23RD INTERNATIONAL EXPERTS SYMPOSIUM

CRITICAL ISSUES in aortic endografting 2019

LIVERPOOL UNITED KINGDOM MAY 23-24

# *Stop Bending the Rules*: Why you should avoid off-label EVAR!

**Isabelle Van Herzeele**

**www.critical-issues-congress.com**

UZ GENT

**Disclosure**

Speaker name:

.....Isabelle Van Herzeele .....

- ☐ I have the following potential conflicts of interest to report:
- ☐ Consulting
- ☐ Employment in industry
- ☐ Shareholder in a healthcare company
- ☐ Owner of a healthcare company
- ☐ Other(s)
- ■ I do not have any potential conflict of interest

# I. *EVIDENCE*: OFF-LABEL EVAR should be AVOIDED!!

- **Selection**
  - **Patient Co-morbidities**

| **Recommendation 62** | ***ESVS AAA guidelines*** | **Class** | **Level** |
|---|---|---|---|
| In patients with limited life expectancy, elective abdominal aortic aneurysm repair **is not recommended**. | | III | B |

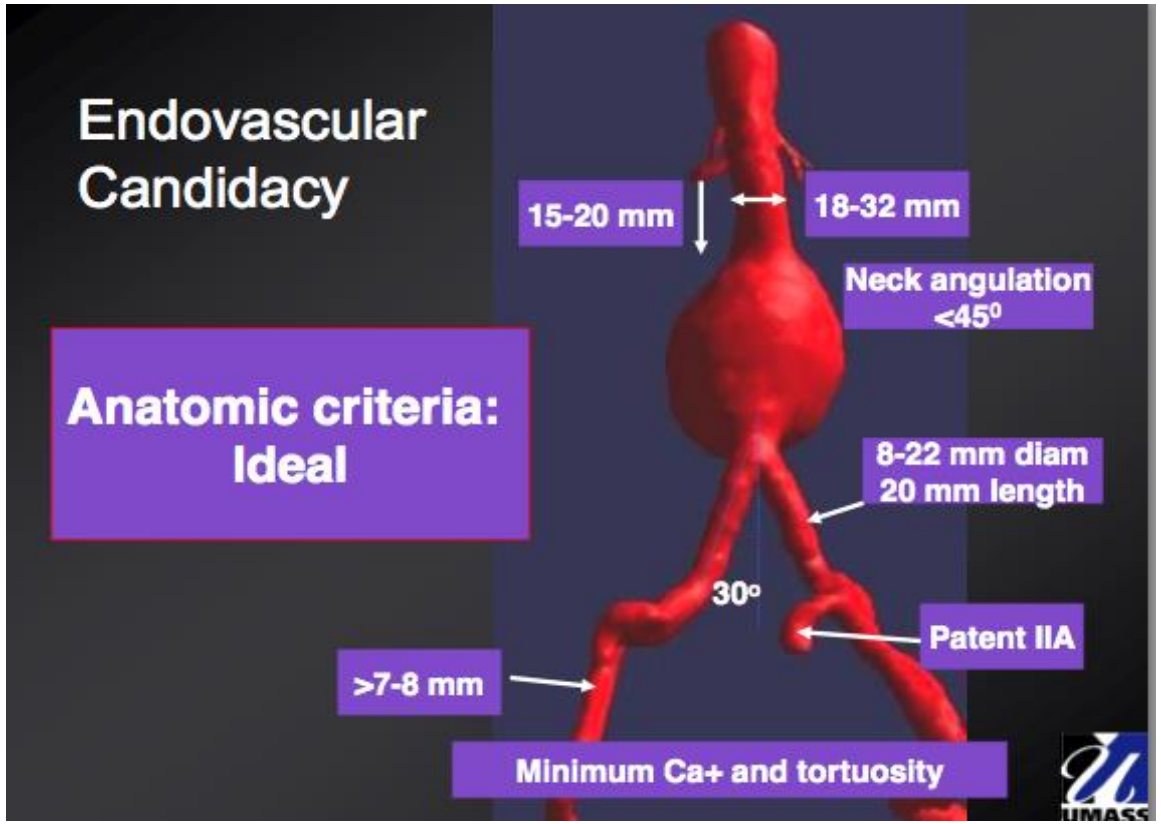
| **Recommendation** | ***SVS AAA guidelines*** | **Class** | **Level** |
|---|---|---|---|
| We **suggest** informing pts contemplating open aneurysm repair or EVAR of their VQI perioperative mortality risk score. | | II<br>weak | C |

  - Anatomical suitability
- **Operator/Centre** - higher annual caseload, lower operative mortality

# OFF-LABEL EVAR should be AVOIDED!!

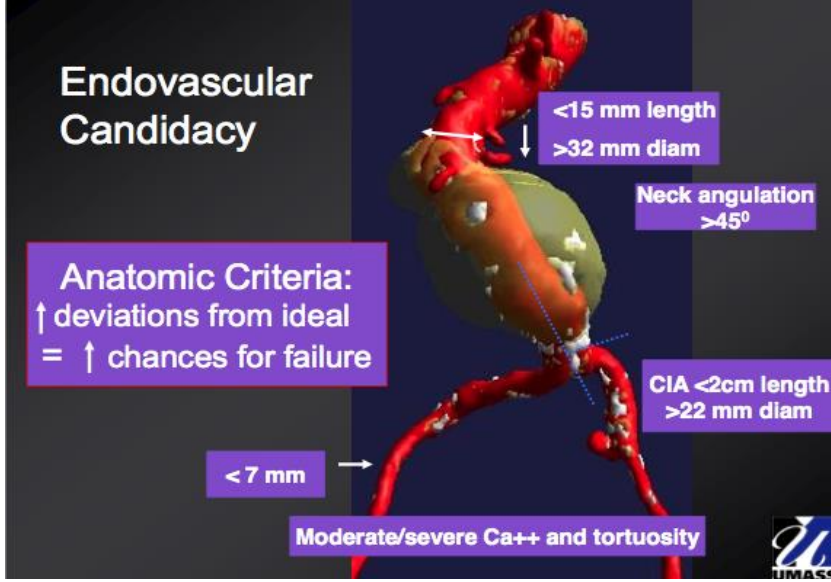
## Selection

- **Patient** criteria
  - Co-morbidities
  - Anatomical suitability
    - CTA ENTIRE AORTA
    - Diameter >54 mm (>50 in women)
    - Dedicated postprocessing software analysis
    - Sizing and planning
      - **Proximal landing zone**
      - Distal landing zone
      - Access
- **Operator/Centre** – higher annual caseload, lower operative mortality



**Predictors of Abdominal Aortic Aneurysm Sac Enlargement After Endovascular Repair**

Andres Schanzer, MD; Roy K. Greenberg, MD; Nathanael Hevelone, MPH; William P. Robinson, MD
Mohammad H. Eslami, MD; Robert J. Goldberg, PhD; Louis Messina, MD



