

INVITED COMMENTARY

Endovascular techniques for preserving hypogastric arteries

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Up to 30% of abdominal aortic aneurysms (AAAs) have concomitant common iliac artery aneurysms. Isolated iliac artery aneurysms occurring in the absence of AAA, are relatively rare and account for 0.4% to 1.9% of intra-abdominal aneurysms. They are located in the common iliac artery in 70% to 90% of cases and in the internal iliac artery (IIA) in 10-20% of cases.^{1,2} Bilateral common iliac artery aneurysms are identified in approximately 30 to 50% of cases.² An important issue in endovascular treatment of aortoiliac and isolated iliac aneurysms is the preservation of pelvic flow. Planned or unintentional coverage of internal iliac arteries may result in symptomatic pelvic ischemia. It is usually well tolerated but in certain cases pelvic ischemia may present as recalcitrant buttock claudication and vasculogenic impotence whereas in more severe cases of compromised pelvic arterial flow, gluteal necrosis, colonic ischemia, and spinal ischemia can occur.

Kouvelos et al.³ in this interesting single center study reported their experience in preservation of internal iliac arteries (IIAs) and analyzed the technical success and the clinical outcome of the techniques used. In consistency with the literature data, the authors reported concomitant unilateral iliac aneurysms in 33.1% of patients and bilateral iliac aneurysms in 16.7%. Remarkably, in this study several hybrid and novel endovascular techniques were applied in order to maintain adequate pelvic perfusion, including IIA bypass/transposition, external iliac artery to IIA bypass, the "sandwich or double-barrel" technique and iliac branch devices (IBDs). Overall, 6 patients were treated totally endovascularly -3 with IBD and 3 with "sandwich technique"- and 5 with hybrid procedures (combining EVAR with open revascularization of the IIA) with no reported deaths. Two early occlusions, one of an IBD and one sandwich, occurred. Buttock claudication was observed in 1 patient (9.1%).

Three important issues should be underlined:

a. Typical strategies utilized during standard endovascular repair of aortoiliac aneurysms involve sacrifice via embolization of unilateral or bilateral hypogastric arteries. A recent systematic review found that buttock claudication occurs in 27% of patients undergoing unilateral IIA interruption and in 36.5% of patients with bilateral IIA interruption.⁴ A metanalysis

showed that erectile dysfunction occurs in 10.2% of males, with higher rates after coiling.⁵ So, it is self-evident why in the last years, we have moved forward from intentional embolic occlusion of the internal iliac artery to advanced endovascular options.

b The IBDs have been increasingly used for treating aortoiliac aneurysms with encouraging results. In March 2016, the US Food and Drug Administration approved the GORE EXCLUDER Iliac Branch Endoprosthesis (IBE). Other IBDs have been commercially available in Europe and include versions of the Zenith IBD (Cook Medical, Brisbane, Australia) and the Jotec E-iliac device (Jotec, Hechingen, Germany). In a recent metanalysis the pooled technical success rate of IBD was 93%, the 30-day mortality rate 2%, the follow-up patency 86%, the endoleak rate 12%, the buttock claudication rate 6% and the IBD-associated re-intervention rate was 11%.⁶ Interestingly, the pELVIS Registry investigators analyzing the results of 227 patients with isolated common iliac artery aneurysms treated with IBDs showed a 35% reintervention rate at 60 months demonstrating that the occurrence of secondary procedures in patients treated with iliac branch devices is not negligible.⁷ So, it should be emphasized that although these encouraging results are strongly related to anatomical feasibility and proper patient selection, certain concerns regarding the durability and the clinical outcome still exist.⁸

c. The "sandwich" or "chimney" technique is a feasible alternative to IBDs. Due to strict anatomic inclusion criteria associated with IBDs, only 35% of patients have anatomy suitable for repair.⁷ Lobato et al. evaluating the safety and efficiency of the sandwich technique for internal iliac artery revascularization in 40 patients described a 100% technical success rate and a 93.8% primary patency rate.⁹ Three IIA occlusions occurred early in this study. Although this innovative method of iliac aneurysm repair is technically feasible and with promising results, the "off-label" use of these devices poses skepticism about the patency and gutter-related endoleaks. Long-term data are needed to prove the efficacy and durability of the technique.

In conclusion, in this interesting paper the authors provided their experience in treating patients with hybrid or totally endovascular means. The preservation of hypogastric arteries should be offered to all patients when technically achievable. Iliac branch devices have high technical success rate without serious complications. More data are needed to prove the efficacy and durability of the "sandwich" or "parallel" grafts technique.

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