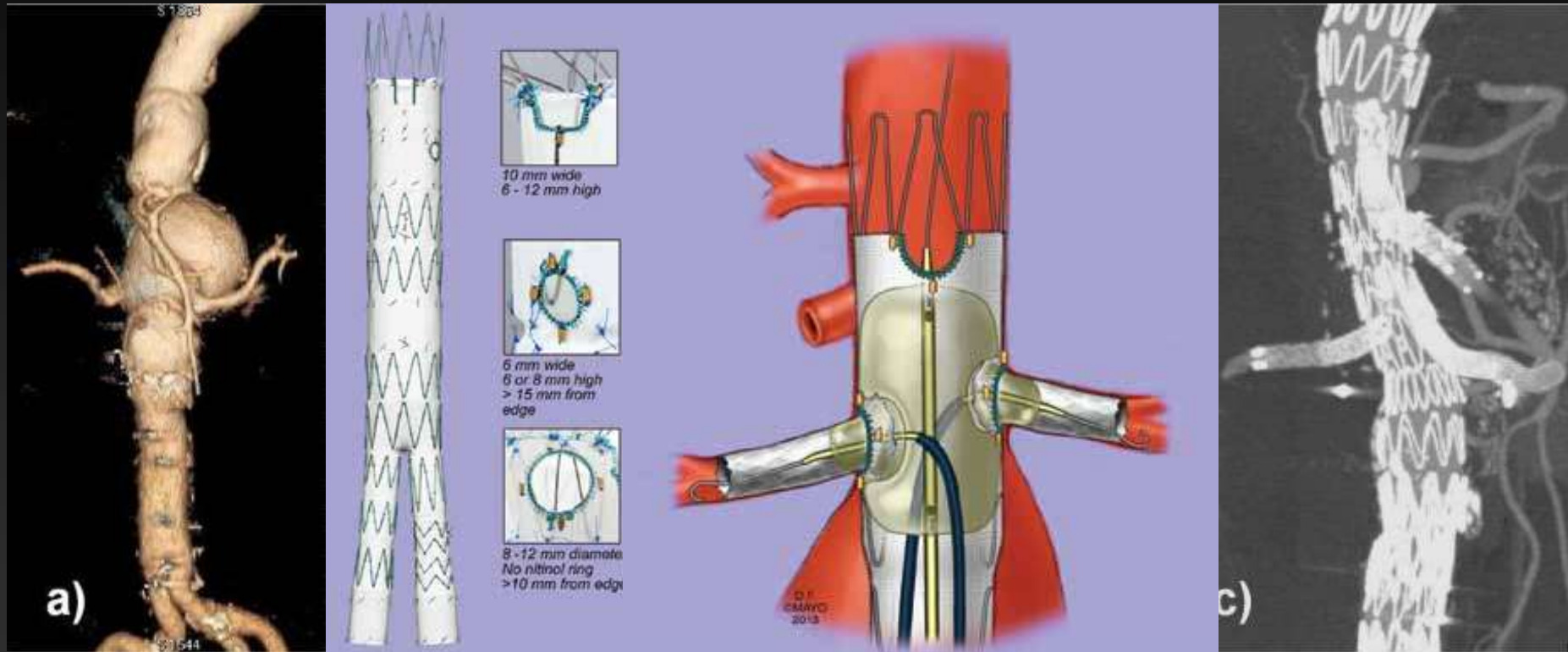


# Venting and Snorkeling with the Trivascular Endograft

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# Fenestrated Endografts F-EVAR



No type I endoleaks pre- or post-market release (N= 113, 56/57)

Patency of visceral stents with F-EVAR 95.7% at 1 year and 88.6% at 4 years (N=138)

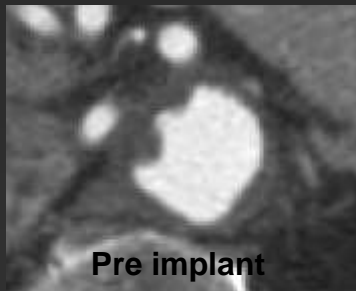
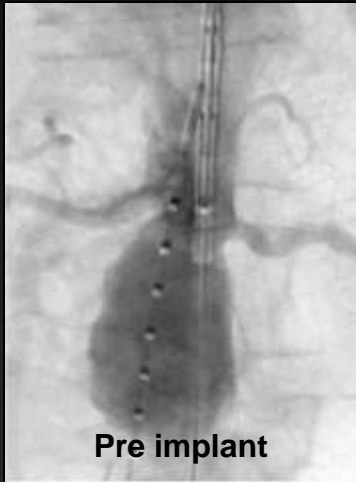
Grimme FAB et al *J Vasc Surg* 2014; 59: 298-306

