CASE REPORTS

JEJUNAL ARTERY ANEURYSM EXCLUSION WITH IMMEDIATE VASCULAR RECONSTRUCTION: A CASE REPORT

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Abstract

A 44 year-old previously healthy woman presented a persistent epigastric pain. Computed tomography revealed a saccular aneurysm with a diameter of 25x20 mm in the first jejunal artery and also a stenosis in the celiac trunk associated with median arcuate ligament syndrome, turning the hepatic perfusion dependent of the gastroduodenal artery flow. Through a midline laparotomy, celiac axis was exposed, and median arcuate ligament released for median arcuate ligament syndrome treatment. A tangential resection of the aneurysm was done, preserving the flow in the jejunal artery. Arterial closure was achieved through an anastomosis between the jejunal artery and the bevelled pancreatoduodenal artery. One of the duodenal branches was also re-implanted in the jejunal artery. The patient's post-operative course was uneventful. At 1 year after the surgery, patient is asymptomatic and with patency of the reconstructed arteries.

Keywords: *aneurysm; jejunal artery; visceral artery; open surgery*

INTRODUCTION

Jejunal artery aneurysms (JAA) are a very rare condition, accounting for less than 1% of all visceral aneurysms.[1, 2] JAA affect both genders equally, more frequently after the sixth decade of life.[3] Most patients are asymptomatic but some may present unspecific symptoms (abdominal pain and/or gastrointestinal hemorrhage)[1] or, although rare, JAA rupture which is a potentially life-threatening emergency.[2, 4]

Infection, inflammation, autoimmune diseases, atherosclerosis, connective tissue disorders and medial degeneration have all been implicated in JAA pathophysiology.[1-4]

Computed tomography angiography (CTA) is the preferred diagnostic tool[3] and angiography may be useful in selected cases for preoperative planning and when endovascular treatment is considered.[3]

ESVS guidelines recommend elective intervention in JAA with >2cm of diameter and emergent intervention when patients are symptomatic or signs of aneurysm rupture exist.[3] Although endovascular repair is the gold-standard, some cases are anatomically unsuitable and still require open repair.[1, 2] Arterial tortuosity, need for hematoma evacuation or if bowel ischemia and/or necrosis is suspected turns open approaches better options.[3]

We present a case of a JAA associated with median arcuate ligament syndrome, treated by median arcuate ligament release, aneurysm resection and immediate vascular reconstruction.

CASE REPORT

A previously healthy 44 years-old woman was referred to the Vascular Surgery consultation of our institution with a suspicion of a JAA on a CTA. The scan was performed as part of the investigation of persistent epigastric pain for the past 6 months, without other additional symptoms. Physical examination was unremarkable and laboratory studies revealed no alterations. An abdominal CTA was repeated in our department, which revealed a saccular aneurysm with 25 mm of maximum diameter, arising from the proximal portion of the

Figure 1

Computed Tomography Angiography (axial view) showing the saccular aneurysm (*) of the first jejunal artery (blue arrow), which origins from the superior mesenteric artery (green arrowhead).

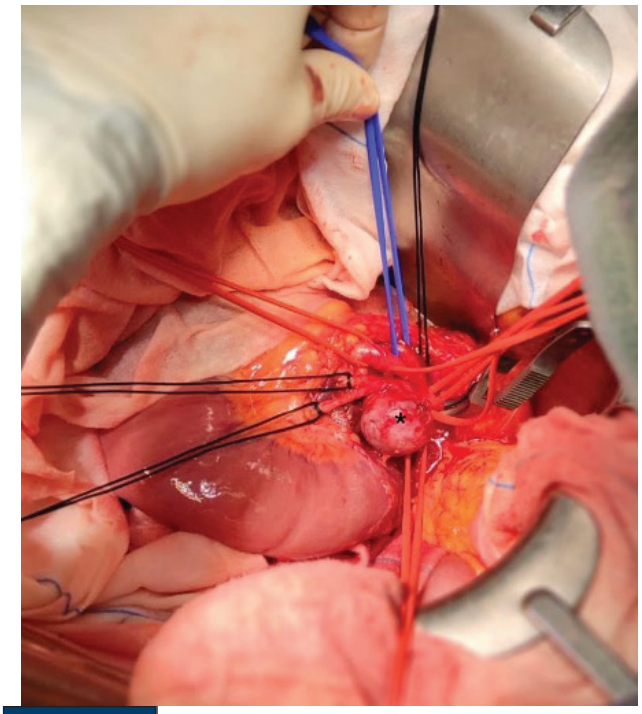

Figure 2

Open surgical approach, showing the saccular jejunal artery aneurysm (*), and all the branches that it gave rise – inferior pancreatoduodenal artery (yellow arrow), first jejunal artery (white arrowhead) and two duodenal branches (blue arrows).

first jejunal artery (Figure 1). It was also evident a 9 mm long stenosis in the celiac trunk. No other changes were evident and no other visceral artery aneurysms were found.

