

CASE REPORT

The GORE® EXCLUDER® Iliac Branch Endoprosthesis in a Tortuous Aortoiliac Aneurysm

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Ensuring an adequate proximal and distal landing zone is crucial for a successful and durable endovascular aneurysm repair (EVAR). Abdominal aortic aneurysms (AAAs) associated with common iliac artery (CIA) aneurysm (CIAA) are not uncommon. CIAA is defined by a transverse diameter > 18.5 mm for men and ≥ 15 mm for women and are found in up to 20% of patients diagnosed with an AAA.¹ Current suggestions for elective CIAA repair recommend a transverse diameter > 30 mm.² Standard endografts are not designed to guarantee an adequate distal landing zone in the presence of extensive CIAA, therefore, different endovascular solutions have been proposed to achieve distal sealing with either internal iliac artery (IIA) occlusion or preservation. IIA embolization is associated with erectile dysfunction, buttock or thigh claudication, paraplegia, and sphincter dysfunction in nearly 30% of patients.³ Preservation of at least one hypogastric artery is advisable to reduce the incidence of such complications.⁴ Initially to maintain endovascular perfusion of the IIA during EVAR, many different techniques have been described using off-the-shelf devices such as the bell-bottom, chimney, sandwich, and double-barrel techniques.⁵⁻⁷ Currently, dedicated iliac branch devices are available* to preserve antegrade perfusion of the hypogastric artery.

CASE PRESENTATION

A 72-year-old man with a history of smoking, obesity (BMI, 38 kg/m²), hypertension, type II diabetes, and severe chronic obstructive pulmonary disease was diagnosed with an asymptomatic aortoiliac aneurysm (55 mm maximum diameter) and a concomitant CIAA of 37 mm with highly tortuous iliac vessels (Figure 1). In consideration of his comorbidities and anatomical features, a total endovascular repair was suggested, discussed, and chosen with the patient.

Preoperative CTA was analyzed with a dedicated workstation, and planning and sizing was based on centerline flow measurements (Figure 1). A GORE® EXCLUDER® Iliac Branch Endoprosthesis (IBE) was selected

to accommodate and navigate the patient's tortuous iliac anatomy and achieve complete exclusion of the right CIAA. Due to the patient's obesity, ultrasound-guided bilateral percutaneous femoral access was achieved, and two ABBOTT® PERCLOSURE® PROGLIDE Closure Systems for each side were preimplanted for the percutaneous perclose technique. A hydrophilic guidewire with parallel puncture of a 16 Fr introducer sheath was snared from the right to the left femoral access in a through-and-through fashion and then loaded on the precannulated internal iliac artery gate. A 23 x 14 x 100 mm IBE was then deployed into the iliac aneurysm, with the bifurcated component just proximal to the right iliac bifurcation over a Lunderquist guidewire. A 12 Fr COOK® FLEXOR® Introducer Sheath was then advanced from the left femoral access over the through-and-through guidewire in the internal iliac artery gate of the IBE.

After selective cannulation of the superior gluteal artery with a Cobra-shaped 5 Fr CORDIS® Diagnostic



Figure 1. Preoperative CTA demonstrating the right aortoiliac aneurysm with highly tortuous iliac access.