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

Zenith Fenestrated AAA Endovascular Graft (P020018/S040) Annual Clinical Update 2013

# 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)

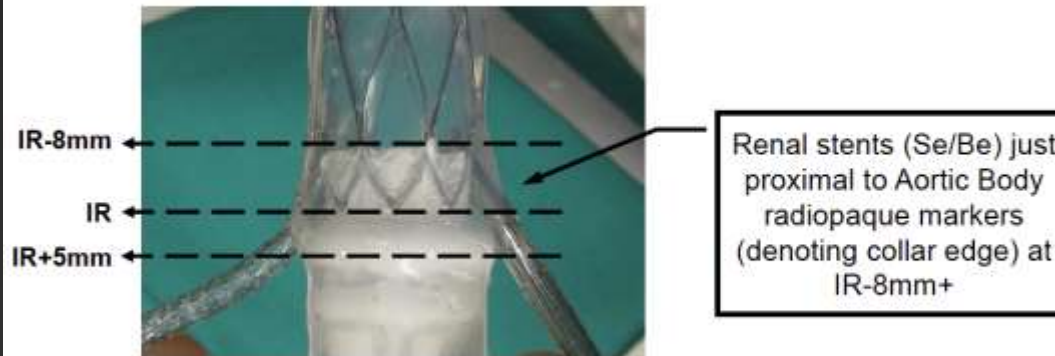
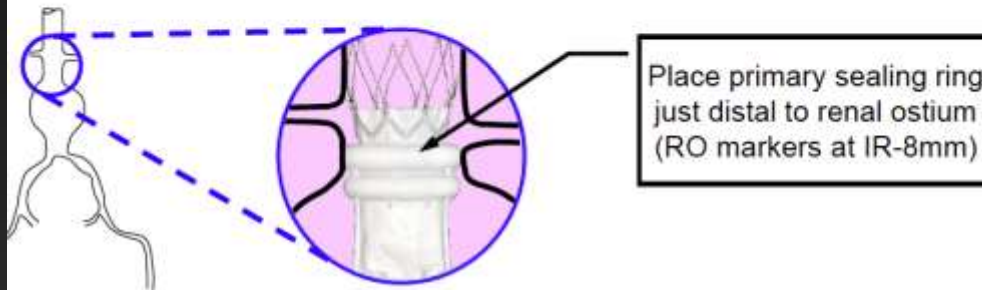
# Adjunctive Procedures in EVAR

## Trivascular Definitions

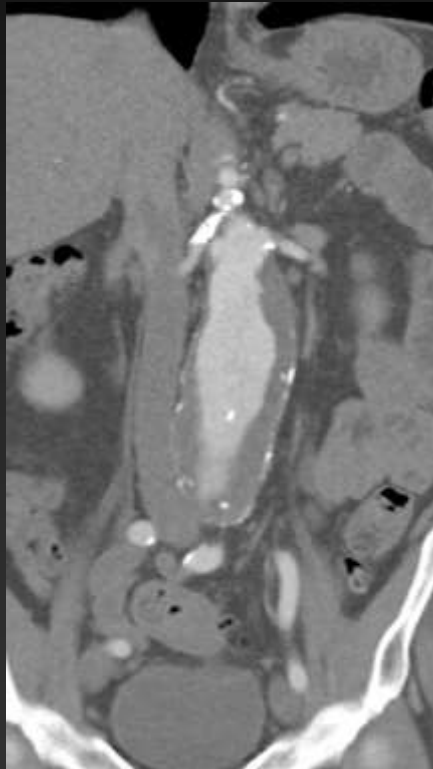
- **Venting:** A covered stent placed into a renal artery or SMA vessel adjacent to the main body of the EVAR device where **the covered stent does not cross the proximal sealing ring**. The aortic lumen of the renal or SMA covered stent is directed superiorly to the grafts sealing collar, resembling a snorkel.
- **Snorkel:** A covered stent parallel to the main aortic stent-graft to extend the proximal sealing zone while maintaining side vessel patency. **Snorkel grafts extend across one or both sealing rings** and are directed superiorly above the main body sealing collar.