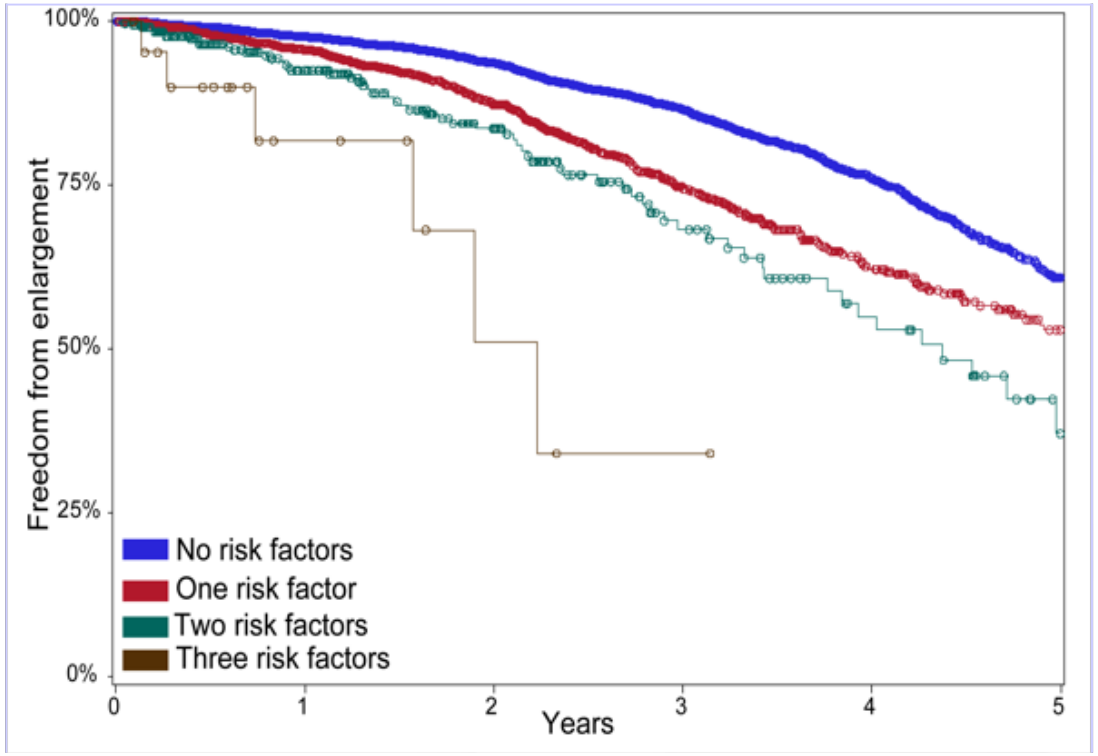

- N= 10 228 – 16% Females
- ⦸ AAA mean 54.8 mm (40.6% ≥ 55 mm)

| Neck | Conservative IFU | Liberal IFU | Outside IFU |
|---|---|---|---|
| Length (mm) | >15<br>***58%*** | >10<br>***18%*** | <10<br>***24%*** |
| Diameter (mm) | <28<br>***91%*** | <32<br>***6%*** | >32<br>***3%*** |
| Angulation ° | <45 | <60 | >60 |
| | ***42%*** | ***69%*** | |

*Circulation 2011; 123(24): 2848-55*

# Predictors of Sac Growth at 5 Years






| Freedom from Sac Enlargement | | |
|---|---|---|
| 1 Yrs | 3 Yrs | 5 Yrs |
| 97.7% | 86.5% | 60.9% |
| 99.4% | 74.4% | 52.9% |
| 92.5% | 68.2% | 37.1% |
| 81.8% | 34.1% | |

- Diameter neck at lowest renal > 28 mm
- Aortic neck angle > 60°
- Age > 80 years
- Either or both iliacs > 20 mm

# A meta-analysis of outcomes of endovascular abdominal aortic aneurysm repair in patients with hostile and friendly neck anatomy

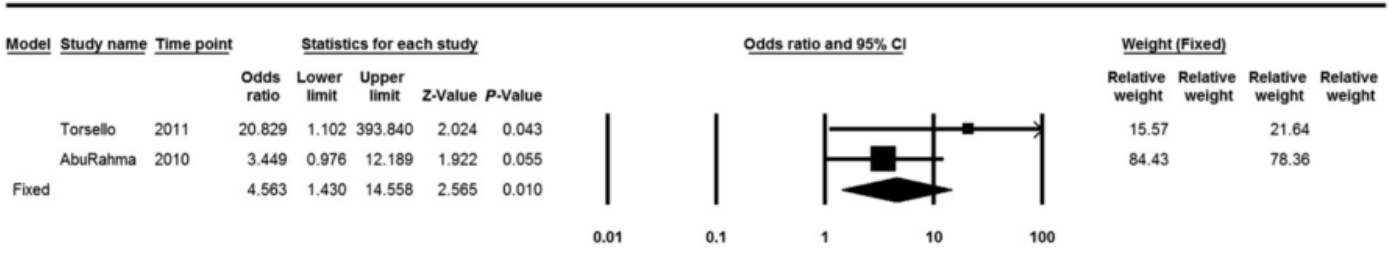
George A. Antoniou, MD, PhD,[a] George S. Georgiadis, MD,[b] Stavros A. Antoniou, MD,[c] Ganesh Kuhan, MD, FRCS,[a] and David Murray, MD, FRCS,[a] *Manchester, United Kingdom; Alexandroupolis, Greece; and Marburg, Germany*

J Vasc Surg 2013; 57: 527-38

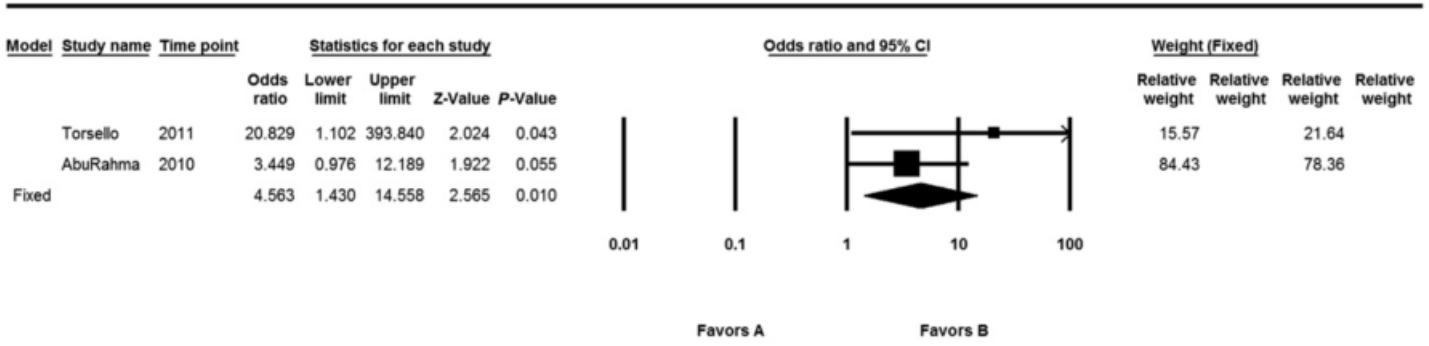
7 studies with control group

1559 pts: 845 FNA vs. 714 HNA

Definition HNA varied




Type IA endoleak at 1 yr:
*4.5* times higher




Aneurysm-related mortality at 1 yr:
*9* times higher

# Endovascular Aortic Aneurysm Repair in Patients with Hostile Neck Anatomy

Philip W. Stather, MRCS; John B. Wild, MRCS; Robert D. Sayers, MD, FRCS; Matthew J. Bown, MD, FRCS; and Edward Choke, FRCS, PhD

*J Endovasc Ther 2013; 20: 623-37*

16 studies

8920 FNA – 3039 HNA

30-day Early type IA endoleak

***OR 2.92***; 1.61-5.30, p<.001

Late type IA endoleak

***OR 1.71***; 1.31-2.23, p<.001

| | Favorable/ Hostile Neck | Criteria for Hostile Neck Anatomy | | | | | |
|---|---|---|---|---|---|---|---|
| | | Length, mm | Diameter, mm | Angulation, ° | Thrombus | Taper | Other |
| Greenberg 2000[26] | 42/13 | <10 | N/A | N/A | N/A | N/A | N/A |
| Sternbergh 2002[24] | 71/10 | N/A | N/A | >60 | N/A | N/A | N/A |
| Dillavou 2003[30] | 115/91 | <10 | N/A | >60 | >50% | >2-mm reverse | Focal bulge in neck >3 mm |
| Greenberg 2003[29] | 352/141 | <15 | >28 | >60 | N/A | N/A | Aortoiliac tortuosity (≥2 90° angulations), iliac diameter <8 mm, inability to preserve IIA |
| Fairman 2004[27] | 71/166 | <15 | >28 | >45 | >50% | N/A | N/A |
| Fulton 2006[12] | 59/25 | <15 | >25 | >45 | N/A | N/A | N/A |
| Choke 2006[31] | 87/60 | <10 | >28 | >60 | >50% | N/A | N/A |
| Leurs 2006[21] | 2822/G2: 485, G3: 192 | G2: 11–15; G3: ≤10 | N/A | N/A | N/A | N/A | N/A |
| Hobo 2007[9] | 4031/1152 | N/A | N/A | >60 | N/A | N/A | N/A |
| Abbruzzese 2008[7] | 343/222 | DS | DS | DS | DS | DS | N/A |
| AbuRahma 2009[8] | 195/G2: 24, G3: 17 | G2: 10–15; G3: <10 | N/A | N/A | N/A | N/A | N/A |
| Georgiadis 2011[25] | 43/34 | <12 | N/A | >60 | N/A | N/A | Iliac axis >60° |
| Hoshina 2011[28] | 80/49 | <15 | N/A | >60 | N/A | N/A | N/A |
| Torsello 2011[33] | 121/56 | <10 | N/A | >60 | N/A | N/A | N/A |
| AbuRahma 2011[34] | 89/149 | <10 | >28 | >60 | >50% | Reverse | >50% calcified neck |
| Stather 2012[6] | 353/199 | <15 | >28 | >60 | >50% | Reverse | N/A |

