

Presentation 1
Number:

Publishing Title: **Shuttering of the Superior Mesenteric Artery During Fenestrated EVAR**

Author: **Brant W. Ullery, MD, George K. Lee, MD, Jason T. Lee, MD**

Block: Stanford University, Stanford, CA

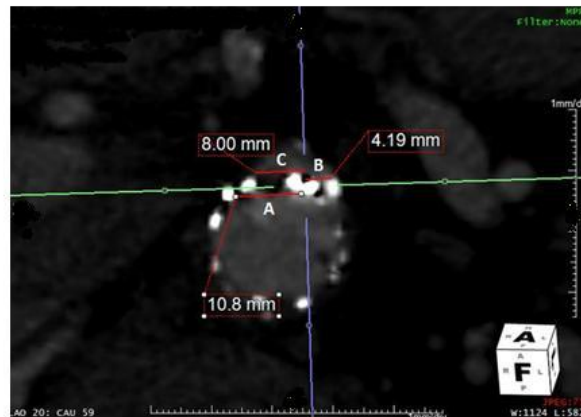
OBJECTIVES: Shuttering occurs when a scallop or fenestration does not align perfectly with the target vessel ostium, and is potentially minimized by stenting. The currently approved fenestrated endovascular aortic repair (f-EVAR) platform usually utilizes a non-stented superior mesenteric artery (SMA) scallop, thereby subjecting the SMA to risk of partial coverage. We sought to describe the presence and degree of SMA shuttering during f-EVAR.

METHODS: Patients undergoing f-EVAR using the commercially available ZFEN device containing an SMA scallop at our institution were included for analysis. Corrected multiplanar coronal images on postoperative CT-A were reviewed to measure SMA shuttering, defined as the percentage of SMA ostial diameter covered by the stent-graft fabric (Figure).

RESULTS: Of the 24 f-EVAR cases performed during the study period, 14 patients had an SMA scallop to include in this analysis (male, 71%; mean age, 75 years; mean AAA size, 6.4 cm). Thirty-nine vessels were targeted (14 SMA scallops, 25 renal fenestrations), with covered stents placed in all fenestrations. Target vessel catheterization was achieved in 100% of cases. SMA shuttering of any amount occurred in 64% of patients (range, 24%-54%). Degree of SMA shuttering varied: no patients had 1-20%, four had 21-40%, and five had 41-60%. All celiac and SMA vessels were patent on postoperative imaging. On univariate analysis, there was no association between SMA shuttering and the measured clock position of the SMA or renal arteries, percent of device oversizing, number of renal artery fenestrations/stents, aneurysm neck morphology, or aortic diameter at the SMA or proximal seal. No clinical events of mesenteric ischemia were noted in any of the patients.

CONCLUSIONS: Even with the custom design of currently available fenestrated technology, shuttering of the SMA occurs in more than half of the patients, although no clinical events were noted. Further detail with regards to the incidence, magnitude, and tolerance of SMA shuttering during f-EVAR is warranted to fully understand the clinical implication of this radiographic finding. Future design considerations for advanced EVAR should take into account SMA shuttering to further refine operative planning.

Abstract
Body:



Percent superior mesenteric artery (SMA) shuttering approximated by the SMA length outside the fenestration (B) divided by the total SMA ostial diameter (B+C). Scallop width is represented by letter A.

Presentation Number: 2

Publishing Title: Thoraco-Abdominal Aneurysm Repair in Patients with COPD_ Traditional Open Repair or HYBRID?

Author Block: Bao-Ngoc Nguyen, MD, Richard F. Neville, MD, Rodeen Rahbar, MD, Richard Amdur, PhD, Anton N. Sidawy, MD, MPH. George Washington University, Washington, DC

OBJECTIVES: Open thoraco-abdominal aneurysm repair (TAR) results in major post-operative pulmonary complications in COPD patients. This study investigates whether a hybrid procedure (HYBRID) is a good alternative for this patient population.

METHODS: All patients who underwent TAR (CPT code 33877) and HYBRID (visceral debranching and TEVAR) from 2005-2010 were identified from the NSQIP database. Outcomes for TAR were compared between patients with and without COPD. For COPD patients, 30-day outcomes were compared between OPEN and HYBRID approach.

