, to confirm the diagnosis and to establish adequate operative planning [1, 8, 9, 28]. In most cases, diagnosis is made starting from incidental radiological findings.

The ECD examination can provide incidental diagnosis in patients who are already performing follow-up for aneurysmal pathology; in fact, many patients are polyaneurysmatics [7, 10, 16, 28]. Thus, it would be recommendable to perform screening in the coronary and cerebrovascular district in patients diagnosed with LGAA [8, 9, 28].

3. Case Report

A 60-year-old man presented to a suburban hospital Emergency Department reporting asthenia protracted for about 9 months.

His medical history included acute pancreatitis from alcohol abuse resolved with medical therapy 15 years before; no other cardiovas-

cular risk factors or medical therapy were present.

On presentation, the patient's vital signs were stable.

Laboratory results included a severe anemia with hemoglobin 4.8 g/dL, pancreatic amylase 9.0 IU/L, Creatinine 1.25 mg/dL. Anemia was immediately healed with hemotransfusions.

At esophagogastroduodenoscopy and colonoscopy no signs of active bleeding were found.

An ultrasound of the abdomen was performed, which showed the presence of an unspecified vascularized abdominal sac. Computed tomography angiography (CTA) scans of his abdomen demonstrated a giant (65 mm) aneurysm of the left gastric artery associated with eccentric thrombosis. This finding was associated also with large hepatic cavernoma in complete thrombosis of portal vein.

The patient was transferred to the reference tertiary hospital to perform endovascular aneurysm embolization.

Under local anesthesia and using US guidance, a percutaneous right common femoral access was obtained. A 5Fr 11 cm introducer sheath and subsequent Pigtail catheter was placed (Figure 1).

The angiography confirmed the presence of the giant aneurysmal

lesion.

Selective catheterization of the celiac tripod with SIM 1 4Fr and superselective catheterization of the left gastric artery with Progreat [2, 7] Fr microcatheter, downstream to the origin of the aneurysmal lesion, was performed (Figure 2a, b).

Sandwich embolization with controlled-release coils (Penumbra coil) 3x8 mm and with 60 cm Penumbra packing coil (Figure 2c) was performed. The sac was not embolized.

At final angiographic control, complete exclusion of the aneurysmal lesion is observed (Figure 2d).

The clinical course did not require ICU transfer, nor further blood transfusion. A duplex examination was performed the day before discharge, confirming the lack of perfusion and the absence of complications at the femoral access site.

The patient was discharged on the second postoperative day, and a one-month CT scan showed no more signs of refilling of the aneurysm, which appeared completely excluded and with a shrunk sac (55mm vs 65mm).

We decided to continue follow-up ultrasound, at 6 months, then annually (Figure 3).

