

Durability of Total Endovascular Repair of TAAA

What do we still need?



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Disclosures

- Speaking Fees for Gore & Cook
- Proctor for Cook

Important Topic!



LIVE 2019
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Education

11:15-11:23

Durability of total endovascular repair of TAAA. What do we still need?

Athanasios Katsargyris (*Germany*)

- Lay-Out
 - Nuremberg Experience
 - Literature Data

Nuremberg Experience

- FEVAR/BEVAR
 - 1st Line Treatment for suitable TAAA



Editor's Choice — Ten-year Experience with Endovascular Repair of Thoracoabdominal Aortic Aneurysms: Results from 166 Consecutive Patients

E.L.G. Verhoeven ^{a,*}, A. Katsargyris ^a, F. Bekkema ^c, K. Oikonomou ^a, C.J.A.M. Zeebregts ^c, W. Ritter ^b, I.F.J. Tielliu ^c

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Eur J Vasc Endovasc Surg (2015) 49, 524–531

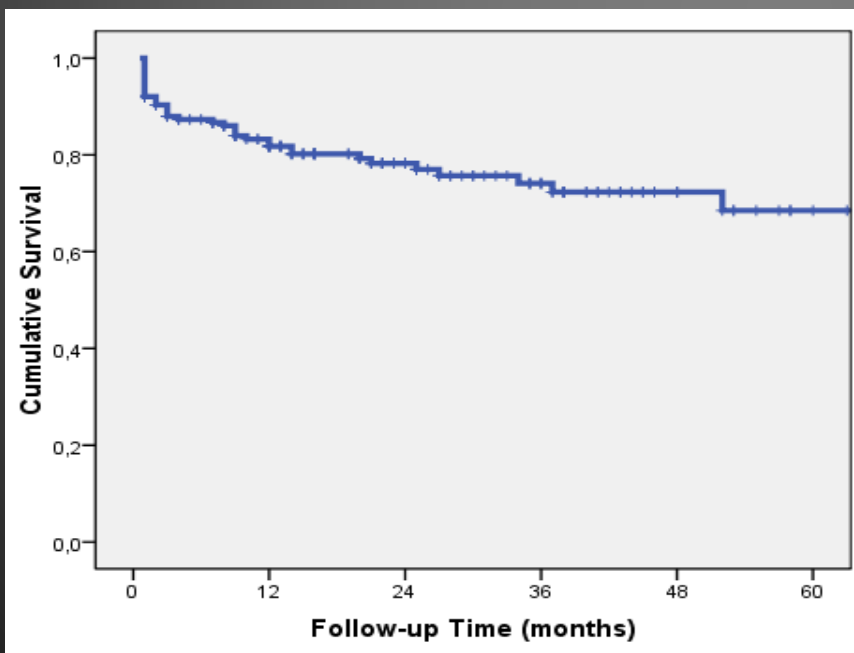
- Article: Combined Experience Gro/Nue
- Updated Nuremberg Experience (N=377 Pts)
 - Suprarenal Aneurysms excluded
- Early Outcomes
 - Technical Success: 95%
 - 30d Mortality: 7%
 - Initial learning curve....

Durability?

