

Transarterial embolization for postoperative splenic artery pseudoaneurysm with direct connection to the splenic vein

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★ Introduction

Visceral artery pseudoaneurysm is rare. The most commonly affected artery is splenic artery[1]. Pancreatitis was believed to be the major cause[1, 2]. Iatrogenic splenic pseudoaneurysm is rarer[1]. Due to the high mortality rate of ruptured splenic artery pseudoaneurysm, the critical manner is taking treatment as early as possible[3, 4].

★ Case report

A 50-year-old female with history of pancreatic cystic lesion for 2 years was transferred to our hospital. Progressive enlargement of the lesion was noted recently. The CT sequences displayed a cystic lesion measuring 6x5cm in size in the pancreatic tail (Fig 1A). The patient underwent a distal pancreatectomy with splenectomy. Pathology examination showed mucinous cystadenoma. The post-operative period was uneventful. Four months later, the following-up sonography and CT revealed a pseudoaneurysm in the splenic artery measuring 9x5 cm in size with enlarged splenic vein and portal vein (Fig 1B). The patient was hemodynamically stable without any discomfort. However, there was drop of hemoglobin (from 12.8 gm/dL to 11.4 gm/dL). Accordingly, she was taken to the angiography suite after admission. Celiac arteriography revealed a huge pseudoaneurysm with direct connection to the distal splenic vein.(Fig 2A). Transarterial coil embolization was performed two days later. The celiac angiography revealed enlarged size of the pseudoaneurysm (Fig 2B). Multiple coils were deposited into a tight coil mass within the splenic artery (Fig 2C). Completion arteriogram showed no opacification of the pseudoaneurysm or splenic vein (Fig 2D). The patient tolerated the whole procedure well. Following-up CT obtained one month after the embolization procedure showed that one migrated coil was located within the right branch of portal vein (Fig 3A). Thrombosed pseudoaneurysm and normal diameter of distal splenic vein and portal vein were noted (Fig 3B).

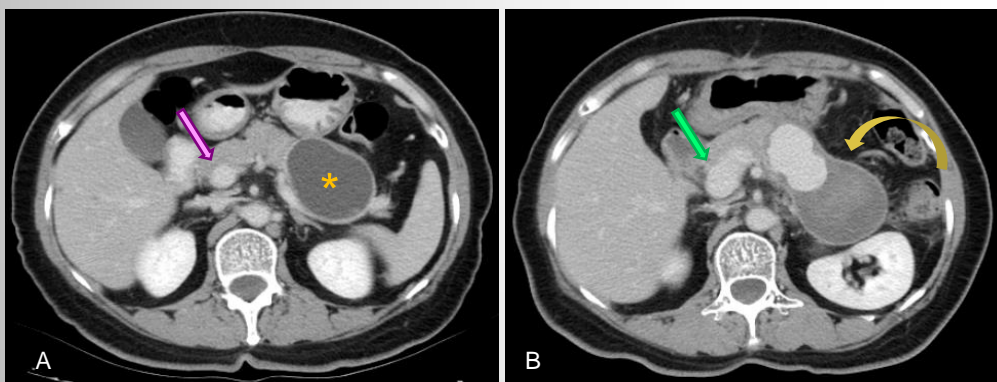


Fig. 1– (A) Axial CT image before pancreatectomy shows well-marginated mass with low attenuation in tail of pancreas (asterisk). Also note the normal diameter of portal vein (pink arrow). (B) Axial CT image before pancreatectomy shows a partially thrombosed pseudoaneurysm (curved arrow) adjacent to neck of pancreas. The diameter of portal vein got enlarged (green arrow).