RESULTS: 575 patients received TAR, 154 (27%) of which had COPD. Compared to patients without COPD, patients with COPD were older, more likely to be malnourished, use steroids and have ASA class 4/5. COPD resulted in a significantly higher risk of prolonged intubation (46% vs 33%, p = .003). When HYBRID (n=27) was compared to TAR (n=575) for all patients, it had significantly longer operative time (7.0±1.7 vs. 5.8±2.4 hrs, p=.0017), higher risk of stroke (11.1% vs. 2.4%, p=.008), and no significant difference in pulmonary complications (table). Furthermore, for COPD patients, multivariate analysis showed HYBRID was associated with significantly higher rates of DVT/Stroke (OR 13.6 vs. 0.9, p=.02) and prolonged intubation (OR 16.0 vs. 1.8, p=.003)

CONCLUSIONS: COPD patients should not be automatically excluded from open thoraco-abdominal repair since the hybrid procedure may not represent a safer alternative.

Abstract Body:

Table. Pre-operative variables and Post-operative Outcomes after HYBRID and TAR

	Open Thoracoabdominal (TAR)			All Patients (with and without COPD)			COPD Patients only		
	COPD (n=154)	No COPD (n=421)	p	HYBRID (n=27)	TAR (n=575)	p	HYBRID (n=9)	TAR (n=154)	p
Age	71.1 (7.7)	69.0 (10.6)	0.01	73.9 (8.1)	69.5 (10.0)	0.03	74.0 (7.6)	71.1 (7.8)	0.28
Albumin	3.7 (0.5)	3.8 (0.6)	0.03	3.67 (0.5)	3.8 (0.6)	0.49	3.9 (0.5)	3.7 (0.5)	0.51
Steroids	13 (8.4%)	13 (3.1%)	0.006	1 (3.7%)	26 (4.5%)	0.99	1 (11.1%)	13 (8.4%)	0.56
ASA class 4/5	82 (53.3%)	175 (41.7%)	0.01	12 (44.4%)	257 (44.8%)	0.97	5 (55.6%)	82 (53.3%)	0.99
Operative time (hrs)	5.9 (2.6)	5.8 (2.4)	0.86	7.0 (1.7)	5.8 (2.4)	0.002	6.8 (2.1)	5.9 (2.6)	0.29
Mortality	18 (11.7%)	40 (9.5%)	0.44	6 (22.2%)	58 (10.1%)	0.06	3 (33.3%)	18 (11.7%)	0.09
Stroke	5 (3.3%)	9 (2.1%)	0.54	3 (11.1%)	14 (2.4%)	0.008	3 (33.3%)	5 (3.3%)	0.01
Prolonged intubation	71 (46.1)	138 (32.8%)	0.003	8 (29.6%)	209 (36.4%)	0.48	6 (66.7%)	71 (46.1%)	0.31

(% or SEM)

Presentation Number: 3

Publishing Title: Experience with CHIMPS Endovascular Techniques and Outcomes in Comparison with Propensity Matched Controls

Author Block: Zdenek Novak, MD, **Benjamin J. Pearce, MD**, Mark A. Patterson, MD, Thomas C. Matthews, MD, Marc A. Passman, MD, William D. Jordan, Jr., MD.
University of Alabama at Birmingham, Birmingham, AL

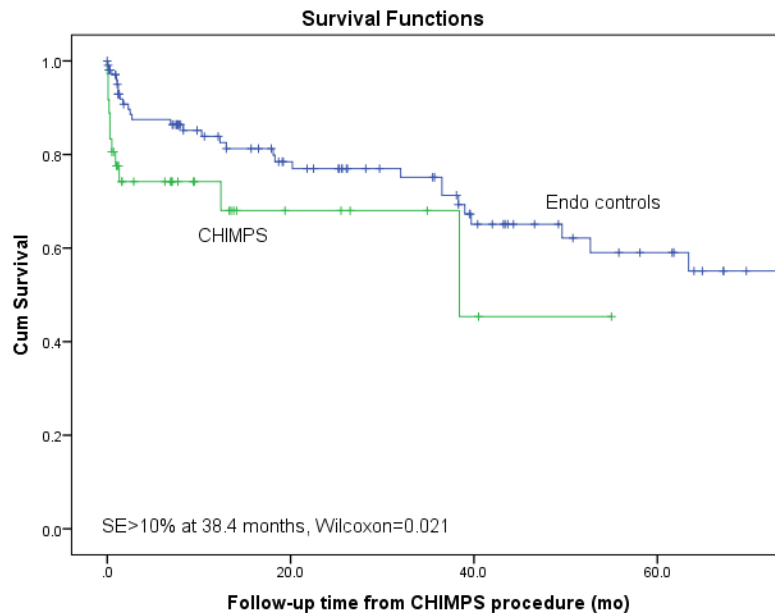
OBJECTIVES: Unsuitable endovascular anatomy presents a dilemma in patients at high risk for open aortic aneurysm repair. We reviewed our experience with off-label CHIMPS (CHIMney, Periscope, Snorkel) approach to treat complex aortic aneurysms and define outcomes among high risk aortic aneurysm patients.