# Venting Procedure

## Ovation & Chimney Graft Placement



# Venting Procedure with Trivascular Ovation

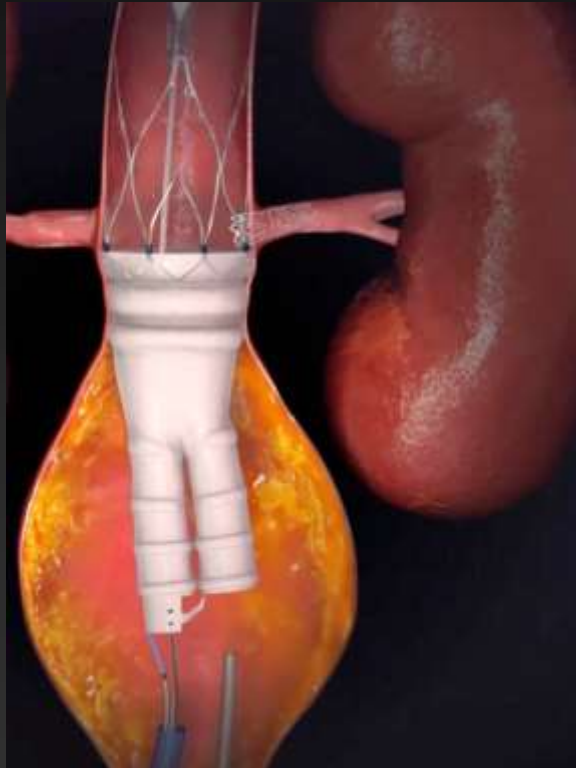


# Venting Procedure with Trivascular Ovation



Positioning of the renal graft well outside the ostium

# Venting Procedure with Trivascular Ovation

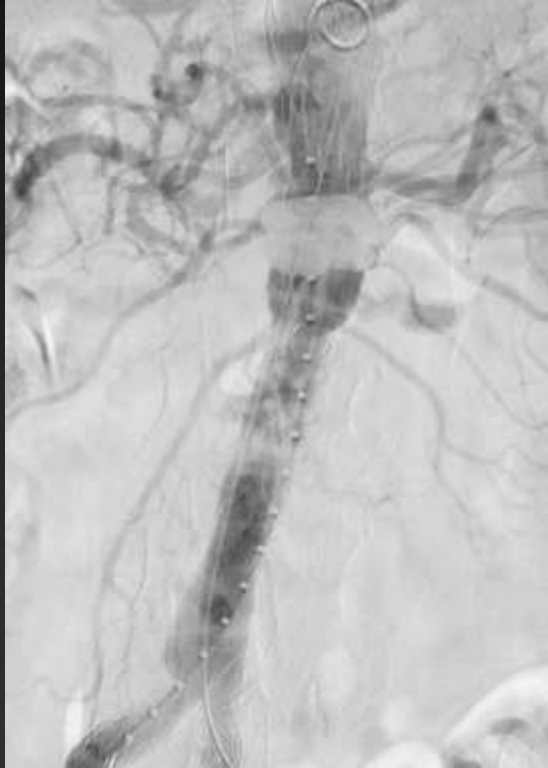


Biopolymer filling with upward pressure on the delivery system

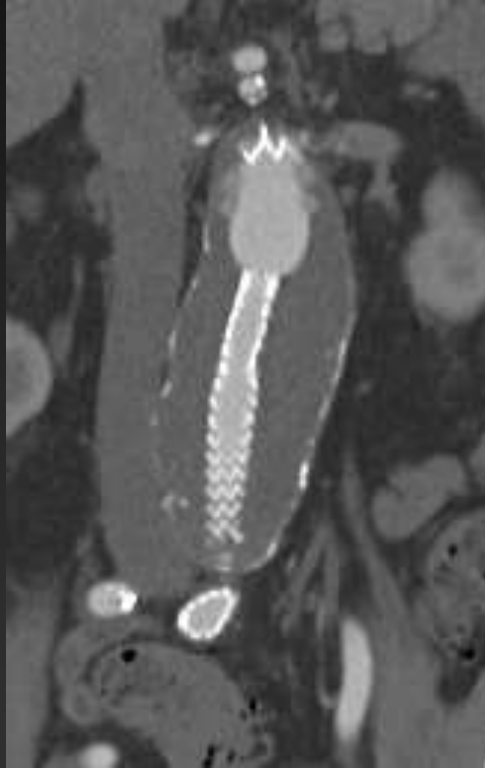
Courtesy of Dr. R. Bersin