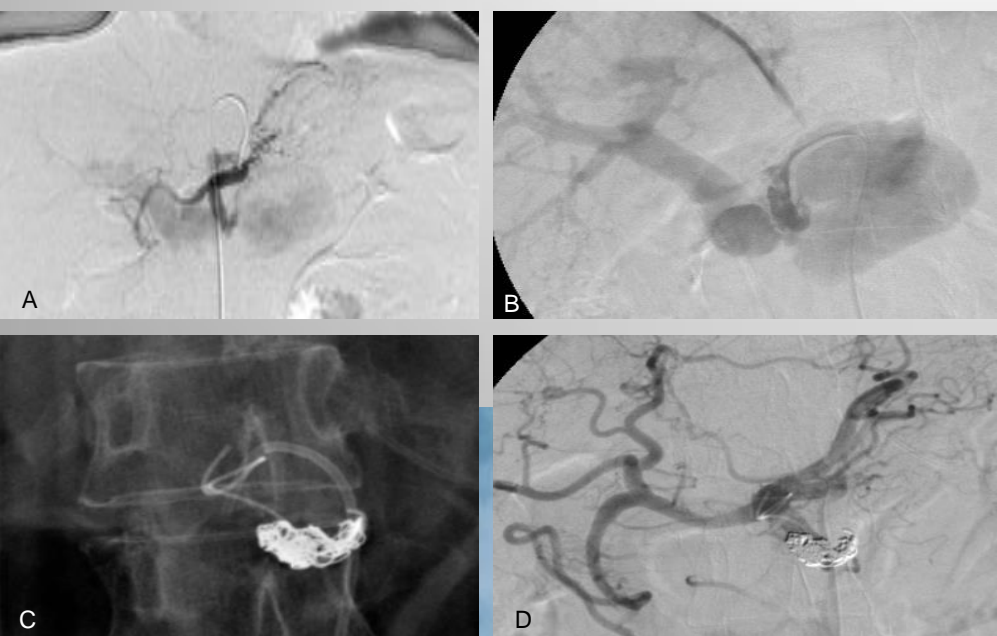


Fig. 2– (A) Celiac arteriography demonstrated a splenic artery pseudo-aneurysm and immediate opacification of the distal splenic vein and portal vein. (B) Celiac arteriography performed two days later shows Axial CT image before pancreatectomy shows enlarged size of the pseudoaneurysm. (C) Coil embolization of arterial segments proximal to the pseudoaneurysm. (D) Celiac arteriography after TAE reveals no opacification of the pseudo-aneurysm or splenic vein.

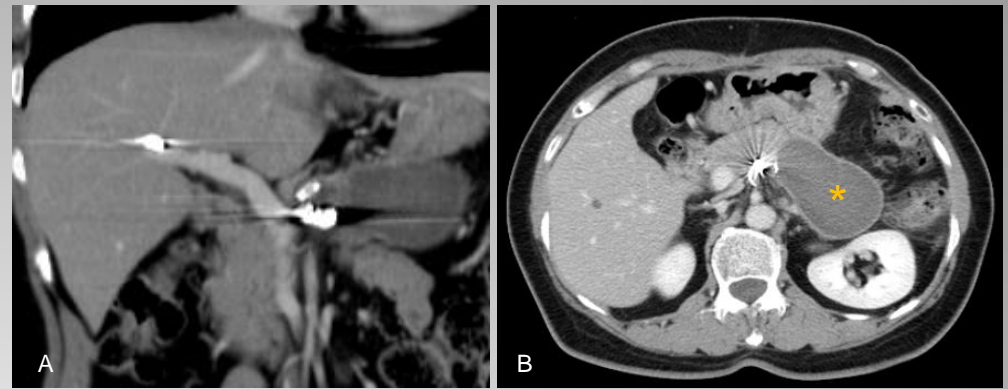


Fig. 3– (A) Reformatted coronal CT image demonstrate a migrated coil in the right branch of portal vein. (B) Axial CT image after transarterial embolization shows non-opacified thrombosed pseudoaneurysm (asterisk) and coils in the splenic artery.

★ Discussion

Splenic artery pseudoaneurysms are very rare [2, 5]. Causes include pancreatitis, postoperative complication and peptic ulcer disease [1]. In a literature, there were only 3% cases of splenic artery pseudoaneurysm with prior endovascular interventions or abdominal surgery. [1] These rare visceral artery pseudo-aneurysms are frequently associated with life-threatening complications and increased requirement of urgent inter-ventions. [4, 6] Although most cases are symptomatic initially, still 2.5% of these cases were incidentally found. [1] Despite hemodynamic change due to the connection between splenic artery and vein would appear after a long period of time, sudden increase of portal vein pressure is also reported. [7, 8] There is no symptom of portal hypertension in our case. This may be explained by that the anatomical structure in our case is similar but not the same as arteriovenous fistula. Some degree of the high pressure from splenic artery is released to the space of pseudoaneurysm. Besides, the period is not long enough to cause obvious hemodynamic change such as portal hypertension. However, enlarged splenic vein and portal vein are noted in the following-up CT sequences. The most common diagnostic study is transarterial angiography, which is assumed to be the gold standard and with therapeutic potential. [1] In recent studies, CT and sonography with the characters of less invasive and more widely available also frequently be used for diagnosis. [3, 4, 9, 10]

Since the splenic artery pseudoaneurysm is at high risk of rupture and with high mortality rate, the treatment should be performed as early as possible. [3, 11] Traditional approach for these cases is surgery. However, surgical treatment would be difficult or even ineffective because of the relative inaccessible anatomy and associated inflammatory reaction after previous abdominal operations.[12, 13] Transarterial embolization plays a role in the management of pseudo-aneurysms nowadays. These visceral artery pseudoaneurysms are extremely fragile. Iatrogenic rupture during transarterial embolization is record in the literature. Operators should be careful to control the injection volume and pressure to deposit embolization material in the ideal location. [13]

A few cases with recanalization of the pseudoaneurysm after embolization are reported. Therefore, post-interventional following-up with CT at one and six months has been recommended. [3, 14] Another known complication after transarterial embolization is migration of the permanent embolization materials. [15, 16] In our case, one migrated coil located within the right branch of portal vein was noted. It is fortunate that no recanalization of the pseudoaneurysm neither infarction nor abscess formation in the liver occurred after the migration.

★ Conclusion

To our knowledge, a post-pancreatectomy splenic pseudoaneurysm with direct connection to the splenic vein after has not been described before. Even with the fragility of its wall and high flow to the splenic vein, splenic artery pseudo-aneurysm with direct connection to the splenic vein could be safely handled with transarterial embolization.

★ Reference

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