

New Technologies and Techniques to Deal with Adverse AAA Neck Anatomy

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Aortic Endografts Current Limitations

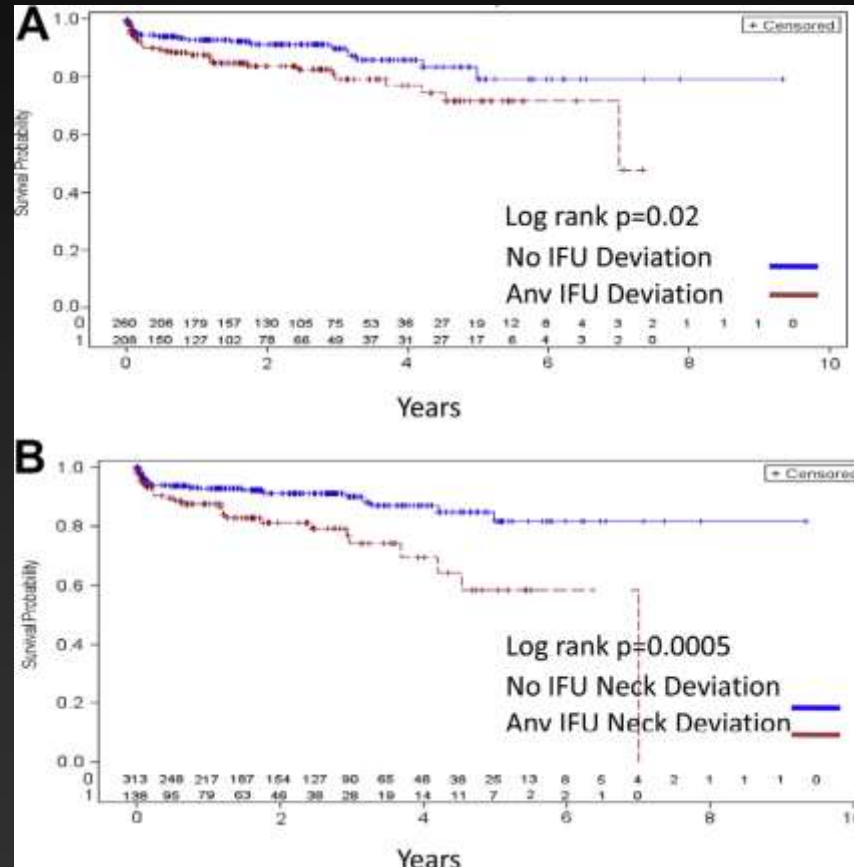


Anatomic Predictors of Type I Endoleak (N=238)

Table VII. Univariate and multivariate logistic regression analyses

<i>Regression analyses</i>	<i>Early type I endoleak</i>		
	<i>OR</i>	<i>95% CI</i>	<i>P</i>
<i>Univariate</i>			
Neck angle	1.91	0.89-4.1	.0984
Neck length	4.59	1.76-11.93	.0018 ^a
Diameter	0.93	0.26-3.34	.909
Calcified neck	5.5	1.93-15.65	.0014 ^a
Circumferential thrombus	1.07	0.54-2.12	.8376
Reverse taper	5.97	2.87-12.42	<.0001 ^a

