

The Importance of Hypogastric Artery Preservation

BY DARREN B. SCHNEIDER, MD

Elective endovascular aortic aneurysm repair (EVAR) is a prophylactic procedure intended to protect patients from death and disability due to aneurysm rupture. Central to the concept of prophylaxis is that an intervention performed to treat an asymptomatic problem should have an acceptably low risk of adversely impacting the patient's quality of life or exposing the patient to potentially harmful new problems. Although EVAR has lower procedural risks of death and disability compared to open surgical aneurysm repair, EVAR with hypogastric artery sacrifice does expose patients to additional and potentially unnecessary risk of pelvic ischemic complications that may affect quality of life and even cause serious harm or death. Fortunately, with the availability of iliac branch devices, we now have safe and effective options available to treat patients with common iliac artery aneurysms using EVAR without sacrifice of hypogastric artery perfusion (Figure 1).

HYPOGASTRIC ARTERY SACRIFICE IS NOT BENIGN

Common complications of hypogastric artery sacrifice during EVAR include new-onset buttock claudication and sexual dysfunction. Approximately 25% of patients who undergo unilateral hypogastric artery sacrifice will experience buttock claudication and the risk increases if both hypogastric arteries are sacrificed.^{1,2} Although buttock claudication symptoms are not life-threatening and do

improve or resolve in some patients, buttock claudication persists in about 50% of patients and is associated with decreased patient-reported quality of life.² Unfortunately, for patients who develop buttock claudication after EVAR with hypogastric artery sacrifice, there are no effective treatment options.

More devastating ischemic complications may occur because of hypogastric artery sacrifice, including ischemic colitis, spinal cord injury, and buttock necrosis. Fortunately, these potentially life-threatening complications are uncommon, but they expose elective EVAR patients to added risks of serious harm and death. In a recent analysis of EVAR using the American College of Surgeons National Surgical Quality Improvement Program dataset, patients who underwent EVAR with hypogastric artery embolization had an increased 30-day mortality in comparison to EVAR without hypogastric artery embolization (4.1% vs 2.5%; $P = .044$). Moreover, EVAR with hypogastric artery embolization was independently associated with an increased risk of ischemic colitis (odds ratio, 2.98; 95% confidence interval, 1.44–6.14; $P = .003$).³ Eagleton and colleagues found that the incidence of spinal cord injury and failure to recover was more common in patients undergoing endovascular repair of complex aortic aneurysms who had a hypogastric artery sacrificed.⁴ These and other studies clearly demonstrate that hypogastric artery sacrifice during EVAR places patients at significant added risk for harm.

