

How do we improve and optimize access for EVAR?

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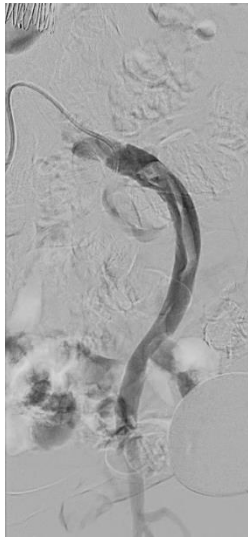
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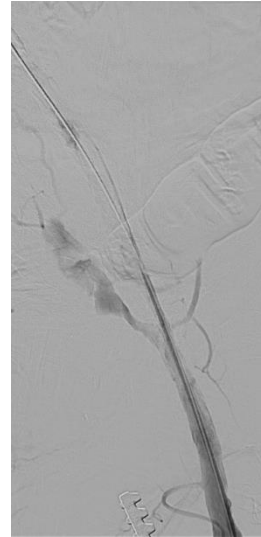


 I have nothing to disclose

Complications of the iliac arteries or the aorta



Dissection



Perforation



Disruption
("iliac artery on a stick")



Thrombosis

Higher rate after

- thoracic endografting
- with FEVAR/BEVAR in women

Cause significantly higher mortality rates and longer hospital stay

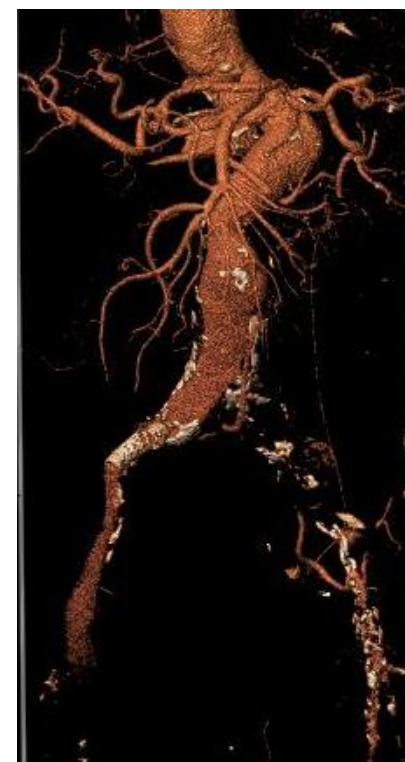
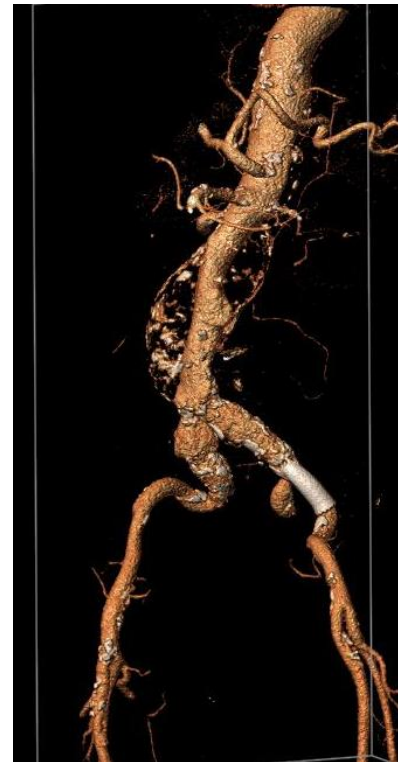
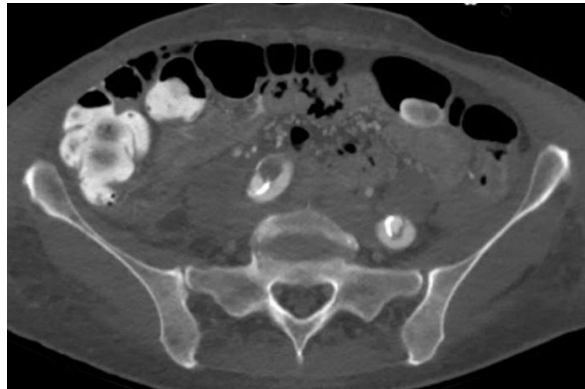
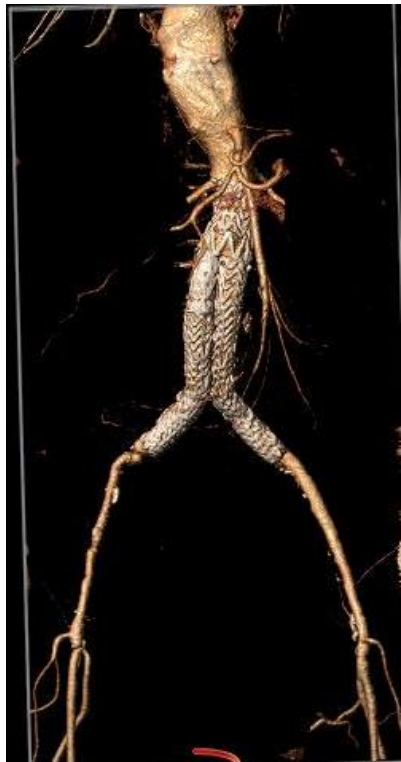
☞ Adequate preprocedure planning