23rd INTERNATIONAL EXPERTS SYMPOSIUM
CRITICAL ISSUES
in aortic endografting 2019
May 23 & 24 - LIVERPOOL - UNITED KINGDOM

## Outcome-based anatomic criteria for defining the hostile aortic neck

*J Vasc Surg **2015**; 61: 1383-90*

William D. Jordan Jr, MD,[a] Kenneth Ouriel, MD,[b] Manish Mehta, MD, MPH,[c] David Varnagy, MD,[d] William M. Moore Jr, MD,[c] Frank R. Arko, MD,[f] James Joye, DO,[g] and Jean-Paul P. M. de Vries, MD,[h]
*Birmingham, Ala; New York and Albany, NY; Orlando, Fla; West Columbia, SC; Charlotte, NC; Mountain View, Calif; and Nieuwegein, The Netherlands*

100 with vs. 121 without type IA EL
Per 1 mm increase in neck diameter,
11% increased risk of developing type IA EL

## Patients with large neck diameter have a higher risk of type IA endoleaks and aneurysm rupture after standard endovascular aneurysm repair

Check for updates

*J Vasc Surg **2019**; 69: 783-91*

Nelson F. G. Oliveira, MD,[a,b] Frederico Bastos Gonçalves, MD, PhD,[a,c] Klaas Ultee, MD, PhD,[a] José Pedro Pinto, MD,[a,d] Marie Josee van Rijn, MD, PhD,[a] Sander Ten Raa, MD, PhD,[a] Patrice Mwipatayi, MD, FCS, FRACS,[e,f] Dittmar Böckler, MD, PhD,[g] Sanne E. Hoeks, PhD,[h] *and* Hence J. M. Verhagen, MD, PhD,[a] *Rotterdam, The Netherlands; Ponta Delgada, Lisbon, and Porto, Portugal; Perth, Australia; and Heidelberg, Germany*

Large neck >30 mm
97 vs. 1160 pts
FU 48 months
***OR 3.0*** (1.0-9.3)

## Infrarenal endovascular aneurysm repair with large device (34- to 36-mm) diameters is associated with higher risk of proximal fixation failure

Check for updates

*J Vasc Surg **2019**; 69: 385-93*

Graeme McFarland, MD, Kenneth Tran, BS, Whitt Virgin-Downey, BS, Michael D. Sgroi, MD, Venita Chandra, MD, Matthew W. Mell, MD, E. John Harris, MD, Ronald L. Dalman, MD, *and* Jason T. Lee, MD, *Stanford, Calif*

Proximal fixation failure (migration/EL IA)
108 vs. 392 pts
FU 34 months
***24.1% vs. 6.1%***

## Conical neck is strongly associated with proximal failure in standard endovascular aneurysm repair

CrossMark

*J Vasc Surg **2017**; 66: 1686-95*

Georgios A. Pitoulias, MD, PhD,[a] Andrés Reyes Valdivia, MD, FEBVS,[b] Suteekhanit Hahtapornsawan, MD,[c,d] Giovanni Torsello, MD, PhD,[c] Apostolos G. Pitoulias, MD,[a] Martin Austermann, MD,[c] Claudio Gandarias, MD, PhD,[b] *and* Konstantinos P. Donas, MD, PhD,[c] *Thessaloniki, Greece; Madrid, Spain; Münster, Germany; and Bangkok, Thailand*

<15 mm neck + at least one HNF
156 pts - FU 25 months
***Conical neck (>2 mm) = Strongest predictor of type IA EL(p<0.012)***

# Aortic Neck Anatomic Features and Predictors of Outcomes in Endovascular Repair of Abdominal Aortic Aneurysms Following vs Not Following Instructions for Use

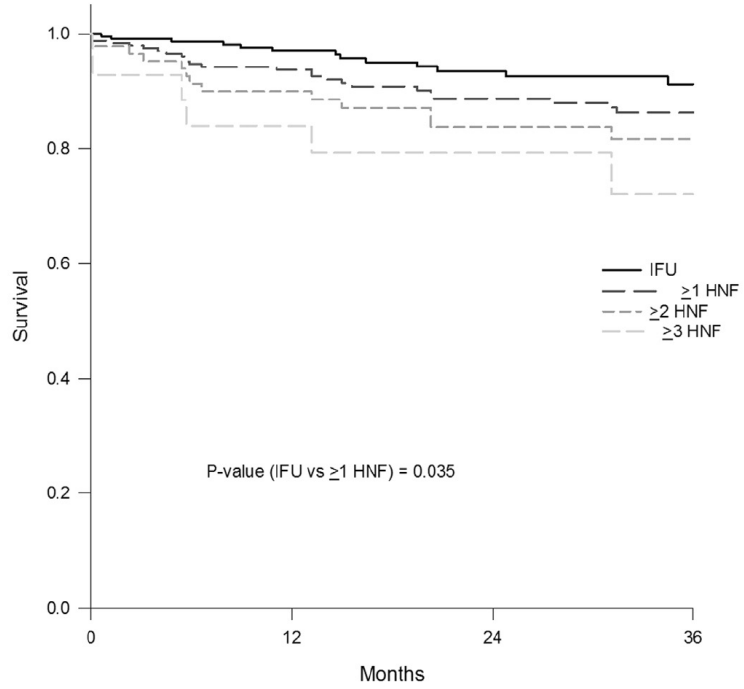
Ali F AbuRahma, MD, FACS, Michael Yacoub, MD, Albeir Y Mousa, MD, FACS, Shadi Abu-Halimah, MD, FACS, Stephen M Hass, MD, FACS, Jenna Kazil, MD, Zachary T AbuRahma, DO, Mohit Srivastava, MD, L Scott Dean, PhD, MBA, Patrick A Stone, MD, FACS

J Am Coll Surg 2016;222: 579-89

| | Outside IFU N= 275/526 | |
|---|---|---|
| | N | % |
| Neck angle >60° | 49 | 18 |
| Neck length < 10mm | 35 | 13 |
| Neck diameter >31mm | 16 | 6 |
| Neck calcium >49% | 51 | 19 |
| Neck trombus >49% | 135 | 49 |
| Reverse taper | 133 | 48 |

| | IFU (n = 251) | | Outside IFU (n = 275) | | |
|---|---|---|---|---|---|
| Endoleak/intervention | n | % | n | % | p Value |
| Early type I | 18 | 7 | 50 | 18 | 0.0002 |
| All early endoleak and type | | | | | |
| 0 | 177 | 71 | 176 | 64 | |
| 1 | 18 | 7 | 50 | 18 | |
| 2 | 52 | 21 | 47 | 17 | |
| 4 | 4 | 2 | 2 | 0.7 | |
| Aortic proximal cuff | 13 | 5 | 43 | 16 | 0.0001 |
| Proximal aortic stent | 12 | 5 | 20 | 7 | 0.2324 |
| All early intervention | 25 | 10 | 66 | 24 | < 0.0001 |
| Late type I endoleak | 5 | 2 | 14 | 6 | 0.0477 |
| All late endoleak and type | | | | | |
| 0 | 191 | 80 | 212 | 83 | |
| 1 | 5 | 2 | 14 | 6 | |
| 2 | 44 | 18 | 27 | 11 | |
| 3 | 0 | – | 1 | 0.4 | |
| Late intervention | 9 | 4 | 14 | 6 | 0.3529 |
| Sac expansion | 17 | 7 | 14 | 6 | 0.4716 |

IFU, instructions for use.




| IFU | | | 1+ HNF | | | 2+ HNF | | | 3+ HNF | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| N | % | SE | N | % | SE | N | % | SE | N | % | SE |
| 174 | 97 | 1.2 | 171 | 93.7 | 1.63 | 65 | 90 | 3.37 | 18 | 84 | 7.4 |
| 104 | 93.5 | 1.93 | 118 | 88.8 | 2.3 | 45 | 83.8 | 4.33 | 13 | 79.3 | 8.33 |
| 62 | 89.8 | 2.86 | 91 | 86.3 | 2.65 | 32 | 81.7 | 4.72 | 7 | 72.1 | 10.2 |

# II. *Why* is OFF-LABEL EVAR being *used*?

- Difficult to say NO …
  - Patient & relatives
  - Referring physician
- Other solutions: FEVAR, EVAR + adjuncts, OAR
  - Physiological reserves and fitness for surgery
  - Waiting time
  - Cost
  - Centre/operator – skills
    - Patient selection
    - Professional judgment >> IFU
    - Open/endo/imaging
  - Outcomes > renal and visceral vessels
- Fee for service
- Human nature...