Mean follow-up: 34.2 ± 21 months

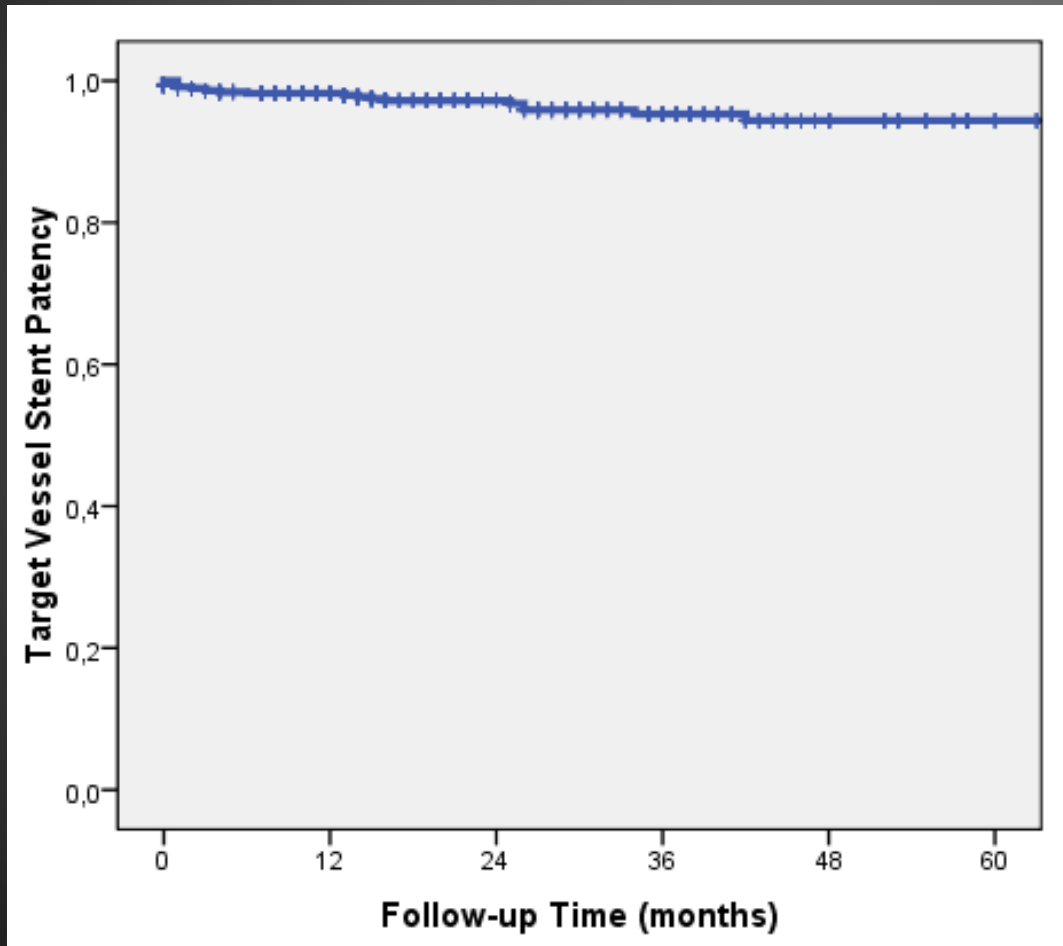
Late Mortality

- 2 Related deaths (aortoesophageal fistula, graft infection)
- ↑ Late mortality in ASA IV vs ASA ≤ III pts



