



Visceral Aneurysm Complicated by Hemorrhagic Shock Secondary to a Mesenteric-Enteric Fistula

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Abstract

Background: There is a high mortality rate for aneurysms of the superior mesenteric artery, which account for 5.5% of visceral aneurysms.

Case Report: We present the case of a 62-year-old woman diagnosed in our center with an aneurysm of a jejunal branch of the superior mesenteric artery, treated with an endovascular stent, who consulted in the emergency department for hypovolemic shock secondary to rupture of the aneurysm, associated with a mesenteric-enteric fistula that required extremely urgent surgery. In this operation, the first jejunal loop was resected and the neck of the aneurysm of the 1st jejunal branch was sutured after removal of the previous stent. The postoperative course was torpid and marked by an anastomotic leak.

Conclusion: Aneurysms of the superior mesenteric artery are a rare pathology, with regard to diagnosis, this type of pathology is often silent but potentially lethal due to the high risk of rupture. Nowadays, we have different approaches to treat these lesions, individualizing the treatment according to each patient.

Keywords: Visceral aneurysm; Open surgery; Endovascular treatment

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Introduction

Visceral aneurysms are defined as aneurysms and pseudoaneurysms located in the visceral arteries and their branches from the aorta. While true aneurysms are enlargements of the arterial diameter involving all vascular layers, pseudoaneurysms represent a disruption of the arterial wall with patent flow in a defined space beyond the vessel walls [1]. Twenty-two percent of visceral aneurysms manifest in emergency situations with an immediate mortality rate of 8.5%. Aneurysms of the superior mesenteric artery account for 5.5% of visceral aneurysms. It is due to the low prevalence of these aneurysms that there is little information published in the scientific literature [2]. We present the case of a complicated aneurysm of the first jejunal branch from the superior mesenteric artery, treated in our center.

Case Presentation

A 62-year-old woman was referred to the General and Digestive Surgery Department of the Regional Hospital in Malaga, Spain, due to the finding of an aneurysm of the Superior Mesenteric Artery (SMA) measuring 8 cm in diameter in an abdominal ultrasound scan requested due to a sensation of mass in the left hypochondrium. In view of the findings of the abdominal ultrasound, a Computerized angio-Tomography (CT angiography) was requested, which showed an "80 mm LOE in the left flank with small peripheral calcifications and intense and heterogeneous filling with contrast, showing communication of the lesion with the branch of the SMA.

Conclusion

Possible giant pseudoaneurysm in the 2nd jejunal branch of the SMA". In order to improve the characterization of the lesion, an arteriography is requested to study the SMA, showing: "aneurysm/pseudoaneurysm that presents nutrition by relatively wide neck, presenting a diameter of 7.5 mm MSA above the neck and 5.7 mm below it, with a distance between the anterior branch to the neck and the posterior branch of approximately 23 mm. The celiac trunk and inferior mesenteric artery were also explored without any alterations" (Figure 1). After being evaluated by a multidisciplinary committee made up of interventional radiology, cardiovascular surgery and general and digestive surgery, a decision was made to perform surgery by general surgery, and the patient was included

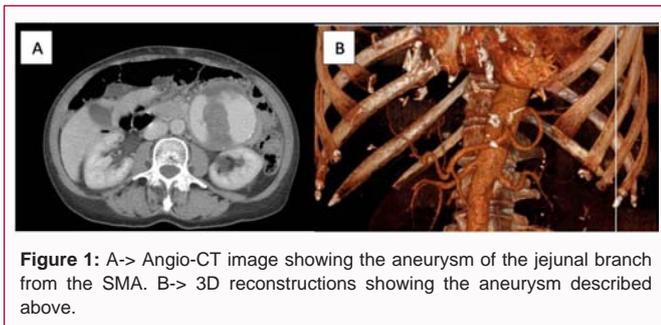


Figure 1: A-> Angio-CT image showing the aneurysm of the jejunal branch from the SMA. B-> 3D reconstructions showing the aneurysm described above.

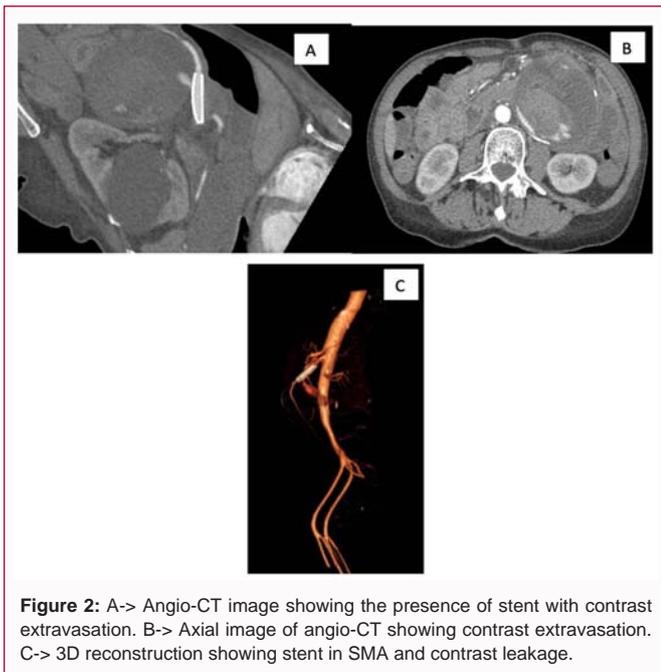


Figure 2: A-> Angio-CT image showing the presence of stent with contrast extravasation. B-> Axial image of angio-CT showing contrast extravasation. C-> 3D reconstruction showing stent in SMA and contrast leakage.