EXPERT REVIEW OF MEDICAL DEVICES
https://doi.org/10.1080/17434440.2019.1561268

**TURN DOWN..**

2019; 16(2): 165-171

Taylor & Francis
Taylor & Francis Group



ORIGINAL RESEARCH

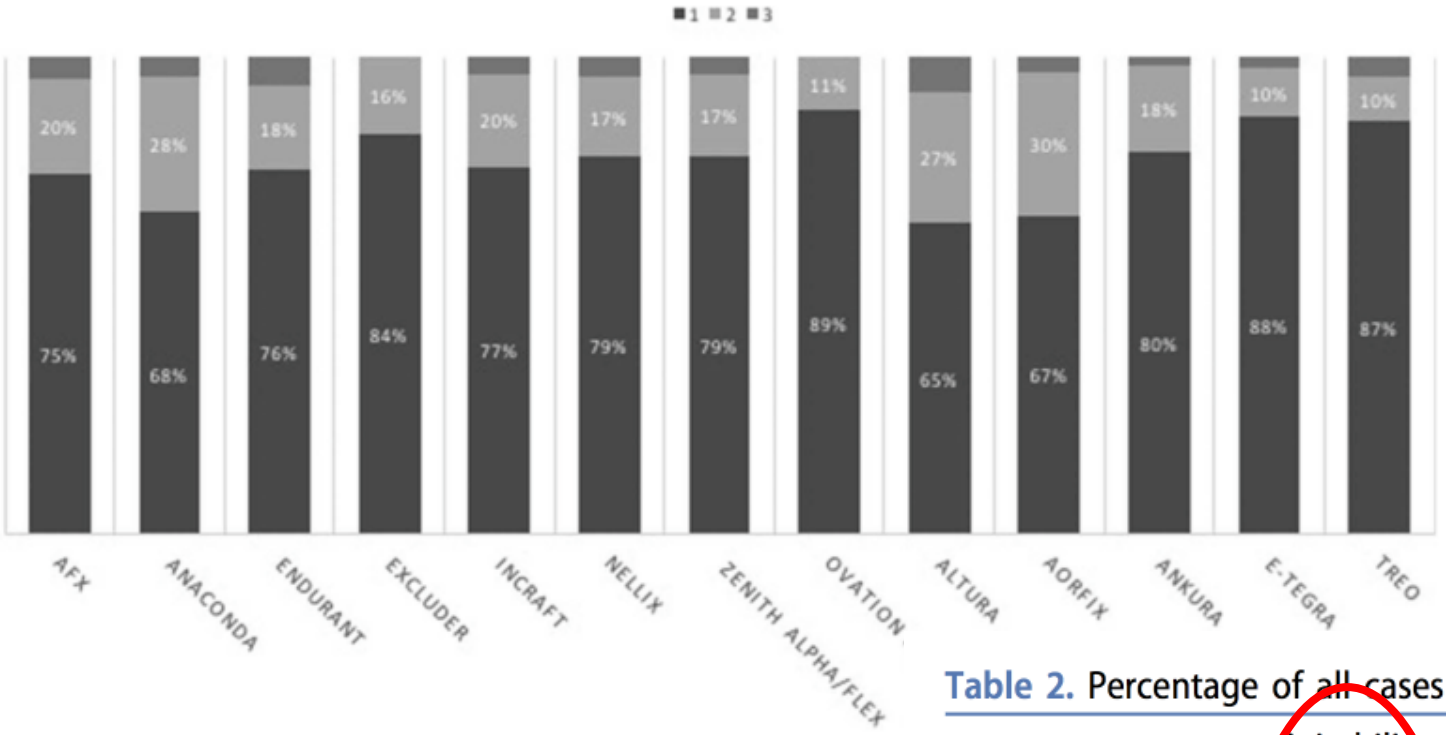
Check for updates

# Suitability study of current endovascular aortic repair devices based on real-life anatomic data

Nikolaos D. Patelis [a], Antonia Malli [b], Konstantinos S. Mylonas [b], Dimitrios Schizas [a,b], Nektario Papa [a], Konstantinos P. Economopoulos [b], Christos Damaskos [c], Konstantinos Moulakakis [d], Athanasios Katsargyris [e], Sotirios Georgopoulos [a], Chris Klonaris [a] and Theodoros Liakakos [a]

**N= 235**

| Stent-graft | Endologix Nellix | Cordis Incraft | Cook Zenith Flex II | Medtronic Endurant | Gore Excluder | Vascutek Anaconda | Endologix AFX | Endologix Ovation iX | Lombard Altura | Lombard Aorfix | Lifetech Ankura | Jotec E-tegra | Cook Zenith Alpha | Bolton Treo |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Neck length (mm) | ≥10 | ≥10 | ≥15 | ≥10 | ≥15 | ≥15 | ≥15 | NA | ≥15 | ≥15 | ≥15 | ≥15 | ≥15 | ≥10 mm, if β-angle<60; 10–15 mm, if 60<β-angle<75 |
| Neck diameter (mm) | 18–28 | 17–31 | 18–32 | 19–32 | 19–29 | 17.5–31 | 18–32 | 16–30 (at 13 mm from proximal edge) | 18–28 | 19–29 | 18–32 | 19–32 | 18–32 | 17–32 mm, if β-angle <60; 16-30 mm, if 60<β-angle<75 |
| Maximum aortic blood flow lumen diameter (mm) | ≤70 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Maximum common iliac artery diameter (mm) | 9–25 | 9–18 | 7.5–20 | 8–18 | 8–25* | 8.5–21 | 10–23 | 8–28 | 8–18 | 9–19 | 8–22 | 8–25 | 8–20 | 8–13 mm, if sealing≥10; 13–20, if sealing ≥15 |
| β-angle (degrees) | <60 | <60 | <60 | If neck length 10–15, then ≤45; If neck length >15, then 60 | NA | <90 | <60 | If neck length ≤10, then ≤45; If neck length >10, then ≤60 | <60 | ≤90 | <60 | <75 | <60 | If neck length 10–15, then ≤60; If neck length >15, then ≤75 |
| α-angle (degrees) | NA | <60 | <45 | If neck length 10-15, then ≤60; If neck length >15, then ≤75 | <60 | NA | NA | NA | NA | NA | <60 | NA | <45 | <45 |
| Aortic bifurcation diameter (mm) | NA | >18 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Landing zone in iliac arteries (mm) | NA | >10 | >10 | >15 | >10 | ≥20 | >15 | ≥10 | ≥15 | ≥15 | ≥15 | ≥15 | ≥10 | ≥10 mm, if diameter 8-13 mm; ≥15 mm, if 13<diameter≤20 |
| Angle of iliac arteries and the aortic bifurcation (degrees) | NA | NA | NA | NA | NA | NA | <90 | NA | NA | NA | NA | NA | NA | NA |
| Maximum diameter to patent lumen ratio | 1.4 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |




Obstacles:

- Neck diameter
- Neck length
- Common iliac artery diameter

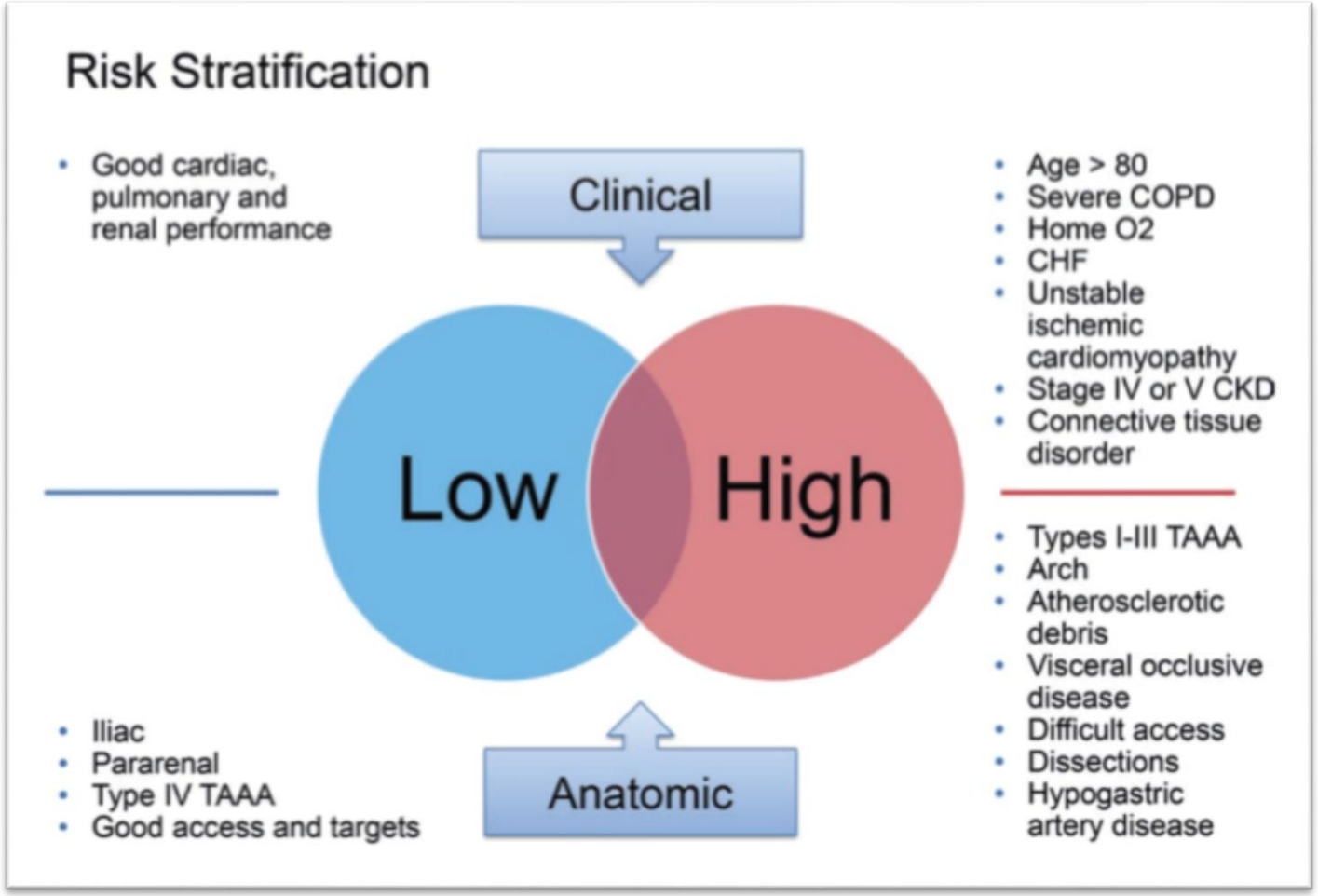
**Table 2.** Percentage of all cases deemed unsuitable by given AAA characteristics.

| Stent-graft | Suitability rate | Neck diameter | Neck length | CIA diameter | CIA landing zone | α-angle | β-angle |
|---|---|---|---|---|---|---|---|
| Endurant II/Iis | 80.7% | 2.3% | 8.8% | 0.6% | 5.3% | 1.2% | 7.6% |
| Ovation iX | 78.9% | 15.2% | 0.0% | 0.0% | 2.3% | 0.0% | 7.6% |
| Treo | 74.9% | 2.9% | 9.4% | 12.9% | 2.3% | 10.5% | 2.3% |
| E-tegra | 72.5% | 2.3% | 22.2% | 0.6% | 5.3% | 0.0% | 1.8% |
| AFX | 62.6% | 1.2% | 22.2% | 11.7% | 5.3% | 0.0% | 6.4% |
| Ankura | 62.6% | 1.2% | 22.2% | 8.8% | 5.3% | 2.3% | 6.4% |
| Nellix | 60.2% | 26.3% | 8.8% | 4.1% | 0.0% | 0.0% | 6.4% |
| Excluder | 57.9% | 23.4% | 22.2% | 0.6% | 2.3% | 2.3% | 0.0% |
| Anaconda | 57.3% | 9.9% | 22.2% | 13.5% | 12.3% | 0.0% | 1.2% |
| Zenith Alpha/Flex | 52.6% | 1.2% | 22.2% | 18.7% | 2.3% | 9.4% | 6.4% |
| Incraft | 48.5% | 9.9% | 8.8% | 36.8% | 2.3% | 2.3% | 6.4% |
| Aorfix | 42.7% | 23.4% | 22.2% | 28.1% | 5.3% | 0.0% | 0.0% |
| Altura | 34.5% | 26.3% | 22.2% | 33.3% | 5.3% | 0.0% | 6.4% |

# Look for another solution…

- Patient's fitness
- Centre/operator dependent – learning curve

Tenorio ER et al.
J Cardiovasc Surg (Torino) 2019; 60(1): 23-34



# Look for another solution…



- Type of treatment - Outcomes

**Fenestrated endovascular aneurysm repair is associated with lower perioperative morbidity and mortality compared with open repair for complex abdominal aortic aneurysms**

Rens R. B. Varkevisser, BS,[a,b] Thomas F. X. O'Donnell, MD,[a,c] Nicholas J. Swerdlow, MD,[a] Patric Liang, MD,[a] Chun Li, MD,[a] Klaas H. J. Ultee, BS,[b] Alexander B. Pothof, MS, MD,[a] Livia E. V. M. De Guerre, MD,[a] Hence J. M. Verhagen, MD, PhD,[b] *and* Marc. L. Schermerhorn, MD,[a] *Boston, Mass; and Rotterdam, The Netherlands*

*J Vasc Surg 2018*

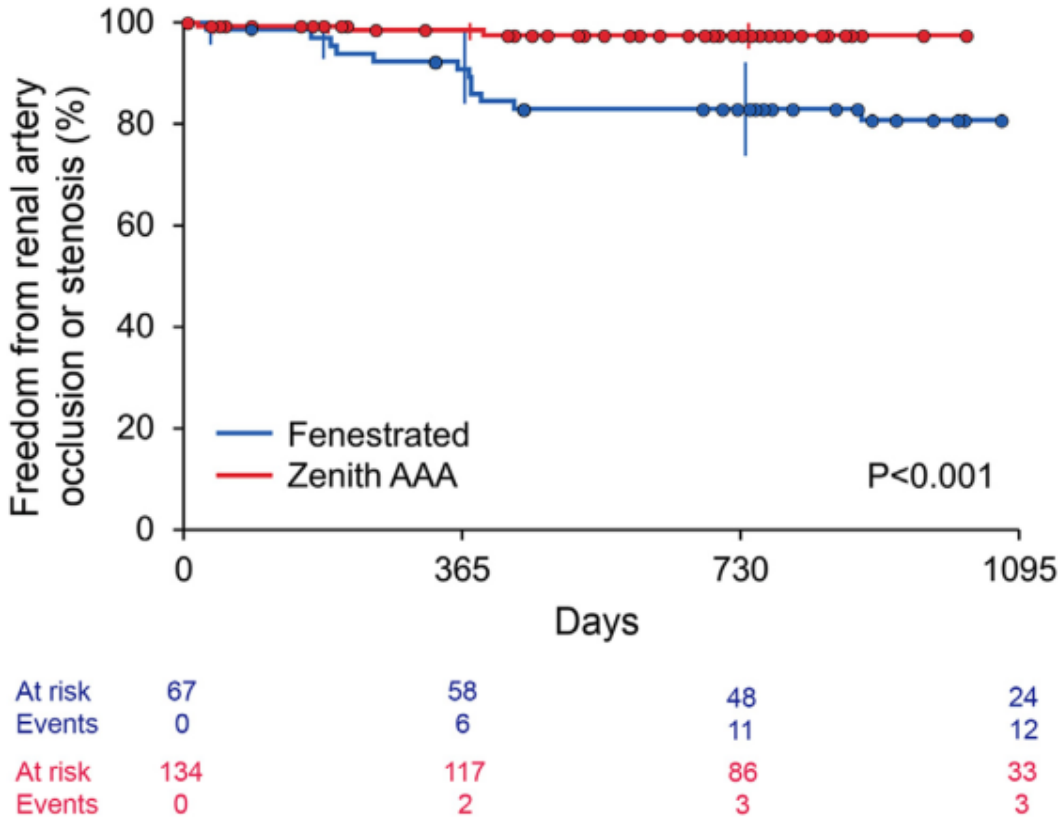
NSQIP
Multicentre
Retrospective
N= 220 FEVAR
N= 181 OR
N= 6424 EVAR