# Venting Procedure with Trivascular Ovation



Implant Angiogram



Post-op CTA



26-mo CTA

# Bilateral Venting Case



Abdominal Anatomy

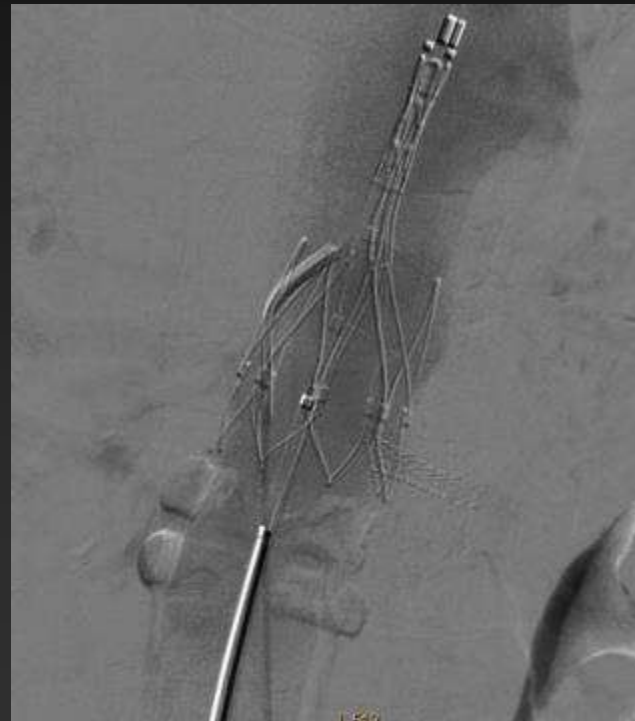


Reverse Taper Neck

# Bilateral Venting Technique



Placement of Left Renal Stent Outside Ostium



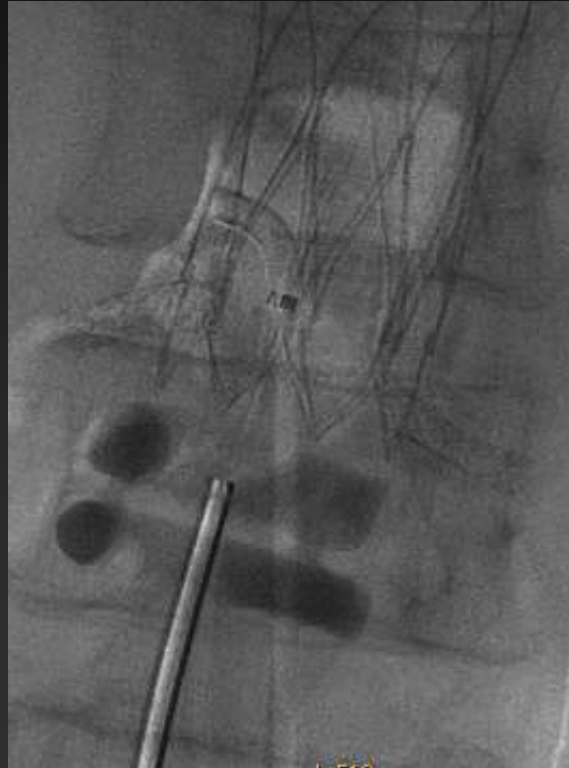
Pre Fill Graft with Saline/Contrast



# Bilateral Venting Technique



Second Renal Vent

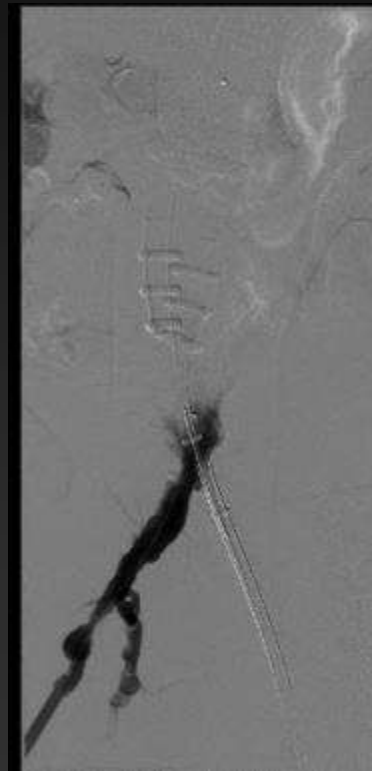
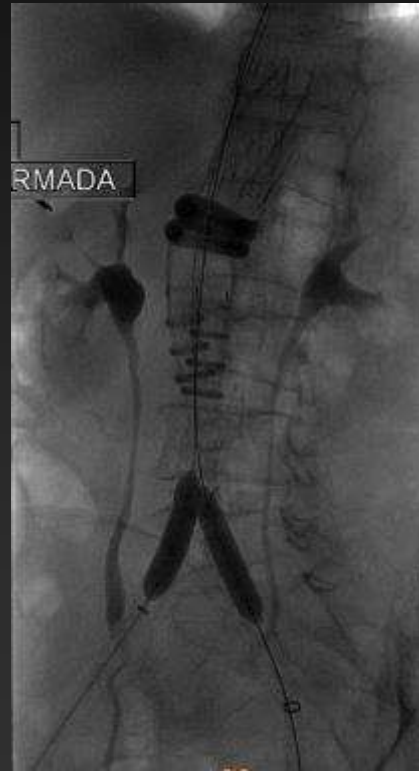
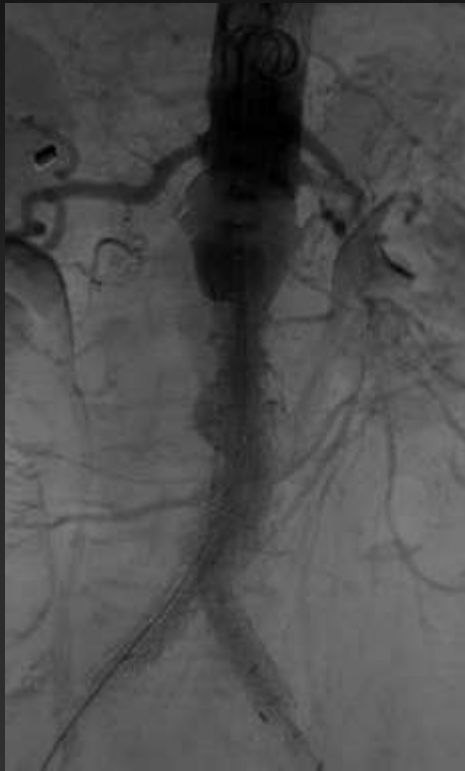


