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DIVISION OF VASCULAR AND
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Predictors of Aneurysm Sac Shrinkage Utilizing a Global Registry

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DIAGNOSTIC AND THERAPEUTIC APPROACHES TO VASCULAR DISEASE.



DISCLOSURE

Mina Boutrous, MD

**No Relevant Financial
Relationship Reported**



Objectives

- To identify factors affecting abdominal aortic aneurysm sac remodeling following EVAR for non-ruptured infrarenal abdominal aortic aneurysms

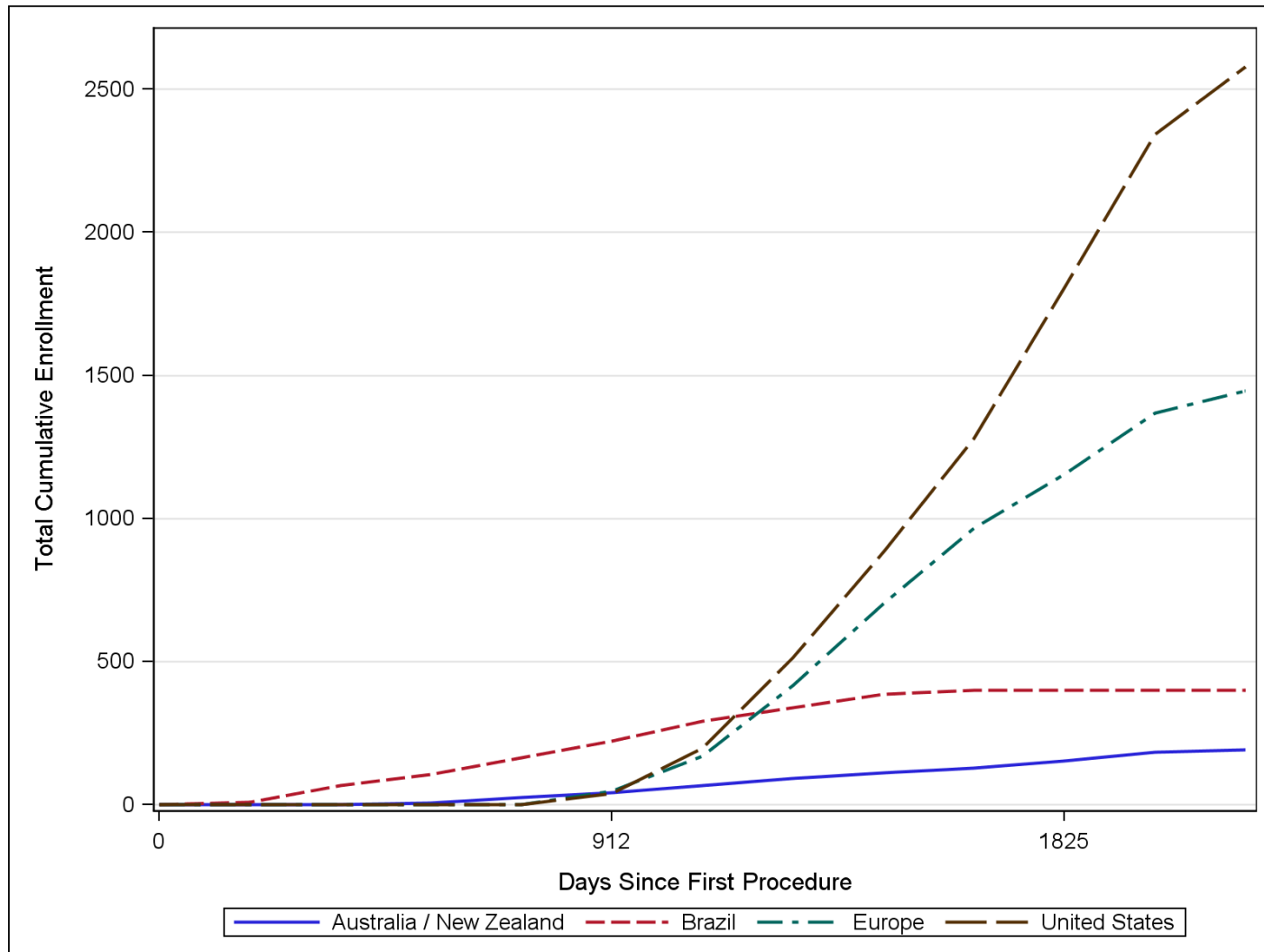


GREAT Registry

- International, multicenter, prospective registry designed to capture data on all Gore aortic endografts
- Utilized for data extraction
- Initiated in August 2010
- Captures demographics, medical history, operative variables and post procedure follow-up



GREAT Enrollment



Methods

- 3265 patients with AAA identified
- 526 patients had follow-up measurements for three successive years following procedure
- Percentage reduction in aneurysm sac maximum diameter was calculated in yearly intervals for the first three years



