Spring 2011 Abstracts

PVSS1. Ultrasonic monitoring of 3-dimensional carotid atherosclerotic plaque structure

Brajesh K. Lal[1], Siddhartha Sikdar[2], Limin Zhao[1], Kirk Beach[3], Daniel Leotta[3]
[1]Univ of Maryland, Baltimore, MD; [2]George Mason Univ, Fairfax, VA; [3]Univ of Washington, Seattle, WA.

OBJECTIVES: Percent carotid stenosis is an imperfect determinant of asymptomatic disease severity. Plaques progress along the vessel faster than they thicken. Therefore, volume may be more sensitive than thickness measurements. Duplex ultrasound (DUS) imaging is optimal for plaque area and volume assessments provided operator and angle dependence can be overcome. We evaluated the accuracy and reproducibility of a novel 3D DUS protocol for plaque volume measurement.
METHODS: We used a 5-8 MHz linear transducer with an attached magnetic tracking system to acquire serial 2D images that were reformatted into 3D. The device was calibrated using a 1 mm spherical copper bead. Reproducibility of multiple anatomic fiducial landmarks were tested and an image of the optimal point established a landmark in 3D space that was used to register serial studies. 10 patients with carotid stenosis were examined. Serial cross sectional images were obtained with EKG gating. Images were stacked and reconstructed to obtain surface renderings of the lumen and adventitia to enable plaque volume measurements. The protocol was repeated by the same sonographer after the patient was moved and repositioned.
RESULTS: Three trials achieved satisfactory calibration of the device to within 2mm. The philtrum and sternal notch were the most reproducible anatomical reference points. Correlation between the first and second measurements of cross sectional area and plaque volume was high (kappa=0.91 and 0.88) and intraobserver variability was low (difference of 0.1±2.5 mm2 and 0.09±3.9 mm3 for repeated scans).
CONCLUSIONS: We report a novel approach of performing 3D DUS imaging using a standard scanner head. A reference point on the patient established a landmark in 3D space that enabled serial imaging. The reproducibility of cross sectional area and plaque volume measurements by this method was high, thereby providing a reliable method of serial follow-up of carotid plaques.

AUTHOR DISCLOSURES: K. Beach: Nothing to disclose; **B. K. Lal**: Nothing to disclose; **D. Leotta**: Nothing to disclose; **S. Sikdar**: Nothing to disclose; **L. Zhao**: Nothing to disclose

PVSS2. APDVS Survey of Knowledge Acquisition and Educational Needs of Vascular Trainees

Michael C. Dalsing[1], Michel S. Makaroun[2], Linda M. Harris[3], Joseph L. Mills[4], John Eidt[5]
[1]Surgery, Indiana University School of Medicine, Indianapolis, IN; [2]University of Pittsburgh Medical Center, Pittsburgh, PA; [3]SUNY at Buffalo Graduate Medical, Buffalo, NY; [4]Arizona Health Sciences Center, Tucson, AZ; [5]Univ of AR for Med Sciences, Little Rock, AR.

OBJECTIVES: Generational differences/ technological improvements influence education, student opinion is needed to design optimal training.
METHODS: The APDVS sent a 63 question (~ half integrated vs. fellows/graduates) survey to vascular surgical trainees focusing on education.
RESULTS: 163/412 (~40%) responded: 46 integrated, 96 fellows and 21 graduates. Table I shows response to learning methods. Concerns after training were thoracic/ TAA procedures and business aspects: 40-50% integrated, 60% fellows/graduates.
Integrated trainees found peri-procedural discussion the best feedback (79%) with 9% favoring written test review. Surgical training & vascular lab/venous training were judged "just right" by 87% & ~71% while business aspects need more emphasis (65-70%). Regarding 80 hr workweek, 82% felt it prevented fatigue and 24% thought it detrimental to patient care.
Fellow trainees also found peri-procedural discussion the best feedback (71%) with 12% favoring written test review. Surgical training & vascular laboratory/venous training were "just right" by 87%/60-70% while business aspects need more emphasis (~ 65-70%). Regarding 80 hr workweek, 62% felt it detrimental to patient care and 42% felt it prevented fatigue.
CONCLUSIONS: For daily knowledge, the integrated trainees especially are turning to online texts. Training level

influences responses. Point of care is the best time for education and feedback. The business side of training is underserved and must be addressed.

