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Case Report

Palliation can be an option for giant splenic artery aneurysm: a case report and review of literature

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ABSTRACT

Giant splenic artery aneurysm (SAA) is a rare vascular pathology, though it remains the third most common intra-abdominal visceral artery aneurysm which is rarely goes above >3 cm in size. Only a few cases larger than 10 cm have been reported, with a rupture risk of 28% and 40% mortality when rupture occurs. A 78-year-old male with a history of vascular dementia, ischemic heart disease, diabetes, and a previously embolized 4 cm SAA (2008) is reported, who presented in March 2025 with COVID-19 infection and non-specific upper abdominal pain. Imaging revealed a 17.3 cm thrombosed splenic artery aneurysm—the largest reported to date. An attempt at endovascular embolization was unsuccessful due to distorted anatomy and multiple non-cannulable collaterals. Given his comorbidities, poor functional status, and the complexity of open surgery, the multidisciplinary team opted for conservative management with palliative intent. At 8-month follow-up, he remained stable and asymptomatic with no aneurysm growth. While endovascular or open surgical repair remains the treatment of choice for splenic artery aneurysms, palliation may be an appropriate option in selected patients where intervention poses disproportionate risk. Multidisciplinary discussion and individualized decision-making are essential in such rare and high-risk cases.

Keywords: Giant splenic artery aneurysm, Coil embolization, Endovascular failure, Conservative management, Palliation, Vascular surgery

INTRODUCTION

Splenic artery aneurysm (SAA) is the third most common visceral artery aneurysm after hepatic and superior mesenteric artery aneurysms. Most SAAs are small (<3 cm) and asymptomatic, with only a few documented cases exceeding 10 cm, termed giant SAAs. The reported risk of rupture in giant SAAs exceeds 25%, with mortality approaching 40% upon rupture.[1,2]

A unique case of a 17.3 cm giant SAA is reported, the largest described in the literature to date, where palliation was chosen after unsuccessful embolization and consideration of prohibitive surgical risk. Here we will discuss the brief review of giant SSA, their presentation and discussion about the treatment option which can be palliation in extreme situation where open surgery or endovascular option deem not beneficial and possible.

CASE REPORT

A 78-year-old man presented to the Emergency Department in March 2025 with COVID-19, lethargy, and two days of upper abdominal discomfort. His history included a splenic artery aneurysm, vascular dementia, ischaemic heart disease, hypercholesterolemia, and type 2 diabetes mellitus.

Initial evaluation for COVID-related complications was unremarkable. He remained comfortable on room air, and a CTPA was negative for pulmonary embolism. Due to mild hypotension (SBP 90 mmHg) and ongoing abdominal

pain, computed tomography (CT) abdomen/pelvis was performed, revealing a 173×144×160 mm (axial×CC) splenic artery aneurysm with extensive calcification and previous embolic material (Figure 1).

Figure 1: CT Axial view showing a partially thrombosed 17.3 cm giant splenic artery aneurysm.

The mass displaced adjacent organs and compressed surrounding vasculature without direct invasion (Figure 2). Contrast-enhanced images demonstrated active blush in the posteromedial aspect with delayed pooling. The splenic artery was not clearly visualized.

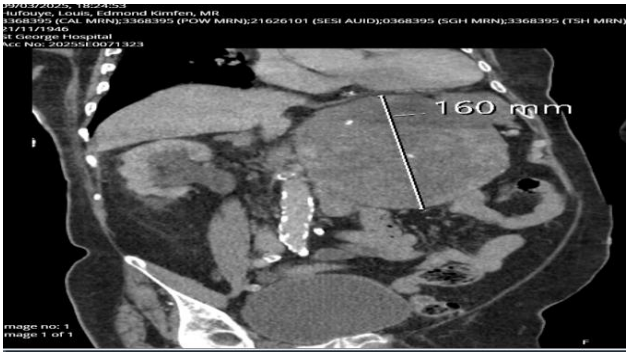

Figure 2: CT coronal view showing a giant splenic artery aneurysm exerting mass effect on surrounding structure.

His medical records indicated coil embolization in 2008 for a 4 cm SAA. He had been lost to follow-up since. The aneurysm had gradually enlarged, likely through collateral reperfusion.