on the surgical waiting list in January 2020. Due to the delay in the waiting list secondary to the COVID pandemic, in March, the patient turned to the vascular radiology service of another hospital center where an endovascular stent was placed. In May she was brought by the critical care and emergency department (DCUU) to the emergency department of our center due to lower gastrointestinal bleeding associated with significant hemodynamic repercussions and acidemization (hemoglobin on arrival of 6 g/dl, previously 12.9 g/dl). Urgent CT angiography was performed, which showed: "Permeable SMA stent, observing contrast leakage in the distal portion that communicates with the interior of the aneurysm, visualizing contrast passage towards the interior of a loop of duodenum/jejunum through its posterolateral wall compatible with arterioenteric fistula" (Figure 2). Due to the clinical presentation of the patient with hemodynamic instability with the need for massive transfusion and the radiological evidence of rupture of the aneurysm of the 2nd jejunal branch, emergency surgery was decided. At surgery, after performing the Cattell maneuver to achieve adequate control of the SMA at its origin, the previously described aneurysm is observed, depending on the first section of SMA in the first jejunal loop, where rupture of the aneurysm was evident. Previous endovascular prosthesis is palpated at the origin of the SMA. A section of the first jejunal loop was performed, as well as mobilization until identification of the neck of the aneurysm dependent on the SMA, which was released and sutured after extraction of the stent through it, for which two

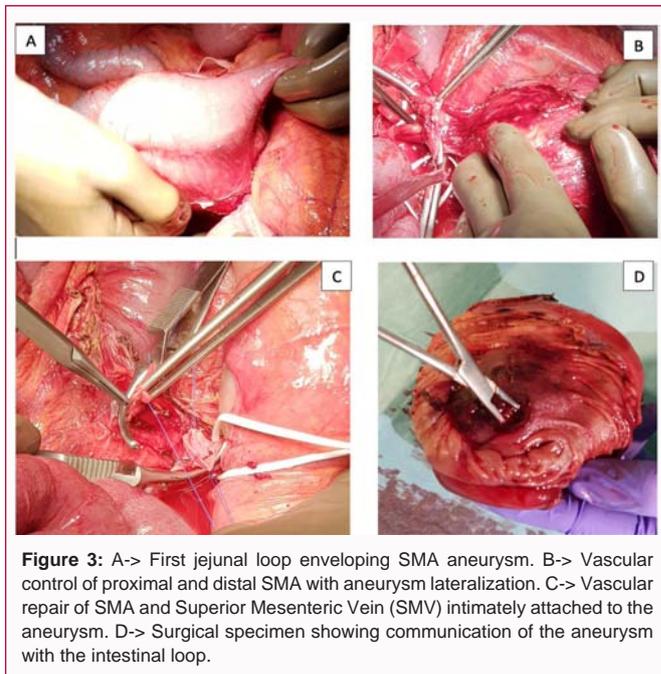


Figure 3: A-> First jejunal loop enveloping SMA aneurysm. B-> Vascular control of proximal and distal SMA with aneurysm lateralization. C-> Vascular repair of SMA and Superior Mesenteric Vein (SMV) intimately attached to the aneurysm. D-> Surgical specimen showing communication of the aneurysm with the intestinal loop.

intermittent Clamping's of the SMA were necessary at the origin due to active bleeding. Subsequently, a biplane isoperistaltic manual lateral-lateral duodenojejunal anastomosis was performed with closure of the mesenteric eyelets, leaving an aspirated drain over the anastomosis (Figure 3). Torpid postoperative period marked by occlusion, secondary to thrombosis, of the SMA and intra-abdominal collections secondary to anastomotic leakage, which were managed with empirical antibiotic therapy, percutaneous drainage of the collections and digestive rest with parenteral nutrition. She was discharged on the 45th postoperative day with good tolerance to oral diet, with preserved intestinal transit and drainage of the intra-abdominal collection connected to a bag. She is currently being followed up by us, with the latest esophago-gastro-duodenal study excluding the presence of intestinal fistula.

Discussion

Aneurysms of the superior mesenteric artery are a rare pathology and their incidence is not clearly defined, being estimated at around 0.5% to 2% according to the published literature [2]. With regard to the etiology of these aneurysms we find: Atherosclerosis, connective tissue diseases, fibromuscular dysplasia, trauma, infections, vasculitis, iatrogenic, etc [1-3]. With regard to diagnosis, this type of pathology is often silent but potentially lethal due to the high risk of rupture. The presence of a visceral aneurysm should be included in the differential diagnosis of sudden abdominal pain associated with anemia. Multiple imaging modalities such as abdominal ultrasound, angio-CT, MRI and angiography can be used [1-4]. Pseudoaneurysms are considered unstable lesions and should be treated immediately after diagnosis [2]. In contrast, aneurysms have specific indications for treatment, as established in the clinical practice guidelines of the European Society for Vascular Surgery (ESVS) [5], which recommend treatment of aneurysms measuring >25 mm. The different therapeutic strategies include:

- **Open surgery:** Considered years ago as the gold standard in the treatment of visceral aneurysms, it is still a viable treatment option today, although more invasive. It is still considered the gold

standard in the treatment of these aneurysms in emergency situations.

- **Endovascular approach:** This is an increasingly popular procedure because it is less invasive than open surgery, as well as because of its low morbidity and mortality rate. In contrast, endovascular treatment for visceral aneurysms is usually complicated by the anatomical tortuosity of the native arteries.

- **Percutaneous embolization:** in cases where open surgical and endovascular approaches are not feasible [1-5].

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