☞ Intraprocedural Maneuvers

- Narrow or small iliac arteries
- Dissected iliac arteries
- Tortuous iliac arteries
- Stenosed or occluded iliac arteries

Preoperative imaging is key to anticipate difficulties with iliac access!!!

vessel diameter, tortuosity, calcification, dissection, implants



Initial device selection plays a key role !!!

- lower profile delivery devices that have their own hydrophilic sheath
- older patients and calcified vessels do not tolerate excessive oversizing

Serial dilatations of the iliac system with non-compliant balloons

- Avoid over dilating the artery to the point of disruption.
- Have a compliant aortic Balloon (Reliant, Medtronic, Coda Cook) immediately available in the event of a vessel rupture
- Mineral oil can be used for dilators

Intraprocedural Maneuvers

Dissected iliac arteries

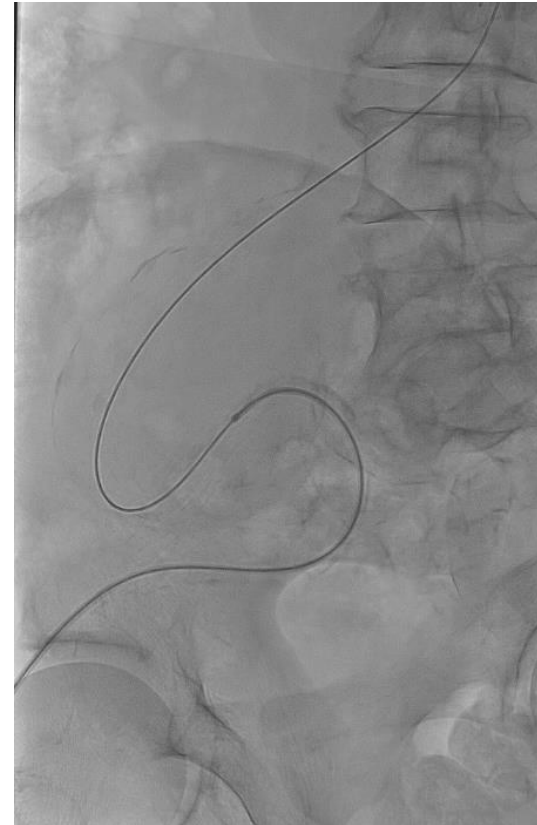
“the embracement technique” using two pigtail catheters



