Direct puncture of superior gluteal artery using a Doppler ultrasound-guided needle to access jailed internal iliac artery aneurysm

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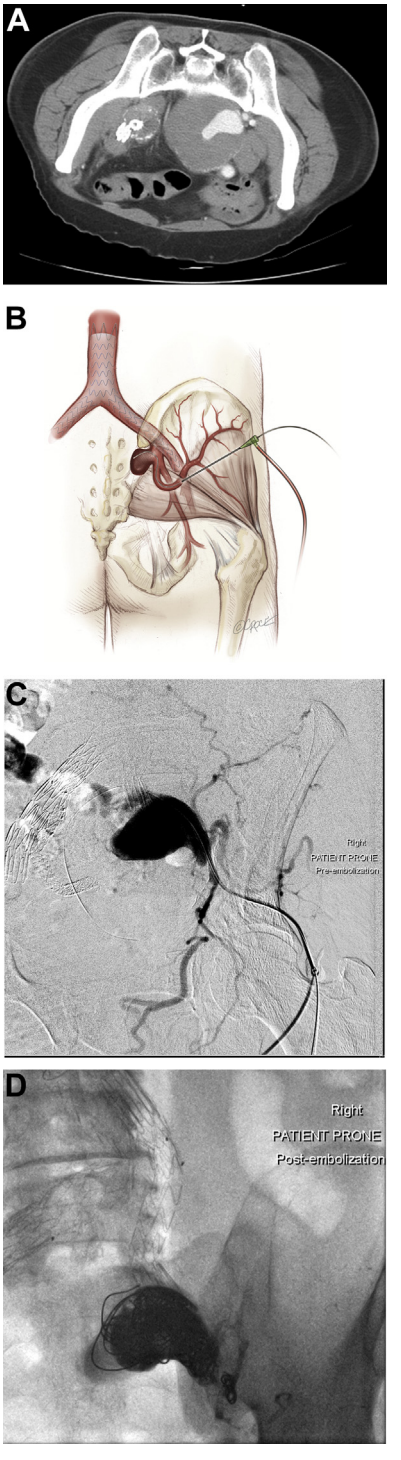
A 66-year-old man underwent endovascular aneurysm repair of a left common iliac artery (CIA) aneurysm (4.4 × 7.3 cm) and right internal iliac artery (IIA) aneurysm (7 × 7.4 cm). An iliac bifurcated device (Zenith Branch Iliac Graft; Cook Medical, Bloomington, Ind) was deployed to the left CIA aneurysm. An Endurant main body stent (Medtronic, Minneapolis, Minn) and extension limb (Zenith iliac extension stent; Cook Medical) were deployed to the right CIA. The procedure was complicated by jailing of the right IIA ostium by the stent graft. Regaining access into the right IIA aneurysm was unsuccessful, and the procedure was abandoned.

Subsequent contrast-enhanced computed tomography showed enlargement of a partially thrombosed right IIA aneurysm (7.5 × 7.4 cm); absent antegrade flow in the right IIA, which was covered by the iliac stent graft; and retrograde filling of the aneurysm sac from the right superior gluteal artery (SGA), which is a branch of the posterior division of the IIA (*A*).

We directly accessed the right SGA percutaneously using an 18-gauge (7-cm) SMART Doppler ultrasound-guided needle vascular access device (Vascular Solutions, Minneapolis, Minn)[1] posteriorly with the patient in the prone position. Under fluoroscopic guidance, we aimed the needle toward the greater sciatic notch where the SGA exits the pelvis (*B*/Cover). The SMART needle system operated by transmitting a Doppler signal from a piezoelectric crystal located at the tip of a transducer within the needle and provided continuous auditory feedback to help locate and access the artery. A 0.021-inch guidewire was advanced into the aneurysm and exchanged for a 5F sheath (Radiofocus; Terumo Europe NV, Leuven, Belgium). Retrograde angiography showed a right IIA aneurysm with four feeding vessels (*C*). The expected location of the right SGA was marked fluoroscopically just lateral to the superior aspect of the right sciatic foramen. The aneurysm sac was successfully obliterated with multiple coils and injection of Histoacryl (B. Braun Medical, Bethlehem, Pa) glue (*D*). Follow-up computed tomography showed absence of contrast material flow into the right IIA aneurysm.

Our case demonstrated that deep vascular access can be achieved by a good understanding of anatomy with the aid of the SMART Doppler needle. Major open surgery was avoided.

Consent for the publication of images was obtained from the patient in a written form.



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