Aberrant splenic artery complicated by aneurysm during pregnancy

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ABSTRACT

The aberrant splenic artery is an uncommon anomaly. It may become a challenging problem when it is associated with an aneurysm diagnosed during pregnancy. Our experience with a patient who underwent two interventions, each performed in the postpartum period without incident, highlights the need to employ techniques that ensure aneurysm closure and thus avoid recurrence and need for repetitive procedures. (J Vasc Surg Cases and Innovative Techniques 2018;4:119-21.)

CASE REPORT

A 37-year-old woman underwent splenic artery embolization 3 days after the birth of her first child in 2012. The aneurysm, 2.5 cm in diameter, was based in the proximal splenic artery, which in turn originated from the superior mesenteric artery (SMA). Coiling of the aneurysm alone resulted in complete closure of the aneurysm sac, subsequently confirmed by ultrasound. She was lost to follow-up but presented at another institution 5 years later, 33 weeks pregnant with her second child. An ultrasound examination performed at that institution showed complete recanalization of the previously coiled aneurysm, now measuring 2.4 cm in diameter (Fig 1). The patient was asymptomatic and closely monitored. She was scheduled for early cesarean delivery at 36 weeks, with possible synchronous embolization or open repair. The patient did undergo successful cesarean delivery but declined open repair at this outside hospital. She was accordingly transferred to our institution, where she underwent visceral angiography, microcatheter splenic artery outflow embolization, and recoiling of the aneurysm sac through the SMA. The aneurysm originated <1 cm from the takeoff of the SMA, making the recoiling difficult (Fig 2). The procedure was performed in the hybrid operating room with femoral access gained with a 5F sheath. An aorta-iliac Neff catheter (Cook Medical, Bloomington, Ind) was used to gain access to the SMA, and a Renegade HI-FLO microcatheter with Fathom-16 guidewire (Boston Scientific, Marlborough, Mass) was used to negotiate the previously coiled aneurysm and to provide access to the splenic artery outflow tract. Penumbra coils of multiple sizes were used for embolization. Final angiography and follow-up ultrasound examination showed complete occlusion of the outflow splenic artery as well as complete exclusion of the splenic aneurysm with normal flow in the SMA (Figs 3 and 4). Proximal SMA covered stenting was not considered because of multiple visceral branches posing additional risk in a 37-year-old patient. The patient consented to the release of her information.

DISCUSSION

The aberrant splenic artery is an uncommon anomaly, originating from the superior mesenteric artery in <1.3% of studies in 320 cadavers.[1] The aberrant splenic artery arises embryologically from alterations in four splanchnic roots: the left gastric artery, splenic artery, common hepatic artery, and SMA.[2] Normally, there is closure of the third and fourth splanchnic roots, but with changes in this process, aberrancy of the splenic artery can result.[2] An anomalous splenic artery originating from the SMA is rare, with a prevalence rate of 1% and incidence rate of 0.03%.[3,4] Aneurysms of these aberrant splenic arteries are uncommon, with only 38 cases tabulated in the literature,[2,5,6] but to our knowledge, none have been documented during pregnancy. There are a number of considerations for management of this entity during pregnancy, including timing and type of intervention, radiation exposure, and inherent risks of concurrent open repair. Repair in asymptomatic aneurysms is ideally carried out in the peripartum or postpartum period, avoiding exposure of the fetus to irradiation. Open surgical repair or ligation can be performed, but it may add unnecessary morbidity compared with endovascular or laparoscopic techniques.

The anatomic configuration of the aberrant splenic artery and the location of the aneurysm have a significant impact on choice of intervention. In our patient, the aneurysm and splenic artery origin were nearly flush with the SMA, favoring coil embolization and SMA covered stent exclusion as described in prior case reports.[7] However, we thought that SMA stenting posed

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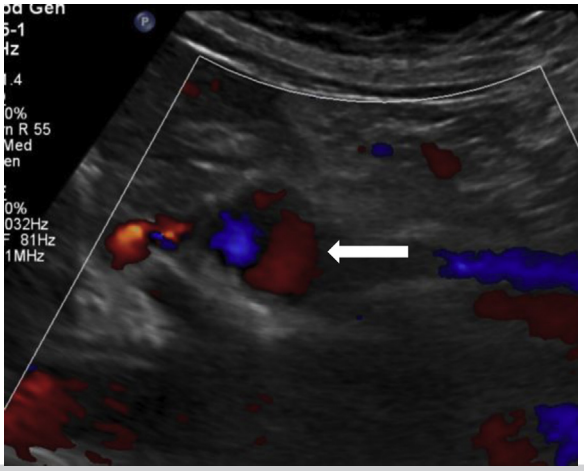

Fig 1. Duplex ultrasound scan depicting recanalized splenic artery aneurysm (*arrow*).

