# Unilateral and bilateral primary and secondary iliac artery aneurysms – endovascular first!

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# Disclosure

Speaker name:Martin Storck

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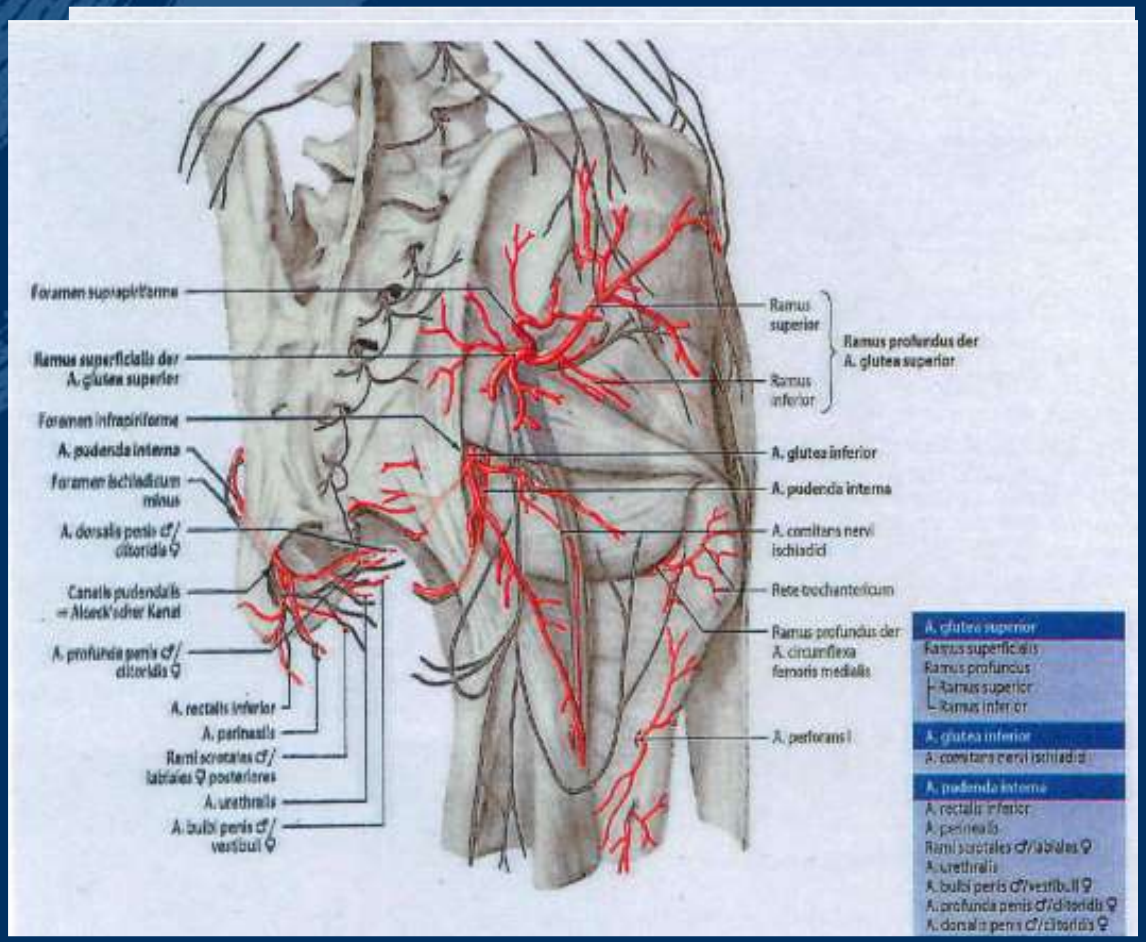
I have the following potential conflicts of interest to report:

Speaker honorarium and travel expenses Medtronic, Endologix

# Clinical sequaelae of occlusion the internal iliac artery

- Claudicatio glutealis >50%
- Erectile Dysfunktion

# Complex and variable anatomy of iliac artery branches




Tillmann BN. Atlas der Anatomie des Menschen. Springer 2005, S. 524

# Established Indications for Iliac Bifurcated Devices (IBD)

- Aneurysm of common iliac artery
  > 25mm with inclusion of iliac bifurcation
- Coexisting aneurysm of the internal iliac artery
- Contralateral occlusion of internal iliac artery
- Young age ( male )

Donas/Torsello CX 2017

# Bilateral iliac aneurysms

Right AIC 41 mm, left AIC 31 mm,
left AII 20 mm


m, 65 ys.