Estimated Survival
83 ± 2.3% at 1 year
68 ± 3.8% at 5 years

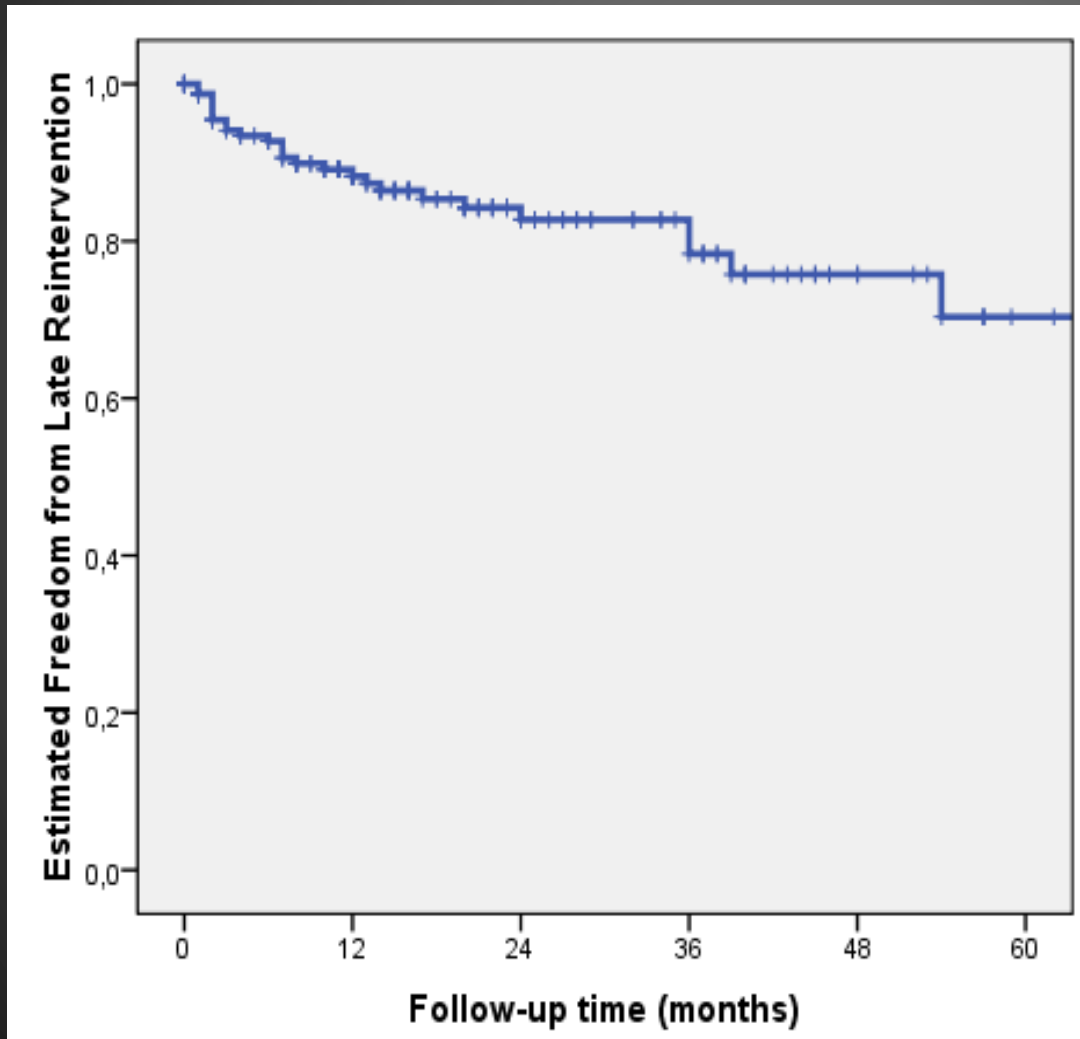
Estimated Target Vessel Patency*



98.3 ± 0.4% at 1 year
94.6 ± 1.2% at 5 years

**Secondary Patency*

Freedom from Reintervention



89.9 ± 2.6% at 1 year
79.8 ± 4.6% at 3 years

Late (>30d) Reinterventions

N=57

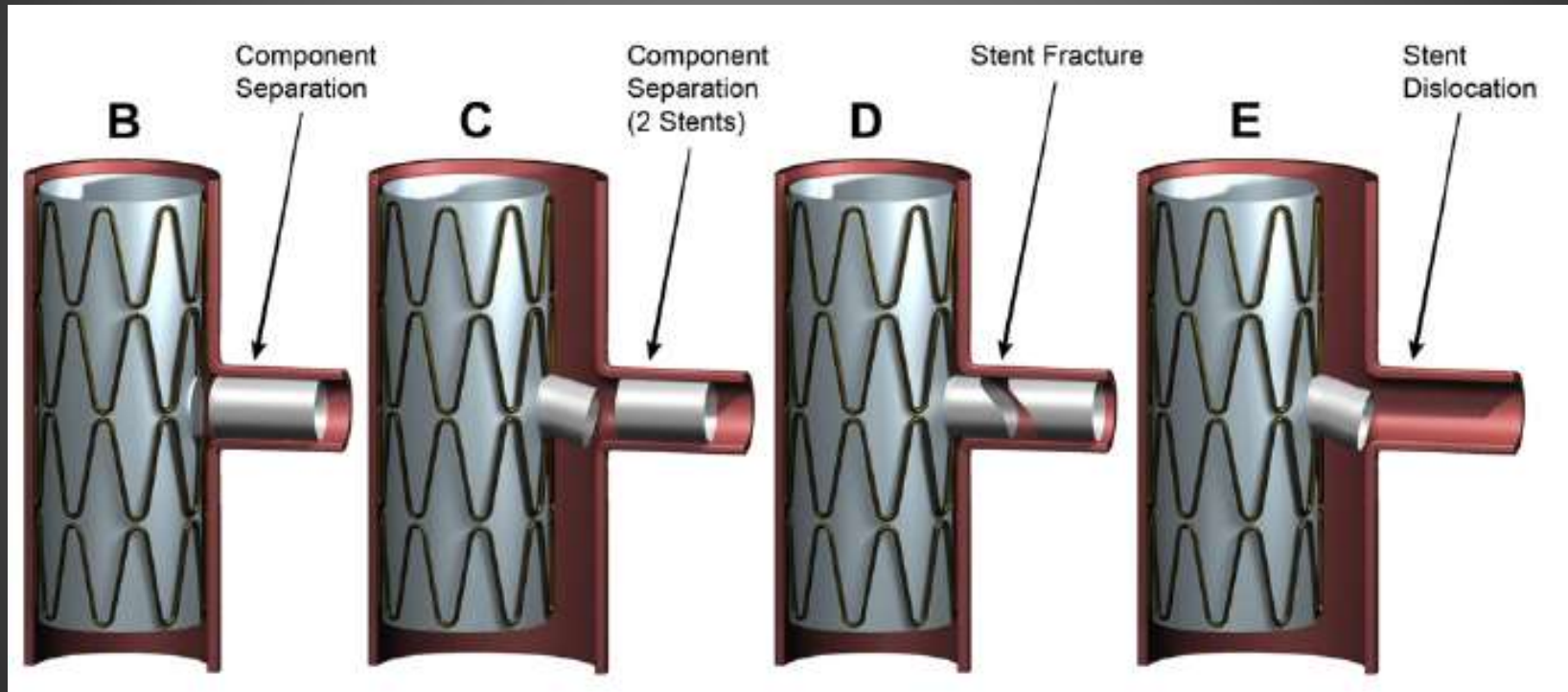
Reintervention	N
Branch relining/extension/thrombolysis	29
Distal stent-graft extension	6
Proximal stent-graft extension	4
Coil embolization for endoleak	8
Thoracic bridging stent-graft for disconnection	2
Reintervention for iliac occlusion	2
Fem-fem crossover bypass	1
Groin drainage due to seroma infection	1
Laparotomy-lavage due to stent-graft infection	1
Ilio-renal bypass	1
Iliac Thormbectomy	2

90%
ENDO

Late (>30d) Reinterventions

Reintervention	N
<u>Branch relining/extension/thrombolysis</u>	<u>29 (51%)</u>
Distal stent-graft extension	6
Proximal stent-graft extension	4
Coil embolization for endoleak	8
Thoracic bridging stent-graft for disconnection	2
Reintervention for iliac occlusion	2