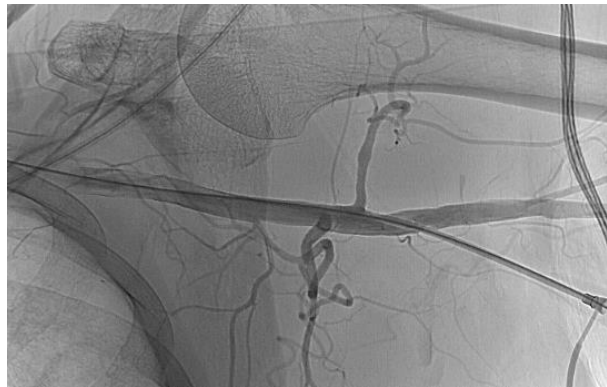
A pigtail catheter that has been installed in the true aortic lumen via left brachial artery picks up the femoral pigtail catheter in the true lumen of the abdominal aorta

Intraprocedural Maneuvers

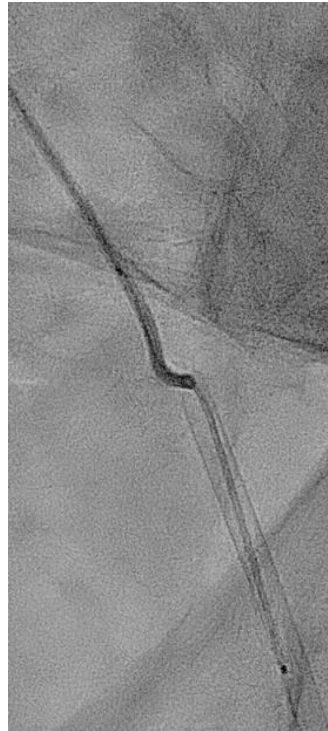
Tortuous iliac arteries



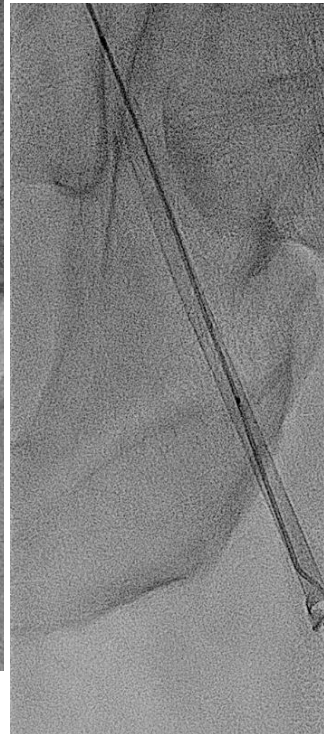
Brachial-femoral through-and-through access to provide more support



A sheath is placed in the brachial artery and a wire is threaded down the descending aorta



This wire is snared from below and is brought out from the femoral sheath.



Tension placed over both ends of the wire can allow a stentgraft to be pulled rather than to be pushed through the iliac arteries.

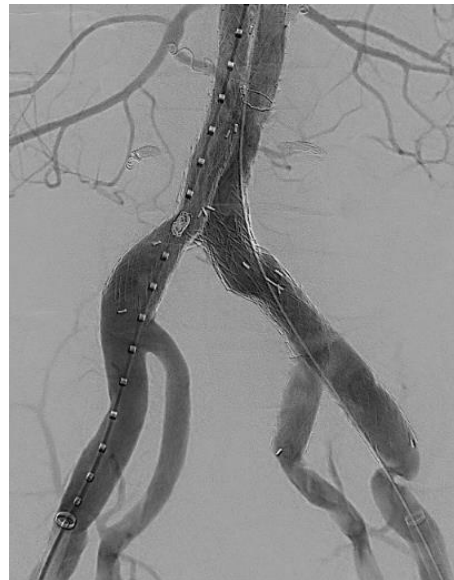


Other maneuvers:

- Retroperitoneal mobilization of the external artery via groin incision to straighten it (“pull-down technique”)
- Manual compression of the lower abdomen during advancement of the device

Exchange the stiff wire for completion angiography after EVAR to

- stent-grafted iliac arteries take their natural shape.
- visualize any kinking of the graft limbs that might not occur when the artery is straightened