Indication for bilateral IBD

# Iliac Bifurcated Devices (IBD)
# - selection -

**Figure 2** Photograph of the Zenith Bifurcated Iliac Side (ZBIS) device (Cook Inc., Bloomington, IN) illustrating the straight side branch for preservation of the internal iliac artery (IIA).

**Figure 3** Photograph of the Helical Branch Endograft (HBE) developed by Greenberg et al incorporating a directional side-branch for preservation of the IIA.

# Standard IFU indications

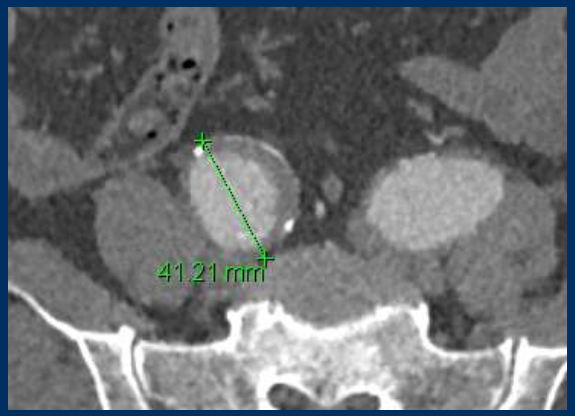
| IFU criteria | Cook Zenith branch endovascular graft-iliac bifurcation | GORE Exclude iliac branch endoprothesis |
|---|---|---|
| **Iliofemoral access vessel size/morphology** | 20 Fr delivery profile<br>Minimal thrombus, calcification, tortuosity | 16 Fr delivery profile<br>Thrombus <2mm thick and/or <25% of vessel circumference in intended seal zone |
| **CIA morphology** | Length >50mm<br>Flow lumen diameter >6mm | Flow lumen diameter >17mm |
| **EIA landing zone** | Length > 20 mm<br>Outer wall diameter 8 mm - 11 mm | Length > 30mm (at least 10mm non-aneurysmal)<br>Diameter 6.5–25mm |
| **IIA landing zone** | Length >10mm (20–30 mm preferred)<br>Diameter 7–10mm | Length >30mm (at least 10mm non-aneuyrsmal)<br>Diamter 6.5–13.5mm |

**Freedom from significant femoral/iliac artery occlusive disease that would impede flow or outflow of stent-grafts

# Bilateral iliac aneurysms with aortic ectasy

M, 60 ys.

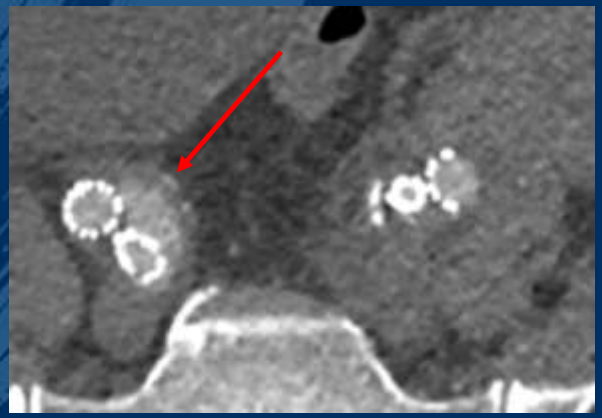
Bilateral AIC-Aneurysm (right 4 cm, left 2,8 cm)



