

Splenic Artery Aneurysm Performed Vascular Reconstruction: A Case Report

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A 58-year-old man was found by abdominal echography to have a pancreatic cyst while undergoing a health examination. Later, a multidetector CT and enhanced CT revealed a splenic artery aneurysm. After consultation he was admitted to our hospital for surgery. Multislice CT and magnetic resonance angiography demonstrated a saccular aneurysm, 22 mm in size, located in the proximal portion of the splenic artery. It was resected, and the splenic artery was reconstructed by an end-to-end anastomosis. The patient's postoperative course was favorable, and, after improvement, he was discharged on the 7th postoperative day. As Doppler ultrasound echography is being increasingly used during health examinations, these lesions are being detected with greater frequency. When splenic artery aneurysms rupture, mortality rates increase; we must therefore avoid simplistic observations. There are various treatment strategies available, and we must select which one is appropriate on a case-by-case basis. (Ann Thorac Cardiovasc Surg 2009; 15: 418–420)

Key words: splenic artery aneurysm, vascular reconstruction, treatment

Introduction

Although splanchnic artery aneurysms are rare, they are clinically important lesions. Recently, with an increasing use of Doppler ultrasound echography in health examinations, these lesions are being detected gradually.^{1,2)} A splenic artery aneurysm is the most frequent aneurysm of the splanchnic arteries.^{3,4)} We experienced a case of asymptomatic splenic artery aneurysm, performed vascular reconstruction, and reported a selection of strategies in the literature.

Case Report

A 58-year-old Japanese man was found to have a pan-

creatic cyst by abdominal echography conducted in a periodic health examination, and multidetector CT (MDCT) and enhanced CT later revealed a splenic artery aneurysm. After consultation, he was admitted to our hospital for treatment. The patient was entirely asymptomatic. On admission his height was 173 cm, body weight 75.4 kg, and blood pressure 126/74 mmHg. The patient had no history of hypertension, diabetes mellitus, coronary artery disease, pancreatitis, smoking, trauma, or previous surgery. Clinical examination was normal, and no bruit was observed on abdominal examination. Laboratory tests revealed serum levels of total cholesterol 172 mg/dl, triglyceride 54 mg/dl, and low-density lipoprotein 114 mg/dl. There was no calcification on the abdominal X-ray. Abdominal computed tomography revealed that a low-density mass was positioned behind the pancreas body. This mass, 22 mm in diameter, was enhanced, and there was no calcification, ascites, or splenomegaly (Fig. 1). MDCT and magnetic resonance angiography demonstrated a 22-mm saccular aneurysm located in the proximal portion of the splenic artery, which stems directly from the aorta (Fig. 2).

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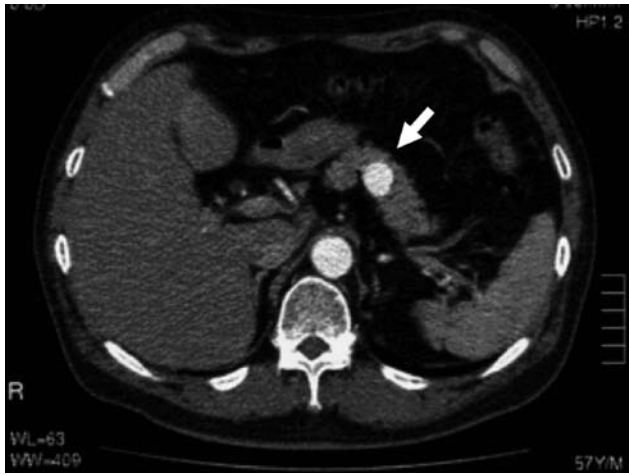


Fig. 1. Abdominal CT scan showing a 22-mm mass (arrow), which is by intravenous contrast enhancement. It is located behind the pancreas body.



Fig. 2. Magnetic resonance angiography showing a saccular aneurysm (arrow) 22 mm in size, located in the proximal portion of the splenic artery.

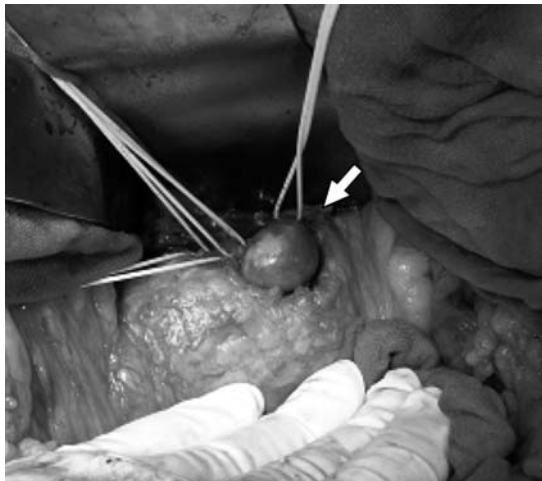


Fig. 3. Intraoperative picture showing that the aneurysm (arrow) is in the proximal portion of the splenic artery and embedded in the pancreas.