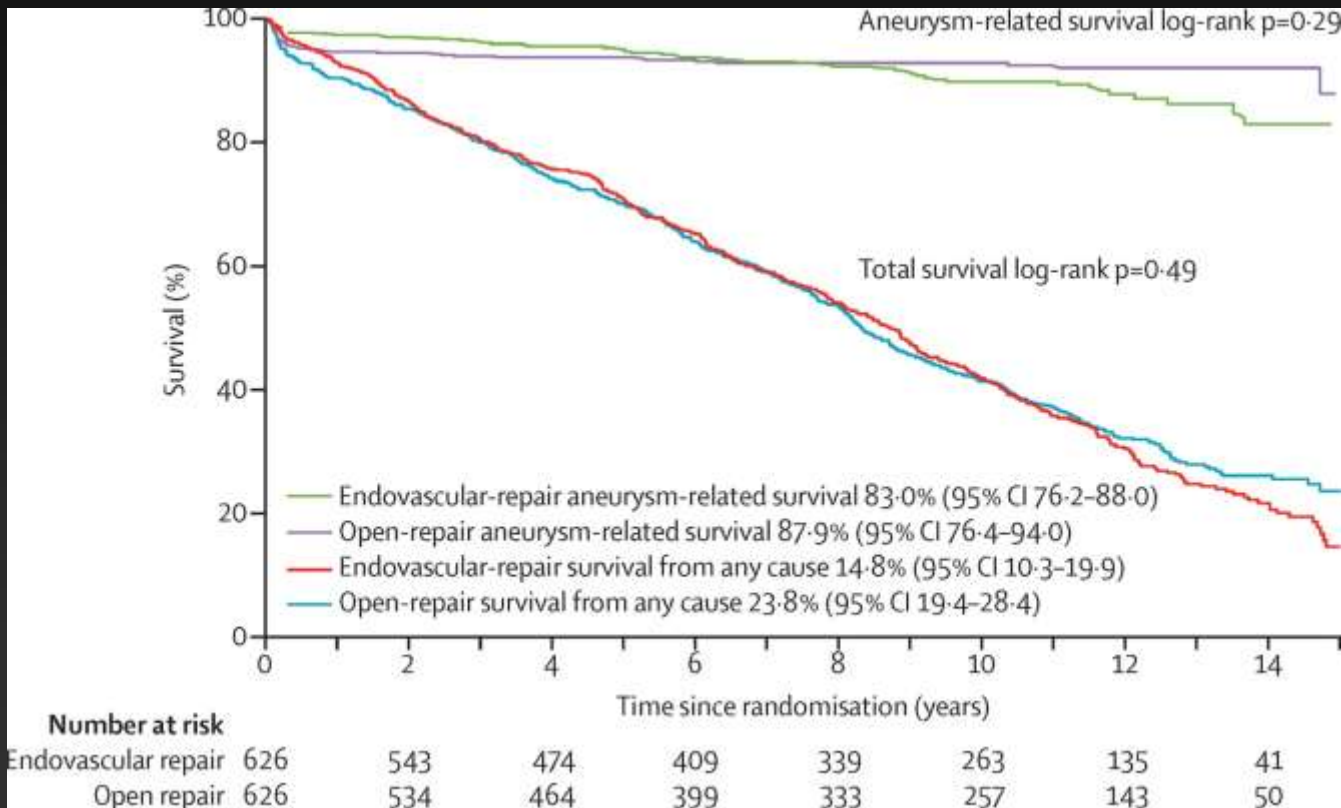
On vs. Off Label EVAR Outcomes



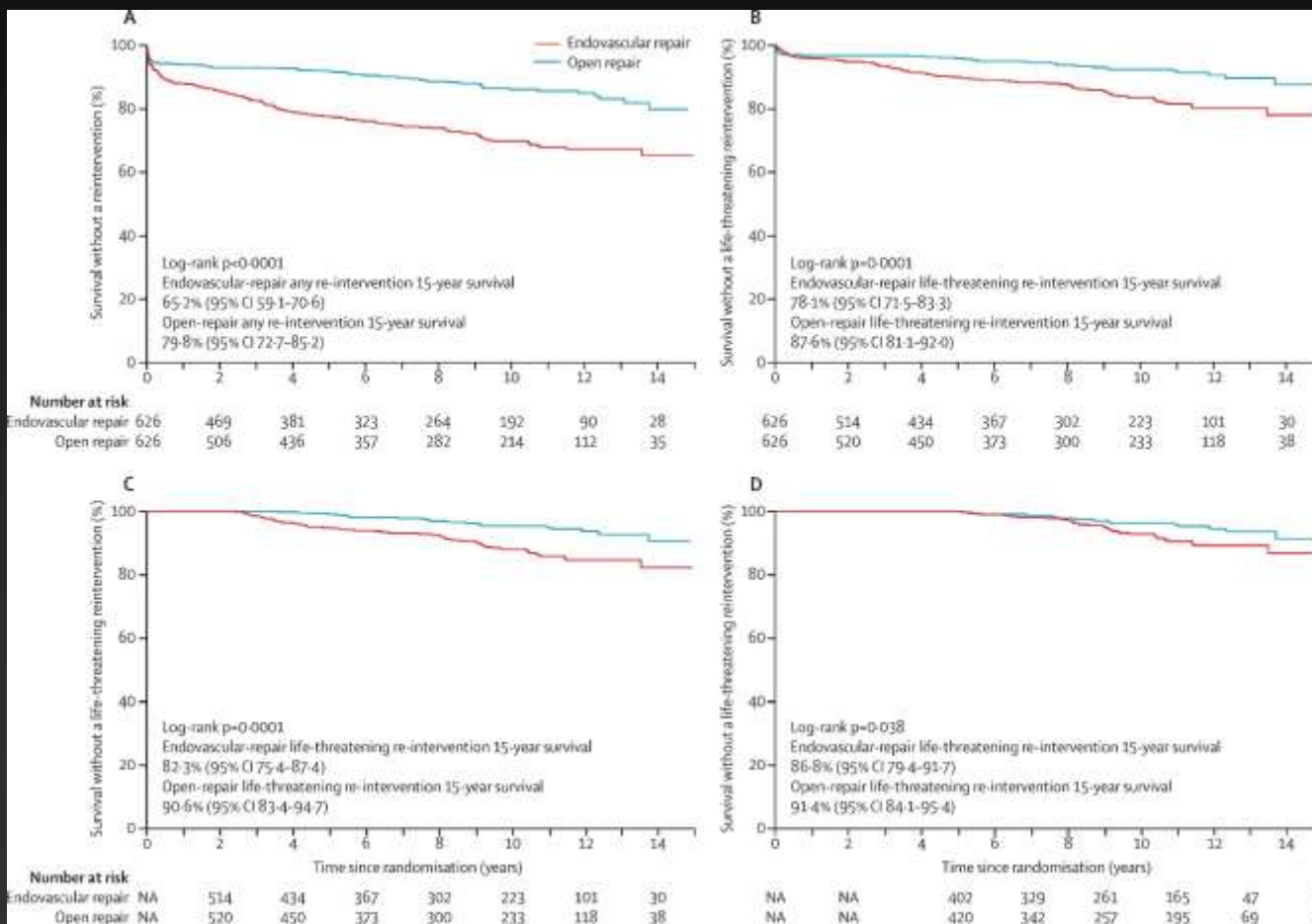
49% had ≥ 1 IFU deviation

- A. With and without any instructions for use (IFU) deviation.
- B. With and without neck IFU deviations.