Contrast/Saline



Biopolymer Fill

# Bilateral Venting Technique

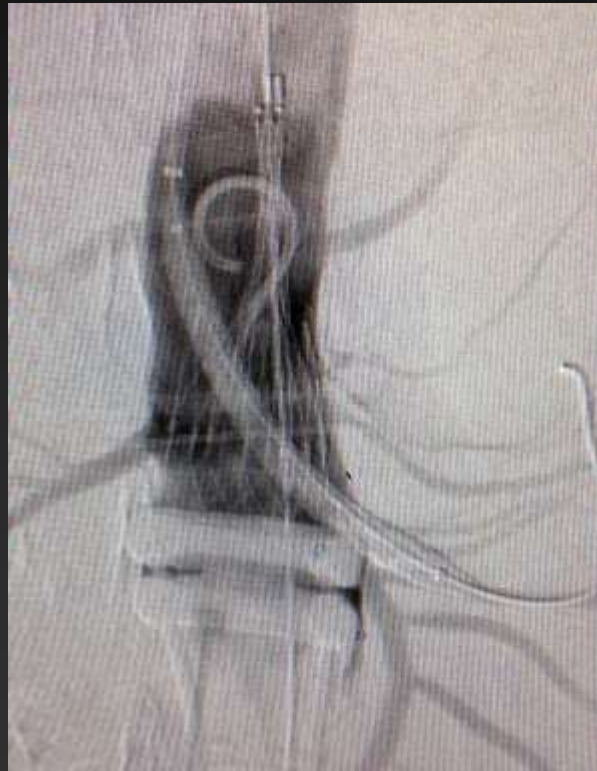


Proximal Venting Seal

Endoleg Placements and PTA

# Ramaiah Technique

## Polymer Injected Prior to Release of Crown Stent

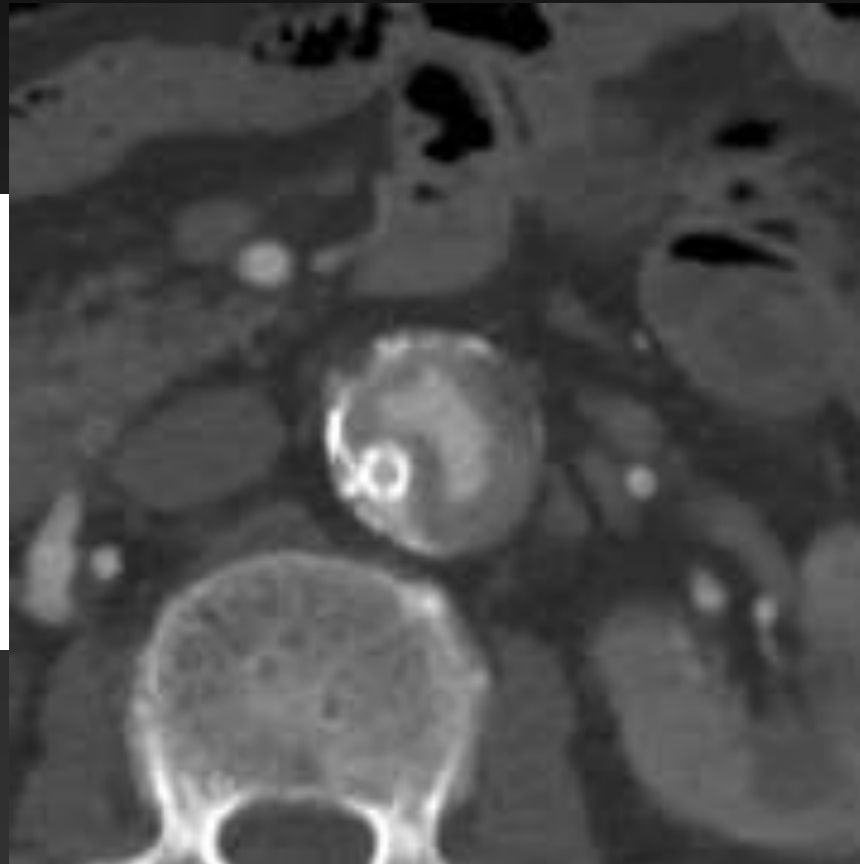
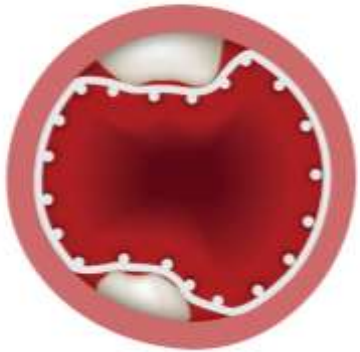


This technique allows more precise placement of the rings directly below the renal ostia