Fig. 4. Postoperative MDCT scan showing that the anastomosis was patent without stenosis or obstruction.

We elected to undertake surgery, which was vascular reconstruction and approach by laparotomy, because the general condition was good. The aneurysm was located in the proximal portion of the splenic artery, embedded in the pancreas body.

At median laparotomy, we approached the aneurysm from the transverse mesocolon and the lesser omentum. We identified the aneurysm embedded in the pancreas body without adhesion. It was saccular type, 22 mm in size, and located in the proximal portion of the splenic artery (Fig. 3). The aneurysm was resected and the splenic

artery was reconstructed by an end-to-end anastomosis.

A pathological analysis of the aneurysmal wall showed moderate atherosclerotic changes and was consistent with a true aneurysm.

The patient's postoperative course was favorable, and he was discharged in an improved condition on the 7th postoperative day. Postoperative MDCT revealed that the reconstructed splenic artery was patent (Fig. 4).

Discussion

Recently, splenic artery aneurysms have been reported to be detected at gradually increasing rates, most likely because of the widespread use of Doppler ultrasound echography and computed tomography in the health

examination.^{1,2)} They can also be detected accidentally by an abdominal X-ray as egg shell calcification.

They are usually saccular and occur most often at bifurcations of the distal splenic artery, proximal (5.0%), middle (35.0%), distal (60.0%), and multiple 20%.³⁾

In most cases the splenic artery aneurysms are asymptomatic. The frequency of rupture risk ranges from 2 to 46%.^{5,6)} This risk is higher in pregnant women and in patients with portal hypertension. The overall mortality rate for ruptured splenic artery aneurysms is reported as 25 to 75%, but the mortality rate of nonruptured patients treated surgically is 0.5%.⁴⁾

In general, a size of 2 cm or larger, a size of 3 cm or larger with calcification, symptomatic or expanding aneurysms, and female patients on a pregnancy schedule are indications for treatment.⁵⁾

The current methods of therapy for splenic artery aneurysms are conventional open surgery, endovascular treatment, and recently, laparoscopic surgery. The choice of treatment has been decided according to the site of the aneurysm, the type of aneurysm, whether the aneurysm is ruptured or asymptomatic, and the patient's general condition.

Because of the developments in endovascular surgery in recent years, this method has become the first choice of treatment. Endovascular embolization may be effective for high-risk patients. Endovascular surgery makes it possible to control emergency bleeding rapidly and safely and contribute to a decrease in the mortality rate.⁷⁾

However, a recurrence of aneurysms of the saccular type is possible because they have a widespread neck, and the multiple and fusiform types are very likely to open again. Moreover, they carry a certain risk of splenic infarction and/or abscess, even though the collateral circulation in this region is abundant. Some previous cases reported that endovascular stent grafts in splenic artery aneurysms were effective.⁸⁾ It will be necessary to await future treatment reports.

Splenectomy has been the most common therapy in the past, but it should be avoided, if possible, to preserve the hematological and immunological function of the spleen. Open surgical treatment of splenic artery aneurysms depends on their location.

The treatment of distal splenic artery aneurysms is typically aneurysmectomy with splenectomy and sometimes needs partial pancreatectomy. And some techniques of laparoscopic surgery (distal splenic artery ligation, splenectomy, and splenopancreatectomy) have succeeded.⁹⁾ The treatment of proximal and middle splenic artery aneurysms

is typically aneurysmectomy, aneurysmectomy with reconstruction, or ligation distal and proximal to the aneurysm without splenectomy. It is said that the reconstruction of splenic artery is not necessary because rich collateral vascular supply prevents infarction of the spleen without splenic artery. However, some previous cases reported that aneurysmectomy and ligation formed splenic abscess and infarction.¹⁾ Vascular reconstruction is simple and easy and requires no special techniques. We recommend reconstruction of the splenic artery if possible, especially in cases where its location is proximal or middle.¹⁰⁾

In conclusion, asymptomatic splenic aneurysms are increasing gradually. When splenic artery aneurysms rupture, mortality rates tend toward high levels. We must avoid easy observation. Some procedures have been reported, and the selections of appropriate strategies for splenic artery aneurysms must be made on a case-by-case basis.

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