

Surgical Resolution of Inferior Pancreaticoduodenal Artery Aneurysm: Case Report

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Abstract

Pancreatoduodenal artery aneurysms (PDAA) are a very rare pathology, representing 2% of all splanchnic artery aneurysms. They have been associated with a high risk of rupture, mortality, and stenotic or occlusive disease of the celiac trunk. In the literature there are few case reports, Ferguson described the first case of superior pancreaticoduodenal artery aneurysm in 1895. Reported cases of inferior PDAA have been associated with rupture. Regarding treatment, the surgical and endovascular option are the therapeutic options that should be depending on the case. We present a case report of a 65-year-old woman with a history of hypertension and hypertriglyceridemia presented with a 3-year history of stabbing epigastric pain and palpitations when lying down, without symptoms of intestinal angina. Physical examination revealed a palpable pulsatile epigastric mass. Abdominal ultrasound incidentally identified a visceral aneurysm, and computed tomography angiography confirmed a 3-cm inferior pancreaticoduodenal artery aneurysm (IPDAA). Selective angiography demonstrated communication between the aneurysm, a branch of the celiac trunk, and the superior mesenteric artery. Endovascular treatment was initially planned but proved unfeasible; therefore, open surgical repair was performed through a supraumbilical laparotomy with proximal and distal vascular control, aneurysm resection, and ligation. The postoperative course was uneventful, except for transient elevation of pancreatic enzymes, which normalized before discharge. At 1-and 3-month follow-up, the patient remained angiologically stable, with resolution of palpitations and no evidence of intestinal angina, although mild epigastric pain associated with dyspepsia persisted.

Keywords: *Inferior pancreaticoduodenal artery aneurysm; Visceral artery aneurysm; Surgical treatment.*

Introduction

Pancreatoduodenal artery aneurysms (PDAA) are a very rare pathology, representing 2% of all splanchnic artery aneurysms. They have been associated with a high risk of rupture, mortality, and stenotic or occlusive disease of the celiac trunk. In the literature there are few case reports, Ferguson described the first case of superior pancreaticoduodenal artery aneurysm in 1895. Reported cases of inferior PDAA have been associated with rupture. [1, 2, 3]

Regarding treatment, the surgical and endovascular option are the therapeutic options that should be depending on the case. [1, 3]

Case Presentation

A 65-year-old female patient, with a personal and family history of hypertension and hypertriglyceridemia. She presented with a 3-year history of stabbing epigastric pain and a sensation of abdominal pulsation when lying supine. On physical examination, stable vital signs, painful abdomen on deep palpation in the epigastrium, and a pulsating mass palpable, lower extremities without edema, pulses preserved. Abdominal ultrasound revealed a visceral aneurysm as an incidental finding, which is why it was referred to the 3rd level.

Abdominal CT Angiography: Inferior Pancreaticoduodenal artery aneurysm (IPDAA) 3cm in diameter, sacular, no thrombus, and no stenosis of celiac artery.

Selective balloon occluder angiography: aneurysm of the inferior pancreaticoduodenal artery communicating with a branch of the celiac trunk and superior mesenteric artery.

Endovascular resolution is planned, which was not feasible for complex anatomy, so surgical resolution was decided. Under general anesthesia and by supraumbilical laparotomy, IPDAA is located, identified and individualized, proximal, distal and celiac artery branch control is performed, section and ligation are performed, without complications.

She remained in intensive care for 48 hours, without vasopressor or respiratory support, she presented elevated pancreatic enzymes (amylase 520, lipase 118), in hospital she remains 72 hours prior to discharge, pancreatic enzymes dropped to normal ranges.

She went for control one month and three months after surgery, pain in the epigastrium persisted, was associated with dyspepsia, the sensation of palpitations disappeared, she did not present intestinal angina, no clinical evidence of mesenteric ischemia or vascular compromise was identified during follow-up.