METHODS: Retrospective analysis of all endovascular aortic procedures performed between 2000 and 2013 was performed to identify patients with CHIMPS endografts. CHIMPS patients were propensity matched to non-CHIMPS subjects by demographic and risk factors. Matched groups were compared for outcomes. Significance was statistically defined using χ^2 (or Fisher's exact test), t-test or Mann-Whitney U-test. KM analysis was used to compare survival.

RESULTS: The CHIMPS procedures were performed utilizing 57 branch stents in 38 patients (mean age 71.9±13.8 years). CHIMPS were used as initial endotherapy for 18 patients (47.3%). Indication for CHIMPS included aneurysm diameter 28 (mean 65±15mm), rupture 5, endoleak 2, dissection 1, dysphagia 1 and mycotic aneurysm 1. Twenty four procedures (63.1%) required single vessel stents, 10 procedures (26.3%) required two vessels, 3 procedures (7.8%) three vessels, and 1 procedure (2.6%) required four vessels. Intra-operative endoleak (EL) was observed in 18 patients (47.3%) (12 with T1, 1 with T2 and 5 with T3). At 30 days 7 of these resolved while one additional type 2 EL was observed. Of 57 total CHIMPS stents, 4 failed within 30 days (3 hypogastric and 1 celiac). Two additional hypogastric CHIMPS stents failed before 12 month follow up. No CHIMPS renal stents failed (n=14). Thirty-day mortality was 10.5% (4/38) in non-emergency cases and 18.4% (7/38) with emergency cases, compared to 1.8% (2/114) among matched EVAR patients. Among CHIMPS patients, 2 with mesenteric stents and intentional exclusion of renals initiated hemodialysis. Thirty day GFR estimates before and after procedures did not differ significantly between the groups. KM analysis shows decreased early survival but similar survival after 3 years in the matched cohort.

CONCLUSIONS: CHIMPS technique offers an alternative therapy in patients with complex aneurysmal disease judged to be medically unsuitable for open repair. Despite CHIMPS feasibility, these patients experience increased mortality compared to a

Abstract Body:



propensity matched cohort.

**Presentation
Number:** 4

**Publishing
Title:** **Gastrointestinal Complications Following Fenestrated Endovascular Aneurysm Repair**

Author Block: **Martyn Knowles, MD**, Jean J. Bao, MD, David A. Nation, MD, David E. Timaran, MD, Luis F. Gomez, MD, M. Shadman Baig, MD, R. James Valentine, MD, Carlos H. Timaran, MD
UT Southwestern, Dallas, TX

BACKGROUND: Fenestrated endovascular aneurysm repair (FEVAR) has become an alternative in patients unfit for open repair and with morphology not suitable to traditional endovascular aneurysm repair (EVAR). FEVAR requires cannulation and stent placement within visceral vessels that could lead to complications not seen after traditional EVAR, and little is known about the gastrointestinal complications (GIC). This study was performed to determine the prevalence of GIC after FEVAR.

METHODS: Over a 5-year period, we prospectively gathered data on 148 patients who underwent FEVAR at our institution.

