New Findings From The ANCHOR Study Support The Prophylactic Use Of Heli-FX Endoanchor (Medtronic) Fixation: Use Of Its Variable Curve Sheath As A Rescue Tool To Fix Poorly Deployed Endografts

William D. Jordan, Jr., M.D.
Moretz/Mansberger Distinguished Chair in Surgery
Professor and Chair
Department of Surgery
Medical College of Georgia at Augusta University
Augusta, Georgia

November 21, 2024

Disclosures

CME Standards → NONE

Clinical Investigator – paid to Augusta University Research Institute
Gore, Medtronic, Endoron

Consultant – paid to Augusta University Research Institute
Gore, Medtronic

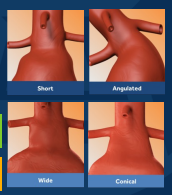
Member, Writing group for TBAD Clinical Practice Guidelines for Society for Vascular Surgery

Equity Shareholder
None

Hostile neck anatomy challenges EVAR outcomes[1]

Aortic seal zone is dependent on many factors:
- Length, angle, width, conicity, Ca^{2+}, thrombus, device design, etc.

Hostile neck characteristics leads to:
- Higher risk of type Ia's, neck degeneration, secondary procedures, late failure[2]



4.5x Increased risk of developing Type Ia endoleak at 1 year (P = 0.01)[1]

9x Increased risk of aneurysm-related mortality at 1 year (P = 0.01)[1]

ANCHOR Registry

Registry design	Prospective, observational, international, multi-center
Principal investigators	Europe: Dr Jean-Paul de Vries, US: Dr William Jordan
Enrollment period	April 2012 to December 2019
Follow up duration	5 years

ANCHOR registry (n=1032 AAA subjects enrolled)

Primary arm (n=771)

88.7% with Hostile Necks (572/645)
- <15mm
- >28mm
- >60°
- Conical
- Ca2+/Thrombus >50%)

Revision arm (n=261)

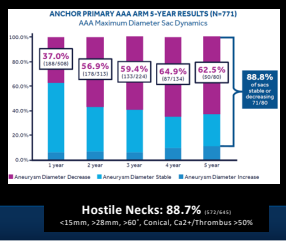
ANCHOR Primary AAA Arm 5-Year results (n=771)[1]

Reinforced Proximal Seal

89.0% - Freedom from Type Ia EL
96.0% - Freedom from Reinterventions for Type Ia EL
0 - Migrations through 5 years

Clinical Durability

98.4% - Freedom from Aneurysm Related Mortality
97.7% - Freedom from Rupture
88.8% - Stable or Regressing sac



Hostile Necks: 88.7% (572/645)
<15mm, >28mm, >60°, Conical, Ca2+/Thrombus >50%

ANCHOR Wide Neck Cohort: (n=72)

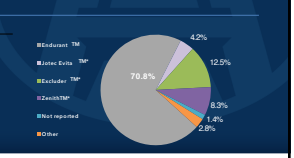
Three-Year Outcomes

Female: 11.1%

Mean: 73.0 years (n=71)

Neck Diameter: 29.5 ± 1.3 mm
Conical Neck: 23.6%
Neck Length: 18.3 ± 10.3 mm
Infrarenal Angulation: 32.8 ± 28.2° (n=67)
Aneurysm Diameter: 61.5 ± 11.7 mm

Baseline Demographics



Positive 3-Year Outcomes with ESAR

ANCHOR Wide Neck Cohort: Three-Year Outcomes[1]

	Freedom from Event through 3 years[2]	No. at risk[2] Year 0	Year 1	Year 2	Year 3
ACM	73.6 ± 6.7%	72	58	43	32
ARM	98.6 ± 1.4%	72	58	43	32
Conversion	100.0 ± 0.0%	72	58	43	32
Secondary procedures	87.4 ± 5.9%	72	56	39	26
Rupture	100.0 ± 0.0%	72	58	43	32
Migration	100.0 ± 0.0%	72	35	15	14
Type IA endoleaks	**98.5** ± 1.5%	72	46	30	24
Reintervention for Type IA	**100.0** ± 0.0%	72	58	43	32

- One Type IA endoleak detected within first 30 days. Patient was monitored and subsequent imaging showed no endoleaks