Fem-fem crossover bypass	1
Groin drainage due to seroma infection	1
Laparotomy-lavage due to stent-graft infection	1
Ilio-renal bypass	1
Iliac Thormbectomy	2

Branches' Potential Problems



Literature

Cleveland Clinic Experience

Durability of branches in branched and fenestrated endografts

Tara M. Mastracci, MD, Roy K. Greenberg, MD, Matthew J. Eagleton, MD, and Adrian V. Hernandez, PhD,
Cleveland, Ohio

(J Vasc Surg 2013;57:926-33.)

- 2001-2010, 650 pts with FEVAR/BEVAR
 - Suprarenal included!
- Mean F/U: 3 ± 2.3 years (range: 1-9 years)
- Reintervention for
 - 0.6% CA, 4% SMA, 5.5% RAs

Branch-related Mortality

- 3 pts (0.46%) all due to Mesenteric ischemia
 - Branches of FEVAR/BEVAR are durable and rarely the cause of patient death

Cleveland Clinic Experience (2)

Twelve-year results of fenestrated endografts for juxtarenal and group IV thoracoabdominal aneurysms

Tara M. Mastracci, MD, Matthew J. Eagleton, MD, Yuki Kuramochi, BScN, Shona Bathurst, and Katherine Wolski, MPH, *Cleveland, Ohio*

(*J Vasc Surg* 2015;61:355-64.)