RESULTS: The median number of vessels fenestrated was 3(IQR:2-4), with a total of 457 vessels. Minor and major GIC occurred in 59(39.9%) patients. There were 2(1.4%) gastrointestinal bleeds, 2(1.4%) patients who developed cholecystitis, 1(0.7%) patient who developed liver failure, and 2(1.4%) patients who developed Clostridium difficile infections. There were no patients who developed pancreatitis, ascites, or small bowel obstructions. Seventy(47.3%) patients had a history of abdominal complaints, and 24(24/70;34.3%) of these developed a GIC. Seventy-two(48.6%) patients had a history of abdominal surgery and 24(24/72;33.3%) developed a GIC. Fifty-five(37.2%) patients developed an ileus, 11(7.4%) requiring a nasogastric tube and 3(2.0%) requiring total parenteral nutrition (TPN). Five(3.4%) patients were taken to the operating room for presumed colonic ischemia, which was confirmed in 2 patients(1.4%) and 1(0.7%) patient was found to have gangrenous cholecystitis. There were no patients who developed small bowel ischemia. The median time to tolerate a diet in the GIC group was 5(IQR:3-6) days. The median ICU stay was significantly higher in the GIC group than in those without complications (5[IQR:3-9]days vs 2[IQR:1-3]days, respectively;P<0.0001). When comparing patients who had a complication based on extent of visceral stenting, there was a higher rate in those who underwent stenting of the celiac artery compared to those that only included the renal arteries (13/40vs27/56;P=0.003) and a higher complication rate comparing above and below the SMA (13/40;32.5%vs46/108;42.6%)(P=0.002). Fourteen(9.5%) patients required re-admission within 30-days, 9(6.1%) for GIC, although none required surgical intervention.

**Abstract
Body:**

CONCLUSIONS: Serious gastrointestinal complications following FEVAR are rare. However, ileus and delayed return of bowel function are common and a major cause of extended hospital stay. Not surprisingly, the level of complexity of FEVAR appears to influence GI complication rates.

**Presentation
Number:** 5

**Publishing
Title:** Aneurysm sac behavior following endovascular aneurysm repair using a branched stent graft

Author Block: **Dhanakom Premprabha, MD**, Timothy A.M. Chuter, MD, Linda M. Reilly, MD., Julia D. Sobel, BS., Chris Pua, PhD, Karen C. Chong, BS, Jade S. Hiramoto, MD
University of California San Francisco, San Francisco, CA

OBJECTIVE: To measure changes in aortic diameter and volume following aneurysm repair using a multi-branched thoracoabdominal stent graft.

METHOD: Between September 2005 and May 2013, 120 patients underwent aneurysm repair using multi-branched thoracoabdominal stent-grafts. Follow-up included routine CT at 1, 6 and 12 months and yearly thereafter. We retrospectively compared the initial post-operative CTA to subsequent CTA using three-dimensional analysis to measure changes in the maximum diameter of the aneurysm and the volume of aorta encompassed by the stent graft.

RESULTS: 91 patients had adequate CTA for serial measurement of aneurysm diameter. Mean follow-up was 23.05+17.37 months. Comparing the first CTA with the most recent CTA, 52 patients (57.14%) had > 5 mm diameter decrease, 39 (42.86%) had < 5 mm change, and none had > 5 mm increase. 47 patients had adequate CTA for serial measurement of aortic volume. Of these, 35 (74.47%) had > 5% decreased in aortic volume, 9 (19.15%) had < 5% change, and 3 (6.38%) had > 5% increase. In the same group of 47 patients, diameter decreased in 32 (68%) and remained stable in 15 (32%). This small difference in the frequency of aneurysm size change (up or down) between volume-based and diameter-based measurements was not significant.

The correlation between volume change and diameter change was significant ($p=0.006$) but weak ($R^2=0.16$). 26 patients (28.5%) had 30 endoleaks (Type I = 6, Type II = 19, Type III = 5). The prevalence of diameter decrease was slightly lower in patients with endoleaks than patients without. The effect of endoleak on diameter might have been more significant had direct endoleaks (types I and III) not been treated. In 3 cases endoleak treatment was delayed by uncertainty regarding the source. In all 3, initial aneurysm dilatation was followed by shrinkage. The failed treatment of a type I endoleak in a case of aorto-iliac dissection resulted in the only case of rupture in the entire series. Type II endoleaks were not treated.

CONCLUSION: Persistent aneurysm dilatation was a rare event after endovascular repair using a multi-branched endovascular stent graft, probably because most direct endoleaks (types I and III) were treated, while untreated type II endoleaks appear to have had little effect on aneurysm size.

**Abstract
Body:**

Presentation Number: MP1

Publishing Title: Scanning Electron Microscope analysis of Ex-Vivo laser fenestration of Thoracic Endografts : Variables for optimal fenestrations?

