Short Report

Contralateral Iliac Occlusion can be Successfully Achieved Using an Amplatz Vascular Plug During Aorto-uni-iliac Endovascular Aneurysm Repair

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Introduction: Aorto-uni-iliac endovascular aneurysm repair is usually accompanied by contralateral iliac occlusion, but access limitations may make plug deployment impossible.

Report: A 73-year-old male underwent aorto-uni-iliac endovascular aneurysm repair via left femoral access for a 5.8 cm abdominal aortic aneurysm; the right common iliac artery was occluded by a 16 mm Amplatz Vascular Plug II via a 7Fr Flexor Ansel Sheath, followed by femorofemoral crossover. The aneurysm was successfully excluded with no endoleaks at follow-up.

Discussion: Access limitations are a consideration for both device deployment and contralateral occlusion whilst undertaking aorto-uni-iliac endovascular aneurysm repair. This paper describes a simple and effective method for achieving iliac occlusion when access vessels are stenosed.

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Report

A 73-year-old male ex-smoker (with a 50-pack-year history) presented with a 5.8 cm abdominal aortic aneurysm (AAA). He had a background of ischaemic heart disease, chronic obstructive airway disease, and had undergone coronary artery bypass grafting two months previously. Pre-operative assessment including cardiopulmonary exercise testing (CPET) suggested high risk of cardiac/pulmonary morbidity. The external iliac artery (EIA) was noted to be tightly stenosed with a functional lumen of 2.6 mm (Fig. 1) and therefore aorto-uni-iliac endovascular aneurysm repair (AUI-EVAR) with left-to-right femorofemoral crossover bypass grafting was opted for; the right common iliac artery (CIA) was noted to be 12 mm in diameter.

AUI-EVAR was undertaken under epidural anesthesia via the left common femoral artery using a Cook AUI device (Cook Inc, Bloomington, USA). The right external iliac artery (EIA) was successfully negotiated for placement of a pigtail catheter via a 7Fr sheath for intra-operative angiography. Following AUI device deployment, a 16 mm Amplatz Vascular Plug II (AVP; AGA Medical Corp., USA) was deployed across the right common iliac bifurcation (Fig. 2) via a 7Fr Flexor Ansel Sheath (Cook Peripheral Intervention). The patient's post-operative course was satisfactory bar chest infection which was successfully treated. The post-operative CTA, performed 2 weeks after treatment confirmed aneurysm exclusion with no endoleaks.

Figure 1. Reconstructed computed tomographic angiogram showing the tight external iliac stenosis (1 = EIA, 2 = CIA, 3 = IIA).
Discussion

Options for occluding the contralateral CIA during AUI-EVAR include using an iliac occlusion plug, or ligating the CIA, for instance. The iliac plug requires a minimal 14Fr introducer system and would not have traversed the stenosis, which poses the same limitation for low profile (LP) devices such as the Cook LP or even newer ones such as the Ovation (TriVascular, Inc. (Santa Rosa, CA)). Other potential options include using a ‘pave-and-crack’ approach but this is probably more suitable for lesser degrees of stenosis in the access arteries with a lower risk of rebound stenosis and late limb occlusion and would have been more of a consideration if a bifurcated device had been used, and not just to deliver an occluder.1

The AVP is typically used to occlude the internal iliac artery (IIA) prior to landing an extension limb into the EIA.2,3 It has been used in the CIA obtain both ‘back door’ and ‘front door’ control for local aneurysmal disease.4 It has been used as a primary adjunct to AUI-EVAR in occluding the CIA, but not in the context of access limitations. In fact, one device in that series could not be deployed due to access limitations.5 It is easy to deploy accurately, and its trilobar design was relevant to this case, where it could be positioned so that its proximal portion could be in the CIA and distal portion in the EIA (Fig. 2). This was deliberately undertaken to stop backflow from the IIA (by promoting thrombosis to at least its first order of branches) and therefore minimize the theoretical risk of recanalisation across the AVP, which has been described.6 The 50% oversize as applied here achieves well-anchored positioning, and, following thrombosis, provided functional obturation of the IIA ostium, given that mere coverage of the IIA ostium without actual coil embolisation suffices in this context.7

Whilst endovascular/open/hybrid approaches can be applied to occlude the contralateral common iliac artery, the AVP II can be conveniently used as a CIA occluder where it is impossible to deploy a standard larger profile device due to access limitations from extensive EIA stenosis.

Conflict of Interest
None declared.

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References