# Bilateral IBD combined with EVAR



# Right Type Ib – Endoleak

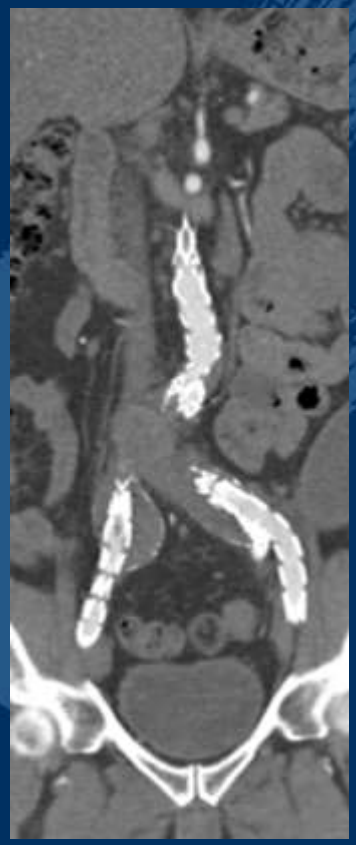


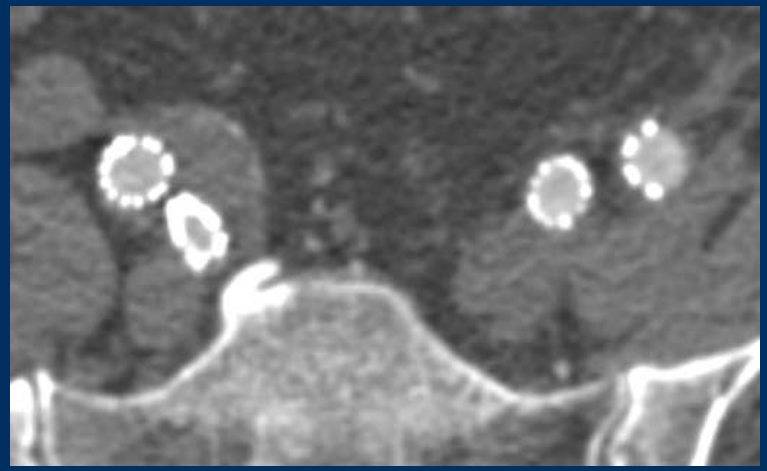


Typ Ib Endoleak
right AII

Secondary Extension via
transbrachial access

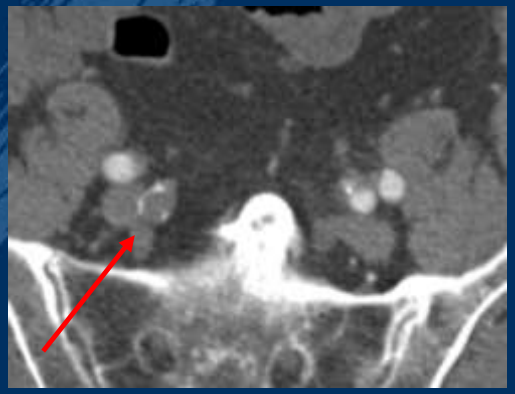
# Endoleak- free Fesult

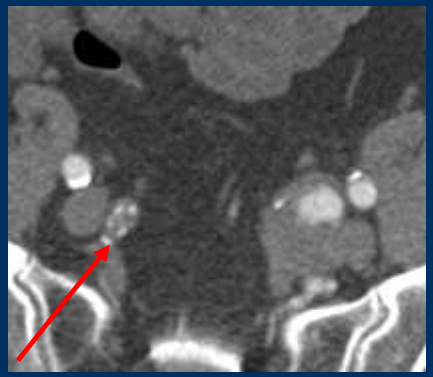




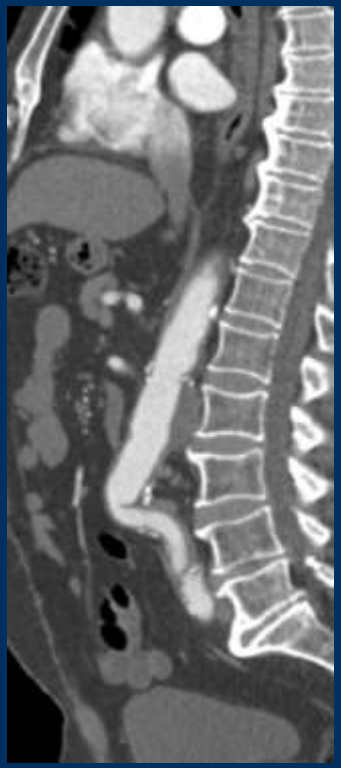
# AII – Aneurysm / bifurcated graft

m, 71 ys.
aortobiiliacal graft,
Growing AII Aneurysm left side 3,5 cm
Contralateral AII occlusion