| | OR | 95% CI | *P* value |
|---|---|---|---|
| 30-Day mortality | | | |
| Procedure | | | |
| Zenith Fenestrated EVAR | Reference | | |
| Open complex AAA repair[a] | 4.9 | 1.4-18 | **.015** |
| Infrarenal EVAR[a,b] | 0.6 | 0.2-2.0 | .42 |
| Postoperative renal dysfunction | | | |
| Procedure | | | |
| Zenith Fenestrated EVAR | Reference | | |
| Open complex AAA repair[a] | 13 | 3.6-49 | **<.001** |
| Infrarenal EVAR[a,b] | 0.4 | 0.1-1.8 | .24 |
| Any complication | | | |
| Procedure | | | |
| Zenith Fenestrated EVAR | Reference | | |
| Open complex AAA repair[a] | 4.2 | 2.3-7.5 | **<.001** |
| Infrarenal EVAR[a,b] | 0.8 | 0.5-1.3 | .35 |

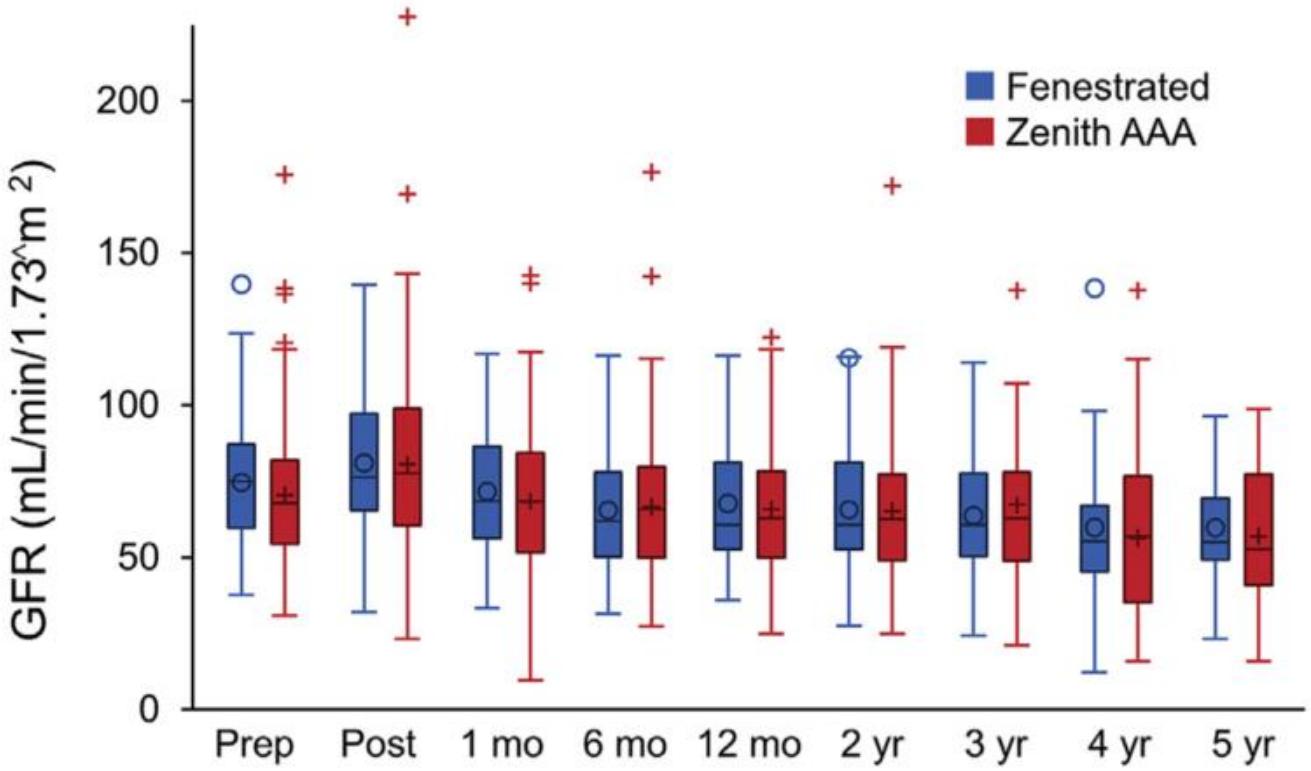
# Comparison of Renal Outcomes in Patients Treated by Zenith® Fenestrated and Zenith® Abdominal Aortic Aneurysm Stent grafts in US Prospective Pivotal Trials☆

*Eur J Vasc Endovasc Surg 2017; 53(5): 648-55*

L.R. de Souza [a,b], G.S. Oderich [a,*], M.A. Farber [c], S. Haulon [d], P.V. Banga [a,e], A.H. Pereira [b], P. Gloviczki [a], S.C. Textor [f], F. Jia [g], on behalf of the Zenith Fenestrated and the Zenith Infrarenal Stent grafts Trial Investigators




12/67 vs. 3/134



# Take the risk – convert later?

## FEVAR or OAR…



**Fenestrated Stent-Grafts for Salvage of Prior Endovascular Abdominal Aortic Aneurysm Repair** EJVES 2013

A. Katsargyris [a], O. Yazar [a,b], K. Oikonomou [a], F. Bekkema [c], I. Tielliu [c], E.L.G. Verhoeven [a,b,*]

[a] Department of Vascular and Endovascular Surgery, Klinikum Nürnberg, Germany
[b] Department of Vascular Surgery, University Hospital Leuven, Belgium
[c] Department of Surgery, Division of Vascular Surgery, University Medical Center Groningen, University of Groningen, The Netherlands

N=26 – type IA endoleak/migration
Technical success 92.3%
Catheterization difficulties 42.3%; 4/26 reinterventions

**Complementary Role of Fenestrated/ Branched Endografting and the Chimney Technique in the Treatment of Pararenal Aneurysms After Open Abdominal Aortic Repair**

Journal of Endovascular Therapy
1–7

DOI: 10.1177/1526602816647363
www.jevt.org
SAGE

Andrés Reyes, MD[1], Konstantinos P. Donas, MD, PhD[2], Georgios Pitoulias, MD, PhD[3], Martin Austermann, MD, PhD[2], Claudio Gandarias, MD, PhD[1], and Giovanni Torsello, MD, PhD[2]

N= 34 pts – technical success 97% - 1/34 died
11% transient weakness lower limbs
3 renal deterioration
8 reinterventions – 18.2%