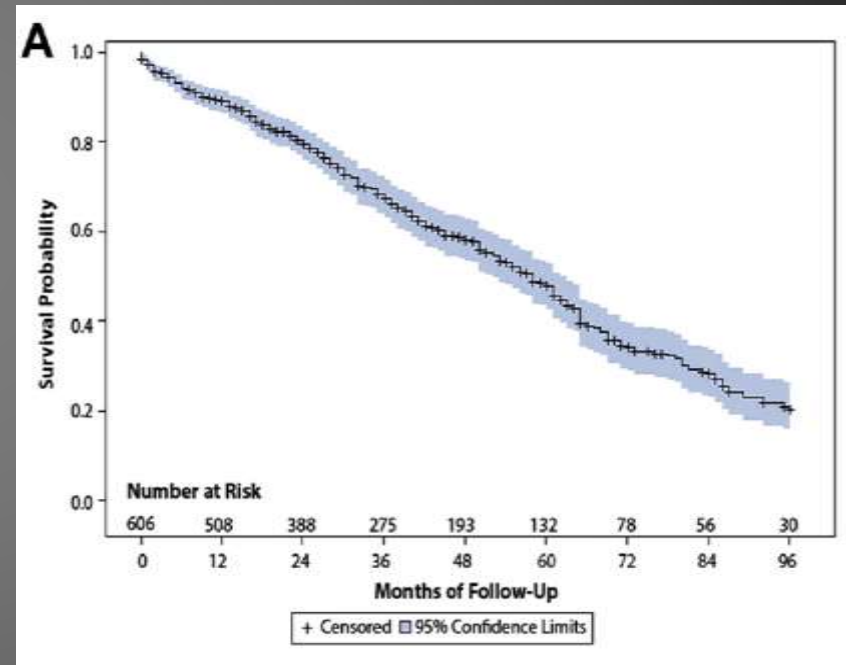
- 2001-2013, 610 pts with FEVAR
- Mean F/U: 8 years!

→ FEVAR safe & effective in the long-term

Aortic related mortality of 2% at 8 years

Do we need longer F/U?

- After 8 years survival is only 20%...
- Cause of death
 - Aneurysm Unrelated
 - Cancer, COPD, Heart failure etc.



(J Vasc Surg 2015;61:355-64.)

Fenestrations or Branches for Renal Arteries in TAAAB grafting?

Mid-term Outcomes of Renal Branches Versus Renal Fenestrations for Thoraco-abdominal Aneurysm Repair[☆]

T. Martin-Gonzalez^a, T. Mastracci^b, T. Carrell^c, J. Constantinou^b, N. Dias^d, A. Katsargyris^e, B. Modarai^c, T. Resch^d, E. Verhoeven^e, S. Haulon^{a,*}

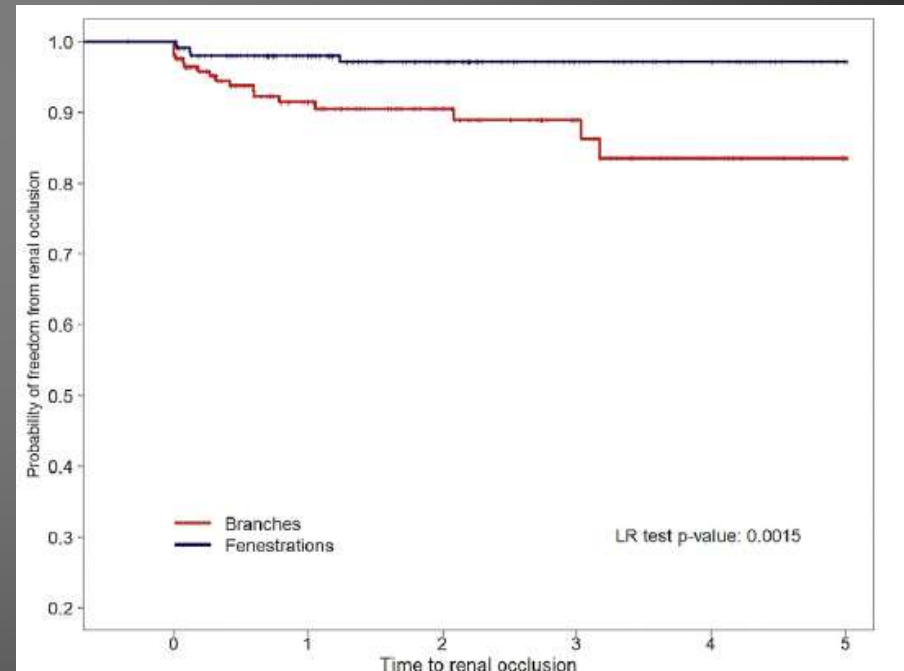
Eur J Vasc Endovasc Surg (2016) 52, 141–148