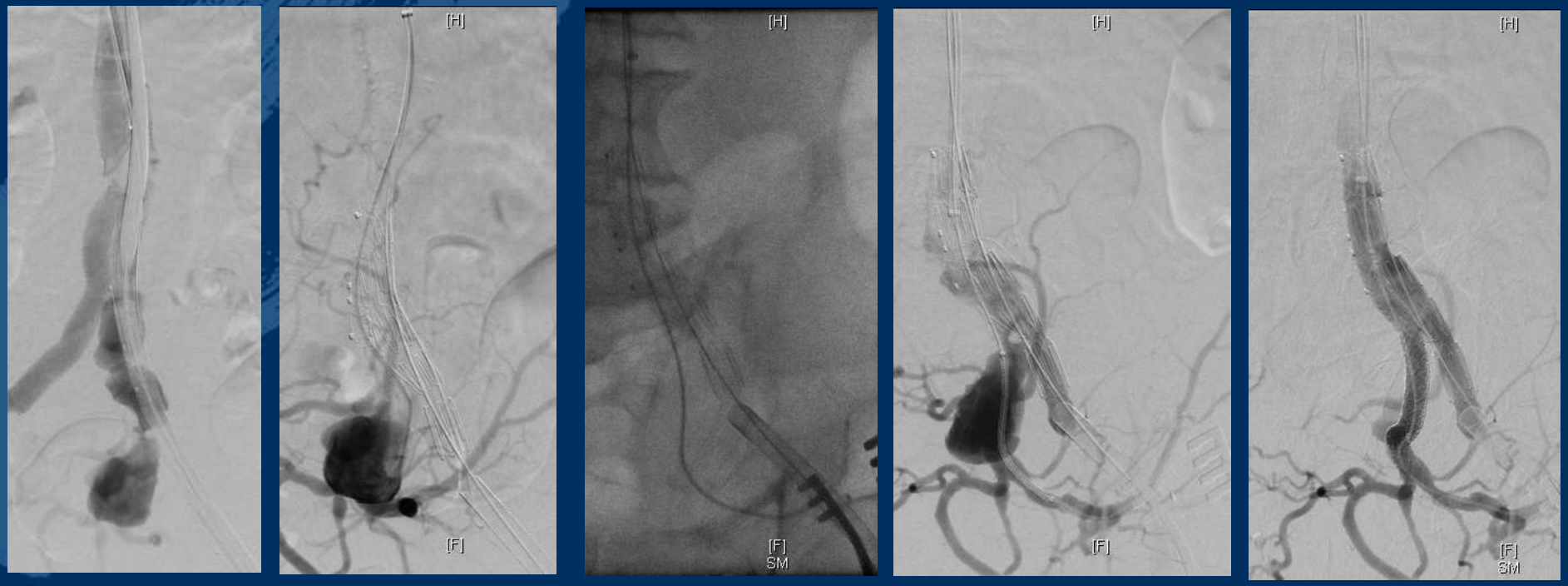




Transbrachial access



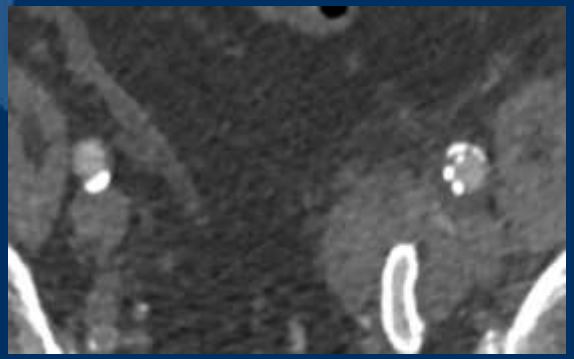
# Unilateral IBD after aortobiiliac graft