AUTHOR DISCLOSURES: M. C. Dalsing: Nothing to disclose; **J. Eidt**: Nothing to disclose; **L. M. Harris**: Nothing to disclose; **M. S. Makaroun**: Nothing to disclose; **J. L. Mills**: Nothing to disclose

Question		Integrated	Fellow/Graduate
How do you best learn?	1-1 Apprenticeship	43%	57%
	Urgent Need	28%	24%
	Textbook Review	16%	19%
	Lectures	0%	3.5%
How do you obtain Clinical Information during a Busy Day?	On-line Text	31%	17%
	Ask a colleague	26%	22%
	Condensed handbook	20%	8%
	Standard Textbook	7%	27%
	On-line library	3%	12%

PVSS3 - Society for Vascular Surgery (SVS) Vascular Registry® Evaluation of Age-Stratified Comparative Effectiveness of Carotid Endarterectomy (CEA) and Carotid Artery Stenting (CAS)

Jeffrey Jim, MD, Brian G Rubin, MD, Joseph J Ricotta, MD, Christopher T Kenwood, MS, Flora S Siami, MPH, Gregorio A Sicard, MD
New England Research Institutes, Inc, Watertown, MA

OBJECTIVES: Recent randomized controlled trials have shown that age significantly affects the outcome of carotid revascularization. The purpose of this study is to utilize data from the SVS Vascular Registry® (VR) to report the influence of age on the comparative effectiveness of CEA and CAS.
METHODS: VR collects provider-reported patient-data using a web-based database. Patients were stratified based on age and symptomatology. The primary endpoint was the composite of death, stroke and myocardial infarction (MI) at 30-days.
RESULTS: As of 12/7/10, there were 1347-CEA and 861-CAS <65years and 4169-CEA and 2536 CAS >=65years. In both age groups, CAS was more likely to have radiation or restenosis for disease etiology, be symptomatic, and have higher cardiac comorbidities. In >=65years, CAS had higher rates of mortality (1.97% vs 0.91%, p<0.01), stroke (4.89% vs 2.52%, p<0.01) and the combined death/stroke/MI (7.14% vs 4.27%, p<0.01). In <65years, the primary endpoint (5.23% CAS vs 3.56% CEA, p=0.065) approached statistical significance. Further analyses showed that CAS in >=65years was associated with higher primary outcome rate in both symptomatic (9.52% vs 5.27%, p<0.01) and asymptomatic (5.27% vs 3.31%, p<0.01) subgroups. For <65years, CAS had higher combined death/stroke/MI (4.44% vs 2.10%, p<0.031) in asymptomatics but no difference in symptomatics (6.00% vs 5.47%, p=0.79). After risk adjustment (Table 1), CAS >=65years were more likely to reach the primary endpoint
CONCLUSIONS: Compared to CEA, CAS resulted in inferior 30-day outcomes in symptomatic and asymptomatic patients <=65years.

AUTHOR DISCLOSURES: Jeffrey Jim, MD: Nothing to disclose; **Brian G Rubin, MD**: Medtronic, consulting fees or other remuneration; **Joseph J Ricotta, MD:** Nothing to disclose; **Christopher T Kenwood, MD:** Nothing to disclose;**, Flora S Siami, MPH:** Nothing to disclose; **Gregorio A Sicard, MD:** Nothing to disclose

Primary outcome Death/Stroke/MI	Unadjusted CEA (vs. CAS)			Adjusted CEA (vs. CAS)		
Patient subgroup	OR	95% CI	p-Value	OR	95% CI	p-Value
<65, symptomatic	0.906	0.532 - 1.544	0.7161	0.811	0.429 - 1.532	0.5182
<65, asymptomatic	0.462	0.235 - 0.908	0.0250	0.501	0.208 - 1.208	0.1236
≥65, symptomatic	0.601	0.449 - 0.806	0.0007	0.585	0.413 - 0.830	0.0026
≥65, asymptomatic	0.615	0.449 - 0.843	0.0025	0.649	0.443 - 0.953	0.0273

PVSS4. Decision Analysis of Optimal Access for Mesenteric Interventions

Katherine Gallagher[1], Andrew J. Meltzer[1], Reid A. Ravin[2], Ashley Graham[1], Francesco A. Aiello[1], Peter H. Connolly[1], Darren B. Schneider[3], Harry L. Bush[3], Rajeev Dayal[2]

[1]Weill Cornell/Columbia University, New York, NY; [2]Columbia University Hospital, New York, NY; [3]Weill Cornell Hospital, New York, NY.

OBJECTIVES: The objectives of this study were to define variables that predict failure of femoral access for mesenteric arterial intervention. We evaluated the relationship between anatomical and mural characteristics of the mesenteric vessels to determine the optimal access site for successful percutaneous intervention.

METHODS: A prospective database identified all patients who underwent an endovascular mesenteric intervention from 2005-2010. Patient demographics, lesion characteristics and operative details were analyzed. All angiograms were reviewed for mesenteric vessel angulation, tortuosity, lesion severity, and calcium score to determine the necessary access site for intervention. All patients had an initial attempt made through femoral access (F), followed by brachial access (B) if technical success was not achieved.

RESULTS: 142 mesenteric arteries in 125 patients were reviewed. Of these, 83 vessels underwent endovascular treatment (50 Celiac, 33 SMA). The majority of these patients were female (n=57). 22 lesions were treated for aneurysm (15 celiac, 7 SMA) and 61 for CMI (12% CTO). 58 lesions were treated with F, while 24 required B. Mean angulation of the mesenteric arteries requiring F access was 48 degrees +/- 15 and 40 +/- 18 for brachial (P=0.03). Calcification at the origin did not impact access site (22% F- severe calcium score; 14% B; P=.5). Presence of CTO predicted brachial route (24% B vs 3.4% F, P=.008). Complication rates (arterial repair, hematoma) were higher in the B group (16% B vs 4% F, P=.05).