1. Intravascular Lithotriposy
2. Endovascular iliac conduit
3. Open surgical iliac conduits
4. Conduit-Free Retroperitoneal Access to the Iliac Artery
5. Other access sites in the absence of suitable iliac access
6. Aortouni-iliac stent-graft and a femoral cross-over graft

- Excellent adjunct to treat calcified access vessels
- Sonic pressure wave to crack calcium
- Increase vessel compliance prior to angioplasty, stenting or inserting of large sheath
- Little downside aside from cost considerations

Shockwave lithotripsy facilitates large-bore vascular access through calcified arteries

Lucyna Z.Price, Scott R. Safir, Peter L.Faries, James F. McKinsey, Gilbert H.L.Tang, Rami O.Tadros (JVS 2021)

IVL during EVAR, TEVAR, TAVR (retrospective review of 9 patients)

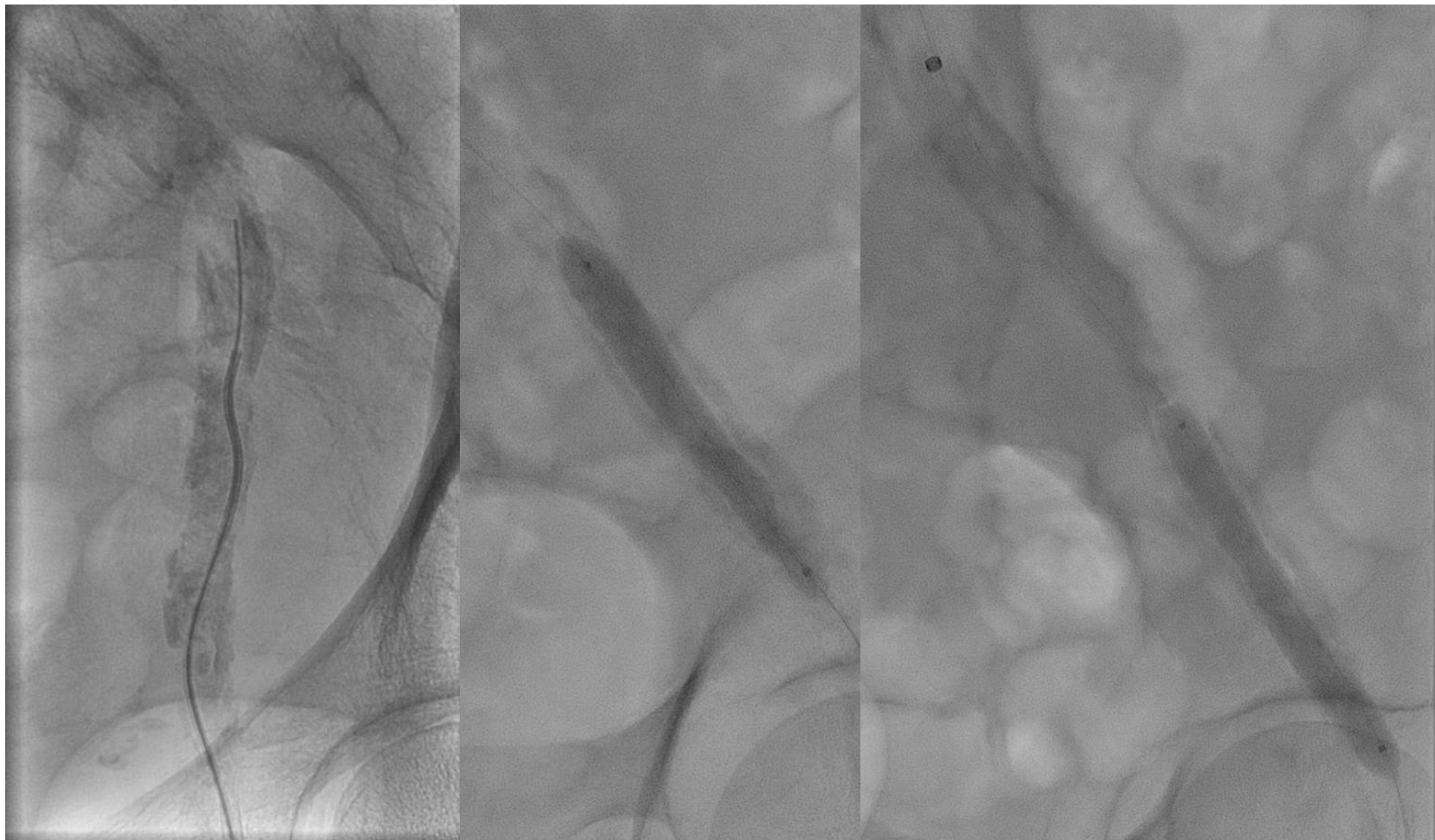
The average inner iliac vessel diameter was 3.38. The average outside diameter of device introduced was 7.2