Short Neck Patients in ANCHOR Registry[1]

Registry design	Prospective, observational, international, multi-center
Principal investigators	Europe: Dr Jean-Paul de Vries, US: Dr William Jordan
Enrollment period	April 2012 to December 2019
Follow up duration	5 years
Short Neck Cohort	Proximal neck length: ≥4mm and <10mm indication received FDA and CE mark approval in 2017

ANCHOR registry (n=1032 AAA subjects enrolled)

Primary arm (n=771) | Revision arm (n=261)

Short Neck (N=70)

[1]Arko F, Southern Association of Vascular Surgeons, 2023

ANCHOR Short Neck Cohort - 5 Year[1]

1086 Total Enrolled → 771 AAA Primary Arm → 70 Endurant™ Short Neck Cohort

Baseline Characteristics

Age (year)	71.3 ± 8.1 (70)
Female Gender % (m/n)	27.1% (19/70)
Risk Factors	
Tobacco Use	80.0% (56/70)
Hypertension	85.7% (60/70)
Hyperlipidemia	75.7% (53/70)
Diabetes	22.9% (16/70)
Cardiac Disease	62.9% (44/70)
Pulmonary Disease	48.6% (34/70)
Renal Disease	15.7% (11/70)
Cerebrovascular/Neurological Disease	20.0% (14/70)
Lower Extremity PAD	18.6% (13/70)

Index Procedure

Type of Anesthesia (%, m/n)	
Local	11.4% (8/70)
Spinal	2.9% (2/70)
Epidural	1.4% (1/70)
General	84.3% (59/70)
Type of Procedure (%, m/n)	
Elective	69.8% (37/53)
Urgent	22.6% (12/53)
Emergent	7.5% (4/53)
Fluoroscopic Time (min)	35.8 ± 22.5 (47)
Total Amount of Contrast Used (mL)	131.6 ± 74.3 (32)
Total Number of EndoAnchors Deployed	5.5 ± 2.1 (70)

ANCHOR Short Neck Cohort - 5 Year[1]

1086 Total Enrolled → 771 AAA Primary Arm → 70 Endurant™ Short Neck Cohort

Mean Measurements

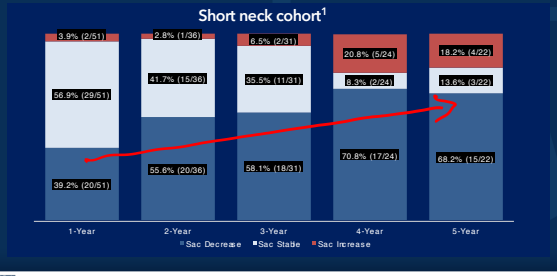
- Neck Length: 6.9 mm (core lab)
- Infrarenal Diameter: 25.7 mm
- Infrarenal Angulation: 20.6°
- Aneurysm Diameter: 57.7 mm

Clinical Outcomes:

- **95.6%** FF Rupture
- **76.9%** FF All Reintervention
- **90.1%** FF ARM

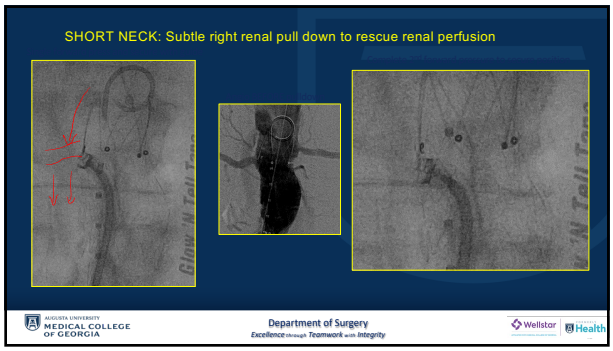
ESAR Sac Dynamics

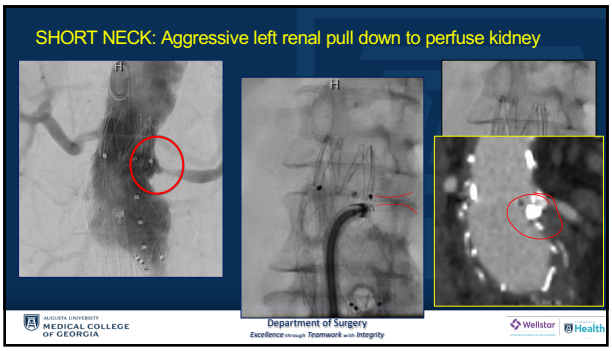
Short neck cohort[1]