Author: Navalkishor Udgiri, MD¹, Jing Lin, MSc², Robert Guidoin³, Ze Zhang, PhD³, David Dexter, MD¹, Xiaoning Guan, MSc², Bin Li, MD³, Lu Wang, PhD², Jean Panneton, MD¹

Block: ¹EVMS, Norfolk, VA, USA, ²Key Laboratory of Textile Science and Technology Of Ministry of Education and College of Textiles, Shanghai, China, ³Department of Surgery Laval University, Quebec, QC, Canada

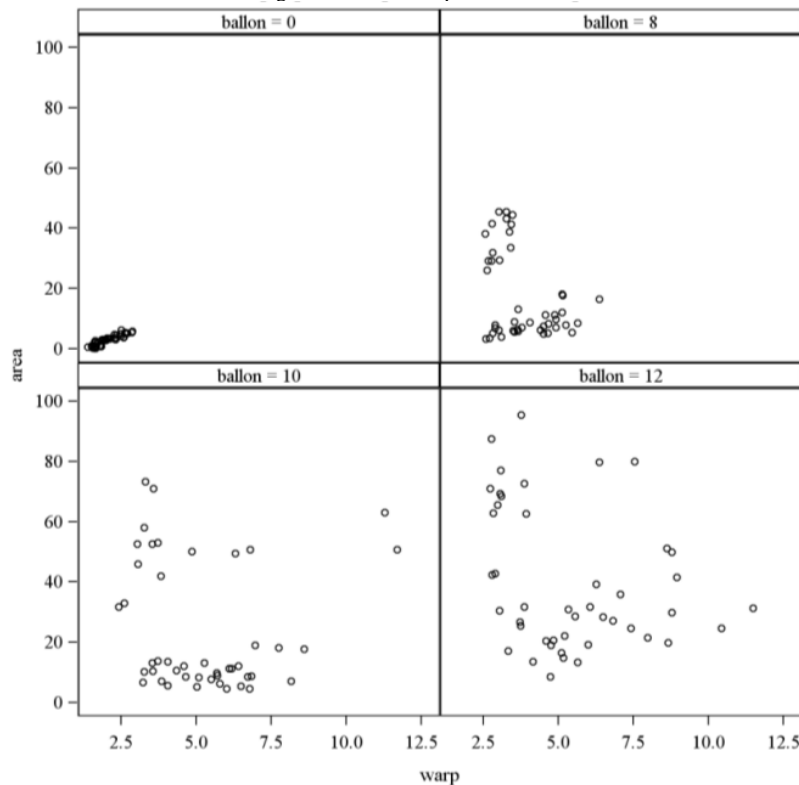
INTRODUCTION: Branched Thoracic Aortic stent-grafts represent a considerable breakthrough in complex Thoracic pathology . The delay in manufacturing customized devices and the limited availability of these devices out of clinical trials makes In-situ Laser Fenestration of Endografts an attractive option in emergent patients .

METHODS: Three different thoracic stent-grafts; Cook Zenith TX2 (multifilament fabric), Medtronic Valiant (monofilament fabric) and Vascutek Anaconda (multifilament fabric) were subjected to laser fenestration ex-vivo with laser system in a physiological saline solution followed by dilatation with 8, 10 and 12 mm diameter balloons. The fenestrations were then observed for gross observation, light microscopy and Scanning Electron Microscopy . The length and area of fenestrations were recorded and studied.

RESULTS: One hundred and eighty fenestrations were created using 1.7,2.0 and 2.3 mm laser fiber. The mean area of fenestration after 8, 10 and 12 mm balloon angioplasty for the endografts were 10, 10, 30 mm² for Cook Zenith , 35.6, 51.8, 65.2mm² for Valiant and 6.0, 9.9, 24.2 mm² for Anaconda. There was significant difference in these areas between the grafts at 8mm(p<0.001) , 10mm(p=0.006) and 12mm balloons(p=0.007) . Graft type also demonstrated a difference in longitudinal (warp) and lateral (weft) fabric tear . Longitudinal tear with 8,10,12mm balloon angioplasty for Cook Zenith was 4.6,6.2,2.3 mm, for Valiant was 3.2,4.8,3.7 mm and for Anaconda was 3.5,4.6,5.1mm respectively .Lateral tear with 8,10,12mm balloon angioplasty for Zenith was 2.5, 3.1 ,7.3 mm, for valiant was 6, 8, 3.7 mm and for Anaconda was 5.4, 7.1, 5.1 mm respectively .The Dispersion of the area and length of fenestration increased as the balloon diameter increased and they were more predictable with 8 mm balloon(fig1) .