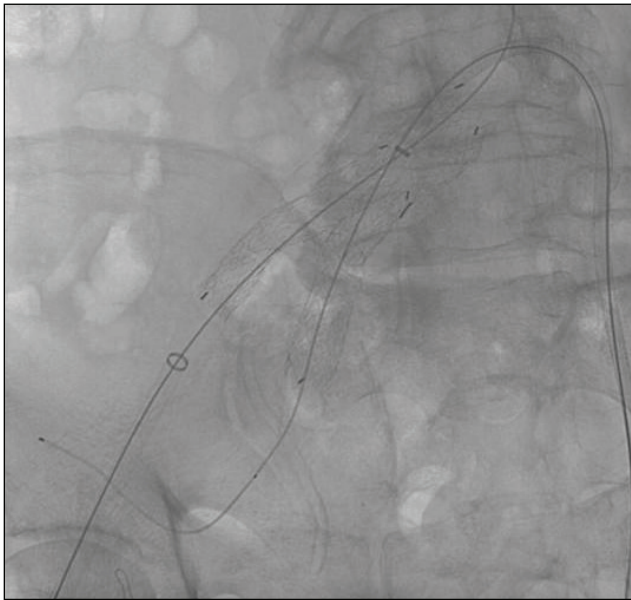


Figure 2. Deployment of the dedicated internal iliac component in the IBE gate.

Catheter and positioning of an ABBOTT® SUPRA CORE 0.035 inch Guidewire, a Gore 16 x 14.5 x 70 mm Internal Iliac Component was deployed in the IIA (Figure 2). In a standard fashion, a 31 x 14.5 x 160 mm GORE® EXCLUDER® Device Trunk-Ipsilateral Leg Component was deployed in the infrarenal aorta just distal to the renal artery ostia, with a 23 x 100 mm right bridging component to the IBE in the

right iliac artery. Lastly, a 20 x 100 mm iliac extender graft was deployed from the left femoral access in overlap with the GORE EXCLUDER Device Ipsilateral Leg.

Postprocedural angiography documented complete exclusion of the aortoiliac aneurysm with no signs of endoleaks, patency of the right iliac branch, and both IIAs (Figure 3) demonstrated good conformability of the IBE to the patient's tortuous anatomy. The postoperative course was uneventful, and the patient was promptly discharged on postoperative day 2.

Follow-up protocol consisted of a postoperative CTA at 1 month, duplex scan at 6 months, and CTA yearly thereafter. A type II endoleak sustained by lumbar arteries was detected at the first-year CTA with no aortic sac increase, and it is currently under surveillance. The right iliac aneurysm is still completely excluded after 2 years of follow-up with good patency of the IIA (Figure 4).

DISCUSSION

Iliac branch devices have contributed to the expansion of total endovascular repair of extensive aortoiliac aneurysmal disease. Preservation of the antegrade perfusion of the hypogastric arteries is effective in reducing the risk of buttock claudication occurring in about 30% of patients after endovascular repair of CIA with embolization/coverage of the IIA.⁸⁻¹⁰ Safety and efficacy of iliac branch devices have been investigated with patency rates reported to be over 80% in most of the recent series¹¹⁻¹³ in a midterm setting. Long-term

durability has been further investigated in a recent series, with freedom from iliac branch-related reintervention of 97.4%, 95.6%, 94.0%, and 91.8% at 1, 3, 5, and 9 years, respectively. Hypogastric artery patency was 94.7%, 92.6%, and 90.4% at 1, 3, and 10 years, respectively.^{14,15} The IBE is a 16 Fr nitinol and expanded polytetrafluoroethylene new-generation device with a precannulated internal iliac limb and a dedicated iliac internal component designed to improve kink resistance and accommodate a wide range of both external and internal iliac diameters



Figure 3. Postoperative angiogram documenting complete aneurysm exclusion with no signs of endoleak, patency of the hypogastric arteries, and good conformability of the device to the patient's anatomy.



Figure 4. Postoperative CTA at 2 years.

(6.5 to 25 mm and 6.5 to 13.5 mm, respectively) with proven results in iliac patency preservation.¹⁶⁻¹⁹

The IBE has to be considered as a first-choice option for total endovascular aortic aneurysm repair in aortoiliac extensive aneurysmal disease, especially in patients with iliac tortuosity, thanks to its high conformability to patient anatomy and the ability to preserve pelvic circulation.²⁰ A tailored approach with accurate preoperative planning and patient selection is strongly recommended for successful and durable endovascular repair. Life-long surveillance is still necessary after graft implantation, as long-term device-specific data are lacking. ■

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