**Increasing use of open conversion for late complications after endovascular aortic aneurysm repair** J Vasc Surg 2018

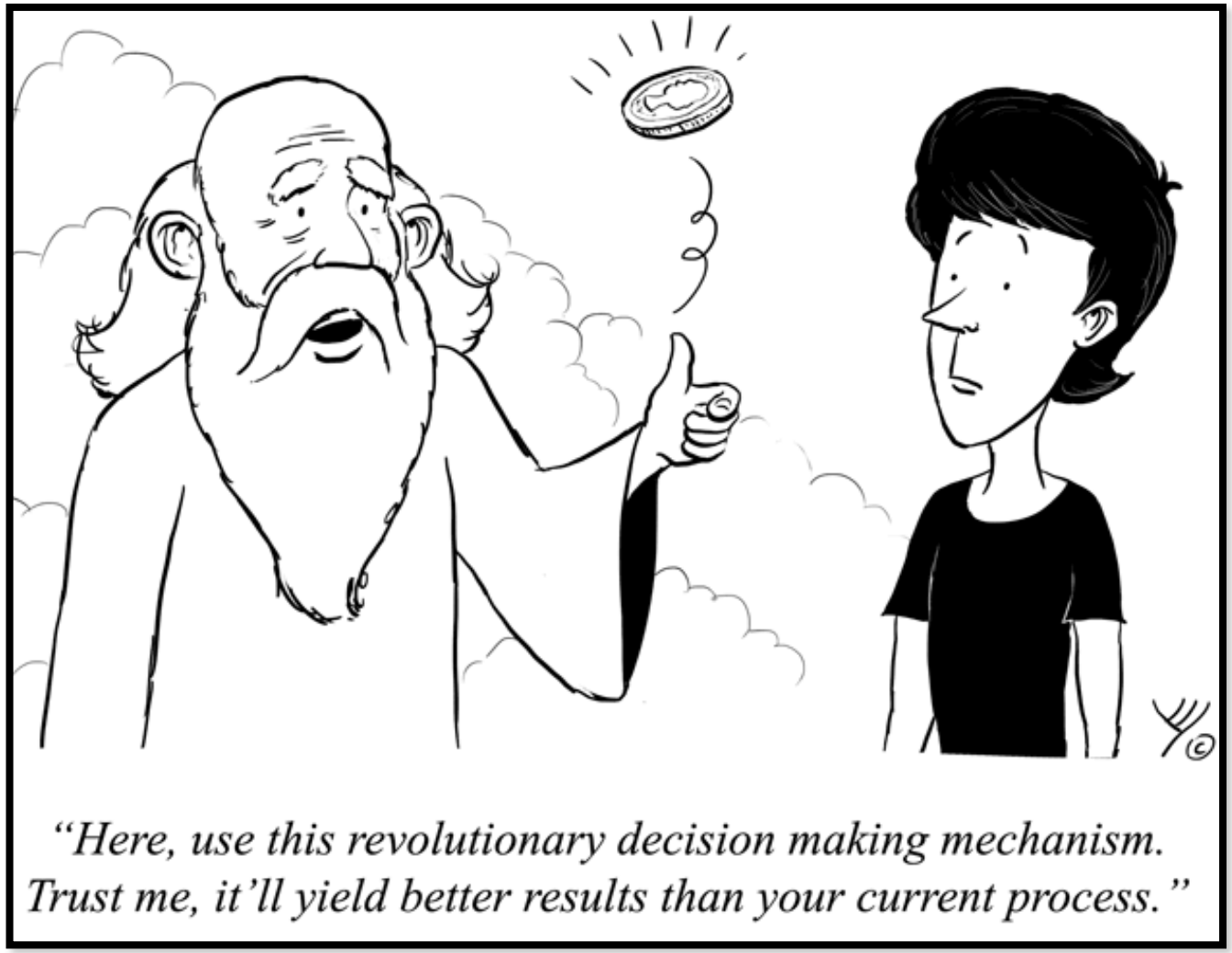
Abhisekh Mohapatra, MD, Darve Robinson, BA, Othman Malak, MD, Michael C. Madigan, MD, Efthimios D. Avgerinos, MD, Rabih A. Chaer, MD, Michael J. Singh, MD, *and* Michel S. Makaroun, MD, *Pittsburgh, Pa*

N= 102 pts – 2002-2017
30d mortality

- 65 Elective 6.2%
  - 28 pts graft-preserving – 3.6%
  - 37 Explantation (partial or complete)– 8.1%
- 20 Ruptures 40%
- 15 Infections 40%

# III. *How* can OFF-LABEL EVAR use be *minimized*?

- Network & centralization
- Training of team
  - Knowledge
  - Technical & non-technical skills
- Multi-disciplinary meeting
  - ***DURABILITY***
    - Case selection
    - Type of treatment
    - Personalized Surveillance
- Quality control - registry
- R&D



*"Here, use this revolutionary decision making mechanism. Trust me, it'll yield better results than your current process."*

# Network: Resources and caseload

23rd INTERNATIONAL EXPERTS SYMPOSIUM
CRITICAL ISSUES
in aortic endografting 2019
May 23 & 24 - LIVERPOOL - UNITED KINGDOM

| Recommendation 2, 3, 4 - ESVS Guidelines | Class | Level |
|---|---|---|
| **It is recommended** that centres or networks of collaborating centres treating patients with abdominal aortic aneurysms can offer both endovascular and open aortic surgery at all times. | I | B |
| Abdominal aortic aneurysm repair **should only be considered** in centres with a minimum yearly caseload of 30 repairs. | IIa | C |
| Abdominal aortic aneurysm repair **should not** be performed in centres with a yearly case load <20. | III | B |
| **Recommendation 94 - ESVS Guidelines** | | |
| Centralization to specialized high volume centres that can offer both complex open and complex endovascular repair for treatment of juxtarenal abdominal aortic aneurysm **is recommended**. | I | C |

| Recommendation - SVS Guidelines | | |
|---|---|---|
| We **suggest** that elective OSR for AAA be performed at centers with an annual volume of at least 10 open aortic operations of any type and a documented perioperative mortality of 5% or less. | II (weak) | C |

# Center and operator experience - Training

23rd INTERNATIONAL EXPERTS SYMPOSIUM
CRITICAL ISSUES
in aortic endografting 2019
May 23 & 24 - LIVERPOOL - UNITED KINGDOM

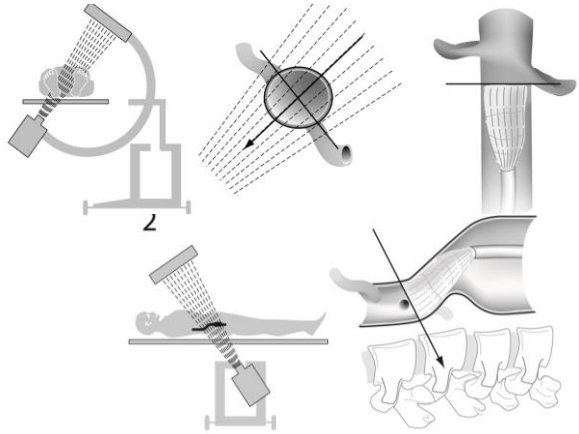
## The Benefits of EVAR Planning Using a 3D Workstation CME

J. Sobocinski, H. Chenorhokian, B. Maurel, M. Midulla, A. Hertault, M. Le Roux, R. Azzaoui, S. Haulon*

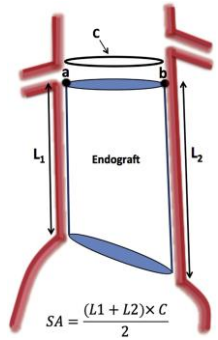
*Eur J Vasc Endovasc Surg 2013; 46(4): 418-23*

**WHAT THIS PAPER ADDS**

In order to enhance the midterm results of EVAR, and especially the occurrence of type 1 endoleaks, this study shows that endovascular therapists should always perform endograft sizing utilizing 3D workstations.