CONCLUSIONS: Severe angulation and CTO are associated with technical failure for mesenteric intervention via transfemoral route. This is the first study to define factors where brachial access is the optimal approach for a successful endovascular intervention.

AUTHOR DISCLOSURES: F. A. Aiello: Nothing to disclose; **H. L. Bush**: Nothing to disclose; **P. H. Connolly**: Nothing to disclose; **R. Dayal**: Nothing to disclose; **K. Gallagher**: Nothing to disclose; **A. Graham**: Nothing to disclose; **A. J. Meltzer**: Nothing to disclose; **R. A. Ravin**: Nothing to disclose **D. B. Schneider**: Cordis,Research Grantsev3,Research GrantsAbbott,Research GrantsWL Gore,Speaker's bureauWL Gore,Consulting fees or other remuneration (payment)ev3,Consulting fees or other remuneration (payment)

	CTO (%)	Mesenteric Vessel Angulation (Degree)	Severe Calcification at Origin (%)	Primary Patency Rate(%) - 12 months	Secondary Patency Rate(%) - 12 months	Diabetes (%)	Tobacco (%)	Female Gender (%)
Femoral Access	3.4	48	22	49	79	24	48	69
Brachial Access	24	40	14	78	88	16	40	68
P Value	.008	.03	.5	.1	.2	.37	.63	.8

PVSS5. Changes in Kidney Volume After Renal Artery Stenting: Does Stenting Preserve Renal Mass?

Mitchell Plummer, Carlos H. Timaran, Eric Rosero, Jayer Chung, Frank Arko, G. Patrick Clagett, R. James Valentine, Clayton Trimmer, J. Gregory Modrall

Surgery, University of Texas Southwestern Medical Center, Dallas, TX.

OBJECTIVES: Renal artery stenting (RAS) improves blood pressure (BP) control and renal function in some patients, but others derive no clear benefit. Proponents of RAS contend that RAS will preserve renal mass even if there is no improvement in BP or renal function. Currently there are limited data to support that notion. The purpose of this study was to assess the longitudinal changes in renal volume after RAS.
METHODS: The study cohort consisted of 35 patients with longitudinal imaging available for renal volume quantification. Renal volume was estimated as kidney length x width x depth/2 based on preoperative CTA or MRA. For each patient, the clinical response of BP and renal function to RAS was categorized according to modified AHA guidelines. Changes in renal volume were assessed using paired nonparametric analyses.
RESULTS: The median age of the cohort was 60 years (interquartile range [IQR], 60-74 years). A favorable BP response was observed in 10 of 35 patients (29%). At a median interval between imaging studies of 18 months (IQR, 10-31 months), ipsilateral renal volume was significantly increased from baseline (147 vs. 135 cm3; P=0.025). This represents a 4% relative increase in ipsilateral kidney volume from baseline. A significant negative correlation between preoperative renal volume and the relative change in renal volume postoperatively (r = -0.42; P=-0.0055) suggests that smaller kidneys experienced the greatest gains in renal volume after stenting. It is noteworthy that the 25 patients with no change in BP or renal function—clinical failures using traditional definitions—experienced a 12% relative increase in ipsilateral renal volume after RAS.
CONCLUSIONS: These data lend credence to the belief that RAS preserves renal mass. This benefit of RAS even extends to those patients who would be considered treatment failures by traditional definitions. It remains unknown whether the changes in renal mass induced by RAS will translate into more stable renal function over the long-term.

AUTHOR DISCLOSURES: F. Arko: Nothing to disclose; **J. Chung**: Nothing to disclose; **G. Clagett**: Nothing to disclose; **J. Modrall**: Nothing to disclose; **M. Plummer**: Nothing to disclose; **E. Rosero**: Nothing to disclose; **C. H. Timaran**: Nothing to disclose; **C. Trimmer**: NIH (Coral Study),Research GrantsBoston Scientific,Stock Options or Bond HoldingsCook Medical Inc,Consulting fees or other remuneration (payment); **R. Valentine**: Nothing to disclose

PVSS6 - Door To Treatment Time - Identifying Opportunities for Process Improvement: Results from an Institution Based Protocol Caring for Patients with Ruptured Aortic Aneurysms

Raghu L Motaganahalli, MD, Michael P Murphy, MD, Alan P Sawchuck, MD, Gary W Lemmon, MD, Andreas Fajardo, MD, George Akingba, MD, Beejay Feliciano, MD, Dolores Cikrit, MD, Cynthia Richardson, RN, Michael C Dalsing, MD