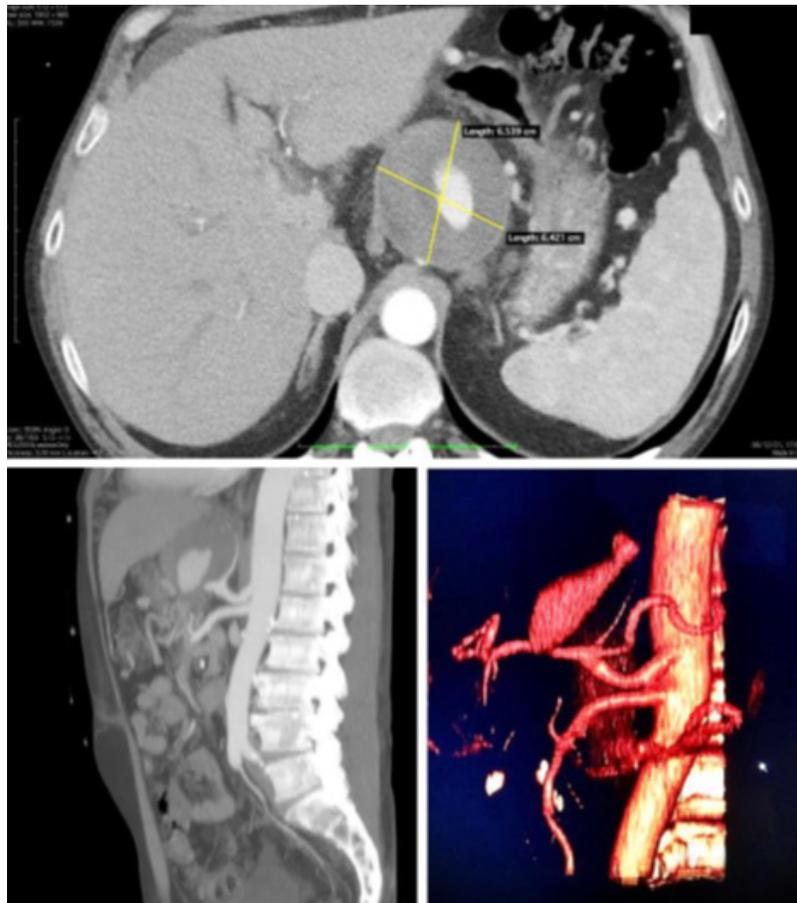


Figure 1: Left Gastric Aneurysm: preoperative findings

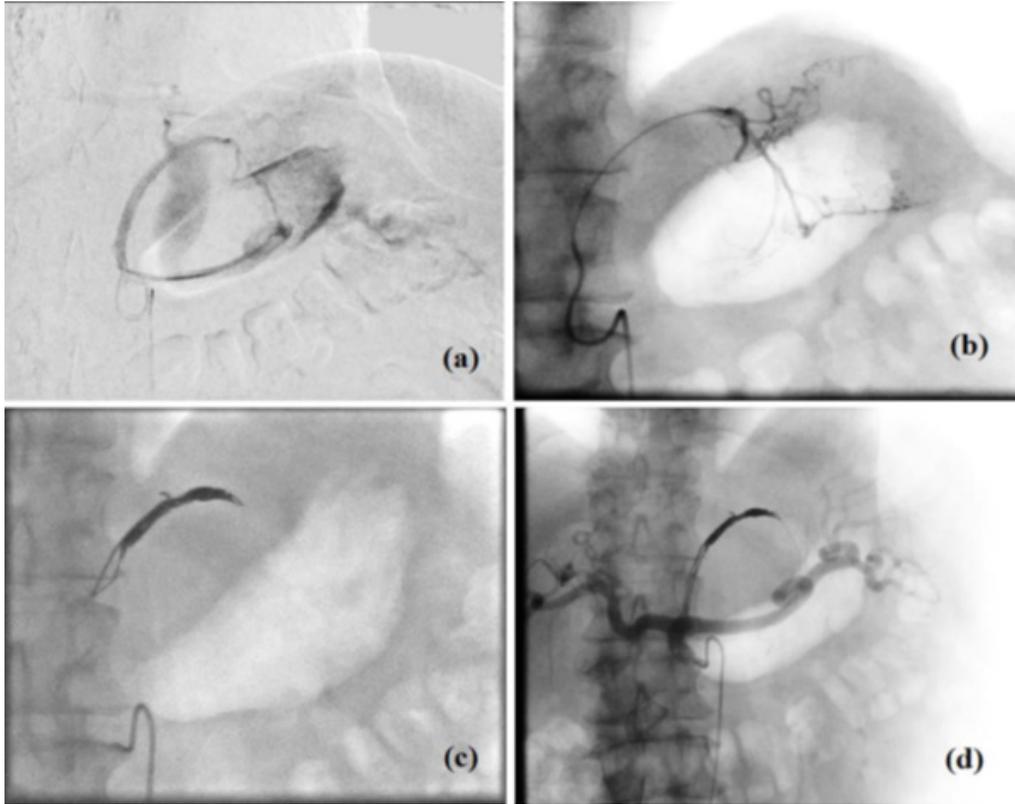


Figure 2: Intraoperative imaging. Selective catheterization of celiac trunk (a) and super selective of LGA (b). Coil release with sandwich technique (c) and final angiography (d)