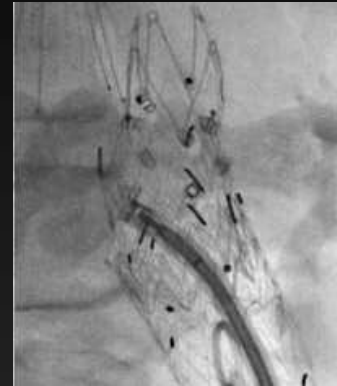
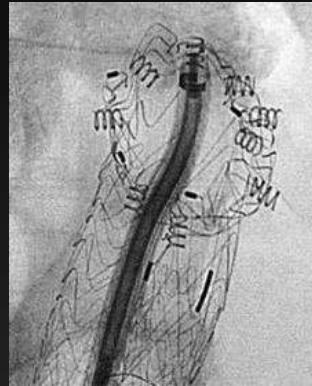
EVAR-1 15-Year Survival



15-Year Reintervention

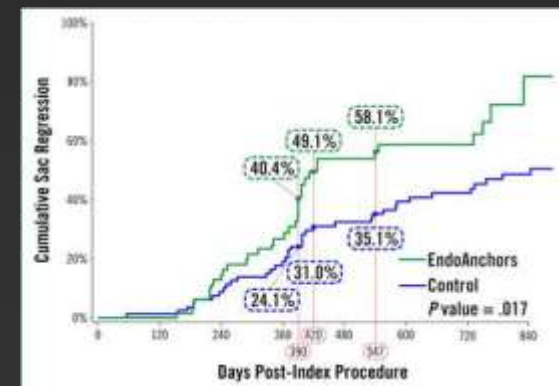


ANCHOR Endostaple Registry



	Prophylactic Use (N=314)	Resolve Intraoperative Endoleak (N=123)	Resolve Late Endoleak (N=167)
Procedural Success	94.6%	87%	89%
Type Ia leak at 24 mos	0.0%	2.9%	11.1%
Re-intervention at 24 mos	7.9%	7.1%	20.1%

Significant sac shrinkage with prophylactic use as compared to propensity-matched controls ($P=0.017$)²



¹Jordan WD Jr Veith 2016

²Muhs BE Veith 2016

Visceral Snorkels and Chimneys for Thoracoabdominal Aneurysms

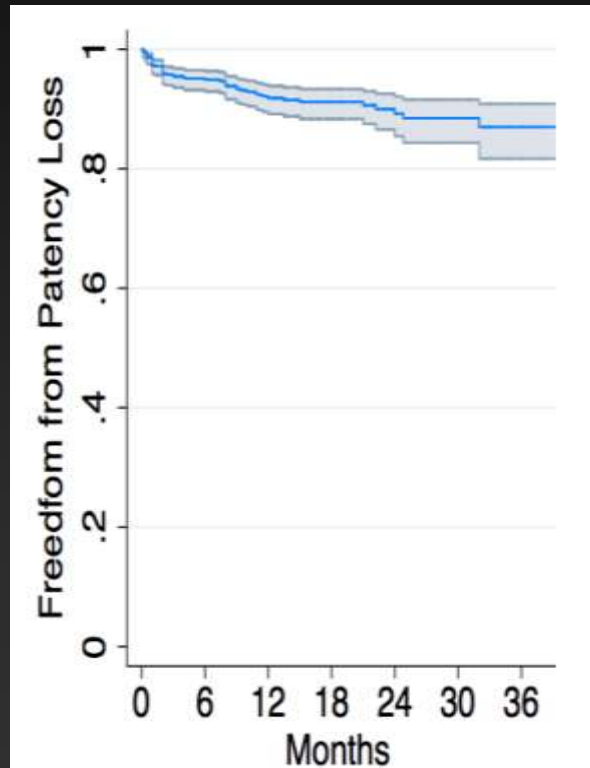


Images courtesy of Dr. Malina

PERICLES Trial

Visceral Chimneys for Thoracoabdominal Aneurysms

Multicenter retrospective registry of 898 snorkel/chimney grafts in 517 patients



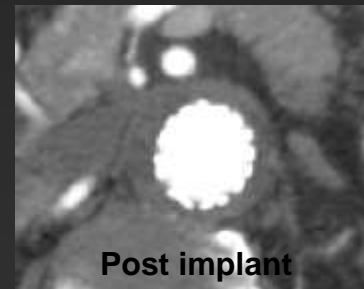
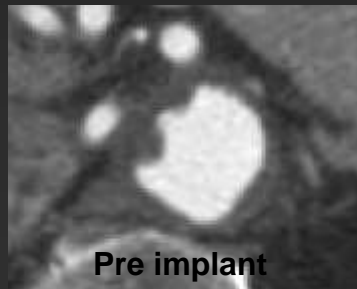
Type I Endoleak
Intraoperative 2.9%
At latest F/U 5.8%

All graft types
Ave 1.7 chimneys/case

Primary chimney patency 94%
at 17 months

TriVascular Ovation Global Pivotal Trial

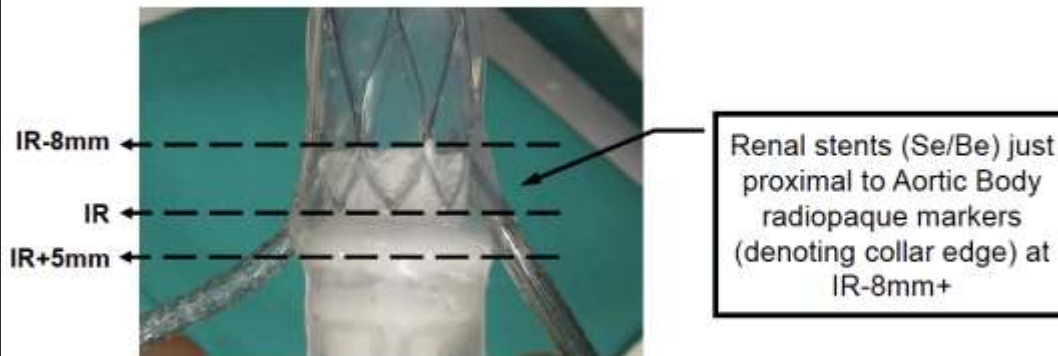
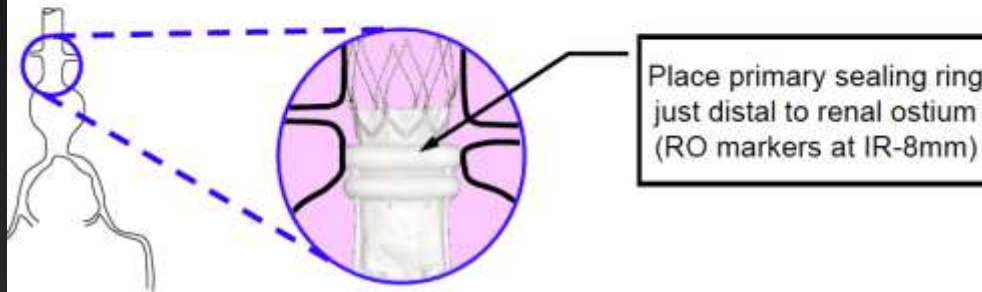
No Type I Leaks in Patients With Adverse Neck Anatomy