# Trivascular Ovation

## Sealing Rings Advantageous for Snorkeling

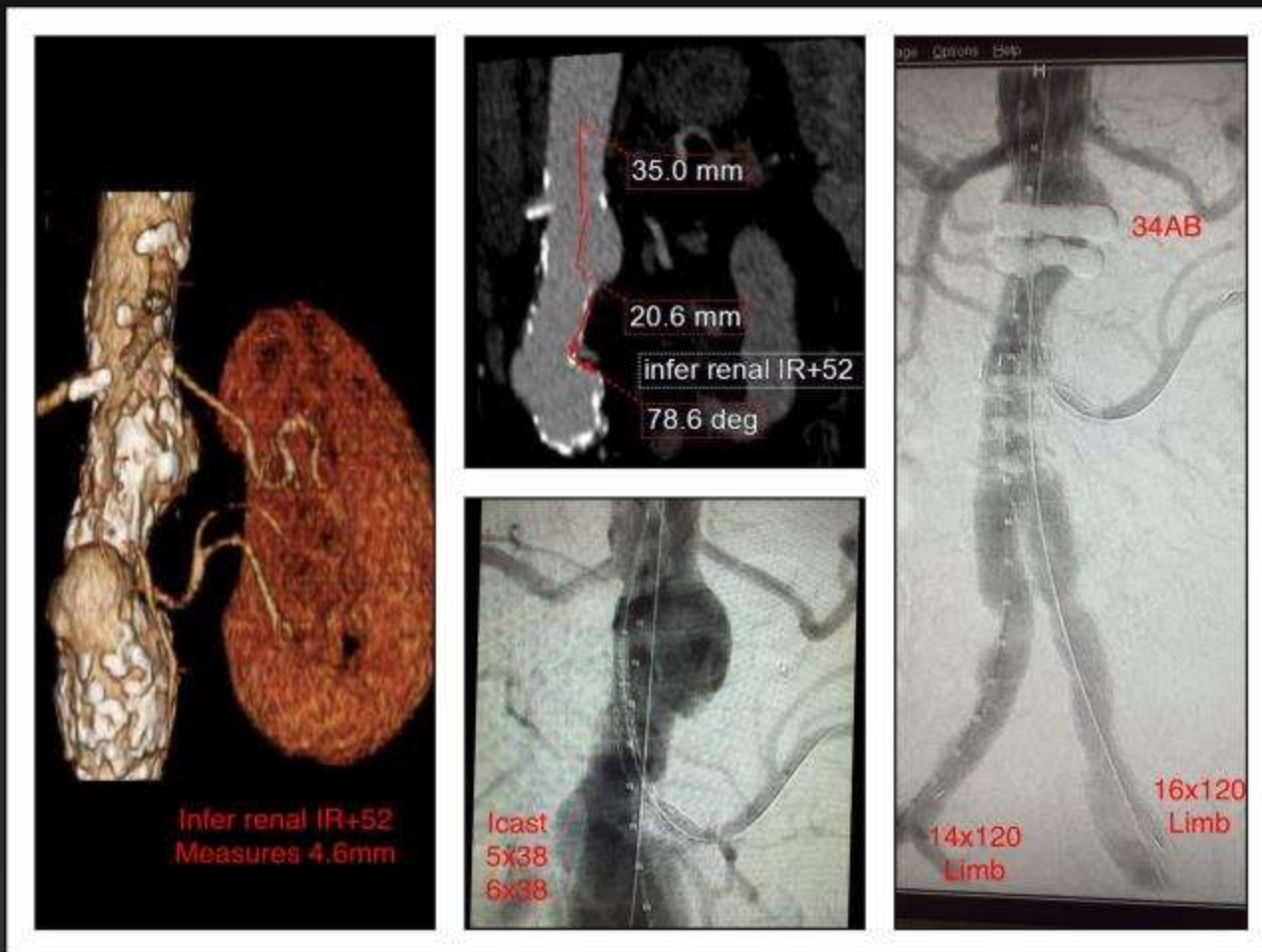
*Self Expanding Stent Graft*



*Ovation Abdominal Stent Graft*



# Accessory Renal Snorkel Using Trivascular Ovation





# AZ Heart Results Using Chimney Grafts with the Trivascular Endograft

21 patients treated with Ovation from 2013 to date

100% Technical Success

100% Freedom From Type 1a Endoleaks (“gutter” endoleak)

