Modified Technique for Iliac Branched
Stent-Graft Insertion

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\section*{Abstract}
Branched iliac stent grafts allow treatment of aorto-iliac aneurysms in patients with aneurysmal or short common iliac arteries whilst maintaining internal iliac arterial flow.

We describe a modified insertion technique involving iliac branched graft insertion over pre-positioned thoracic aortic and through and through iliac arterial guidewires.

Our technique has the potential to reduce procedural and screening time and reduce disposable costs.

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\section*{Introduction}
Stent graft treatment of aorto-iliac aneurysms with bifurcated devices is restricted by a number of anatomical factors. Short or aneurysmal common iliac arteries may prevent an adequate iliac sealing zone. When these factors are unilateral the graft may be extended into the external iliac artery, usually following internal iliac artery embolization. Bilateral external iliac graft extension with internal iliac artery embolization is associated with buttock claudication, sexual dysfunction and spinal cord ischaemia.\textsuperscript{1}

Iliac branched devices (IBD) address these limitations by preserving internal iliac arterial flow. The IBD is advanced over a stiff guidewire placed in the thoracic aorta and is sited above the origin of the internal iliac artery. An additional internal iliac sealing stent is delivered through a sheath from the opposite common femoral artery and then deployed. Further modular components are then deployed in the abdominal aorta and ipsilateral iliac artery.

The IBD contains a pre-loaded catheter and 260 cm hydrophilic guidewire and the manufacturer's instructions for use\textsuperscript{2} recommend that following introduction of the IBD over a stiff guidewire, the pre-loaded hydrophilic wire is snared and withdrawn through a sheath in the opposite common femoral artery. This wire is then secured at both ends and used to deliver a 12-French (F) vascular sheath over the aortic bifurcation into the IBD to facilitate placement of the internal iliac sealing stent.

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Identification and snaring of the hydrophilic wire may be hampered by the radio-opaque nose cone of the IBD delivery system. Snare manipulations also carry a risk of minor complications.3

Report

An alternative technique is to place a 12-F sheath on the side of the planned IBD and through this place a stiff guidewire in the thoracic aorta and a 260 cm hydrophilic wire and curved catheter combination at the aortic bifurcation.

This catheter and hydrophilic guidewire combination is then advanced into the opposite iliac arterial system and the guidewire steered into the tip of a 7-F sheath placed in the opposite common femoral artery. A further 6 F sheath and dilator is advanced into the 7 F vascular sheath beyond the flushing side port to act as a valvebreaker. After removing the dilator and further advancing the hydrophilic wire the 6 F sheath is removed, leaving a through and through wire crossing the aortic bifurcation (Fig. 1). This is usually quickly achieved and is facilitated by the curved tip of the hydrophilic wire and magnified screening centered on the 7 F sheath tip. If a surgical cutdown has been performed then considerable sheath tilting or manipulation is possible and this may also be helpful.

The pre-loaded 260 cm hydrophilic wire has already been removed from the IBD for use as the through and through wire and following 12 F sheath removal the IBD is loaded onto both the stiff guidewire (through the nosecone) and the hydrophilic wire (through the pre-loaded catheter tip), taking care to avoid crossing of the guidewires. The IBD is then inserted. Intra-arterial guidewire crossing may be difficult to avoid and is resolved by careful rotation of the IBD, with screening control to determine the direction of rotation. The IBD is deployed according to the manufacturer’s instructions for use. The pre-positioned through and through iliac artery guidewire allows delivery of a 12 F sheath from the opposite side into the IBD and facilitates internal iliac artery catheterization and sealing stent delivery (Fig. 2).

This modified technique requires an additional 6 F vascular sheath costing approximately 21 Euros but avoids the need for a snare (approximate cost 309 Euros). Other disposables including 12 FG sheath and 260 cm wire are common to both techniques although there are differences in timing. Overall there is a saving of approximately 288 Euros.

Conclusion

Branched stent-graft cannulation and internal iliac sealing stent delivery is facilitated by mounting the IBD on a guidewire placed in the thoracic aorta and a through and through iliac guidewire. This technique is simple and rapid. The potential complications and financial costs of guidewire snaring are avoided and our initial experience suggests that there may be a modest reduction in procedural and screening time.

Conflict of Interest

None.

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References