229% effective luminal gain

100% technical success

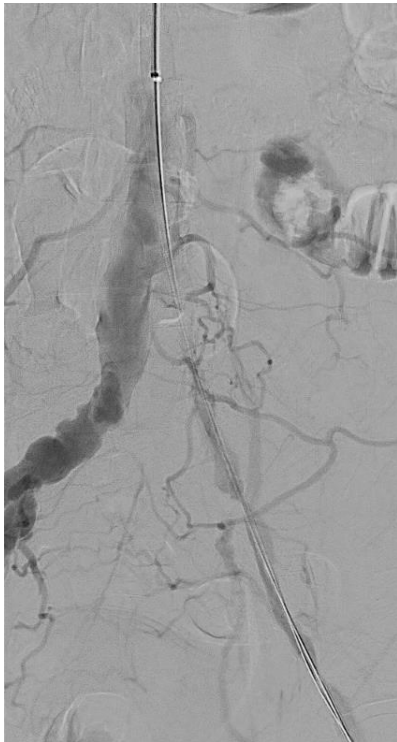
1 vessel perforation

1. Intravascular Lithotripsy



2. Endovascular conduit

- First described by Yano et al in 2001 (7)
- deployment of covered or non-covered stents along the iliac arteries followed by aggressive dilatation of this segment with a non-compliant balloon to enlarge iliac arteries



3. Open surgical conduits

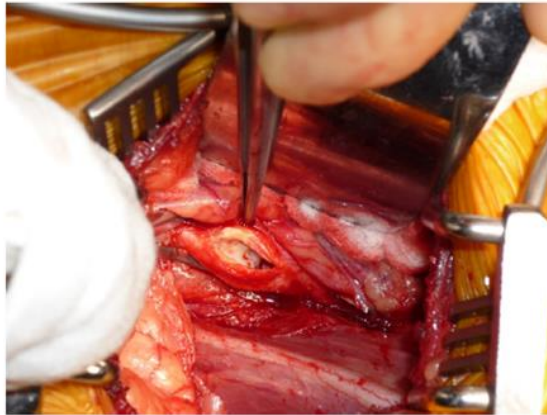


Fig 1. Retroperitoneal exposure demonstrates a longitudinal arteriotomy in the common iliac artery for placement of a conduit.

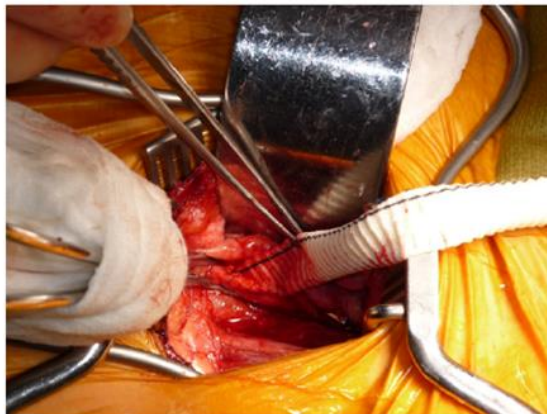


Fig 2. A 10-mm polyester graft has been anastomosed to the common iliac artery in an end-to-side fashion.