Indiana University School of Medicine, Indianapolis, IN

OBJECTIVES: Time is of essence while caring for patients with ruptured aortic aneurysms (RAAA). Multiple factors which are beyond the control of treating physician play a role in provision of timely care to these critically ill patients. We examined time line of various events and its impact on the process improvement since the inception of a protocol for patients with ruptured aortic aneurysms.
METHODS: A protocol was instituted in August 2009 which included a dedicated team with easy accessibility to referring hospitals to streamline the care pathway for patients with RAAA. A prospective data base was established to record the door to treatment time for patients. Besides patient demographics ,mode of transfer , various timelines including time spent at the referring facility to diagnosis, transfer time, wait time at the receiving hospital and overall time were analyzed . A comparative analysis using two –sample Wilcoxon test was then made between patients who were treated prior to group 1 (January 2008- August 2009) and after group2 (August 2009- November 2010) implementation of protocol.
RESULTS: In group1 there were 26 patients while group2 included 36 patients accounting for a 55% increase in patients treated with RAAA. There was no difference in the age, mode of transfer. While all the patients in group 1 were treated with open procedures, 36% patients in group 2 were treated with endovascular repair. Table 1 shows the results of comparative analysis of various timelines. There was a statistical difference with reduction in the overall door –treatment time after the implementation of the protocol.
CONCLUSIONS: While various therapeutic interventions have improved the outcome for patients with ruptured aortic aneurysms, provision of timely care is equally important. The observations from our study identify the need for dedicated protocols which enable early recognition by increasing awareness, effective communication, and rapid transfer to centers caring for patients with ruptured aneurysms. The study also suggests the need to have a common protocol for process improvement at the national level and creation of centers treating ruptured aortic aneurysms.

AUTHOR DISCLOSURES: Raghu L Motaganahalli, MD: Nothing to disclose; **Michael P Murphy**, **MD:** Nothing to disclose; **Alan P Sawchuck, MD:** Nothing to disclose; **Gary W Lemmon, MD:** Nothing to disclose; **Andreas Fajardo, MD:** Nothing to disclose; **George Akingba, MD:** Nothing to disclose; **Beejay Feliciano, MD:** Nothing to disclose; **Dolores Cikrit, MD:** Nothing to disclose; **Cynthia Richardson, RN:** Nothing to disclose; **Michael C Dalsing, MD:** Nothing to disclose

	Group 1 (Pre implementation Period) January 2008 – August 2009 (N = 26)	Group 2 (Post implementation Period) August 2009 – November 2010 (N = 36)	P-Value
% Male	24 (92.3%)	33 (91.67%)	1.000[F]
Age in Years (Mean, Std)	70.7 (+/- 8.25)	73.06 (+/- 9.10)	0.292[t]
Mode of Transfer			
Air	16 (61.54%)	21 (58.33%)	0.780[C]
Ground	10 (38.46%)	15 (41.67%)	
Mortality	9/26(35%)	11/36(30.5%)	0.788[C]
Method of Treatment (Open vs. Endo)			
Endo	N/A	13 (36.1%)	N/A
Open	26 (100%)	21 (58.3%)	
Open + Endo	N/A	2 (5.5%)	
Time Segments in Minutes			
Time spent at referring hospital	150.50 (82.50 – 234.50)	115.00 (75.00 – 220.00)	0.668[W]
Time taken for transfer	52.00 (37.00 – 58.00)	35.00 (28.00 – 55.00)	0.188[W]
Wait time at receiving hospital	35.00 (16.00-92.00)	23.00 (9.50 – 41.00)	0.030[W]
Door to treatment(Overall)	183.50 (147.00-349.00)	157.00 (92.00 – 259.00)	0.056[W]

[T] Two-sample T-Test ,F Fisher's exact test ,[W] Two-sample Wilcoxon test, C Chi-Squared test ,

PVSS7. The Impact of Adjunctive Iliac Stenting on Femoral-Femoral Bypass in Contemporary Practice

Chetan P. Huded[1], David H. Stone[2], Philip P. Goodney[2], Richard J. Powell[2], Brian W. Nolan[2], Eva M. Rzucidlo[2], Jack L. Cronenwett[2], Daniel B. Walsh[2]

[1]Dartmouth Medical School, Hanover, NH; [2]Dartmouth Hitchcock Medical Center, Lebanon, NH.

OBJECTIVES: Most reports of femoral-femoral bypass (FFB) were published before the era of endovascular intervention. This study examines the utilization and impact of adjunctive endovascular intervention on FFB in contemporary practice.

METHODS: We reviewed 253 FFB performed in 247 patients between 1984 and 2010. Primary endpoints including graft patency, primary assisted patency, limb salvage and survival were assessed using Kaplan-Meier life table analysis. Univariate and multivariate analyses were performed to determine predictors of primary endpoints.

RESULTS: The indication for FFB included claudication(27% n=69) and critical limb ischemia(72% n=184). Forty-eight patients were treated urgently for acute ischemia. Mean follow-up was 5.6(±5.5) years. Over the study interval, adjunctive iliac stent placement increased significantly from 0% to 54% (p-trend<0.001) while the rate of axillo-femoral bypass or no inflow procedure decreased from 100% to 46% (p-trend<0.001). Despite increased utilization, iliac stenting was associated with both decreased five year primary graft patency, and primary assisted patency, although did not impact limb salvage or overall survival.(Table) Five year primary patency among claudicants and CLI patients was 65% and 68% respectively.