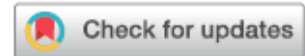
- 449 pts (235 BEVAR, 214 FEVAR)

Fenestrations or Branches for Renal Arteries in TAAAB grafting?

Fenestrations significantly better patency rates!

Branches significantly higher instability
(occlusion/reintervention)





Long-term durability of multibranched endovascular repair of thoracoabdominal and pararenal aortic aneurysms

Joy Walker, MD, Smita Kaushik, BS, Megan Hoffman, BS, Warren Gasper, MD, Jade Hiramoto, MD, Linda Reilly, MD, and Timothy Chuter, MD, *San Francisco, Calif*

(J Vasc Surg 2019;69:341-7.)

- 146 pts with BEVAR, mean Follow-up: 36 Months

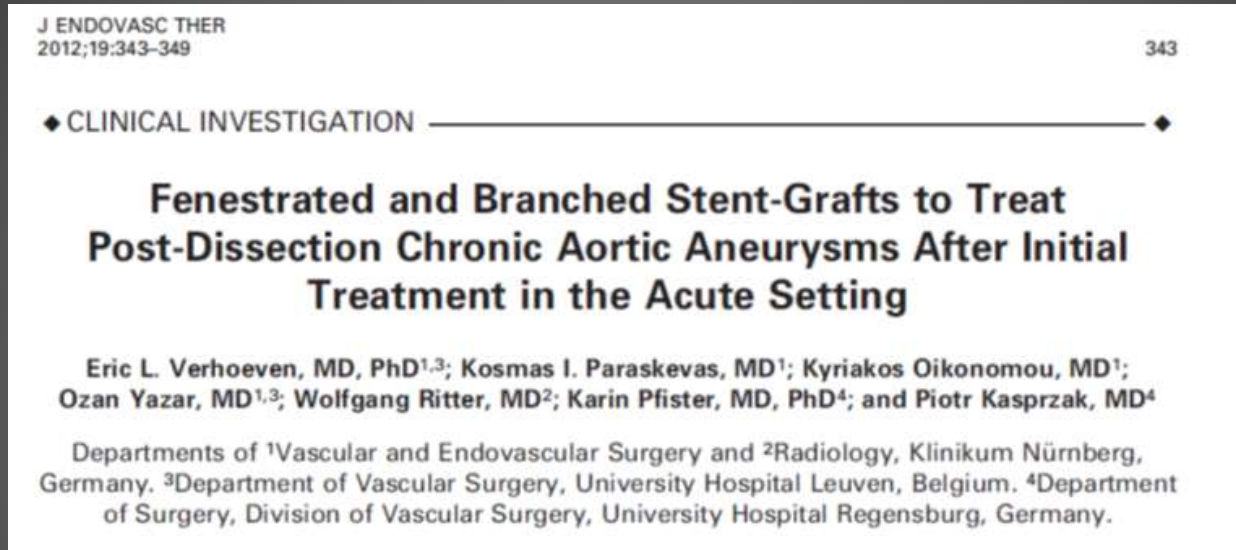
Conclusions: Total endovascular repair of TAAAs and pararenal aortic aneurysms using axially oriented cuffs is safe, effective, and durable in the long term. (J Vasc Surg 2019;69:341-7.)

but...