CONCLUSION: Ex-Vivo Fenestration area and length was more predictable with 8 mm balloon, there was more dispersion with increasing balloon sizes. The area and length of fenestration was significantly different in different grafts under same conditions .These results should be able to guide us to obtain optimal In-Situ Fenestrations.

Abstract Body:



Figures 1: Dispersion of the measurements: area vs warp

Presentation Number: MP2

Publishing Title: Increased Peak Wall Stress in Women with Abdominal Aortic Aneurysms

Author Block: Eric K. Shang, MD, Derek P. Nathan, MD, Robert C. Gorman, MD, Joseph H. Gorman, III, MD, Grace J. Wang, MD, Edward Y. Woo, MD, Ronald M. Fairman, MD, Benjamin M. Jackson, MD.
University of Pennsylvania, Philadelphia, PA

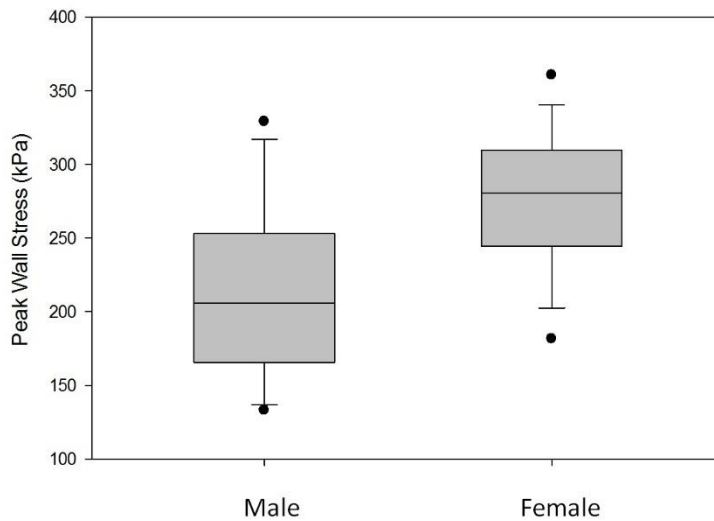
OBJECTIVE: Growing evidence suggests that peak wall stress (PWS) derived from finite element analysis (FEA) of abdominal aortic aneurysms (AAAs) is a superior predictor of clinical outcomes compared to maximum transverse diameter. Women with AAAs have higher rupture risks at equivalent diameters, with material properties and geometric differences implicated as possible etiologies. The purpose of this study was to investigate possible differences in the PWS of AAAs, which reflects individual aneurysm geometry, between the two genders.

METHOD: A total of 20 consecutive men and 20 consecutive women with infrarenal AAAs undergoing CTA were identified. Custom MATLAB image processing algorithms extracted variable wall thickness patient-specific AAA geometries from raw DICOM images. Peak wall stress was calculated by loading the resulting aortic reconstructions with a constant 120 mmHg blood pressure using commercially available FEA solvers in an effort to isolate the role of aneurysm geometry.

RESULTS: No significant differences were found between men and women's mean ages (74.5 ± 9.2 vs 75.4 ± 8.2 , $P=0.75$), and maximum transaortic diameters (47.0 ± 7.7 vs 48.5 ± 9.0 , $P=0.56$). PWS was found to be significantly higher in women (277 ± 51 vs 214 ± 62 kPa, $P=0.001$, see Figure). While mean aortic wall thickness was not significantly different (2.17 ± 0.22 vs 2.26 ± 0.35 mm, $P=0.33$), women had significantly increased maximum Gaussian curvature (0.031 ± 0.013 vs 0.024 ± 0.010 mm⁻², $P=0.03$).

CONCLUSION: PWS calculated using FEA was significantly higher in women with comparably sized aortic aneurysms. Maximum gaussian curvature, a measure of aneurysm morphology, was significantly different between the two groups. These results suggest aneurysm geometry contributes to gender differences in AAA prognosis, and that PWS-derived risk stratification may be gender independent.

Abstract Body:



Presentation Number: MP3

Publishing Title: Centerline Three Dimensional Reconstruction versus Axial Computed Tomography Angiography for Sizing of Endovascular Grafts in Patients with Abdominal Aortic Aneurysm

Author: Marlene T. O'Brien, MD, PhD¹, Adam J. Doyle, MD¹, Jennifer L. Ellis, MD¹, Karl A. Illig, MD², Ankur Chandra, MD¹.

