Stent-Supported Coil Embolization of a Splenic Artery Aneurysm

A feasible technique that can be used effectively in select cases with wide-neck or fusiform aneurysms.

BY MARK T. BAESL, MD, AND STUART SINGER, MD

Visceral artery aneurysms have an incidence of approximately .01% to .02%,[1] the most common of which are the splenic and hepatic artery aneurysms. Most patients are asymptomatic at the time of medical imaging. Symptomatic patients with splenic artery aneurysms typically present with abdominal pain or hypotension and are commonly associated with multiparity, atherosclerosis, infection, or pancreatitis.[2] Treatment should be considered when the aneurysm is >1.5 cm,[3] rapidly enlarging, symptomatic, or found in a patient who might become pregnant.[2] Splenectomy or transcatheter embolization is generally accepted as the standard of care for treatment of splenic artery aneurysms. This article describes one case of a stent-supported coil embolization for treatment of a technically difficult splenic artery aneurysm.

INDICATION

A 46-year-old man presented for a CT scan for abdominal pain, which demonstrated a patent 2.5-cm X 2.6-cm X 2.5-cm splenic artery aneurysm containing some mural calcification and a small amount of mural thrombus. Further evaluation with CTA (Figure 1) was performed, and the patient was referred for diagnostic angiography and possible endovascular intervention.

TECHNIQUE

After a 5-F sheath was placed into the right femoral artery, a 5-F C2 catheter (Cordis Corporation, Warren, NJ) was placed into the celiac artery. Selective angiography revealed a 2.5-cm eccentric aneurysm arising from the midsplenic artery (Figure 2A). The aneurysm arose from the apex of the second acute angle bend in the splenic artery. A Glidewire (Terumo Interventional Systems, Somerset, NJ) was used to advance the 5-F C2 Glide catheter (Terumo Interventional Systems) to the aneurysm lumen. A shortened SOS-1 catheter (AngioDynamics, Queensbury, NY) was then used to direct the Glidewire to the distal splenic artery where an 8-F guiding sheath was

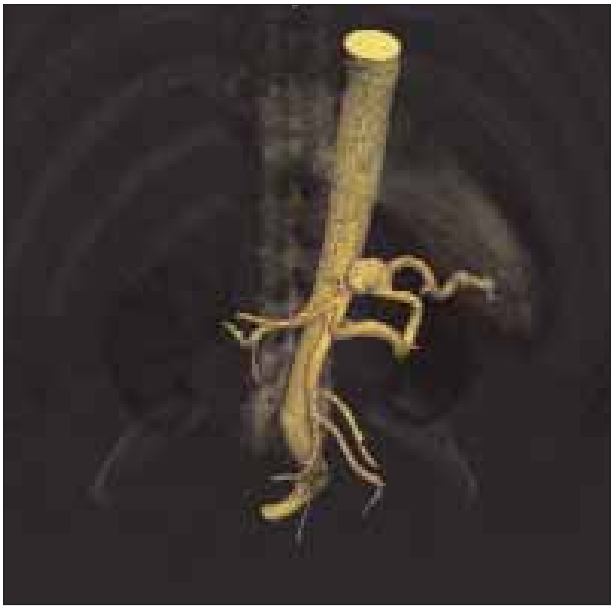

Figure 1. Pre-embolization CTA of a splenic artery aneurysm.