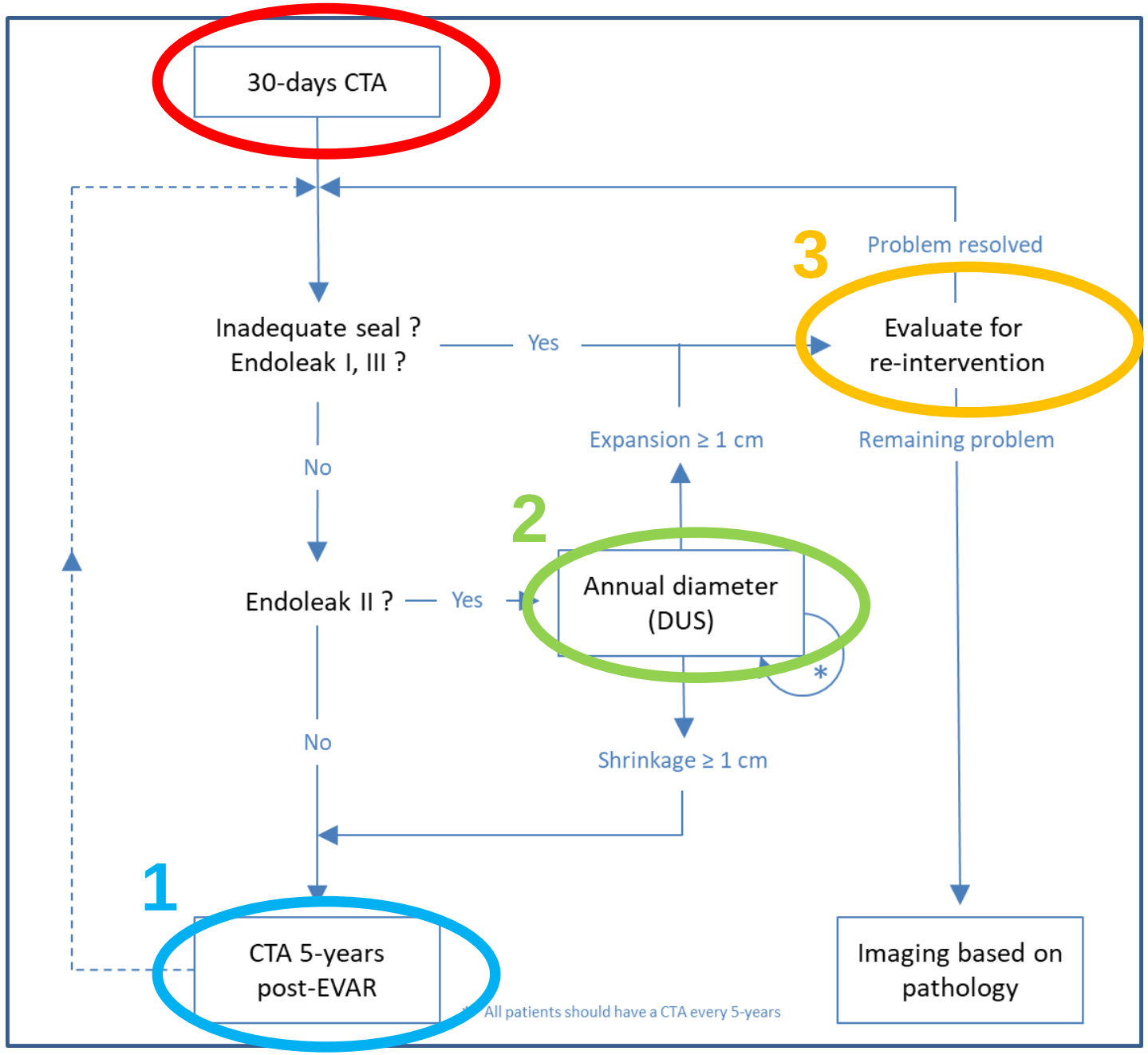
- Patient selection
- Sizing and Planning
- Choice and familiarity with stent-graft
- Patient specific rehearsal
- Peri-operative Imaging: Fusion, …
- Quality of deployment
  - Elimination of parallax
  - Fabric is placed 2-3 mm below lowest renal




***Acceptable*** (score 1 or 2)
- Partial renal artery coverage <= 2 mm OR
- <= 2-4 mm distal to the renal artery orifice

***Unacceptable*** (score 3 or 4)

***AH Kim*** et al. J Vasc Surg 2016; 64(1): 251-8




# MDT:

- **Selection**
- **Treatment**
- **Surveillance**

***ESVS guidelines 2018***

# Quality control

| Recommendation 1 | Class | Level |
|---|---|---|
| Centres performing aortic surgery **are recommended** to enter cases in a validated prospective registry to allow for monitoring of changes in practice and outcomes. | I | C |
| **Recommendation 57** | **Class** | **Level** |
| For newer generation of stent grafts based on existing platforms, such as low-profile devices, long-term follow-up and evaluation of the durability in prospective registries **is recommended**. | I | C |

## The Safety of Device Registries for Endovascular Abdominal Aortic Aneurysm Repair: Systematic Review and Meta-regression

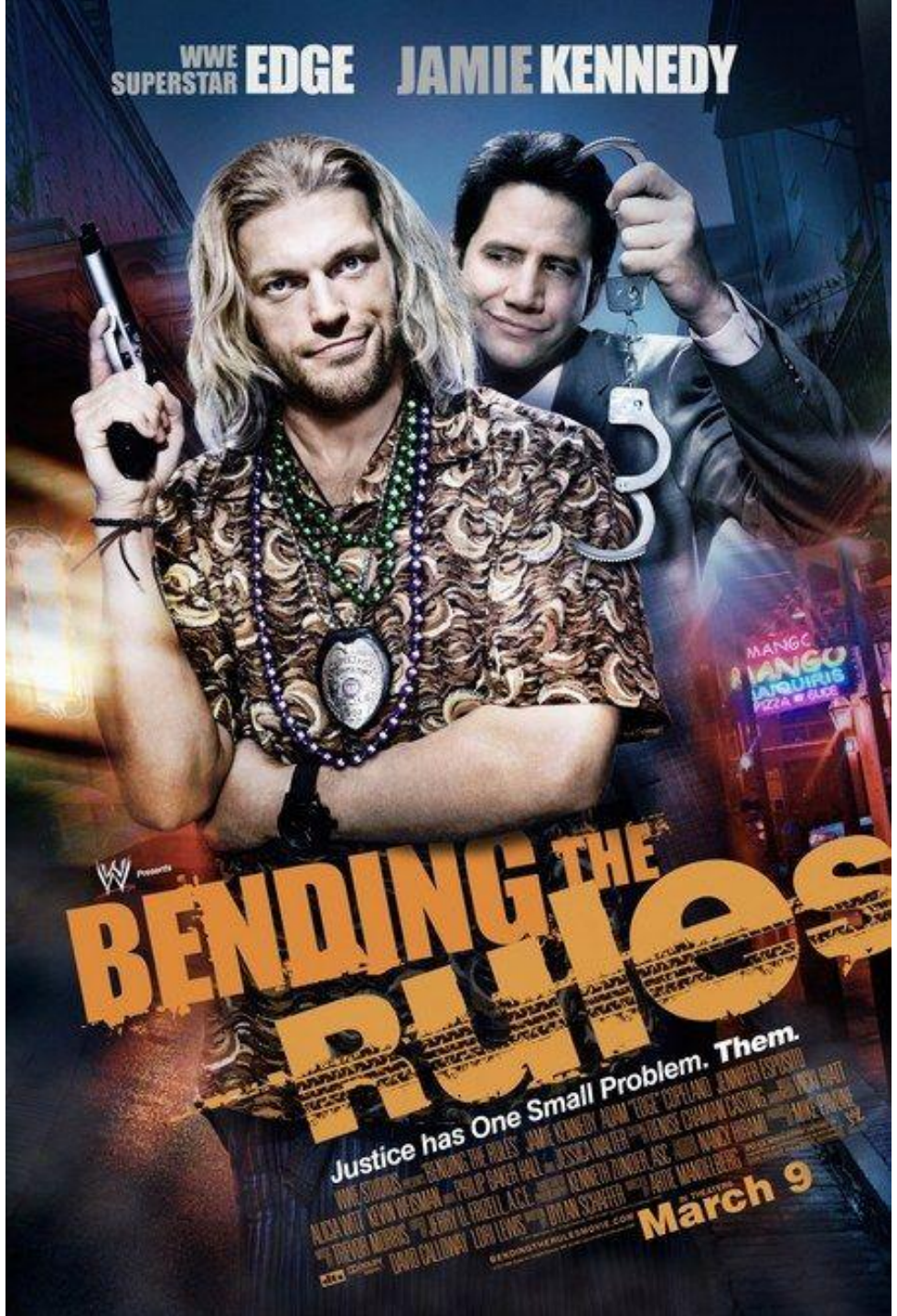
Fran Kent [a], Graeme K. Ambler [a,b], David C. Bosanquet [a], Christopher P. Twine [a,b,*], on behalf of BSET (British Society for Endovascular Therapy)

**Conclusions:** Five hundred and twenty-five patients need to be entered into a registry to demonstrate non-inferiority to previous stent grafts. Almost all previous publications have captured lower patient numbers. With performance varying between devices, and new devices being introduced regularly, there is an urgent need to capture higher quality long-term data on EVAR stent grafts.

EJVES 2018; 55:177-83

Cumulative endoleak: N 525 pts

Reintervention rate: N 492 pts




**Patients and healthcare have just one small problem…**