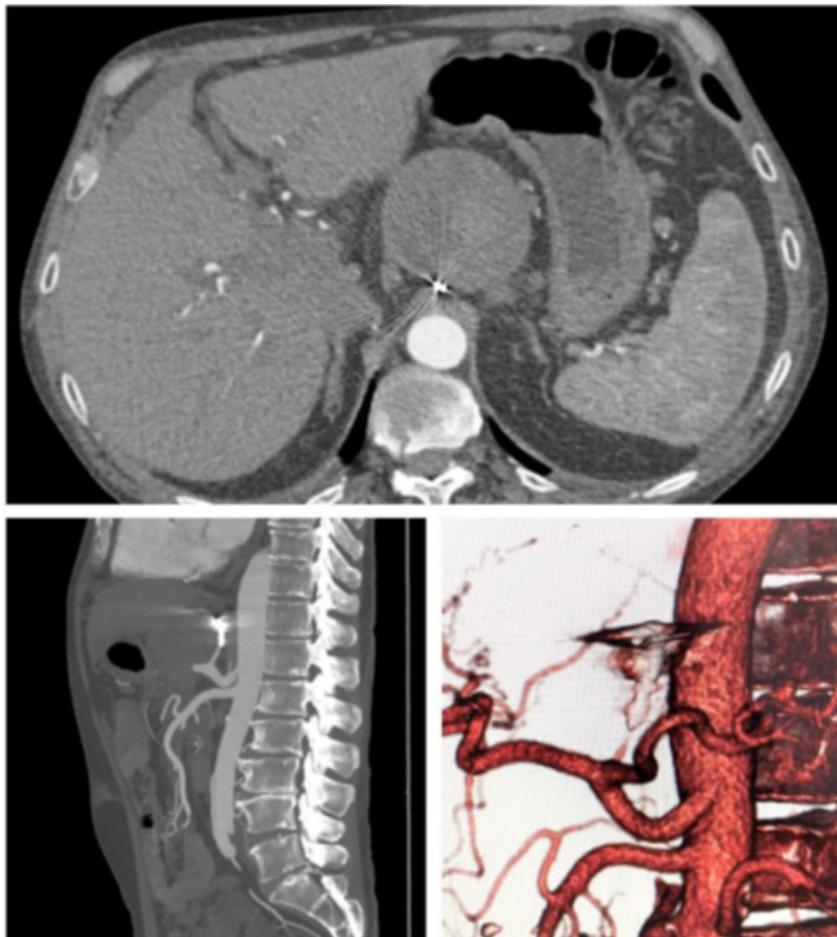


Figure 3: Postoperative findings 1 month after procedure, showing a complete exclusion of the aneurysmatic sac

4. Discussion

Indication to treatment, as assessed by the newest international guidelines (SVS 20201) is recommended “regardless of size” because of the rupture tendency also for small sized aneurysms [1, 10].

For patients with ruptured aneurysm clinical presentation, indications to treatment become absolutely urgent because of the risk of haemorrhagic shock and death [1, 10, 21-23, 26].

Endovascular coil embolization is the first-choice treatment and has a high success rate (> 90%) even in the case of ruptured aneurysms, compared with low mortality and morbidity. This type of treatment can sometimes be accompanied by injection of thrombin or analogues inside the aneurysm sac [1-3, 12-14, 19, 20].

Plug embolization without aneurysmal sac thrombosis entails a significant risk of endoleak from right gastric artery and collaterals, therefore it’s not indicated [15, 19].

Open surgical treatment consists in the simple ligation of the artery, sometimes accompanied by the removal of the sac in case of large dimensions, or by the removal of an ischemic intestinal tract in the case of thrombosed aneurysms, or wedge excision of the gastric wall in case of intramural aneurysms [1, 3-5, 11].

In rarer cases, open surgery has been described using aneurysmorrhaphy 22, 23. Kamath, Vijay et al. 31 describe a case of laparoscopic resection of the aneurysm as an alternative technique.

Batagini et al., [20] compared open and endovascular treatment of 113 patients with visceral aneurysms and visceral pseudoaneurysms (VAAPs), of which 57 by EV technique and 56 by OS. Open and endovascular approaches had similar rates of technical and clinical success, as well as mortality during follow-up. However, periprocedural morbidity was significantly higher in cases treated by OS [20].

De Carlo et al.³² indicate the open surgical treatment more advisable in cases of ruptured visceral aneurysms.

The open exploration allows to inspect the gastric wall and other viscera and to evacuate hematoma, without requiring an angiographic suite. Thus, open repair remains an important means of managing a ruptured GAA. 10

The postoperative follow-up, according to the latest guidelines, is indicated by axial imaging (CT, MR) after 1-2 years.¹ Cases have been described in which postoperative MRI was performed after 3 months [28].

In conclusion, LGAA is a very rare entity which, despite a silent clinical picture, presents a considerable risk of rupture and mortality. Coil embolization has a high success rate, therefore it remains the first choice treatment. Open surgical treatment remains an option, particularly in case of uncontrollable bleeding.

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