CONCLUSIONS: The incidence of iliac stent placement in conjunction with FFB has increased significantly over time in contemporary practice. Reliance on iliac stents for FFB inflow is paradoxically associated with both diminished primary and primary assisted graft patency when compared to historical controls. These findings highlight the importance of patient selection and inflow consideration when performing FFB.

AUTHOR DISCLOSURES: J. L. Cronenwett: Nothing to disclose; **P. P. Goodney**: Nothing to disclose; **C. P. Huded**: Nothing to disclose; **B. W. Nolan**: Nothing to disclose; **R. J. Powell**: Nothing to disclose; **E. M. Rzucidlo**: Nothing to disclose; **D. H. Stone**: Nothing to disclose; **D. B. Walsh**: Nothing to disclose

	Primary Patency	P	Primary Assisted Patency	P	Limb Salvage	P	Survival	P
Non-Stented	71%		87%		91%		45%	
Ax-fem	74%	0.004	85%	0.002	91%	0.521	40%	0.568
Stent	44%		61%		87%		44%	

PVSS8. Comparison of Early Hemodynamics after Endovascular Therapy and Open Surgical Bypass in Patients with Diabetes and Critical Limb Ischemia: Does mode of revascularization matter?

Luke X. Zhan, Manish Bharara, Matthew White, Sugam Bhatnagar, Janice Thai, Brian Lepow, David G. Armstrong, Joseph L. Mills
University of Arizona/Southern Arizona Limb Salvage Alliance (SALSA), Tucson, AZ.

OBJECTIVES: While endovascular therapy (EVT) has increasingly become the initial intervention of choice to treat lower extremity peripheral arterial disease, reported outcomes for EVT in patients with critical limb ischemia (CLI) and diabetes have been reported to be inferior compared to open surgical bypass (OSB). Objective data assessing the hemodynamic success of EVT compared to the established benchmark of OSB are sparse. We therefore evaluated and compared hemodynamic outcomes of EVT and OSB in diabetic patients with CLI at a single academic center.
METHODS: We studied 126 consecutive patients with diabetes and CLI who underwent either EVT (n=79) or OSB (n=31) in a single center. The mean patient age was 69 years; 62% were men and 38% were women. All patients presented with either rest pain and/or ulcer/gangrene. Per protocol, all were assessed using ankle brachial index (ABI), Doppler waveform analysis and toe pressure determinations before and early post intervention.
RESULTS: Both EVT (∂ABI & TP $p<0.0001$) and OSB (∂ABI $p<0.005$, TP $p<0.002$) resulted in significant hemodynamic improvements, with no statistically significant initial difference between the two types of intervention (ABI $p=0.9$; TP $p = 0.509$).
CONCLUSIONS: These data suggest that with appropriate patient selection, each intervention is efficacious with respect to initial hemodynamic improvement. If the intermediate/long-term results of EVT for CLI in people with diabetes are inferior, the problem is not one of initial hemodynamic response, but more likely due to differing patient characteristics or durability of the intervention.

AUTHOR DISCLOSURES: D. G. Armstrong: Nothing to disclose; **M. Bharara**: Nothing to disclose; **S. Bhatnagar**: Nothing to disclose; **B. Lepow**: Nothing to disclose; **J. L. Mills**: Nothing to disclose; **J. Thai**: Nothing to disclose; **M. White**: Nothing to disclose; **L. X. Zhan**: Nothing to disclose

Hemodynamic Data: Open Surgical Bypass (OSB) versus Endovascular Therapy (EVT

Hemodynamic Measurement	EVT Pre-Intervention	EVT Post-Intervention	Change (Mean ± SD)	OSB Pre-Intervention	OSB Post-Intervention	Change (Mean ± SD)
Toe pressure (TP)	35.51±27.41 (N=57)	63.21±37.75 (N=56)	31.74±25.60* (N=43)	25.4±26.33 (N=20)	52.29±29.18 (N=21)	35.68±25.0* (N=19)
Ankle brachial	0.52±0.25	0.79±0.28	0.36±0.22**	0.54±0.21	0.80±0.24	0.48±0.19**

Index (ABI)	(N=49)	(N=53)	(N=37)	(N=19)	(N=15)	(N=12)

[(*p=0.509), (**p=0.9)]

PVSS9 - Failed SFA Intervention: Insignificant or Detrimental?