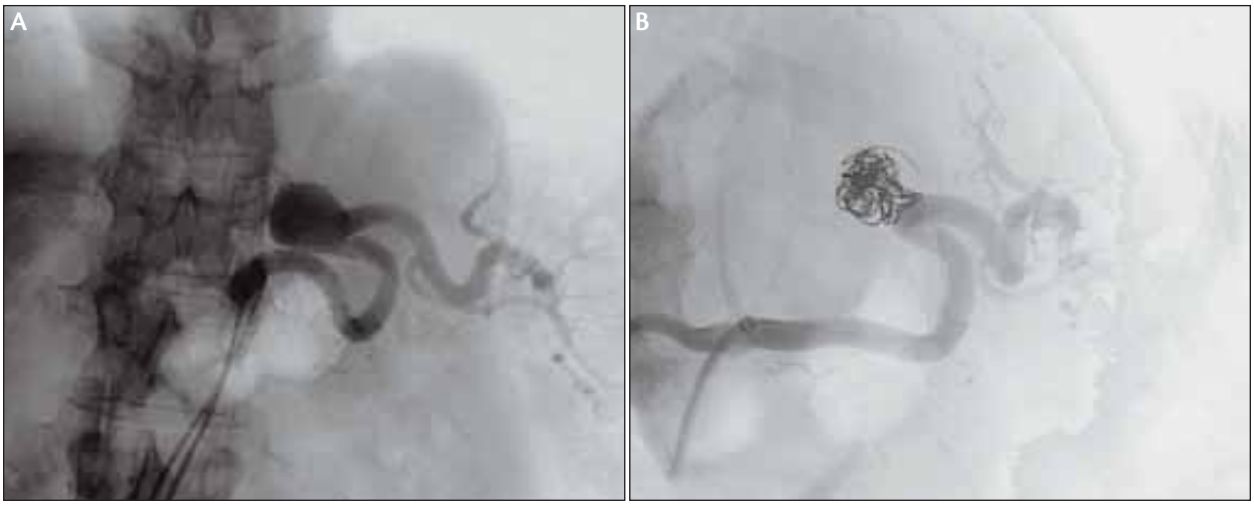

Figure 2. Pre-embolization (A) and postembolization angiograms (B) of a splenic artery aneurysm.

then placed into the proximal splenic artery. A Rosen wire (Cook Medical, Bloomington, IN) was then advanced distal to the aneurysm. A 7-mm X 40-mm Fluency covered stent (Bard Peripheral Vascular, Inc., Tempe, AZ) was advanced with the intent to cover the aneurysm but could not be advanced beyond the first bend in the splenic artery. An attempt to place an 8-mm X 60-mm Smart stent (Cordis Corporation) was also unsuccessful for the same reason. Next, a Precise 8-mm X 40-mm stent (Cordis Corporation) was placed across the origin of the aneurysm using a Platinum Plus .018-inch guidewire system (Boston Scientific Corporation, Natick, MA). A Tracker 325 microcatheter (Target Vascular, Fremont, CA) was then placed through the interstices of the stent into the aneurysm. Five 5-mm-diameter X 12-mm-long complex helical microcoils (Target Vascular) were delivered through the stent wall. Another five 4-mm-diameter X 10-mm-long complex helical microcoils were delivered into the aneurysm. The microcatheter was then replaced with a .035-inch angled Glide catheter. Two additional 10-mm Tornado coils, one 7-mm Tornado coil, and two 6-mm Tornado coils (Cook Medical) were then placed into the aneurysm. The postembolization splenic artery arteriogram showed no filling of the aneurysm (Figure 2B). A small nonflow-limiting dissection was identified within the proximal splenic artery from trauma related to the guiding sheath. Therefore, an 8-mm X 40-mm .035-inch Smart stent was deployed across the dissection with complete resolution. Excellent flow through the splenic artery was preserved, and there was no evidence for splenic infarct (Figure 2B). The patient received a total of 5,000 U of heparin and 1 g of cefazolin IV during the procedure. The patient was kept overnight for observation and discharged home the following morning.

Figure 3. Postembolization CTA of splenic artery aneurysm.

The 5- and 18-month follow-up CT angiograms demonstrated no evidence for filling of the splenic artery aneurysm (Figure 3). The patient remains asymptomatic 20 months after therapy.

DISCUSSION

Splenectomy or transcatheter embolization is generally accepted as the standard of care for the treatment of splenic artery aneurysms. As technology has advanced, transcatheter embolization has become the treatment of choice over splenectomy for splenic artery aneurysms to preserve splenic function with minimal morbidity and

mortality. Coil embolization, however, is technically difficult with wide-neck aneurysms. These aneurysms have an increased risk for coil dislodgement and embolization. Alternative approaches in these cases have included placement of stent grafts or total occlusion of the splenic artery.[1,4,5] In some cases, severe splenic artery tortuosity may not allow the delivery of the covered stent across the aneurysm neck. This article reports stent-supported coil embolization as an endovascular treatment option. There have been multiple reports of this technique to treat carotid, vertebral, and basilar artery aneurysms.[6-9] It was a logical step to extend this technique into nonneurologic aneurysms that presented the same anatomic challenges.

CONCLUSION

We believe that stent-supported coil embolization is a valuable technique that allows successful embolization of a wide-necked splenic artery aneurysm with a tortuous splenic artery. ■

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