35% of enrolled patients had 1 or more hostile neck features (56/161)

Venting Procedure

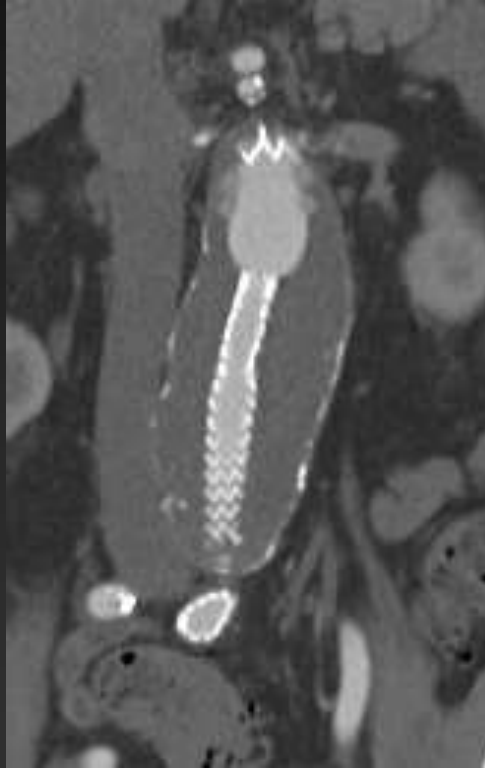
Ovation & Chimney Graft Placement



Venting Procedure With TriVascular Ovation



Implant angiogram



Post-op CTA

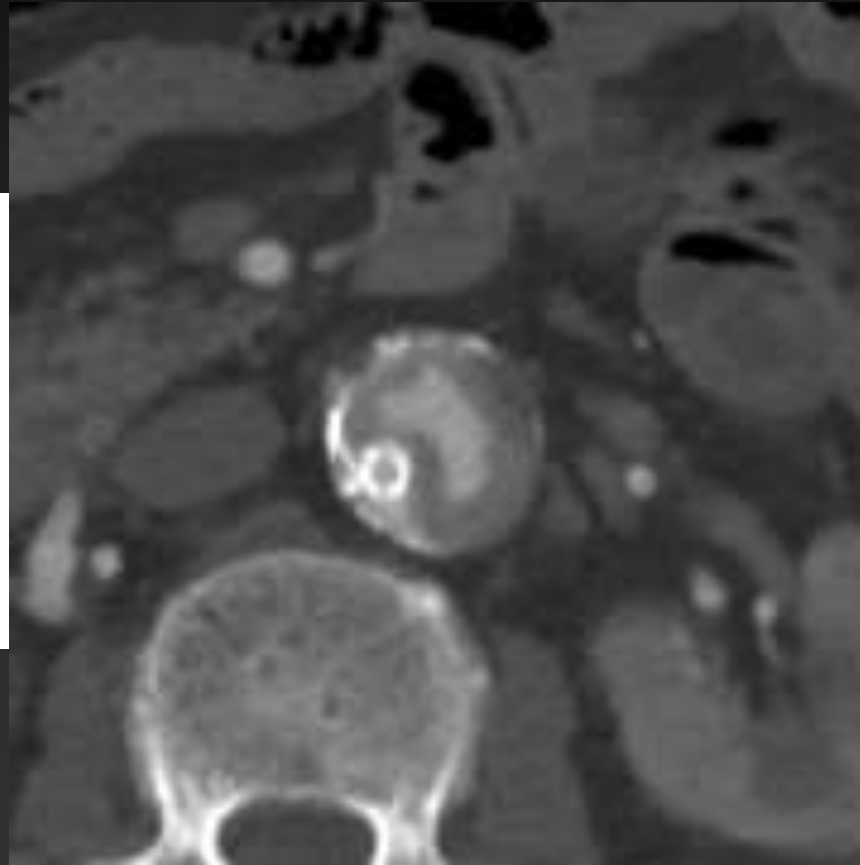


26-mo CTA