Omar Al-Nouri, DO, Monika Krezalek, MS-III, Richard Hershberger, MD, Pegge Halandras, MD, Andrew Gassman, MD, Bernadette Aulivola, MD, Ross Milner, MD
Loyola University Medical Center, Maywood, IL

OBJECTIVES: Endovascular treatment of superficial femoral artery (SFA) lesions is a well-established practice. The repercussions of failed SFA interventions are unclear. Our goal is to review efficacy of SFA stenting and define negative effects of its failure.
METHODS: Retrospective chart review from January 2007 to January 2010 identified 42 limbs in 39 patients that underwent SFA stenting. Follow-up ankle-brachial index (ABI) and duplex ultrasound was performed at routine intervals.
RESULTS: Mean patient age was 68 years (range 43-88), 22 men (56%) and 17 women(44%). Intervention indication was claudication in 15 (36%), rest pain in 7 (17%), tissue loss in 19 (45%). There were 15 TASC A (36%), 9 TASC B (21%), 5 TASC C (12%), 13 TASC D (31%) lesions. Three stents (7.7%) occluded within 30 days. 1-year primary, primary-assisted, secondary patency rates were 24%, 44%, 51% respectively. Limb salvage was 93% during follow-up. Seventeen interventions failed (40%) at 1-year. Of these, 7 (17%) developed claudication, 7 (17%) ischemic rest pain, 3 (7%) were asymptomatic. During follow-up, 3 (7.7%) required bypass and 3 (7.7%) major amputation, one following failed bypass. All limbs requiring bypass or amputation had TASC C/D lesions. Thirty-day mortality 2.6%. One-year mortality 10.3%.
CONCLUSIONS: Stenting SFA lesions is technically feasible. Interventions performed for TASC C/D lesions are more likely to fail and more likely to lead to bypass or amputation. Interventions performed for TASC C/D lesions that fail have a negative impact on limb salvage. This should be considered when performing stenting of advanced SFA lesions.

AUTHOR DISCLOSURES: Omar Al-Nouri, DO: Nothing to disclose; **Monika Krezalek, MS-III:** Nothing to disclose; **Richard Hershberger, MD:** Nothing to disclose; **Pegge Halandras, MD:** Nothing to disclose; **Andrew Gassman, MD:** Nothing to disclose; **Bernadette Aulivola, MD:** Nothing to disclose; **Ross Milner, MD:** Nothing to disclose

PVSS10. Clinical Value of CTA in Patients with ≥50% ICA Stenosis by Duplex Ultrasound

Mohammad I. ElSorady, Heather Hall, Vector Bernhard, Hisham Bassiouny
Vascular Surgery and Endovascular Therapy, University of Chicago Hospitals, Chicago, IL.

OBJECTIVES: CT angiography (CTA) is frequently employed in current clinical practice to evaluate the extent of cerebrovascular disease in patients with DU ≥50% extra-cranial ICA stenosis. We studied a) the prevalence of additional clinically significant intracranial or proximal arch occlusive disease not detected by DU, and b) whether such CTA findings predict progression in DU ICA stenosis category.
METHODS: From 2005 to 2010, 111 consecutive patients were studied retrospectively. 81 were asymptomatic and 30 symptomatic (TIA, stroke, AF). Kappa agreement between DU stenosis category and CTA was determined. Findings on CTA considered significant were ≥50% intracranial ICA stenosis, proximal CCA stenosis, intracranial aneurysm, vertebral stenosis or occlusion, ≥50% subclavian stenosis and diffuse atherosclerosis of the aortic arch. Progression of DU ICA stenosis from 50-79% to 80-99% was determined in relation to CTA findings.
RESULTS: Patient demographics were similar between asymptomatic and symptomatic patients Table 1. DU and CTA were performed within 6 months in 95% of cases. Agreement between DU and CTA was 0.9 (Kappa). 19% (21/111) of patients had CTA findings not detected by DU, of which 17 (21%) were in asymptomatic and 4 (13%) in symptomatic patients ($p<0.60$, NS) Table 2. Median follow up was 3.2 years. Progression from 50-79% to 80-99% was detected in 4 (19%) and in 13 (14.4%) patients with and without additional CTA findings respectively (NS).
CONCLUSIONS: For patients harboring ≥ 50% carotid bifurcation ICA stenosis by DU, CTA provides minimal information of clinical use. Progression of stenosis is unrelated to the presence of remote atherosclerotic plaque

burden as detected on CTA. These findings suggests that CTA is over utilized in clinical practice and that DU performed in an ICAVL accredited lab is sufficient for planning carotid intervention if necessary.

AUTHOR DISCLOSURES: H. Bassiouny: Nothing to disclose; **V. Bernhard**: Nothing to disclose; **M. I. ElSorady**: Nothing to disclose; **H. Hall**: Nothing to disclose

	Asymptomatic	Symptomatic
	n (%)	*n* (%)
DM	32 (39.5)	12 (40)
HTN	68 (83.9)	28 (93.3)
CAD	38 (46.9)	14 (46.6)
MI	15 (18.5)	8 (26.6)
Smoking	50 (61.7)	16 (53.3)
CHF	5 (6.1)	5 (16.5)
COPD	19 (23.4)	5 (16.6)
Coagulopathy	1 (1.2)	1. (3.3)
Cancer	21 (25.9)	6 (20)
PAD	42 (51.8)	10 (33.3)
Male	34(41.9)	16(53.3)
Mean Age	78	78