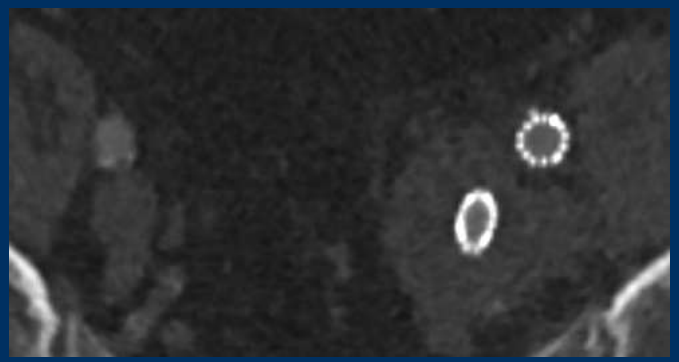



Transbrachial access left side

# Final result

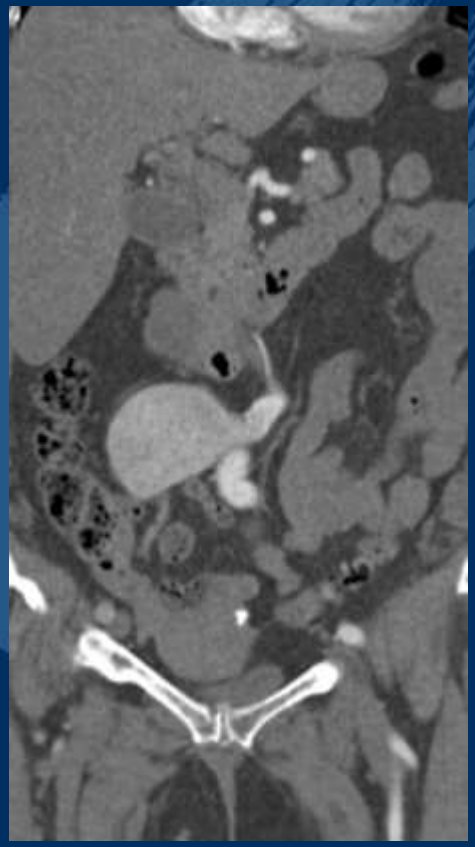


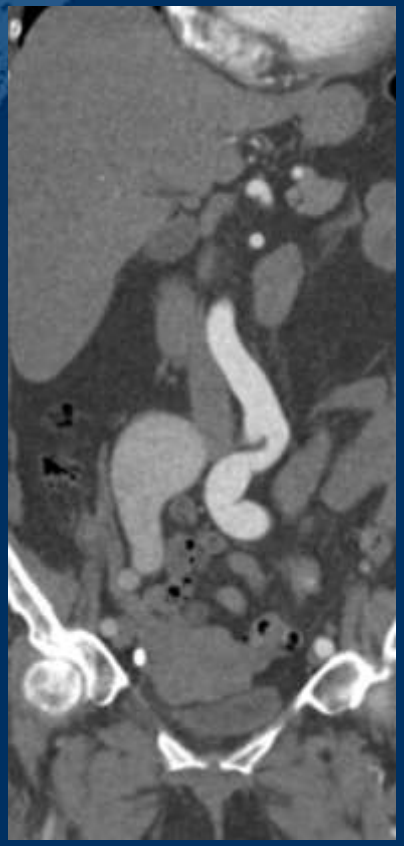



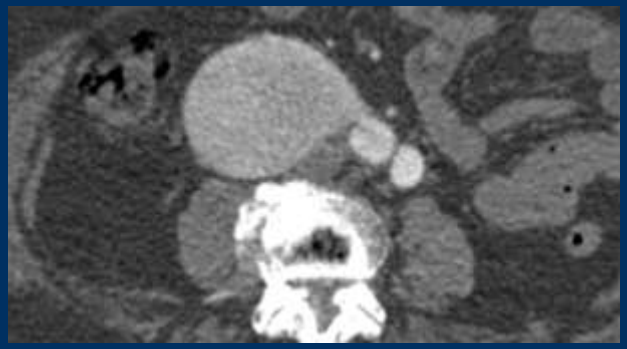


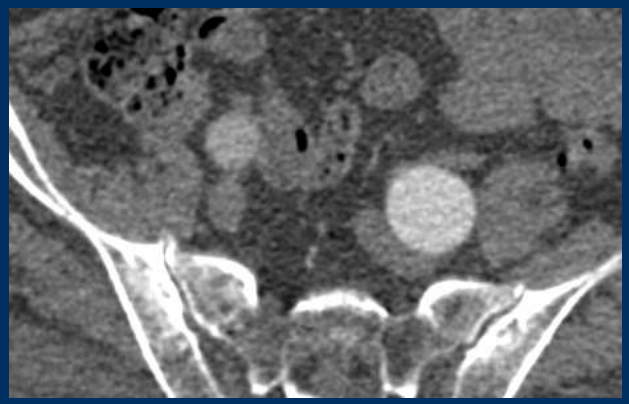
# Bilateral IBD with EVAR

f, 67ys
Bilateral AIC aneuryms (right 6 cm, left 3 cm)