TriVascular Ovation

Sealing Rings Advantageous for Snorkeling

Self Expanding Stent Graft

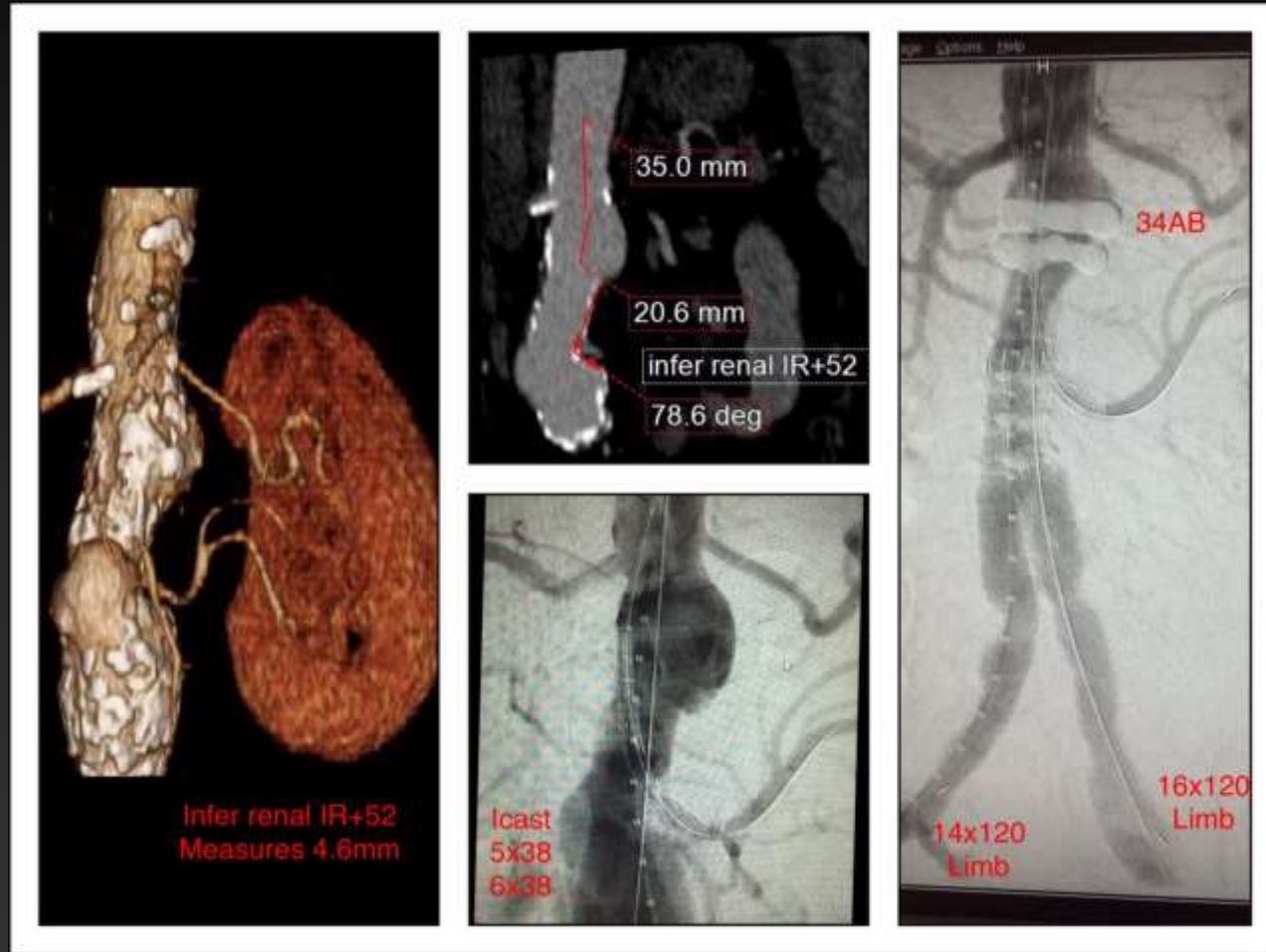


Ovation Abdominal Stent Graft

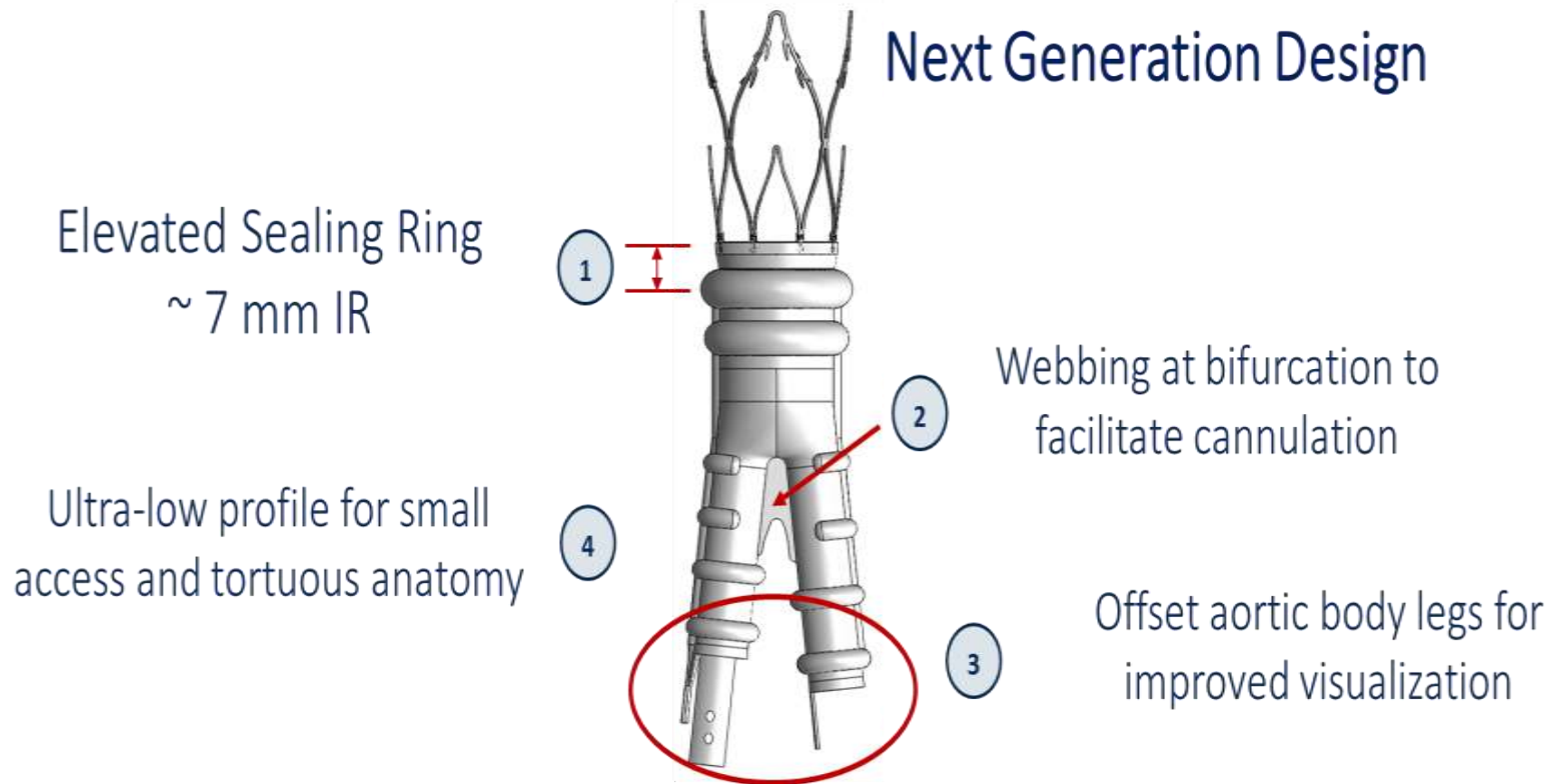


Images courtesy of Dr. R. Bersin

Accessory Renal Snorkel Using TriVascular Ovation