Additional CTA Findings	Description	Asymptomatic (n=81)	Symptomatic (n=30)
Intracranial ICA	Stenosis (>50%)	1	
Proximal CCA	Stenosis (>50%)		1
Ant. Communicating A.	Aneurysm (2.1mm)	1	
Post. Communicating A	Aneurysm (4mm)	1	
	Stenosis (>50%)	1	
	Occlusion		1
Vertebral A.	Stenosis (>50%)	7	
	Occlusion	2	
Subclavian	Stenosis (>50%)		
Arch	Diffuse atherosclerosis	4	2
	Total	**17**	**4**
	%	21	13

PVSS11. Assessing Outcomes to Determine Which “Symptoms” Justify Renal Artery Stenting

J. Gregory Modrall, Eric Rosero, Carlos H. Timaran, Thomas Anthony, Jayer Chung, Frank Arko, G. Patrick Clagett, R. James Valentine, Clayton Trimmer

Surgery, University of Texas Southwestern Medical Center, Dallas, TX.

OBJECTIVES: Severe, symptomatic hypertension (HTN) is a classic indication for intervention for renal artery stenosis. It is not clear, however, which "symptoms" merit treatment. For instance, is angina in a hypertensive

patient an indication for renal artery stenting (RAS)? The purpose of this study was to assess the blood pressure (BP) response to RAS to determine which "symptoms" justify intervention.
METHODS: Symptoms examined in this study were HTN urgencies (n=25), HTN emergencies (n=13), and angina (n=14). By convention, HTN urgency was defined by a systolic BP ≥ 180 mm Hg or diastolic BP ≥ 120 mm Hg, while HTN emergency also required HTN-related symptoms with hospitalization. Patient-specific response to RAS was defined using modified AHA reporting guidelines.
RESULTS: The study cohort of 52 patients had a median age of 66 years (interquartile range 58-72). The BP response to RAS varied significantly according to the indication for RAS. HTN emergency provided the highest BP response rate (85%), while the response rate was significantly lower for HTN urgency (52%) and angina (7%; P=0.03). Only 1 of 14 patients with angina was a BP responder. Multivariate analysis showed that HTN urgency or emergency were not independent predictors of BP response to RAS. Instead, the only independent predictor of a favorable BP response was the number of preoperative antihypertensive medications (Odds Ratio 7.5; 95% Confidence Interval 2.5-22.9; P=0.0004), which is another indicator of the severity of HTN. Interestingly, angina was an independent predictor of failure to respond to RAS (Odds Ratio 118.6; 95% Confidence Interval 2.8-999.9; P=0.013).
CONCLUSIONS: HTN urgency and emergency are manifestations of severe HTN, but the number of preoperative antihypertensive medications proved to be a better predictor of a favorable BP response to RAS. In contrast, angina was a predictor of failure to respond to stenting, providing further evidence against the practice of "drive-by" stenting during coronary interventions.

AUTHOR DISCLOSURES: T. Anthony: Nothing to disclose; **F. Arko**: Nothing to disclose; **J. Chung**: Nothing to disclose; **G. Clagett**: Nothing to disclose; **J. Modrall**: Nothing to disclose; **E. Rosero**: Nothing to disclose; **C. H. Timaran**: Nothing to disclose; **C. Trimmer**: NIH (CORAL Trial),Research GrantsBoston Scientific,Stock Options or Bond HoldingsCook Medical Inc,Consulting fees or other remuneration (payment); **R. Valentine**: Nothing to disclose

PVSS12 - Prior Endovascular Intervention Does Not Negatively Impact on Lower Extremity Bypass Procedures
Sikandar Z Khan, MD, Reid Ravin, BS, Benjamin Bradley, BS, In-Kyong Kim, MD, James F McKinsey, MD
Columbia University Medical Center, New York, NY

OBJECTIVES: Many centers have adopted an endovascular-first philosophy for the treatment of patients with Critical Limb Ischemia (CLI).There is a theoretical concern that endovascular intervention (EI) may negatively impact on the outcome if future surgical bypass graft (BPG) is required. In this study, we will evaluate the impact of prior endovascular intervention compared to primary BPG on BPG patency and limb salvage in CLI patients.
METHODS: We retrospectively reviewed patients who underwent lower extremity BPG with and without prior EI for CLI between 2003-2009. Patients undergoing primary EI or BPG at an outside hospital were excluded. Demographics and follow-up data were collected. Patients were followed up at 1, 3, 6, 12 months and then yearly. Patencies and limb-salvage were calculated using Kaplan-Meier.
RESULTS: A total of 232 BPG procedures(178 Femoral-distal,54 Femoral-popliteal) were performed in 211 patients. There were 140 primary BPG and 92 BPG procedures after prior endovascular intervention. Patient demographics and co-morbidities were not significantly different except for a higher incidence of congestive heart failure in the prior endovascular group(P=.014).Venous conduit was used in 126(54.3%) BPG procedures. Mean follow-up was 13.7±12.4months. Primary, primary assisted, secondary patency and limb salvage were not significantly different between primary BPG and BPG with prior endovascular for both venous and prosthetic conduits.(Table)
CONCLUSIONS: Both primary BPG and BPG after prior endovascular intervention provided similar results of patency and limb salvage in similar patients with CLI. An endovascular first policy for limb salvage is reasonable in CLI patients because it did not appear to negatively affect the outcome of subsequent bypass procedures.