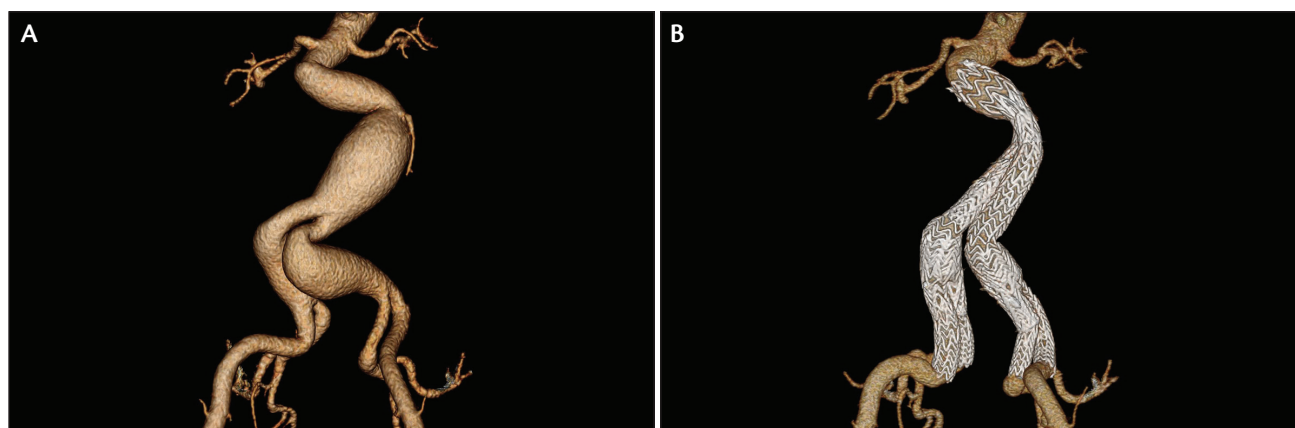


Figure 1. A 48-year-old male competitive triathlete with abdominal and bilateral iliac artery aneurysms. Pre-implant (A) and 1-year follow-up (B). Courtesy of Sharif Ellozy, MD, and Darren Schneider, MD, New York Presbyterian/Weill Cornell Medical Center; New York, New York.

OUTCOMES OF EVAR WITH ILIAC BRANCH DEVICES

Dedicated iliac branch devices have been developed specifically to preserve hypogastric artery perfusion in patients with common iliac artery aneurysms undergoing EVAR. Multiple centers have described excellent outcomes of treatment with iliac branch devices, reporting high rates of technical success, procedural risks that are comparable to standard EVAR, excellent patency, and rates of reintervention that are comparable to standard EVAR.⁵⁻⁸ We recently reported similarly promising outcomes of treatment of iliac and aortoiliac aneurysms using the GORE® EXCLUDER® Iliac Branch Endoprosthesis (IBE) (Figure 2) in a prospective, multicenter United States clinical trial (the IBE 12-04 study).⁹ At the 6-month primary endpoint, IBE patency was 95.2% with no type 1 or 3 endoleaks and 98.4% freedom from reintervention. Importantly, the IBE prevented pelvic ischemic complications and there was 100% freedom from new-onset buttock claudication on the side treated with the IBE. In contrast, 21 patients with bilateral iliac artery aneurysms in the IBE 12-04 study underwent sacrifice of one hypogastric artery, and in this cohort, there was a 28% incidence of buttock claudication on the side of the sacrificed hypogastric artery (opposite to the IBE side).

HYPOGASTRIC ARTERY PRESERVATION DURING EVAR IS THE NEW STANDARD OF CARE

Iliac artery aneurysms are common, occurring in around 25% of patients undergoing EVAR¹⁰ and treatment with internal iliac artery sacrifice is associated with complications that can affect quality of life or cause serious harm. Multiple studies have demonstrated that hypogastric artery preservation with iliac branch devices during EVAR is safe and effective and has high rates of technical success, low branch occlusion rates, and intervention rates comparable to standard EVAR. Therefore, most patients with iliac aneurysms who are candidates for EVAR with an iliac branch device should no longer undergo hypogastric artery sacrifice and be exposed to likely avoidable pelvic ischemic complications.

Although not all patients with iliac aneurysms undergoing EVAR have suitable anatomy for treatment with the currently available iliac branch devices,^{11,12} EVAR with hypogastric artery preservation should be strongly considered in those with suitable anatomy. Hypogastric artery preservation may have the most beneficial impact in younger and more active patients and in patients with bilateral iliac artery aneurysms who are more likely to be affected by buttock claudication. In patients with multifocal aneurysmal disease or complex aortic aneurysms, hypogastric artery sacrifice increases the risk of spinal cord injury and paraplegia and is a near absolute indication for hypogastric artery preservation. Although the risks of hypogastric artery sacrifice in each individual



Figure 2. The GORE® EXCLUDER® Iliac Branch Endoprosthesis.

patient need to be balanced against the increased case complexity and the added cost associated with use of an iliac branch device, EVAR hypogastric artery preservation should become the default treatment strategy for patients with iliac aneurysms. ■

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Darren B. Schneider, MD

Associate Professor of Surgery
Chief, Vascular and Endovascular Surgery
Weill Cornell Medicine
New York-Presbyterian Hospital
New York, New York

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