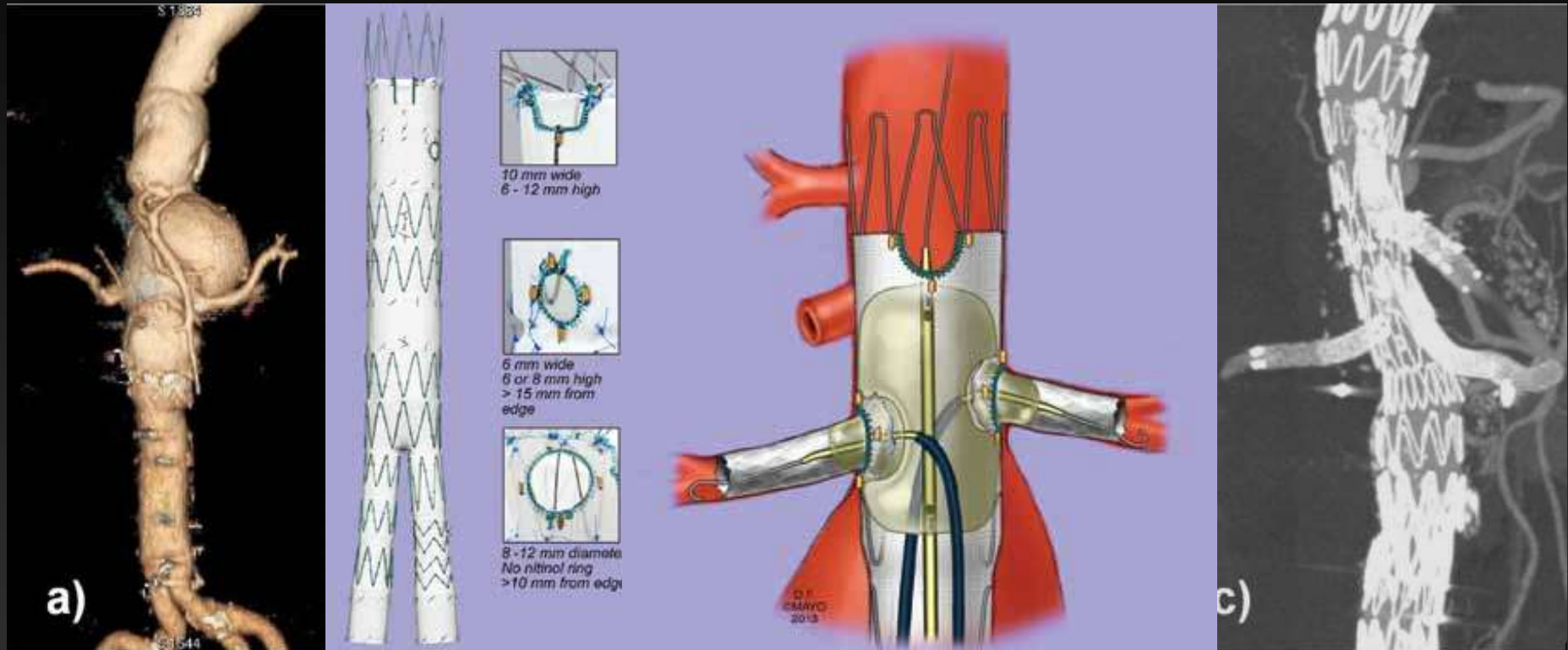


Ovation Alto



First sealing ring is 7mm below fabric collar instead of 13 mm

Fenestrated Endografts F-EVAR



No type I endoleaks pre- or post-market release (N= 113, 56/57)
Patency rates of visceral artery stents with F-EVAR were 95.7%
at 1 year and 88.6% at 4 years (N=138)