end-to-side fashion (Fig 2). A 10-mm graft is chosen to

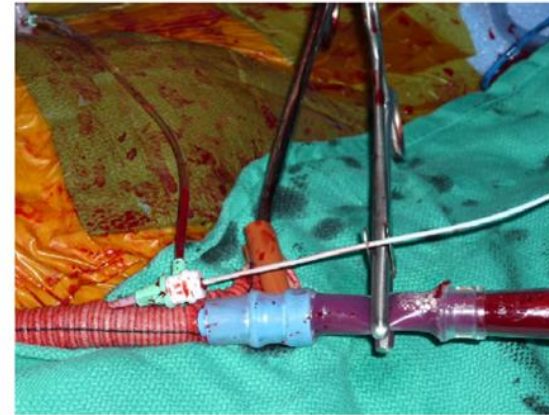


Fig 3. A conduit used during thoracic endovascular aortic repair. Notice that the end of the conduit is controlled with a clamp and that a sidewall puncture permits simultaneous passage of a 5F sheath for diagnostic purposes and a 24F sheath for device delivery.

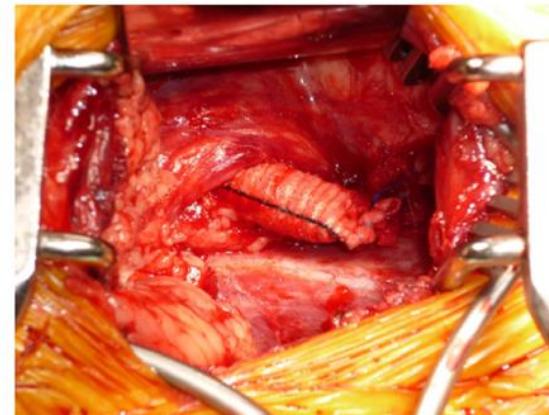


Fig 4. A transected and oversewn conduit cuff; alternatively, the conduit can be used as an iliofemoral bypass graft in the setting of symptomatic iliac occlusive disease.

4. Conduit-Free Retroperitoneal Access to the Iliac Artery

Innovations: Technology & Techniques in Cardiothoracic & Vascular Surgery:

March/April 2016 - Volume 11 - Issue 2 - p 150-153

doi: 10.1097/IMI.0000000000000252

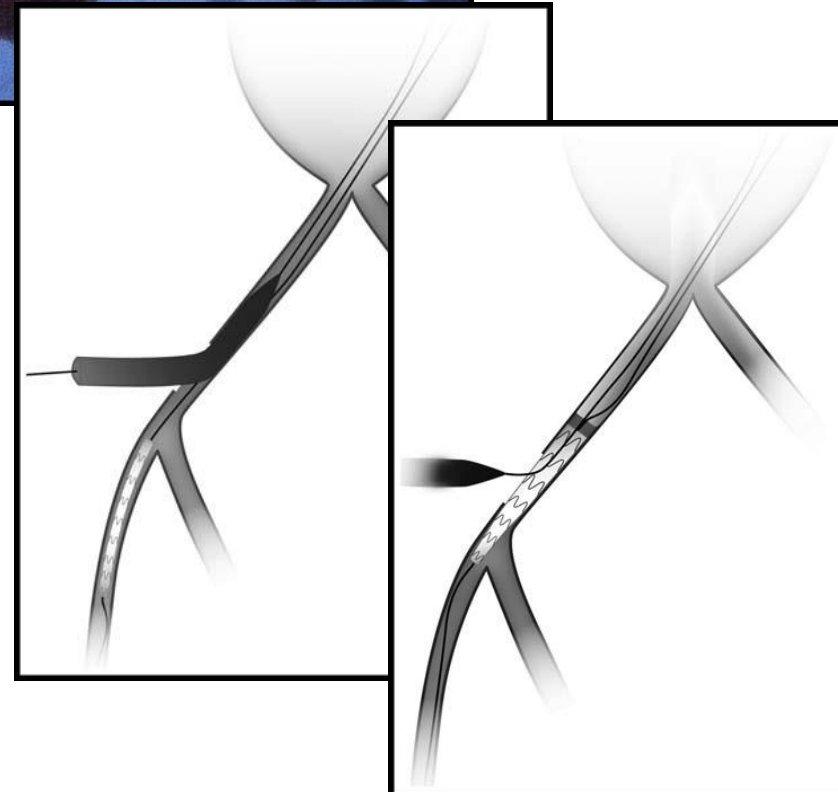
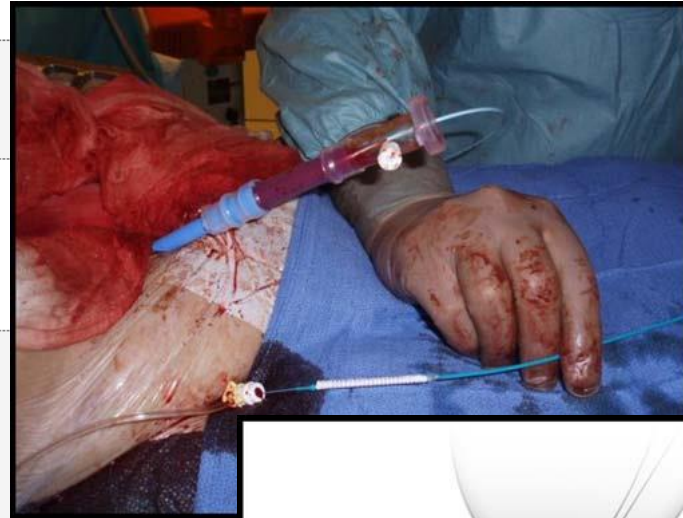
How-To-Do-It Article

