A 78-year-old man was referred for treatment of a progressively enlarging, asymptomatic abdominal aortic aneurysm (AAA) and a left hypogastric artery aneurysm, which had been followed for 3 years with serial computed tomography (CT) scans. A helical CT angiogram was obtained using a 100 mL intravenous bolus of iodinated contrast medium (GE LightSpeed, 2.5 mm nominal section thickness, 6.0 pitch, 15 mm/rotation table speed, and reconstructed with 1.6 mm increment) (Figure 1).

Three-dimensional reconstructions were performed; they demonstrated the relationship of the horseshoe kidney to the aorta (Figure 2).

Detailed measurements of the infrarenal neck of the AAA and the distal landing zones demonstrated an anatomy suitable for endovascular stent graft repair of both aneurysms using the AneuRx bifurcated device (Medtronic). The proximal extent of the stent graft would be deployed in its usual infrarenal position, but the distal extent of the left limb of the device would be extended into the left external iliac artery to exclude the left hypogastric artery aneurysm, while the right limb of the device would be seated in the right common iliac artery proximal to the origin of the larger accessory renal artery to maintain segmental flow to the isthmus of the horseshoe kidney.

The patient underwent preoperative, percutaneous coil embolization of the outflow branches of the hypogastric artery aneurysm (Figure 3).

Through a right transfemoral approach, the patient underwent placement of an AneuRx bifurcated stent graft measuring 26 mm (main body diameter) by 16 mm (iliac limb diameter) by 16.5 cm (total length). Through the left femoral artery, the contralateral AneuRx iliac device, measuring 16 mm (iliac limb diameter) by 11.5 cm (length), with an extender cuff was deployed to extend coverage to the left external iliac artery. The patient was moved to the intensive care unit for overnight observation, and he was discharged on postoperative day 2 with a normal serum creatinine value. A postoperative spiral CT angiogram was obtained; it demonstrated complete exclusion of the AAA and the left hypogastric artery aneurysm and patency of all 3 dominant renal arteries (Figure 4).
Figure 1. CT angiogram. A, 5.2-cm infrarenal AAA with the isthmus of a horseshoe kidney draped over its anterior aspect. B, 6.2-cm left hypogastric artery aneurysm with a large crescentic mural thrombus.

Figure 2. Color-enhanced surface-shaded rendering. A, Anterior view; B, posterior view. Note the 2 main renal arteries and an accessory renal artery coming off the right common iliac artery to supply the isthmus of the horseshoe kidney. A second, smaller accessory renal artery can be seen coming off directly from the aneurysm anteriorly; this is best seen in the posterior view (B). The left hypogastric artery aneurysm is also well visualized.

Figure 3. Preoperative angiograms. A, Anteroposterior aortogram. Note the 2 dominant renal arteries at the proximal neck and a third renal artery coming off the right common iliac artery. B and C, Coil embolization of the left hypogastric artery outflow branches.

Figure 4. Surface-shaded rendering from postoperative spiral CT angiogram. A, anterior view; B, posterior view. Note (1) the very proximal infrarenal placement of the stent graft just below the renal arteries and the patency of the right iliac renal artery, (2) the crossed iliac limbs of the stent graft, which are of no hemodynamic significance given the fully supported design of the device, and (3) the thrombosed left hypogastric artery aneurysm with coils in place.
Endovascular Stent Graft Repair of an Infrarenal Abdominal Aortic Aneurysm With a Horseshoe Kidney

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