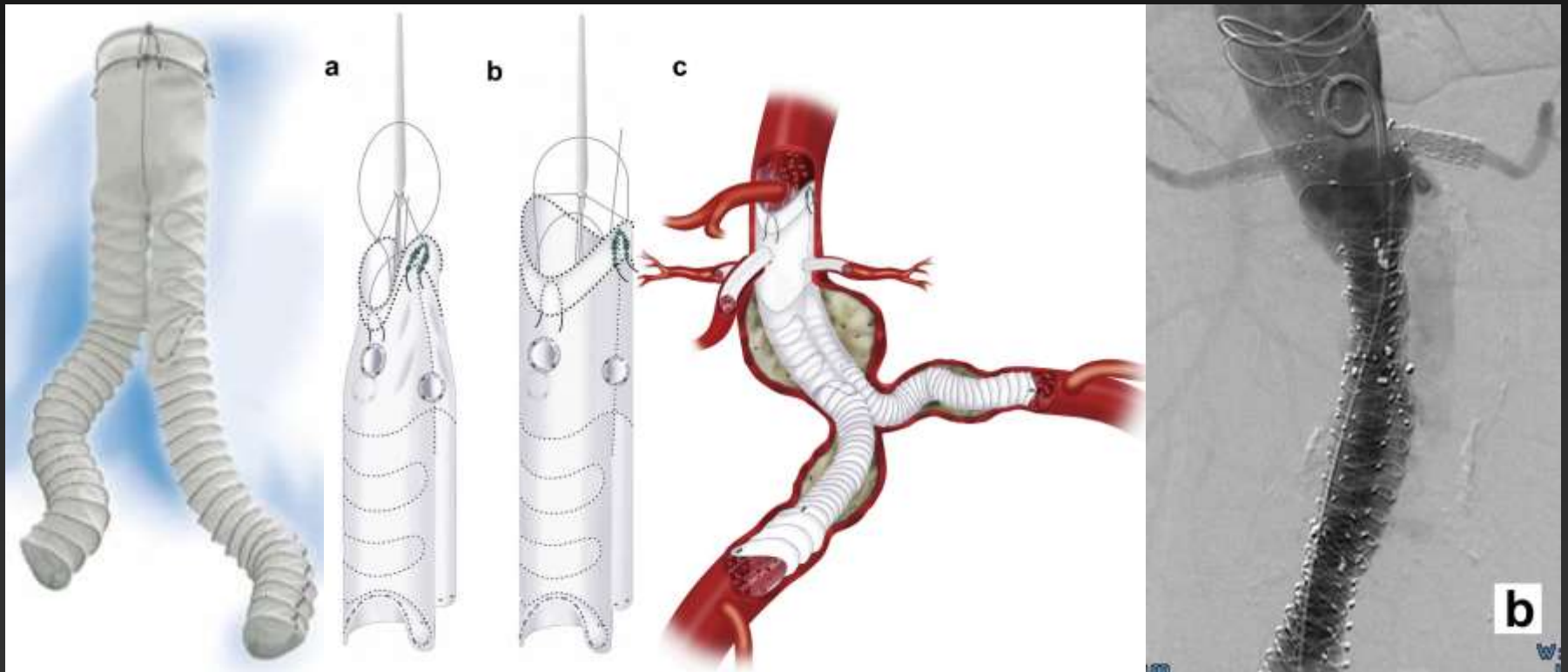
Grimme FAB et al *J Vasc Surg* 2014; 59: 298-306

Vemuri C et al *J Vasc Surg* 2014; 60: 295-300

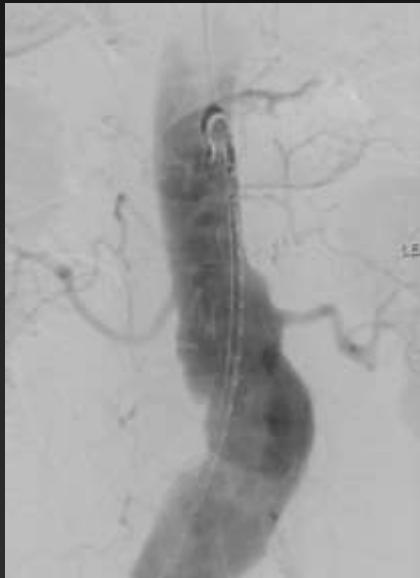
Zenith Fenestrated AAA Endovascular Graft Annual Clinical Update 2013

Anaconda Endograft

Flexible Design for Highly Angulated Necks and Fenestrated Aortic Cuff for Short Necks

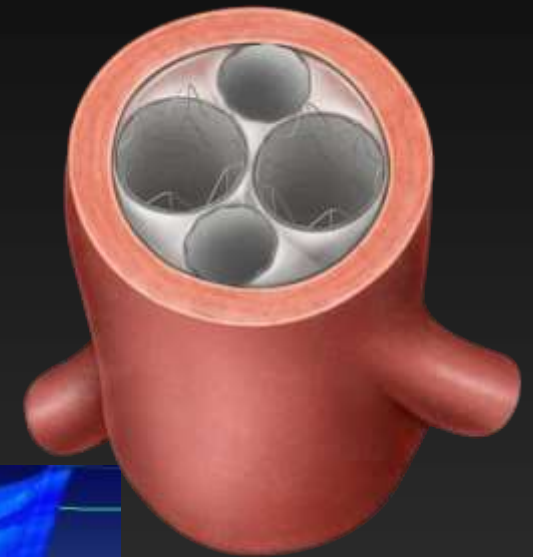
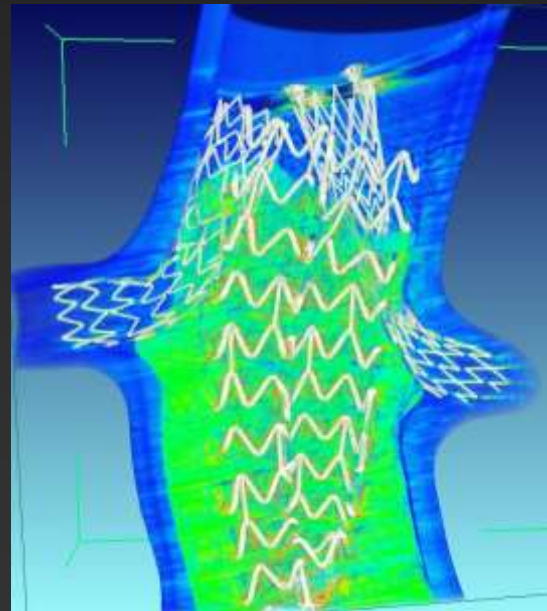