Due to aneurysm size and location, surgery was indicated. Endovascular repair was not suitable because the aneurysm was located in a segment where several collaterals were present, which would lead to an increased risk of pancreatic, hepatic and intestinal ischemia if an endovascular coverage was planned. Open surgery was chosen. An upper midline laparotomy was performed, and the lesser sac entered. The celiac axis was exposed, and the median arcuate ligament identified, confirming it as the cause of celiac trunk stenosis. The taut ligamentous tissue stretched across the cephalad portion of the celiac artery was divided and excised. Then, we approached the first jejunal artery and aneurysm and confirmed that the aneurysm gave rise to the inferior pancreatoduodenal artery and two duodenal branches (Figure 2). A tangential resection of the aneurysm was done and we performed a lateroterminal anastomosis between the jejunal artery and the bevelled inferior pancreatoduodenal artery. One of the duodenal branches was also re-implanted in the jejunal artery in a lateroterminal fashion. A continuous suture with a non-absorbable 6/0 monofilament was used for both anastomoses. At the end of the procedure there were no signs of ischemia in the duodenum and jejunum, and it was decided not to re-implant the other duodenal branch. The patient's post-operative course was uneventful.

One year after surgery, the patient was asymptomatic, without complaints of abdominal pain and follow-up CTA confirmed the patency of the reconstructed arteries (Figure 3).

DISCUSSION

JAA endovascular repair offers the possibility to evaluate the collateral flow with angiography evaluation and can facilitate the treatment of difficult to expose aneurysms[1,3,5,6], being associated with lower surgical risk. However, open surgery is still of major importance in anatomically challenging cases, in emergent cases of rupture and/or when hematoma evacuation is needed. Also, it enables bowel assessment for viability and vascular reconstruction when indicated.[1, 7]

We present a very challenging case, in which the patient presented both a JAA and median arcuate ligament syndrome. Due to the aneurysm diameter and associated symptoms, surgery was indicated and an open approach was decided for several reasons: anatomic location and type of the aneurysm; celiac trunk stenosis due to the median arcuate ligament syndrome; and also increased risk of hepatic, pancreatic and/or duodenal ischemia as a reverse gastroduodenal arterial flow (through the superior mesenteric artery and pancreatoduodenal arteries) that can be of major importance in cases of median arcuate ligament syndrome. We performed aneurysm resection with immediate vascular reconstruction. Tangential resection was feasible due to the saccular nature of the aneurysm and inferior pancreatoduodenal re-implantation in a lateroterminal fashion allowed to avoid the use of vascular patches in arteriotomy closure. Due to the complex nature of duodenal perfusion, a duodenal branch was also re-implanted in a lateroterminal fashion. At the end of the vascular reconstruction, signs of good hepatic, pancreatic and duodenal perfusion were evident, and it was decided not to implant other small vascular branch. Median arcuate ligament incision and excision by laparotomy, releasing the extrinsic compression in the celiac trunk artery, was performed. Minimally invasive strategies are described and are currently the preferred approach, but they have no role in this case as JAA repair and vascular reconstruction were also indicated.

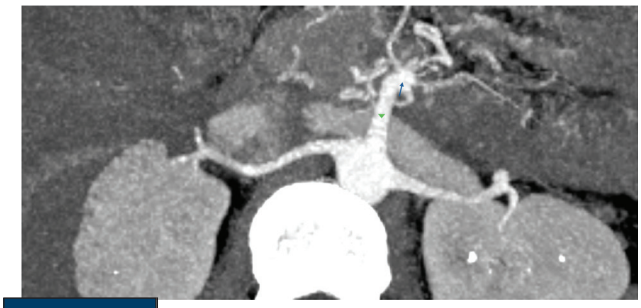

Figure 3

Computed Tomography Angiography (axial view) showing the final result of the arterial reconstruction, with patent first jejunal artery (blue arrow) branching from the superior mesenteric artery (green arrowhead). The aneurysm in the jejunal artery was successfully excluded.

CONCLUSION

Elective treatment is recommended for JAA with >2 cm of diameter and emergent intervention is necessary in symptomatic patients or if signs of aneurysm rupture exist. Although endovascular interventions are the gold-standard of treatment for most visceral aneurysms, open repair is still the best approach when visceral perfusion assessment is necessary and vascular reconstruction may be needed. Multidisciplinary evaluation of these complex cases, including Vascular surgeons, Hepatobiliary surgeons and Radiologists, is corner stone to achieve the best outcomes.

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