An emergency IR-guided embolization was attempted but failed due to inability to catheterize the feeding vessels amid distorted anatomy and tortuous collaterals (Figures 3 and 4). Despite partial contrast extravasation, no active rupture occurred. He remained hemodynamically stable but required transfusion of 2 units of red cells. A multidisciplinary team (MDT) including vascular surgery, general surgery, interventional radiology, and medicine reviewed the case. Open resection with splenectomy ± distal pancreatectomy was deemed technically prohibitive and high-risk due to extensive adhesions, vascular effacement, and comorbidities.

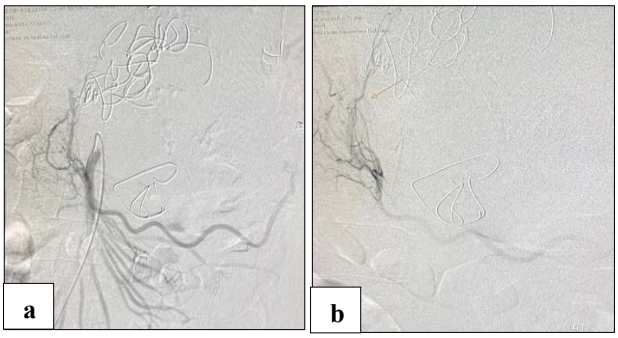

Figure 3: (a) SMA arteriogram showing retrograde flow into pancreatic arcade, supplying the bleeding branch, and (b) marked arrow showing point of extravasation.

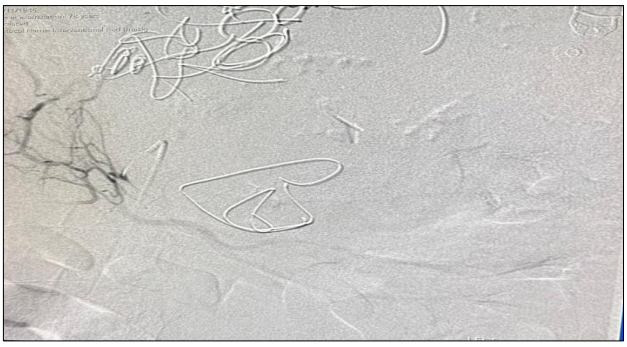

Figure 4: Oblique DSA again showing extravasation from small non collaterals vessels.

The consensus was for conservative management with palliation in case of rupture. He was discharged to a nursing home. At 8 months follow-up, he remained clinically well. A repeat computed tomography (CT) scan showed no further interval increase in the size of aneurysm enlargement and he was clinically asymptomatic.

DISCUSSION

Epidemiology and presentation

Splenic artery aneurysms have a female predominance, typically occurring in the 5th–6th decade.[3] However, in one comprehensive literature review the reported incidence for giant SAAs (>10 cm) appear 1.78 times more frequent in males.[4] The vast majority of the patients (80-97.5%) are asymptomatic, and symptoms—when present—are vague, including epigastric or left upper quadrant pain, nausea, vomiting, anorexia or other GIT related symptoms. In this presented case our patient has been feeling lethargic with non-specific epigastric pain without nausea and vomiting but we understand that these symptoms can be related to COVID.

Management options

The principal indications for intervention in SAA include a diameter greater than 2–2.[5] cm, documented growth of

3–5 mm or more during surveillance (regardless of initial size), the presence of symptoms, women of childbearing age, portal hypertension, and patients being considered for liver transplantation.[5,6] For patients in whom intervention is not indicated, surveillance imaging is recommended at 6 months after diagnosis and annually thereafter. Ultrasonography is suitable for surveillance if it can adequately characterize the aneurysm, although CT angiography remains an alternative option.[6]

Endovascular therapy has largely replaced open surgery as first-line management due to its minimally invasive nature, shorter recovery, and reduced cost.[7,8] Techniques include coil embolization, stent grafting, or combined approaches.[9] This is especially beneficial for high-risk patients with multiple co morbidities and in emergency when concerns for risk of bleeding and rupture. However, giant aneurysms present unique technical challenges due to tortuosity, vessel distortion, and collateralization when compared with common SSA.[10]

While coiling is a common treatment for splenic artery aneurysm, it can in some cases, lead to complications that increase the risk of future aneurysm or recurrence such as recanalization (12.5%) or coil migration are well documented.[11] Re-canalization, where blood flow returns to the aneurysm after insitu coil potentially due to incomplete occlusion or coil migration. It can lead to re-bleeding or further enlargement of the aneurysm. Other theory of coil migration from their intended position within the aneurysm sac, potentially lead to incomplete treatment, recurrence or even blockage of other vessels.

