SHORT REPORT

Endovascular Bilateral Evolutive Common Iliac Artery Aneurysm Repair Using a Zenith Branch Graft Through a Combined Femoro-Brachial Approach in a Patient with Previous EVAR

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Zenith

Abstract
Introduction: To report treatment of bilateral evolutive iliac artery aneurysms three years after EVAR.

Report: Three years following uncomplicated Zenith AAA stent-graft placement, the patient presented with aneurysmal common iliac arteries. Through a combined femoro-brachial approach, both iliac artery aneurysms were excluded, and a Zenith branch graft was placed to preserve the left hypogastric artery. The procedure was technically successful and free from complication. One year post-procedure, the Zenith branch graft remains stable.

Discussion: A combined femoro-brachial approach, with iliac branch graft placement, offered a solution to a challenging scenario.

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Introduction

Hypogastric artery (HA; or internal iliac artery) occlusion is associated with many potential complications, including pelvic, colonic and bowel ischaemia, hip and buttock claudication and paraplegia. The Zenith Branch Endovascular Graft-Iliac Bifurcation (Cook Medical, Bloomington, IN, USA) is an endograft specifically designed to preserve flow to at least one HA; outcomes with the branch graft have been reviewed recently. Herein we report endovascular treatment of a patient presenting with bilateral iliac artery aneurysms 3 years after uncomplicated endovascular aneurysm repair (EVAR), including iliac branch graft placement to preserve flow to the left HA.

Report

In 2005, a 73-year-old male underwent endovascular repair for an infrarenal aortic artery aneurysm (57 mm maximum diameter). The common iliac arteries (CIAs) were ectatic:
21 mm right CIA maximum diameter and 23 mm left CIA maximum diameter (Fig. 1(A)). A Zenith AAA stent-graft (Cook Medical, Bloomington, IN, USA) was placed with flared limb extensions for optimal distal landing (Fig. 1(B)). The procedure was technically successful and without endoleak. Three years post-procedure, progressive bilateral iliac artery aneurysmal disease (31 mm left CIA maximum diameter; 27 mm right CIA maximum diameter) and a kinked right Zenith graft limb were found on routine imaging (Fig. 2(A)). Therefore, the patient underwent endovascular repair to exclude both CIA aneurysms, preserve the left HA and straighten the kinked graft limb. The procedure was completed through percutaneous bilateral common femoral artery and left brachial artery access.

On the left side, a Zenith Branch Endovascular Graft-Iliac Bifurcation was positioned above the iliac bifurcation over a 0.035\(^{\circ}\) extra-stiff guidewire. The pre-mounted wire within the graft’s side branch was exchanged for a 0.035\(^{\circ}\)
Terumo wire, advanced into the suprarenal aorta, snared with a 25 mm goose neck (eV3, Plymouth, MN, USA) positioned from the brachial access site (while partially retracting the extra-stiff guidewire so as not to interfere with the goose-neck opening), and pulled through to form a through-and-through femoro-brachial guidewire. The Zenith branch graft was deployed using the brachial access site, instead of the crossover access, and an Advanta V12 balloon-expandable covered stent (10 x 38 mm; Atrium Medical, Hudson, NH, USA) was deployed in the left HA.

On the right side, via ipsilateral femoral access, the HA ostium was occluded using an Amplatz Vascular Plug (14 mm; AGA Medical Corp., North Plymouth, MN, USA). A Zenith TFLE limb (Cook Medical, Bloomington, IN, USA) was deployed, extending the right limb of the Zenith graft to the external iliac artery, and a Wallstent (14 x 40 mm; Boston Scientific, Natick, MA, USA) was placed, straightening the kinked Zenith AAA graft limb.

Completion angiography documented bilateral CIA exclusion, no endoleak, preservation of the left HA and straightening of the kinked Zenith graft limb. The patient was discharged 3 days later in good condition, without complication. One year post-procedure, the branch graft remained stable, with flow maintained to the left HA, no endoleak and no structural defects (Fig. 2(B)).

Discussion

HA preservation is preferred over HA occlusion because of the potential risks associated with HA occlusion.1,3 At the time the patient underwent his first endovascular procedure, HA preservation was commonly obtained through an open surgical procedure; however, the patient was unfit for open surgical repair. Instead, flared limbs were placed in both ectatic CIAs to preserve flow to both HAs, with positive outcomes. While this is a common technique, CIAs exceeding 16–18 mm in diameter have an increased risk of continued dilatation.4 Post-procedure, the patient routinely underwent surveillance imaging, and progressive bilateral iliac artery aneurysmal disease was evident on a computed tomography (CT) scan 3 years post-procedure.

Since the patient’s initial procedure, advances in endovascular devices and techniques have extended the possibility to preserve the HA. Therefore, 3-years after successful EVAR, the left HA of this patient was preserved with placement of a branch graft and covered stent through a combined femoro-brachial approach. The use of concomitant brachial artery access to correct an intra-operative distal endoleak after a standard crossover iliac branch graft positioning has previously been reported.5 However, to the authors’ knowledge, this is the first report of iliac branch graft placement after AAA stent-graft placement. The patient continues to be monitored, as the durability of such a repair has not been demonstrated to date.

Conflict of Interest Statement

None.

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References