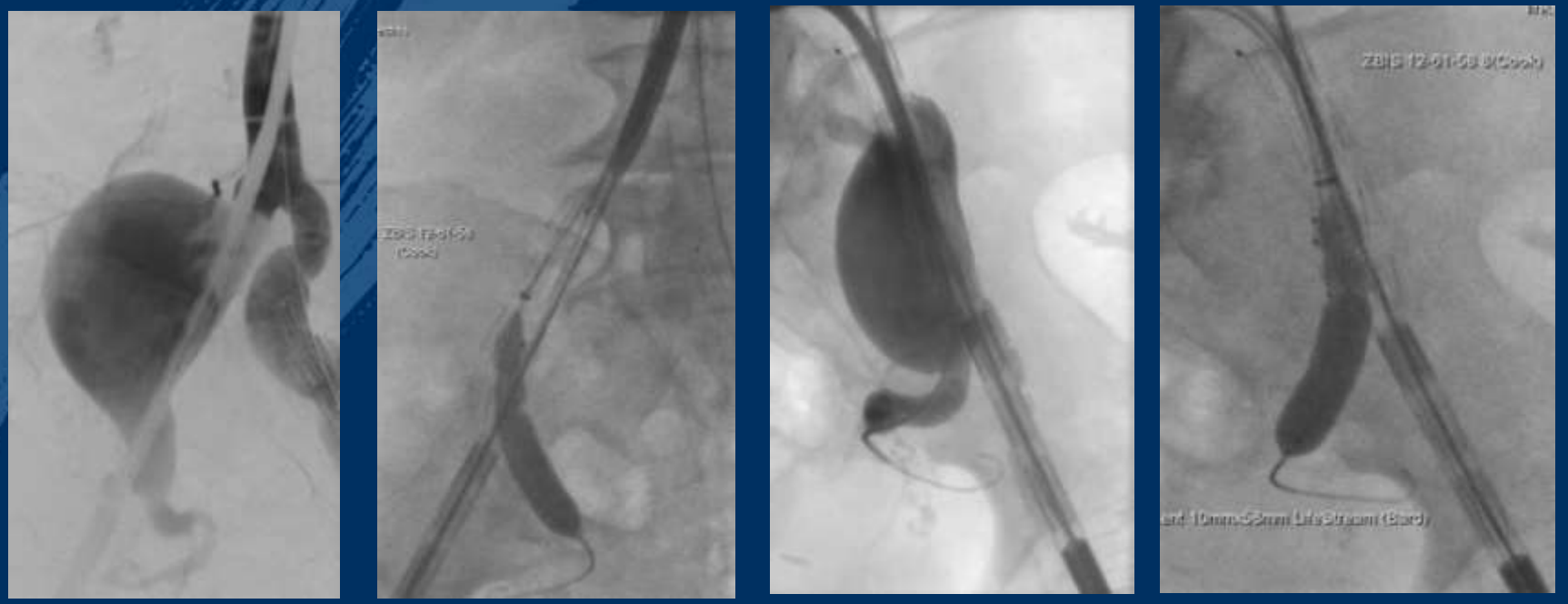






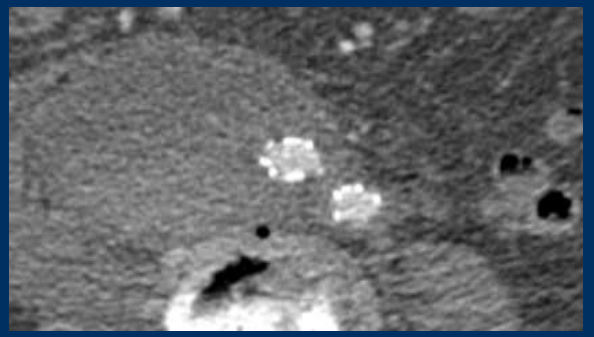


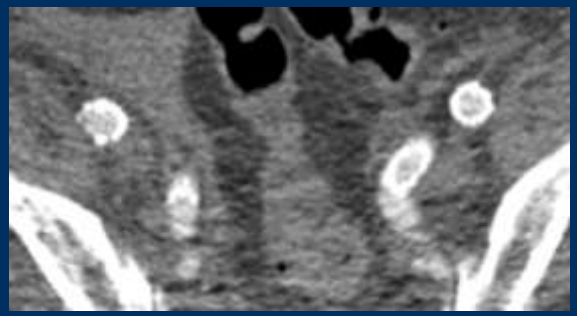
# Bilateral IBD with EVAR



Right transfemoral and left transbrachial access

# Result





# Outcome after IBD

| Author, year | Mortality % (n) | Technical success % (n) | Initial clinical success (<30 days) % (n) | Short-term clinical success (30 days–6 months) % (n) | Mid-term clinical success (6 months–5 years) % (n) | Operating time (min) | Iodine dose | IIA bridging stent-graft[a] | Additional adjuncts deployed in IIA[a] | Brachial or axillary access required |
|---|---|---|---|---|---|---|---|---|---|---|
| Dias/Malina et al, 2008/2006[23,25] | 9.1% (2/22) 0 aneurysm-related | 91.3% (21/23) 2 IBD occlusions | 87% (20/23) 1 IBD occlusion | 83% (19/23) 1 IBD occlusion | 74% (17/23) 2 IBD occlusions | 279 (234–327) | 58 (48–78) | Advanta V12 (10) Jomed (6) Fluency Plus (7) | Advanta V12 (3) Jomed stent-graft (2) AVE stent (1) Luminexx (1) | 1/22 |
| Haulon/ Greenberg et al, 2007/ 2006[21,24] | 13% (7/52) 0 aneurysm-related | 94% (49/52) 2 unable to visualise IIA1 unable to cross aortic bifurcation | 79% (41/52) 6 IBD occlusions (2 EIA thrombosis) | 79% (41/52) 0 further complications | 79% (41/52) 0 further complications | – | 208 | Fluency Plus Advanta V12 (2) | Genesis expandable | Common (exact no. not stated) |
| Ziegler et al, 2007[29] | | | | | | | | | | |