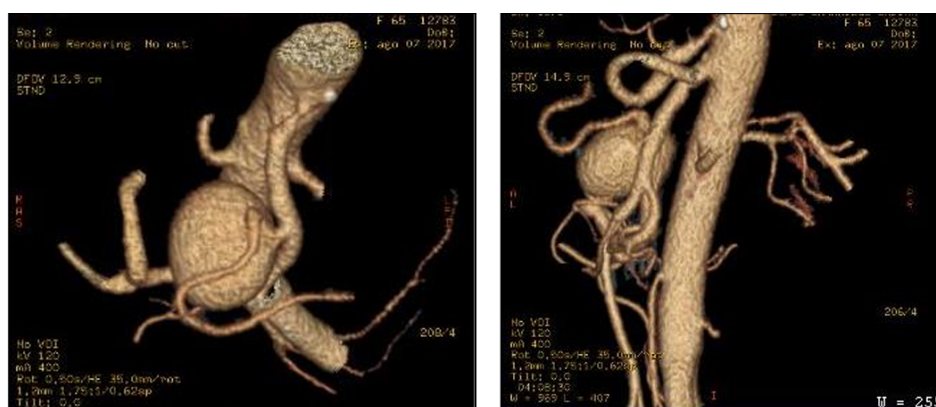


Figure 1, 2. 3D Reconstruction CT angiography.



Figure 3. CT angiography, axial projection.

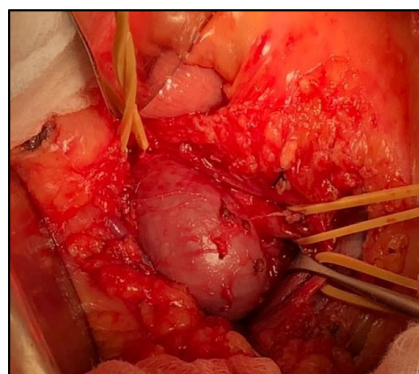


Figure 4. Inferior pancreaticoduodenal artery aneurysm.

Discussion

Pancreatoduodenal artery aneurysms (PDAA) are a very rare pathology, representing 2% of all splanchnic artery aneurysms. They have been associated with a high risk of rupture, mortality, and stenotic or occlusive disease of the celiac trunk. In our case, there was no evidence of stenosis or occlusion of the celiac trunk. [1]

This type of aneurysm does not have a specific etiology, it has been related to pathological pancreatic, traumatic, iatrogenic, occlusion or stenosis of the celiac artery. The predominance is 4-1 man/woman, being predominant over 60 years of age. In our case, it was not possible to determine what the probable main cause was, but two risk factors such as age and hypertension were identified. [1, 2]

The clinic is non-specific, and may even be asymptomatic. Most patients present with abdominal pain, radiating or not to the lumbar region, gastrointestinal bleeding, emesis, diarrhea, and jaundice. The site of rupture can be towards the gastrointestinal tract in up to 65%, and to the retroperitoneum in 35%. Which is associated with a mortality of 30-40% even with intervention. In the case reported, the patient came for non-specific abdominal pain, which led to complementary studies that identified the aneurysm. [1].

There is no relationship between the size and the risk of rupture, but its diagnosis requires prompt resolution due to the high risk of mortality associated with rupture. [1]. In other cases, ligation and partial pancreatectomy or pancreaticoduodenectomy have been proposed as surgical resolution; another option is endovascular resolution that requires exclusion or ablation of the aneurysmal sac from the rest of the circulation. In our case, considering the surgical challenge, endovascular resolution was initially considered, but it was not feasible due to its complex anatomy, so ligation and aneurysmectomy were performed, without trans-surgical or postoperative complications. [1, 3, 4]

Bataggini et al. compared open and endovascular resolution of visceral aneurysms, and concluded that in both cases the technical and clinical success was similar, as was mortality during follow-up, but periprocedural morbidity was higher in open resolution than in endovascular treatment. long-term follow-up is necessary to assess durability. [5]

Endovascular therapy has become the preferred treatment for visceral artery aneurysms because of its lower morbidity and shorter hospital stay, open surgical repair remains an important alternative when endovascular exclusion is technically unfeasible. In the present case, complex aneurysm anatomy prevented successful endovascular treatment, and surgical ligation achieved complete aneurysm exclusion without ischemic complications.

Conclusions

Inferior pancreaticoduodenal artery aneurysms are rare visceral aneurysms with a significant risk of rupture and potentially life-threatening complications. Early diagnosis through vascular imaging is essential, particularly in patients presenting with nonspecific abdominal symptoms and a pulsatile abdominal mass.

Although endovascular therapy is currently considered the preferred treatment in many cases, open surgical repair remains a safe and effective alternative when endovascular exclusion is not technically feasible. In our patient, surgical ligation and resection of the aneurysm achieved definitive exclusion of the lesion without major postoperative complications or evidence of mesenteric ischemia during follow-up.

This case highlights the importance of individualized treatment planning based on anatomical characteristics and technical feasibility, as well as the need to consider pancreaticoduodenal artery aneurysms in the differential diagnosis of visceral aneurysms despite their low incidence.

Conflict of Interest

The authors have no conflict of interest to declare.

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