Factors associated with an increased risk of complications include larger aneurysm size and unfavourable morphological features, such as saccular configurations within the splenic artery, which can influence the technical success of coil embolization. Other important determinants of outcome are underlying conditions such as pancreatitis, which predisposes to recurrence, and portal hypertension, which contributes to elevated splenic venous pressure and is associated with aneurysmal expansion.[12] The experience of the interventional radiologist and the specific embolization technique used can also significantly affect procedural success. Reported technical success rates for coil embolization of visceral artery aneurysms in the literature range from 67% to 97%.[13,14]

Risk of recanalization depends on location; nature of the aneurysm and technique is used. This emphasize the importance of regular follow up to avoid potential complication of rupture or enlargement and additional coiling may be necessary which seems like the reason in our case report where our patient has lost the fellow up. A post operative follow up does not necessitate imagining after an open repair whereas following endovascular coiling of a splenic artery aneurysm, follow up typically involves clinical evaluation and imaging. According to the society of vascular surgery (SVC) guidelines suggest periodic surveillance with CTA, ultrasound, or MRA to assess for the possibility of endoleak or aneurysm reperfusion that could lead to a continued risk of aneurysm growth or rupture.[15]

Regular imaging follow-up post-embolization is crucial, typically at 1, 6, and 12 months, then annually, using MRA or CTA, though specific intervals remain non-standardized.[16]

Lamparski et al conducted a systematic review across five databases, including 20 relevant original studies, to evaluate the utility of different imaging modalities for follow-up after endovascular treatment of SAA.[16] They concluded that the overall quality of evidence regarding optimal follow-up imaging methods after SAA coil embolization remains limited and low. Magnetic resonance angiography (MRA) was identified as a promising non-invasive technique that avoids ionizing radiation and should be preferred over digital subtraction angiography (DSA) for detecting aneurysmal sac reperfusion. Computed tomography angiography (CTA), while useful in emergency settings, is less suitable for routine follow-up because of metallic artifacts. Additionally, duplex ultrasonography may serve as a complementary tool to MRA in patients at low risk of re-intervention but is not sufficient as a standalone follow-up method.

Literature review has demonstrated that even after technically successful initial coiling procedures, some aneurysms may require additional interventions or long-term surveillance due to risks of recurrence or delayed complications. Moreover, complete and durable occlusion is not always achieved with a single coiling session, emphasizing the need for lifelong follow-up.[17]

Open surgery is recommended when endovascular therapy fails or is not feasible.[18] However its role in giant splenic artery aneurysms is limited. Open surgical procedures vary from aneurysmectomy and arterial ligation to splenectomy with or without distal pancreatectomy, depending on size and involvement.[2] Operative success depends on aneurysm location, size, and patient fitness. Additional considerations include compression or adherence to adjacent viscera, which are frequently encountered in giant splenic artery aneurysms (GSAAs) and often explain the extent of surgery required.

Literature evidence

A 2020 meta-analysis of 92 giant SAA cases reported a ~90% success rate for endovascular intervention, though most were <10 cm.[11]

Hogendoorn et al analysed 1,321 patients. where they have + performed a systematic review and meta-analysis by comparing major treatment modalities including endovascular versus open surgery and conservative management.[19] They have concluded that endovascular management provides lower perioperative mortality and

faster recovery, while open surgery offers fewer long-term complications. Conservative management was associated with higher late mortality but remains appropriate in carefully selected cases.

Our case

In this patient, previous embolization likely led to partial recanalization via collateral flow, gradual endo-tension, and aneurysm enlargement. Complex anatomy and inability to super-select the feeding artery precluded re-embolization. Given the prohibitive surgical risk and comorbidities, open the MDT opted for palliative management—a rare but valid decision in such extreme scenarios.

CONCLUSION

Giant splenic artery aneurysm is a rare and potentially fatal condition. While endovascular and open surgical repair remain the mainstays of management, each case must be approached individually, accounting for aneurysm anatomy, patient comorbidities, and operative feasibility with procedural risk. Although endovascular therapy remains the preferred option, open surgery may be indicated when feasible. In select high-risk patients, where intervention is unsafe, palliation offers a compassionate and pragmatic alternative, emphasizing the most appropriate course after MDT review, ensuring patient comfort and dignity while minimizing futile intervention.

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