| 1st Generation Unibody IBD: | 0 | 62% (16/26) | 72% (33/46) 0 further complications | 63% (29/46) 4 IBD occlusions | 63% (29/46) 0 further complications | 183 (100–330) | 88 (35–180) | Not described | Not described | Exact no. not stated |
| 2nd Generation IBD: | 0 | 85% (17/20) | | | | | | Not described | Not described | |
| Serracino-Inglott et al, 2007[26] | 0 | 100% (8/8) | 88% (7/8) 1 IBD occlusion | 88% (7/8) 0 further complications | 88% (7/8) 0 further complications | 101 (84–130) | 103 (84–130) | Advanta V12 (8) | – | 1/8 |
| Tielliu et al, 2009[27] | 11.1% (3/27) 0 aneurysm-related | 96% (26/27) | 86% (18/21) 3 IBD occlusions | | | 185 ± 31 | – | Advanta V12 (23) Jomed (3) | – | 2/27 |
| Verzini et al, 2009[28] | 3% (1/32) 0 aneurysm-related | 94% (30/32) 2 IBD occlusions | | | | 153 (no range or s.d.) | – | Advanta V12 (19) Fluency (13) | "Self-expanding stent" (5) 2nd Fluency stent (1) | Not stated |
| Cambridge Vascular Unit (unpublished), 2009 | 0 | 75% (6/8) 2 IBD occlusions | | | | 290 (230–390) | – | Advanta V12 (6) | – | 1/8 |

[a] The following bridging stent-grafts or adjuncts were deployed: AVE Stent, Medtronic Vascular, Santa Rosa, CA, USA; Luminexx Stent, CR Bard, Inc. Tempe, AZ, USA; Fluency Plus Vascular Stent-Graft, CR Bard, Tempe, AZ, USA; Advanta V12, Atrium Medical, Hudson NH, USA; Jomed Stent-graft, Abbot Vascular Devices, Rangendingen, Germany; Genesis Balloon Expandable Stent Graft, Cordis, Great Lakes, NJ, USA.