100% Freedom from Endoleak Type I / III / IV

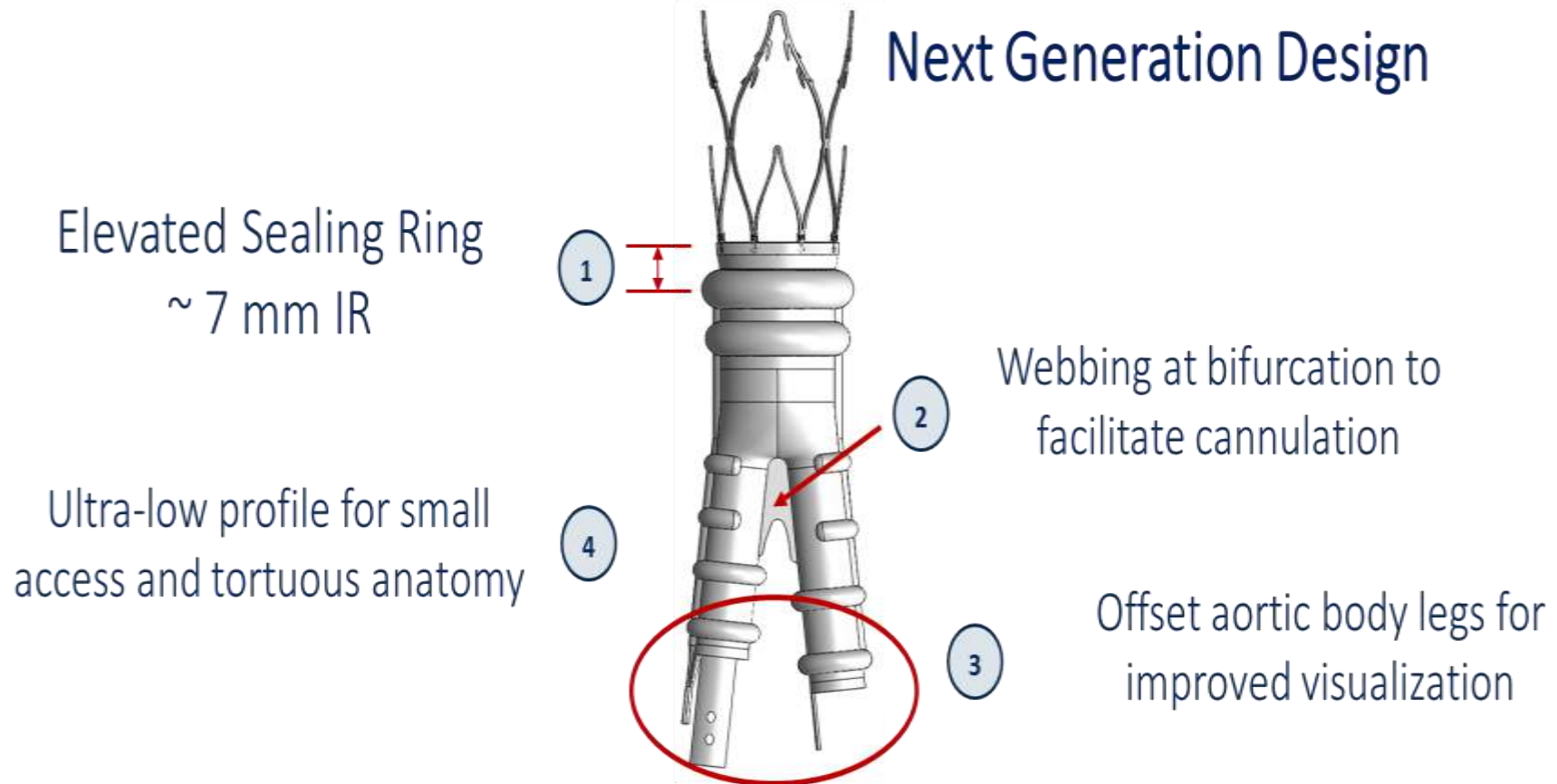
100% Freedom From Conversion

100% Freedom From Rupture

100% Freedom From Limb Occlusions

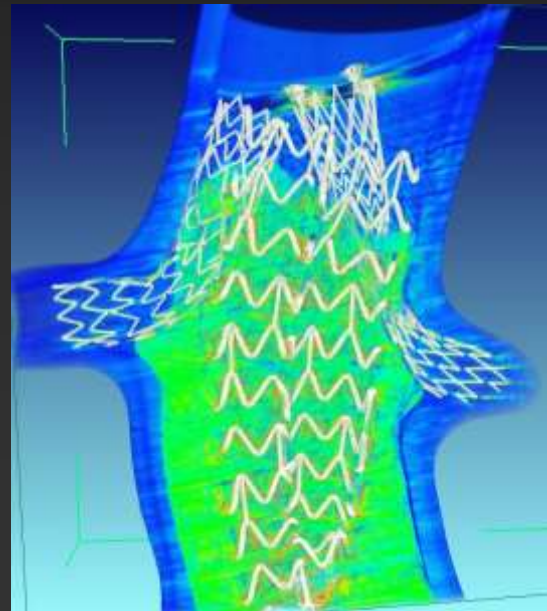
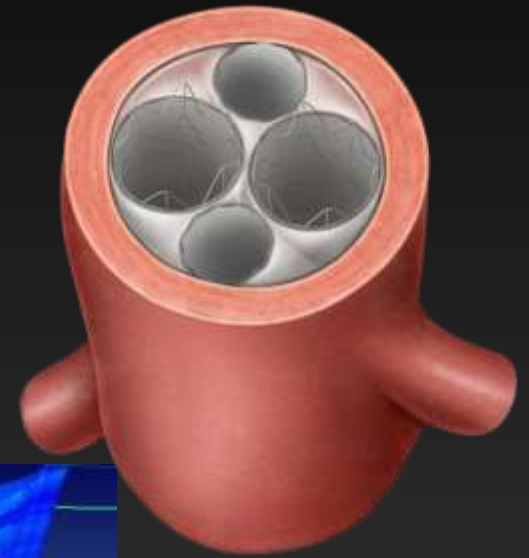
2 renal stenosis/occlusions, secondary renal stenting

# Ovation Alto



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

# EVAS with Snorkel Grafts



# Snorkel Grafts and EVAS – Technique

- Plan to increase sealing zone to 1.5-2.0 cm
- Aim for parallel alignment
- Inflate Nellix stents first and then visceral stents
- Keep snorkel stent balloons inflated while filling endobags and curing polymer



# ASCEND

Aneurysm Sealing for Complex AAA: Evaluation of Nellix Durability

- Post-market registry of the Nellix system with chimney grafts
- Open-label, single-arm, no prospective screening
- 200 patients, up to 10 international centers with 5y F/U
- 187 patients (154 primary, 9 rAAA, 25 EVAR, 5 EVAS)
- 1-yr endpoints typical of EVAR therapy in complex AAA

# ChEVAS and ChEVAR

	ASCEND (n=154)	PERICLES (n=517)
SINGLE	11%	70% (Juxtarenal)
DOUBLE	58%	
TRIPLE/QUADRUPLE	31%	30% (Suprarenal)
PERSISTENT TYPE I ENDOLEAK	0%	2.9%
TARGET VESSEL PATENCY	98% - 100%	92%
FREEDOM FROM ACM	90%	85%

# Next Generation Endografts

## Conclusions

- Venting of visceral vessels can be performed in short neck situations reliably with the Trivascular Ovation endograft
- The Alto endograft should facilitate short neck/no neck venting and reduce the need for snorkel grafts
- Biopolymer sealing rings provide superior sealing for snorkel grafts with the potential for less gutter leak because of their ability to conform/mold to snorkel grafts
- Endobags may transform our ability to provide endovascular solutions for hostile neck anatomy