Block: ¹University of Rochester, Rochester, NY, USA, ²University of South Florida, Tampa, FL

OBJECTIVE: Correct sizing of endovascular aortic grafts is essential for successful elective treatment of infrarenal abdominal aortic aneurysms (AAA) and for decreasing the rate of delayed secondary interventions. Our study compares the reproducibility and accuracy of sizing aortic endografts using centerline 3D reconstruction as compared with standard computed tomography angiography (CTA) axial images.

METHODS: Patients who underwent elective endovascular infrarenal aneurysm repair (EVAR) from 2006-2010 who had axial and centerline images were selected for retrospective review. Power analysis to be able to detect a 2 mm difference between measurement methods was conducted and revealed a total of 122 studies would need to be reviewed. Six diameter and three length measurements were compared using two-tailed t-test and Pearson correlation coefficients. The agreement between the two methods was analyzed using Bland and Altman's method. EVAR main body graft selection based on proximal neck measurements obtained by both sizing methods was also compared using a Chi-square test.

RESULTS: Axial and centerline images and measurements from 124 patients were reviewed. The mean difference between diameters was not statistically significant ($p > 0.001$), with acceptable agreement at all points except at L1 (11.1 mm, $p = 0.00$). Pearson correlation coefficients were above 0.90 at all diameter measurements apart from DM1 (0.870). EVAR main body graft sizing based on the largest neck diameter was studied for axial versus centerline, with no statistical difference between the graft selected using either method ($p = 0.980$).

CONCLUSIONS: AAA measurements obtained from CTA axial images are similar to those obtained from centerline 3D reconstruction images based on six aortic diameter measurements and three lengths. EVAR main body grafts selected based on axial or centerline images demonstrated no statistical difference between the two methods. Use of CTA axial images alone may be adequate for selection of main body graft selection in patients with infrarenal AAA.

Abstract Body:

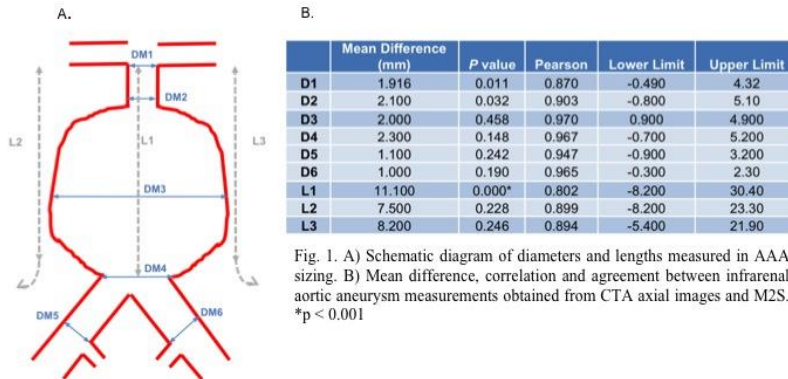


Fig. 1. A) Schematic diagram of diameters and lengths measured in AAA sizing. B) Mean difference, correlation and agreement between infrarenal aortic aneurysm measurements obtained from CTA axial images and M2S. * $p < 0.001$

Presentation Number: MP4

Publishing Title: Anatomic Characteristics of the Proximal Aortic Neck in Patients Treated with EndoAnchors for Prevention of Endoleak and Migration

Author Block: William D. Jordan, MD¹, Jean-Paul JM de Vries, MD, PhD², Manish Mehta, MD, MPH³, David Varnagy, MD⁴, William M. Moore, Jr., MD⁵, Frank R. Arko, MD⁶, James Joye, DO⁷, John Henretta, MD⁸.

¹University of Alabama at Birmingham, Birmingham, AL, ²St. Antonuis Hospital, Nieuwegein, Netherlands, ³Center for Vascular Awareness, Albany, NY, ⁴Florida Hospital, Orlando, FL, ⁵Lexington Medical Center, West Columbia, SC, ⁶Carolinas Health Care System, Charlotte, NC, ⁷El Camino Hospital, Mountain View, CA, ⁸Mission Hospital, Asheville, NC

OBJECTIVES: The outcome of endovascular repair of abdominal aortic aneurysms (EVAR) is, in part, dependent on the anatomy of the proximal aortic neck (PAN). EndoAnchors (Aptus Endosystems, Sunnyvale, CA) have been employed to prevent endoleak and migration in patients with hostile PAN anatomy.