Conduit-Free Retroperitoneal Access to the Iliac Artery in Endovascular Aortic Repair in Patients With Improper Access Vessels

Pirouzram, Artai MD; Hörer, Tal Martin MD, PhD; Larzon, Thomas MD, PhD

Abstract

Abstract: Successful endovascular aortic repair is highly dependent on the quality of the iliac access vessels. Patients with poor access vessels can be turned down from endovascular aortic repair or thoracic endovascular aortic repair by the treating physician. Perioperative complications such as failure to deliver the device or iliac rupture can be addressed to improper access vessels. In this article, we describe a novel technique to access the common iliac artery when access vessels are poor in diameter or quality. This sutureless conduit-free access technique can be used in TEVAR or EVAR and requires less surgical exposure of the iliac arteries.



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- six patients (TEVAR n = 5, EVAR n = 1) since 2008 with calcified and narrow EIA
- sealing stent grafts with a minimum length of 5 cm
- IIA was overstented in all patients
- no buttock claudication
- no complications from the access site postoperatively, at 30-day or 1-year follow-up.

5. Other access sites in the absence of suitable iliac access

- ☞ Left/right common carotid artery^{14,15}
- ☞ Subclavian/axillary artery¹⁶
- ☞ The ascending aorta¹⁷
- ☞ The apex of the left ventricle¹⁸
- ☞ Inferior vena cava (trans caval aortic access)¹⁹

6. Aortouni-iliac stent-graft and a femoral cross-over graft

- ☞ Rarely required with current endograft designs and the endovascular adjunctive measures

- ☞ Thinner graft materials
- ☞ Thinner Stent struts
- ☞ Fit into lower profile delivery system.

The difficult issue becomes the balance between lower-profile delivery systems and maintaining the columnar strength and radial force of previous graft designs

- ❖ Difficult iliofemoral access remains a significant problem during EVAR
- ❖ Advances in device and delivery system profiles will continue to expand the indications for EVAR
- ❖ Careful preprocedural case planning continues to be the most important step for successful endovascular aortic surgery
- ❖ Intraprocedurale adjuncts can assist with device delivery and are requisite in the endovascular surgeon's armamentarium
- ❖ A complete understanding of endovascular bail-out procedures and plans for such are paramount when treating aortic pathologies associated with difficult iliofemoral access

**Thank you for your
attention and
thanks to Daniela Branzan**