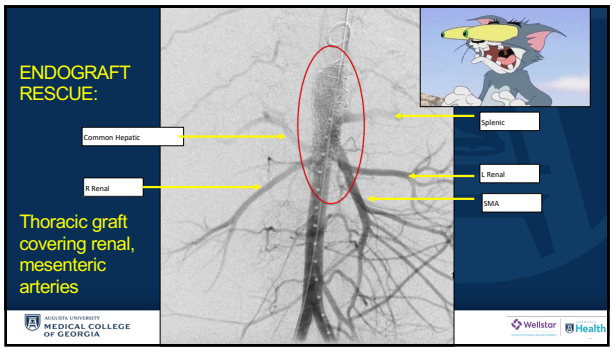


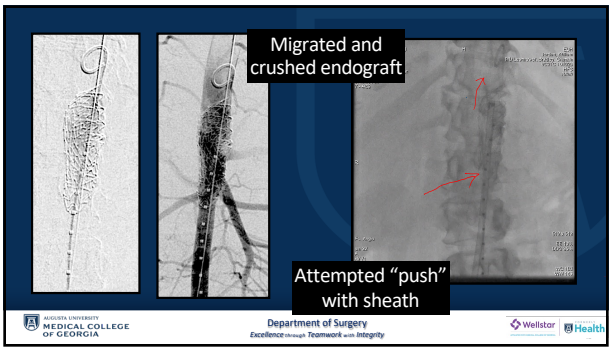
Obtaining good results in hostile necks

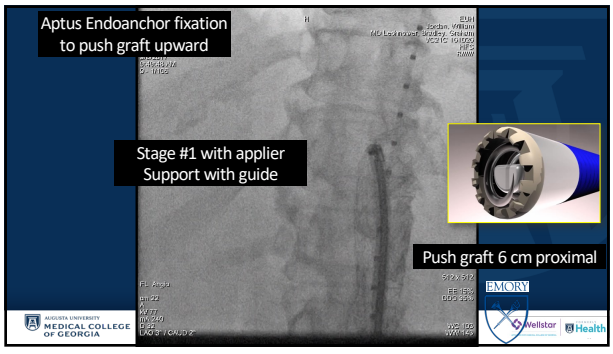
- Precise and accurate deployment and sealing of endograft
- Using adjustable, angled sheath to improve graft placement
- Combination of guide and applier create "tool" for in-situ graft adjustment

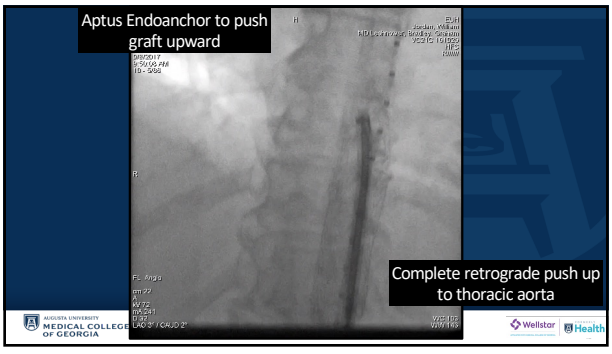

SHORT NECK: Subtle right renal pull down to rescue renal perfusion
Department of Surgery


SHORT NECK: Aggressive left renal pull down to perfuse kidney
Department of Surgery


ENDOGRAFT RESCUE:
Common Hepatic
R Renal
Splenic
L Renal
SMA
Thoracic graft covering renal, mesenteric arteries


Migrated and crushed endograft
Attempted "push" with sheath
Department of Surgery


Aptus Endoanchor fixation to push graft upward
Stage #1 with applier
Support with guide
Push graft 6 cm proximal


Aptus Endoanchor to push graft upward
Complete retrograde push up to thoracic aorta

Conclusions

- ESAR has good durability for hostile neck aneurysm patients with 90% freedom from ARM at 5 years
- EndoAnchors with sheath can be used to improve graft position in-situ
- Experience with grafts and devices can improve results