Results

- Formula used:
 - $((\text{AAA baseline diameter} - \text{AAA diameter at Follow-Up}) / (\text{AAA baseline diameter} - \text{Device Diameter})) * 100$

Number of Subjects Enrolled	Total (n=526)
% Reduction Towards Device Diameter 3 Year	
Mean (Std Dev)	28.2(39.0)
Median	27.2
Interquartile (25 th -75 th percentile) Range	(3.2, 55.9)
Range	(-103.7,183.9)



Patient Demographics

	Subjects Enrolled (N=526)
Gender	
Male	454 (86.3%)
Female	72 (13.7%)
Race	
White or Caucasian	477 (90.7%)
Black Or African American	9 (1.7%)
Other	2 (0.4%)
Unknown	32 (6.1%)
Age (yrs)	
Mean (Std Dev)	72.9 (7.3)
Median	73
Range	(51.0,89.0)
BMI	
Mean (Std Dev)	27.5 (4.3)
Median	27.25
Range	(13.8, 56.4)



Results

- Top quartile of sac regression was compared to bottom three quartiles according to percentage of aneurysm sac shrinkage
- Multivariate logistic regression analysis pursued with backward elimination retaining only statistically significant factors



Results

	Top 25% Reduction at 3 Years (n=131)	Bottom 75% Reduction at 3 Years (n=395)	p-value
Gender			
Male	109 (83.2%)	345 (87.3%)	0.23
Female	22 (16.8%)	50 (12.7%)	
Race			
American Indian/Alaskan	0 (0%)	2 (0.5%)	0.45
Asian/Oriental	0 (0%)	2 (0.5%)	
Black or African American	4 (3.1%)	5 (1.3%)	
Middle Eastern	0 (0%)	1 (0.3%)	
Native Hawaiian/Pacific Islander	1 (0.8%)	0 (0%)	
White/Caucasian	120 (91.6%)	357 (90.4%)	
Other	0 (0%)	2 (0%)	
Age(years)			
Mean (StdDev)	71.3 (7.3)	73.6 (7.4)	0.003
Median	54.7	56	
Range	39.9, 95.0	34.2, 100.0	
Mean BMI (StdDev)	27.0 (4.6)	27.7 (4.2)	0.16



Results

	Top 25% Reduction at 3 Years (n=131)	Bottom 75% Reduction at 3 Years (n=395)	p-value
Reason for Treatment			0.99
Primary Procedure	130 (99.2%)	391 (99%)	
Reintervention of Prior Procedure	1 (0.8%)	4 (1%)	
Aneurysm Baseline Diameter (mm)			0.026
Mean (Std Dev)	56.4 (8.5)	58.5 (10.9)	
Median	54.7	56.0	
Range	39.9, 95	34.2, 100	
Aneurysm Baseline Diameter > 5.5 Cm	58 (44.3%)	214 (54.2%)	0.049
Pre-Imaging Modality			0.66
CT	20 (15.3%)	45 (11.4%)	
CTA	111 (84.7%)	346 (87.6%)	
MRI	0 (0%)	1 (0.3%)	
X-Ray	0 (0%)	1 (0.3%)	
Ultrasound	0 (0%)	2 (0.5%)	



Results

	Top 25% Reduction at 3 Years (n=131)	Bottom 75% Reduction at 3 Years (n=395)	p-value
Conical Neck (Max-Min Proximal Diameter >2 mm)	58 (44.3%)	127 (32.2%)	0.012
Infrarenal Neck Angle (degrees)			0.73
Mean (Std Dev)	30.5 (23.0)	31.2 (22.0)	
Median	15.0	25.0	
Range	(0, 142)	(0, 111)	
Maximum Proximal Diameter (mm)			0.014
Mean (Std Dev)	24.5 (3.5)	23.6 (3.2)	
Median	24.0	23.0	
Range	(13.0, 35.5)	(17.0, 37.0)	
Proximal Sizing Outside IFU	36 (27.5%)	99 (25.1%)	0.58



Clinical Implications

- Only 52% of the cohort had a baseline maximum sac diameter of ≥ 5.5 cm.
- Aneurysms with baseline diameter < 5.5 showed a higher % reduction in sac size at 3 years raising the question of size criteria in fixing infrarenal AAA.



Clinical Implications

- Noncylindrical necks have been previously incriminated in early EVAR failure however, showed increased sac reduction at 3 years.
- Degree of oversizing should be carefully addressed on each patient according to their aneurysm anatomy.



Conclusions

- Aneurysms with conical necks and larger proximal device neck diameters showed a more significant reduction in sac size.
- Older age and larger initial diameters of aneurysms were negatively associated with percent change in sac regression.
- Further studies are warranted to determine the clinical utility of these observations across multiple endoprosthesis platforms.



Questions?

