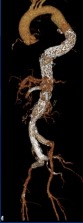


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Parallel Endografts For Aorto-iliac Lesions: The Good, The Bad And The Ugly: A Balanced View



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 Veith Meeting, Nov 21, 2024
 November 21, 2024

Financial Disclosures

- None relevant

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Management of Aortoiliac artery aneurysm

- SVS guidelines recommend preservation of at least one internal iliac artery (1A)
- iliac branched devices in patients with suitable anatomy (1A)
- External-internal iliac artery surgical bypass
- Aortouniliac stent graft (AUI), femoral-femoral bypass, external iliac to internal iliac artery stenting
- Surgeon-modified endografts (Backtable or Laser fenestration)
- Parallel grafting**

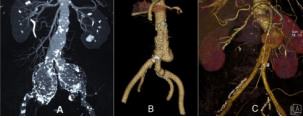
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Parallel Endografts in the Treatment of Distal Aortic and Common Iliac Aneurysms

S. Lepidi^{1,2}, M. Piazza¹, P. Scrivera¹, M. Menegolo¹, M. Antonello¹, F. Grego¹, P. Frigatti³

¹Department of Cardiac, Thoracic and Vascular Sciences, Division of Vascular and Endovascular Surgery, University of Padova, Padova, Italy
²Department of Surgery, Division of Vascular Surgery, City Hospital, Udine, Italy

- Distal saccular abdominal aortic aneurysms and bilateral common iliac artery aneurysms
- Long aortic neck with asymmetric aneurysm expansion, with calcium/PAU surrounding saccular aneurysm with concern for incomplete opening of contralateral limb
- Mean aneurysm size was 50 mm in D-AAA and 43 mm in BCIAA



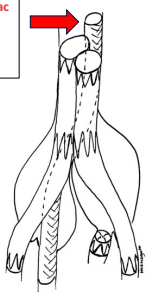
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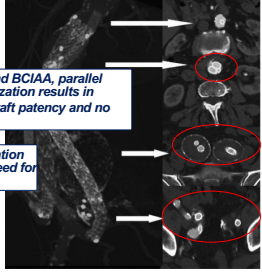
- Inclusion: proximal neck >20 mm or <27 mm in diameter
- CTA of the chest-to evaluate left subclavian and arch anatomy
- Bilateral iliac leg endografts delivered transfemorally landing in common or external iliac arteries
- Viabahn stent-left brachial to preserve internal iliac artery-5-10 mm proximal to the iliac leg endografts
- ILEs dilated with compliant and internal iliac stent dilated with noncompliant balloon in kissing fashion
- After 2010, sac embolization with coils, fibrin glue performed
- Sum of ILEs measured to plan for ≥15% oversizing, sum of ILEs and internal iliac stent ≥20% oversizing



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Results

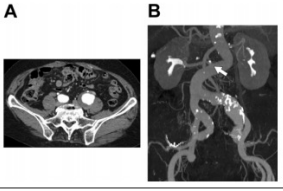
- 18 patients treated
 - 9 for DAAAs, 9 BCIAAs
 - 5 patients Viabahn
- 100% technical success **In patients with distal AAA and BCIAA, parallel endografting with sac embolization results in successful exclusion, with graft patency and no type IA endoleaks**
- 1 patient required percutaneous endoleak
- 1 patient undergoing stroke at 24 hrs **Stroke is a possible complication of this technique given the need for arm access**
- 2 type II endoleaks
- 5 patients died of non-aneurysm causes in followup
- Median followup of 26 months-no new endoleaks, graft migration or occlusions noted



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Double D Technique: An Innovative Modified Bifurcated Stent Graft Deployment Strategy for an Isolated Common Iliac Artery Aneurysm With a Challenging Renal Artery Anatomy

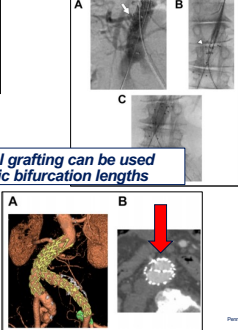
- Left CIAA 35 mm and normal sized abdominal aorta
- Low-lying right renal artery-50 mm above aortic bifurcation
- Need a distance between lowest renal and aortic bifurcation of ≥ 70 mm to clear bifurcation



Vascular and Endovascular Surgery 2019

Double D Technique: An Innovative Modified Bifurcated Stent Graft Deployment Strategy for an Isolated Common Iliac Artery Aneurysm With a Challenging Renal Artery Anatomy

- Amplatz plug to left internal iliac artery
- Endo **Double D technique and parallel grafting can be used to overcome short renal to aortic bifurcation lengths**
- Endurant limbs simultaneously deployed 1 cm below the proximal edge of cuff
- Double D shape within aortic cuff prevents gutter endoleak

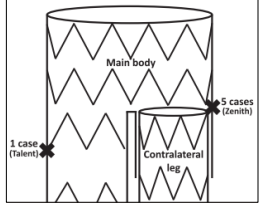


Vascular and Endovascular Surgery 2019

Parallel placement of Excluder legs for treatment of type IIIb endoleaks caused by fabric tear after endovascular aneurysm repair

Takashi Hashimoto, MD,* Noriyuki Kato, MD,* Toshiya Tokui, MD,* Yoichiro Miyake, MD,* Michihiro Nasu, MD,* Ken Nakajima, MD,* Takatoshi Higashigawa, MD,* and Shuji Chino, MD,* Tsukuba, Ibaraki, and Toyooka, Japan