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# Primary and secondary iliac aneurysms

| Author, year | IBD as Secondary Procedure | AAA+ CIA aneurysm | Solitary CIA aneurysm | *IIA aneurysm |
|---|---|---|---|---|
| Dias/Malina et al, 2008/2006[23,25] | 4.3 | 60.7 | 35 | – |
| Haulon/Greenberg et al, 2007/2006[21,24] | – | 80 | 20 | – |
| Ziegler et al, 2007[29] | 8.7 | 73.9 | 17.4 | – |
| Serracino-Inglott et al, 2007[26] | 12.5 | 75 | – | 12.5 |
| Tielliu et al, 2009[27] | – | 74 | 26 | – |
| Verzini et al, 2009[28] | – | 78 | 12 | 19 |
| Cambridge Vascular Unit, 2009 | – | 88 | 12 | 25 |

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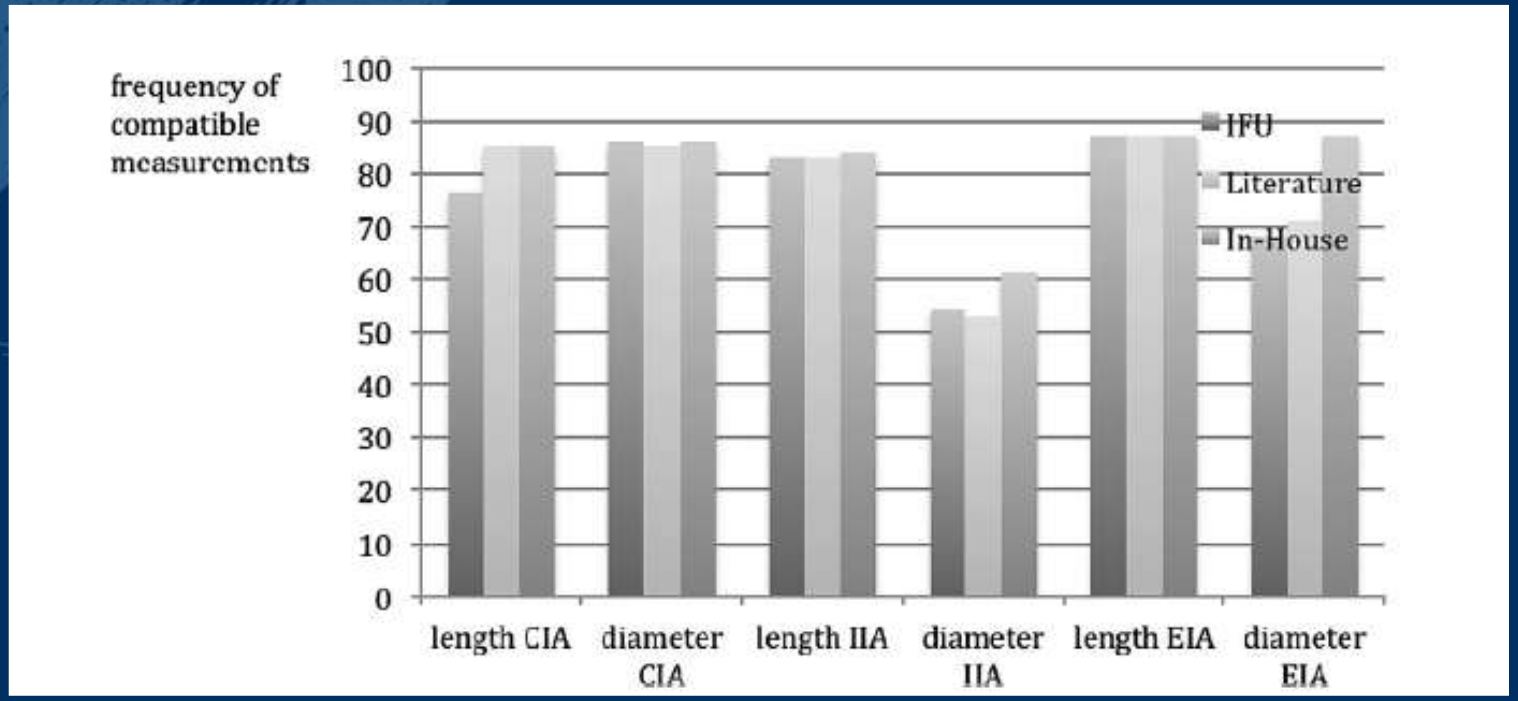
# Percentage of IFU Cases




58% on IFU in this series

*Gray et al. EJVES 2015; 49:283-288*

# Conclusion

- Endovascular therapy is the therapy of choice for treatment of:

- Most primary iliac aneurysms (IFU/Non-IFU)
- Combined aorto-iliac aneurysms
- Secondary iliac aneurysms

- Number of “Non- IFU cases” increasing!

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