

# Incidental finding of a splenic artery aneurysm: A case report

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## ABSTRACT

**Introduction:** Splenic artery aneurysm (SAA) is an uncommon and potentially life-threatening clinical entity that carries a risk of rupture and peritoneal hemorrhage. **Case Report:** This is a case of a splenic artery aneurysm incidentally diagnosed in a 55-year-old male. Diagnosis was confirmed by abdominal computed tomography (CT) scan and the patient was managed by surgical approach because of the complex anatomy of the SAA. The tortuosity of the splenic artery, the size and the expansion of the SAA hampered its management by an endovascular approach. The postoperative period was uneventful. **Conclusion:** The SAA is a rare condition in need of prompt diagnosis and treatment to avoid major complications.

**Keywords:** Aneurysm, Splenic artery, Surgery

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## INTRODUCTION

Splenic artery aneurysm (SAA) is an uncommon condition. Its significance lies in the potential risk for rupture and life-threatening hemorrhage which occurs in 10% of cases with a mortality rate of 10–25% in non-pregnant patient and up to 70% during pregnancy [1]. It is defined as an abnormal dilatation of the splenic artery exceeding more than 1 cm in diameter and it only follows aortic and iliac arteries aneurysms as the third most common intra-abdominal aneurysm [1, 2].

The following is a case presentation of surgical treatment of a 55-mm SAA.

## CASE REPORT

A 55-year-old male presented to our outpatient clinic with a fortuitous discovery of a splenic artery aneurysm. He was referred to our cardiovascular surgery department by his urologist who ordered the abdominal computed tomography (CT) scan for an abdominal discomfort and fullness and thus made the incidental diagnosis of the SAA. His medical history includes hypertension and a pacemaker implant for an idiopathic complete AV block.

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The patient was on captopril 150 mg and amlodipine 5 mg to be taken daily. The patient was a nonsmoker.

Initial physical examination was unremarkable. He had no palpable abdominal mass, tenderness nor vascular bruit. Laboratory test results were within normal limits. The contrast-enhanced computed tomography showed a 33-mm partially thrombosed saccular SAA at the proximal third of the tortuous splenic artery. The patient, asymptomatic, refused any surgical treatment and was regularly followed in the outpatient clinic with regular imaging to assess progression. Nine months later, he started showing abdominal pain in the left upper quadrant. The abdominal CT scan disclosed a progression in size from 33 mm to 47 mm but with no signs of rupture (Figure 1). Endovascular treatment was discussed initially and angiography was performed to assess its feasibility. However, it confirmed the extreme complexity of the SAA anatomy. With the patient's consent, a decision of surgical treatment had been made.

In the operating room, a bilateral subcostal incision was performed. A pulsatile swelling was easily identified through the lesser omentum (Figure 2a). The falciform ligament was dissected, the lesser omentum was opened and the lesion was better exposed (Figure 2b). The splenic artery was identified and traced to the aneurysm with afferent and efferent limbs. Both afferent and efferent arteries were clamped. An aneurysmectomy was performed followed by an end to end anastomosis of the splenic artery. The spleen was fully preserved. Gross examination showed a 55-mm unruptured aneurysm (Figure 3). Histopathology report was suggestive of a true aneurysm with atherosclerotic lesions. Postoperative period was uneventful and patient was discharged on day-8.

## DISCUSSION

The splenic artery aneurysm is rare yet life threatening. It is the third most common intra-abdominal aneurysm following those of the aorta and the iliac arteries [2]. Large autopsy studies suggest an incidence ranging from 0.01–0.98% but the true prevalence remains largely unknown because most SAAs are asymptomatic [3]. It is four times more common in females compared to males [2].

Although the precise etiology of SAA remains unknown, many risk factors have been described including hormonal and local hemodynamic events in pregnancy, portal hypertension, splenomegaly, degenerative atherosclerosis, hypertension and liver transplantation [1, 2, 4]. Hypertension and splenomegaly are both risk factors identified in the present case.

The SAA is an uncommon typically asymptomatic clinical entity in 80% of the cases [2]. Only 20% of patients have symptoms such as epigastric pain, left upper quadrant or chest pain, others may present with a palpable pulsatile lump or vague upper abdominal



Figure 1: Enhanced contrast abdominal CT scan showing a 47x38x39 mm SAA. Red star: origin of the splenic artery, yellow stars: afferent and efferent arteries



Figure 2: (a) Splenic artery aneurysm (SAA) emerging through the lesser omentum, (b) A better exposure of the SAA after meticulous dissection.



Figure 3: Gross specimen showing the aneurysm.

discomfort. Patients may also present with melena, hemosuccus pancreaticus or hematemesis [1, 2, 4]. A more dramatic mode of presentation is spontaneous rupture of the aneurysm which is reported to occur in 2–10% of patients as an initial presentation [2] with an increased incidence during pregnancy [5]. Symptoms include acute presentation with hemorrhagic shock and acute abdomen secondary to the intra-abdominal rupture of the SAA [6]. Our patient's diagnosis was first a fortuitous discovery on abdominal CT scan but then he developed left upper quadrant pain.

Many imaging modalities such ultrasound, CT scan and MRI scan can make the initial diagnosis of an asymptomatic aneurysm [2]. However, abdominal aortic arteriography is considered the gold standard [1] because of its therapeutic potential. The most frequent localization of true SAAs is the distal third of the artery (75%) followed by the middle third (20%). They are usually solitary and saccular in nature. The mean size of the SAA at the time of detection is approximately 20 to 25 mm and rarely exceeds 30 mm [2]. In our case, the SAA occurs in the proximal third of the splenic artery with a size of 33 mm at the time of detection.

It is recommended that all patients with symptomatic aneurysm, pregnant or women of child bearing age group, lesions gradually increasing in size or patients with portal hypertension undergo treatment [4].

To deal with the SAA there are basically two approaches: endovascular or surgery. Surgical options include excision, ligation with or without splenectomy [1]. This could be achieved by either an open or a minimally invasive approach depending on the expertise [1]. One of the important features of SAA that influence the mode of treatment is its anatomy [5]. Proximal aneurysms can be

treated by ligation or aneurysmectomy but distal ones are best treated by resection of both the aneurysm and spleen [5, 6].

Endovascular techniques are also a good alternative to surgical approach [4]. Coil embolization, detachable balloon occlusion or stent graft may be used [4]. However, splenic abscess formation, splenic infarct, high rate of recurrence and inability to perform in larger lesions with a tortuous artery are drawbacks of endovascular techniques [2, 4]. As for our patient, due to the complex anatomy of the aneurysm and the tortuosity of the artery we found the open surgical approach a safe and effective alternative [6].

## CONCLUSION

The splenic artery aneurysm (SAA) is a rare condition with frequent asymptomatic presentation. The diagnosis is more commonly a fortuitous discovery in the imaging. Depending on the SAA anatomy, it could be managed by both surgical and endovascular procedures.

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## Author Contributions

Sofiane Jerbi – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Amine Tarmiz – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Tesnim Besbes – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Chokri Kortas – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

## Guarantor

The corresponding author is the guarantor of submission.

## Conflict of Interest

Authors declare no conflict of interest.

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