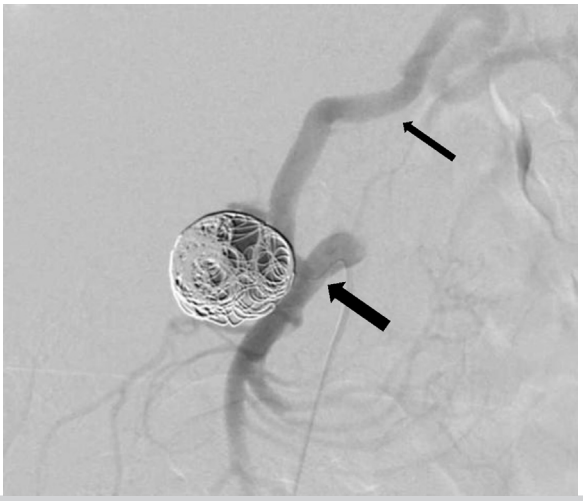

Fig 2. Angiogram depicting superior mesenteric artery (SMA; *wide arrow*) and aberrant splenic artery (*thin arrow*) with continued aneurysm and splenic artery flow.

considerable risk of visceral ischemia, whereas complete recoiling of outflow and aneurysm would suffice. Other endovascular occlusive devices, such as Amplatzer plugs (St. Jude Medical, St. Paul, Minn), were not applicable because of previous space-limiting embolic coils. Concern has been expressed about splenic necrosis and infection after embolization. Despite its rarity, antibiotics and immunologic prophylaxis are warranted after splenic embolization and are routine in our practice.

CONCLUSIONS

This case underscores the challenging anatomic considerations required for managing the anomalous splenic artery with aneurysm during late-term pregnancy. The indications and urgency for treating splenic aneurysms are well established, and when required,

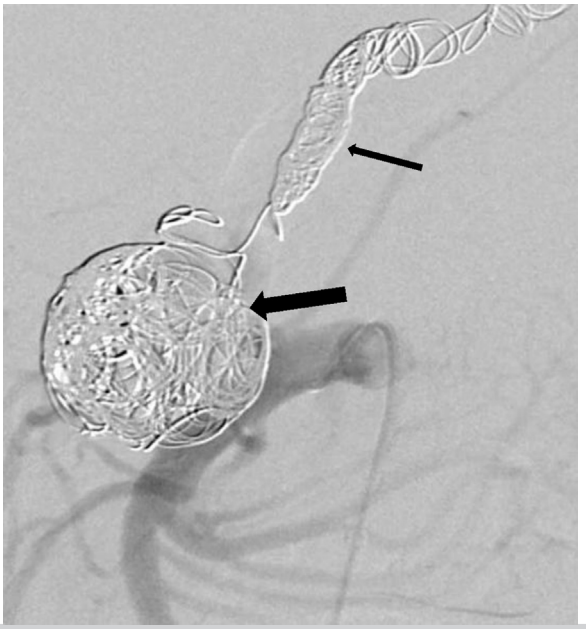

Fig 3. Angiogram depicting coiled aberrant splenic artery (*thin arrow*) and aneurysm (*wide arrow*).

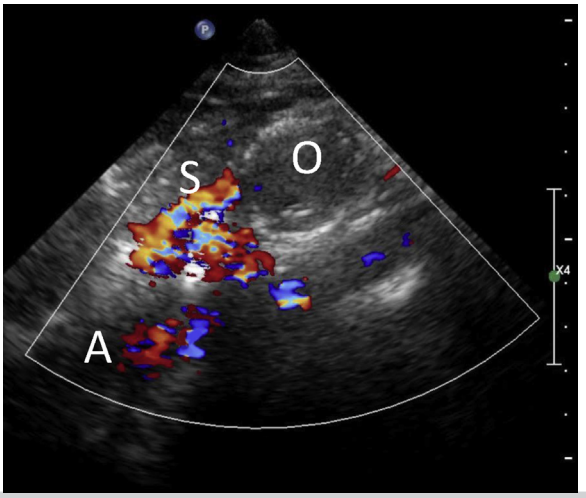

Fig 4. Ultrasound scan depicting thrombosed aneurysm, with aortic and superior mesenteric flow. *A,* Aorta; *O,* occluded aneurysm; *S,* superior mesenteric artery.

one must additionally consider pregnancy, surgery, endotechnology, and timing as factors.

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