- Single institutional series
- 6/576 patients undergoing standard EVAR developed type IIIb endoleaks
- All endoleaks close to the flow divider
- Distance between lowest renal artery and top of contralateral limb was 53 mm

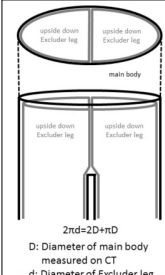
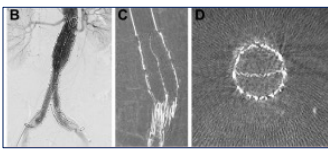


JVS, 2017

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- Parallel endografting from top of main body graft and relining entire iliac limbs with upside down Excluder limbs
- Using the diameter of main body, derive the diameter of limbs, then upsize for 10-20% oversizing

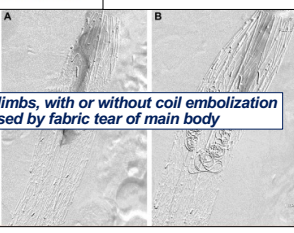



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- Gutter endoleaks in 2/6 patients
- Gutters were effectively treated with coil embolization
- Completion aortogram
- Parallel placement of flipped Excluder limbs, with or without coil embolization can be used to treat IIIb endoleaks caused by fabric tear of main body**
- Mean followup of 12 months-aneurysm diameter decreased by 4 mm, 5 mm, stable in others

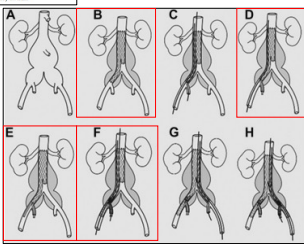


JVS, 2017

The sandwich technique to treat complex aortoiliac or isolated iliac aneurysms: Results of midterm follow-up

Armando C. Lobato, MD, PhD, and Luciana Camacho Lobato, MD, PhD, São Paulo, Brazil

- Deploy bifurcated graft with ipsi limb 1 cm above iliac bifurcation
- Position internal iliac stent (Viabahn) from left brachial approach with at least 5 cm overlap into iliac limb
- Position external iliac stent graft 1 cm below internal iliac stent
- Deploy and balloon the external iliac stent followed by internal iliac stent



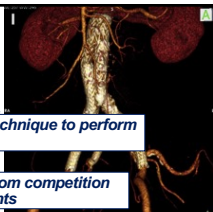
JVS, 2017

The sandwich technique to treat complex aortoiliac or isolated iliac aneurysms: Results of midterm follow-up

Armando C. Lobato, MD, PhD, and Luciano Camacho-Lobato, MD, PhD, São Paulo, Brazil

- 40 patients, with 48 internal iliac stents placed
- Iliac limb extensions of EVAR device Viabahn in internal iliac artery
- "Sandwich technique is a safe and easy technique to perform to treat aortoiliac aneurysms"**
- Mean follow-up: 12.2 ± 4.4 months
- 100% technical success rate
- 1 ipsilateral procedure
- expandable stent relining of external iliac stent
- 3 internal iliac artery occlusions-93.8%
- 2 brachial artery occlusions
- Two type I, four type II, and one type III endoleaks detected at completion angiography (managed conservatively)
 - No endoleaks or occlusion events detected after 12 months of followup
- Iliac aneurysm sac had a significant (≥5 mm) decrease in diameter in 16 (34.8%), no change in 29 (63%), and an increase in one patient (2.2%)

There is a finite risk of stent thrombosis from competition between the external and internal iliac stents

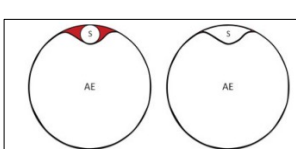


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Molded Parallel Endografts for Branch Vessel Preservation during Endovascular Aneurysm Repair in Challenging Anatomy

David Minion, M.D.¹

- "Eye of the Tiger" technique
- Deploy a balloon-mounted stent, sized to the target vessel as a chimney
- Overexpand the stent using a balloon
- Position smaller sized balloon within chimney
- Deploy graft and inflate balloon for the parent artery and crush the chimney stent
- Inflate the smaller balloon within chimney
- Obliterates gutter leak while maintaining patency

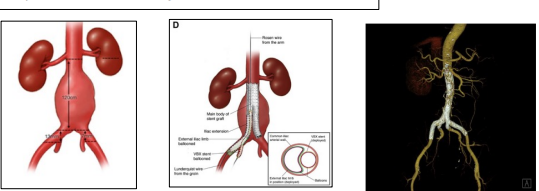


Int J Angiol 2012;21:81-84



Preservation of internal iliac arteries during endovascular aneurysm repair using "eye of the tiger" technique

Tariq Alimerey, MD, and W. Andrew Oldenburg, MD, Jacksonville, Fla



- Gore Excluder EVAR
- Bilateral EOT to preserve internal iliac arteries
- Followup CTA showed patency of stents and no endoleak

13 November 21, 2024

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Conclusions

- There remain challenging anatomic scenarios for standard EVAR or iliac branched endografting
 - i.e. narrow abdominal aorta, short renal to aortic bifurcation, short renal to flow divider of main body of iliac bifurcation lengths
- Aortic parallel endografting ("Double D" configuration) can be a useful treatment strategy
 - Coil embolization of gutter endoleaks may be needed
- Parallel endografting for preservation of internal iliac artery
 - Excellent graft patency
 - Gutter endoleaks
 - Arm access increases risk of stroke
- Sandwich technique
 - High technical success rate
 - Finite risk of internal iliac or external iliac stent occlusion
 - Theoretic risk of gutter endoleak
- Molded parallel endografting ("eye of the tiger") can mitigate gutter endoleak

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