Renal Branch Occlusion: Most common late complication (8.9%)

Special TAAA Pathologies

Post-Dissection TAAA



– ENDO Feasible

- We can work in a small True Lumen
- We can switch from True/False lumen
 ← Many entries/re-entries...
- Additional technical challenges ← unfriendly anatomy

Post-Dissection TAAA

Mid-term Outcomes

Mid-Term Results of Fenestrated/Branched Stent Grafting to Treat Post-dissection Thoraco-abdominal Aneurysms

Kyriakos Oikonomou ^{a,b}, Piotr Kasprzak ^b, Athanasios Katsargyris ^a, Pablo Marques De Marino ^a, Karin Pfister ^b, Eric L.G. Verhoeven ^{a,*}

^a Department of Vascular and Endovascular Surgery, Paracelsus Medical University, Nuremberg, Germany

^b Department of Vascular Surgery, University Medical Centre Regensburg, Regensburg, Germany

Eur J Vasc Endovasc Surg (2018) ■, 1–8

- 71 Pts, F/BEVAR for post-dissection TAAA
 - F/U (25.3 months)
 - No Rupture
 - Favorable Sac Remodeling (FL Thrombosis: 85%)
 - ↑ Need for reintervention, mostly endovascular...

Post-Dissection TAAA

Mid-term Outcomes

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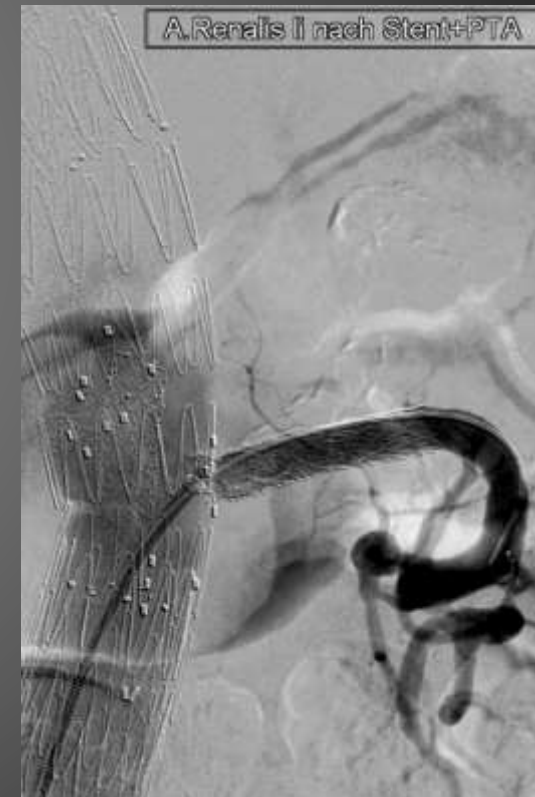
Post-Dissection TAAA Reason for Reintervention



Completion angio



Angio 1 month



Connective Tissue Disease TAAA

- OPEN
 - Gold Standard
- ENDO
 - Only for pts unfit for OPEN
 - Durability???



Confounding Factors



- Not comparable cohorts
 - Patients
 - Anatomy, number of target vessels
- Center Experience
 - High vs Low volume centers
- Set-up in different centers/countries
- Patient selection bias
- Learning Curve!

Conclusions

- FEVAR/BEVAR for TAAA
 - Durable Option
 - Low Aortic related death during F/U
 - Good patency of target vessels
 - Fenestrations better than branches for RAs?
 - Confounding factors...
 - Need for Reintervention (mostly for branches?)
 - Mostly by endovascular means

What do we still need?



- Close patient surveillance!

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- Better bridging stent-grafts
 - More F/BEVAR dedicated?

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- Close patient surveillance!
- Better bridging stent-grafts?
 - More F/BEVAR dedicated...
- ↓ Reinterventions for post-dissection TAAA

What do we still need?



- Close patient surveillance!
- Better bridging stent-grafts?
 - More F/BEVAR dedicated...
- ↓ Reinterventions for post-dissection TAAA
- Evidence for ENDO Repair of CTD TAAA...

An underwater photograph showing a diver's leg and foot in the foreground, with bubbles rising from the foot. The water is clear and blue-green. The text is overlaid on the center of the image.

**Better is the enemy of
good.**
Voltaire