Hybrid Approach Using F-EVAR Grafts

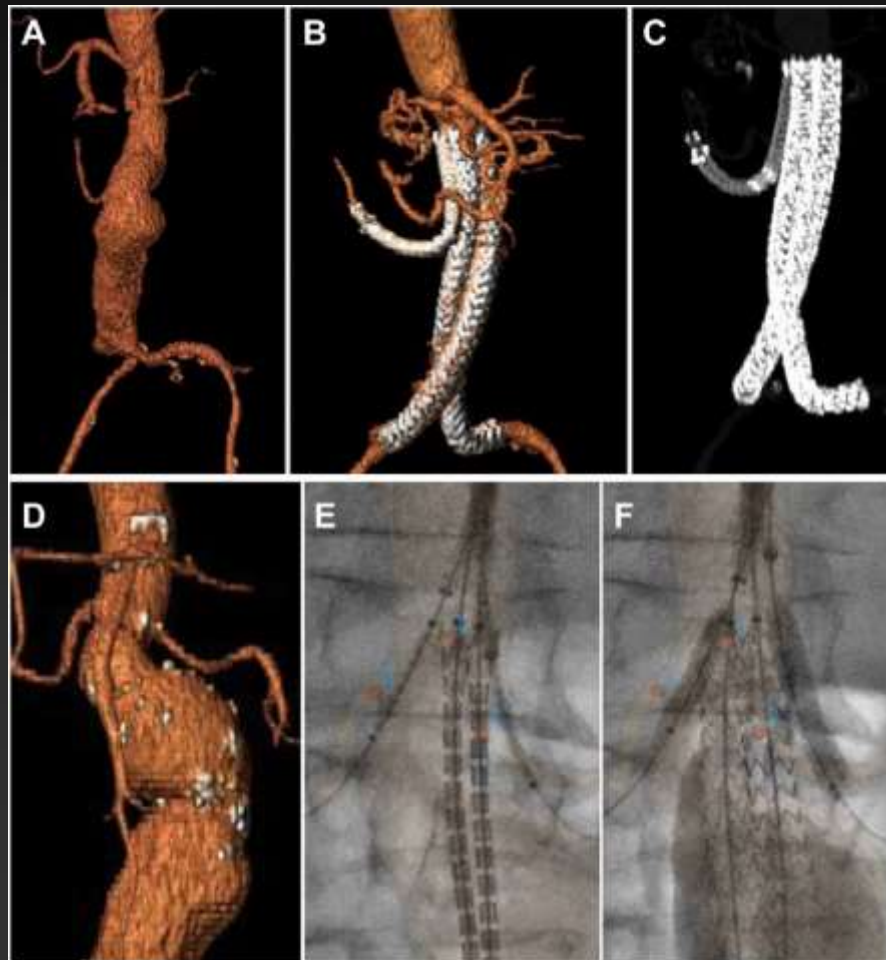


Debranching limited to the viscerals only

EVAS With Snorkel Grafts



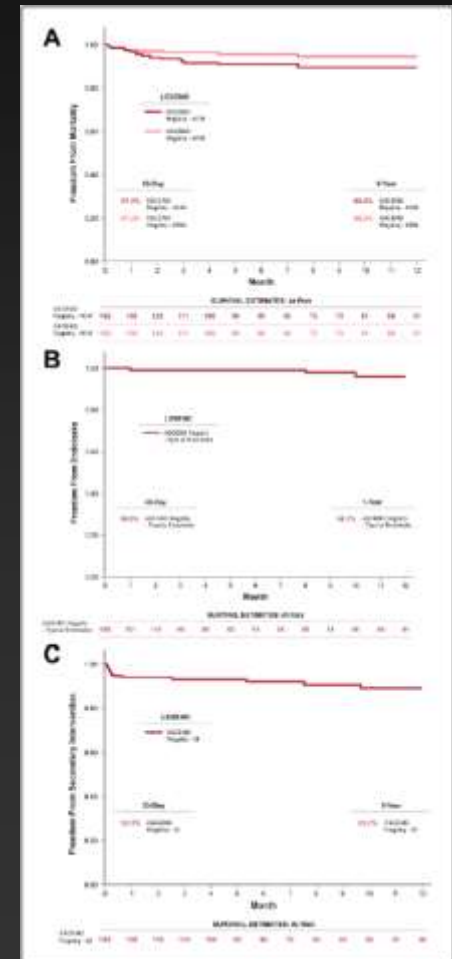
EVAS With Snorkel Grafts



An open-label, single-arm, post-market registry of the Nellix system with chimney grafts

1-year outcomes (N=154)

- Type Ia endoleak 4.3%
- Type II or III endoleak 0.0%
- Re-intervention 10.8%
- Aneurysm-related mortality 5.7%



Chimney EVAS vs EVAR

	ASCEND ¹ (N=154)	PROTAGORAS ² (N=128)	PERICLES ³ (N=517)
Type Ia endoleak	4.3%	1.6%	5.8%
Chimney graft patency	96.3%	95.7%	94.1%
Re-intervention	10.8%	14.1%	5.2%
Aneurysm-related mortality	5.7%	NR	0.7%

¹Thompson M et al *J Endovasc Ther* 2017; 24(6): 764–772

²Donas KP et al *J Vasc Surg* 2016; 63: 1-7

³Donas, KP et al *Ann Surg* 2015; 262: 546–553

Next Generation Endografting

Conclusions

- Endostapling reduces the risk of Type Ia endoleak in hostile neck anatomy cases
- F-EVAR devices are transforming our ability to seal adverse necks with few type I leaks and good visceral branch graft patency
- Biopolymer sealing rings provide superior sealing for Ch-EVAR with the potential for less gutter leak because of their better ability to conform/mold to snorkel grafts
- Whether endobags for Ch-EVAR provides a better solution for hostile neck anatomy is uncertain and requires further study and/or device modification.