METHODS: Pre-procedure baseline 3D-reformatted CT scans were evaluated by an independent core laboratory in 100 patients undergoing primary EVAR with EndoAnchors in the ANCHOR Global Registry. Median CT slice thickness was 1.5 mm and aortic diameter was assessed at 5 mm increments from the renal arteries to the aneurysm sac. PAN length was defined as the aortic centerline length where diameter remained within 10% of the immediate infrarenal diameter. Infrarenal tortuosity index was calculated as the ratio of the curvilinear (centerline) to straight length from the infrarenal location to a point 40 mm distal to the end of the PAN. Hostile PAN were defined as length <10 mm, diameter >28mm, angulation >60 degrees, thrombus or calcium over >50% circumference, or an increase in aortic diameter >10% over the first 10 mm below the lowest renal artery (conical configuration). Values are expressed as median and interquartile range.

Abstract Body:

RESULTS: The median PAN length was 10.8 mm (7.1, 22.7 mm). Neck length was ≤ 10 mm in 45 patients and ≤ 5 mm in 14 patients. The median infrarenal aortic neck diameter was 25.8 mm (23.5, 29.0 mm), with suprarenal angulation of 13 degrees (9, 22 degrees) and infrarenal angulation of 22 degrees (14, 35 degrees). Neck thrombus and calcium ≥ 2 mm thickness was present in 19 and 32 patients and covered 36% and 10% of the neck circumference, respectively. The infrarenal tortuosity index was 1.04 (1.02, 1.08). PAN were conical in 43 cases. Overall, 79 cases met the criteria for a hostile PAN. No type 1a endoleaks (site-reported) were observed on the first post-procedure CT scan in any patient.

CONCLUSIONS: The PAN anatomy of patients treated with EVAR in ANCHOR Registry was quite challenging, with short length, large diameter, significant thrombus/calcium, or conical configuration in 79% of cases. Despite the vast majority of patients meeting the criteria for a hostile PAN, early type 1a endoleaks were not observed. Definitive results, however, must await the availability of long-term outcome.

Presentation Number: MP5

Publishing Title: Expanding the Indications for use of EVAR and TEVAR Grafts with Parallel Stent Grafts: Early Experience with Snorkels and Chimneys

Author Block: Mathew Wooster, MD, Murray Shames, MD, Martin Back, MD, Bruce Zweibel, Paul Armstrong, DO, Karl Illig, MD, Neil Moudgill, MD, Peter Nelson, MD, Brad Johnson, MD

University of South Florida, Tampa, FL

OBJECTIVE: While fenestrated and branched devices for parvisceral and thoracic aneurysms are available worldwide, limited US availability has perpetuated widespread utilization of adjunctive techniques for the endovascular treatment of these aneurysms. The objective of the study is to report on the technical feasibility and short-term durability of parallel grafts for parvisceral and thoracoabdominal aneurysms

METHODS: We performed a retrospective review of a prospectively collected EVAR database, including all patients that underwent a parallel stent procedure.

End points included: 1) number vessels snorkeled 2) endoleaks 3) morbidity and mortality and 4) snorkel graft patency.

RESULTS: Thirty-eight patients (84% male, mean 77.8 years of age) were treated for primary aneurysms (27), para-anastomotic aneurysms (5) following prior open repair, and endoleaks (8) following prior endovascular repair. Sixty-nine visceral vessels were preserved. Bilateral femoral arteries were accessed as well as the left upper extremity via either percutaneous (n=4) brachial, open brachial (n=4), or open axillary (n=20) artery exposure. The mean length of surgery was 252 minutes with average of ICU stay of 3.5 days. There were eight endoleaks noted, six access site complications, two perioperative deaths, and three branch vessel stent occlusions. We have a mean follow up time of 198 days (Range 0-1215).

Abstract Body:

	N	Endoleak	N
Vessels Cannulated			
Unilateral Renal	20	Type I	3
Bilateral Renal	14	Type II	4
Bilateral Renal, SMA	3	Type III	1
Bilateral Renal, SMA, Celiac	3		

CONCLUSION: Parallel stent graft repair for parvisceral aneurysms is feasible and has acceptable technical/clinical success and complication rates. Though long-term follow up is still needed, this technique fills the gap in endovascular options for poor open surgical candidates in whom fenestrated devices are not available.