AUTHOR DISCLOSURES: Sikandar Z Khan, MD: Nothing to disclose; **Reid Ravin, BS**, **Benjamin Bradley, BS**: Nothing to disclose; **In-Kyong Kim, MD, James F McKinsey, MD:** Cordis, Boston Scientific, EV3, Medtronic, CR Bard, speakers bureau; EV3 Pathway, Avenger, Scientific Advisory Board

SAPHENOUS VEIN CONDUIT			
Primary Patency	12 months	24 months	36 months
Prior Endovascular	59.3±8.5	52.7±9.8	42.2±12.2
No Prior Endovascular	50.9±7.3	45.6±7.5	45.6±7.5
P-value	*.443*	*.320*	*.331*
Primary Assisted patency			
Prior Endovascular	73.3±7.7	57.1±12.0	57.1±12.0
No Prior Endovascular	65.8±6.8	60.3±7.3	53.6±9.0
P-value	*.356*	*.354*	*.436*
Secondary patency			
Prior Endovascular	78.5±7.3	61.2±12.5	61.2±12.5
No Prior Endovascular	67.6±6.7	62.1±7.2	55.2±9.1
P-value	.195	.201	.267
Limb Salvage			
Prior Endovascular	84.4±6.5	84.4±6.5	84.4±6.5
No Prior Endovascular	82.6±5.5	82.6±5.5	82.6±5.5
P-value	*.734*	*.734*	*.734*
Prosthetic Conduits			
Primary Patency	12 months	24 months	36 months
Prior Endovascular	48.0±10.1	42.7±10.3	32.0±12.0
No Prior Endovascular	41.5±6.8	38.9±6.8	25.0±9.3
P-value	*.619*	*.866*	*.741*
Primary Assisted patency			
Prior Endovascular	52.9±10.3	35.7±13.0	35.7±13.0
No Prior Endovascular	46.7±6.9	41.7±7.0	29.2±9.0
P-value	*.447*	*.622*	*.526*
Secondary patency			
Prior Endovascular	54.3±10.5	36.7±13.3	36.7±13.3
No Prior Endovascular	55.0±6.9	44.7±7.3	31.3±9.6
P-value	*.636*	*.702*	*.595*
Limb Salvage			
Prior Endovascular	74.2±9.5	74.2±9.5	74.2±9.5
No Prior Endovascular	77.8±6.5	70.4±7.7	70.4±7.7
P-value	.894	.837	.837

PVSS13. Characterization and Management of Cervical Vascular Injuries Resulting from Improvised Explosive Devices (IEDs) and Rocket Propelled Grenades (RPGs)

Colin A. Meghoo1, James W. Dennis2, Caroline Tuman1, Raymond Fang1

[1]Surgery, University of Florida College of Medicine, Jacksonville, FL; [2]Landstuhl Regional Medical Center, Landstuhl, Germany.

OBJECTIVES: Improvised explosive devices (IEDs) and rocket propelled grenades (RPGs) encountered in combat situations cause a unique pattern of injuries unlike that seen in civilian trauma. The purpose of this study was to characterize the presentation, diagnosis and management of vascular injuries caused by these multiple high velocity

fragments in the neck, an area not usually protected by personal body armor.
METHODS: The trauma registry of evacuated soldiers injured in combat from January 1, 2006 to June 30, 2010 was reviewed for penetrating injuries to all zones of the neck deep to the platysma caused by IEDs and RPGs. All vascular injuries, diagnostic studies utilized, repairs performed, negative explorations and final results were identified.
RESULTS: A total of 252 medical records were identified, 53 were excluded, leaving 199 patients. Thirty eight patients (19.1%) with 44 vascular injuries were seen. Arterial injuries included: common carotid- 2, internal-7, external-9, vertebral-4, and subclavian-3. Venous injuries were: internal jugular-15, external jugular-4 Procedures included primary repair in 9, ligation in 21, bypass in 4 (3 vein, 1 prosthetic), and endovascular repair in 2. Eight were treated with anticoagulation alone. Eleven patients underwent surgery based on physical exam alone, 27 had pre-procedural CT scans. There were 55 negative neck explorations, 37 based on proximity alone, 4 for bleeding, 4 for CT abnormalities and 10 for associated injuries. One venous injury requiring ligation had a normal PE and CT. One stroke occurred and no patient that reached a tertiary level of care died from their neck injuries.
CONCLUSIONS: Explosive devices involving the neck cause significant vascular injuries over 20% of cases. Approximately 30% are evident of PE alone; nearly all others are identified by CT. Proximity alone on PE or CT does not warrant neck explorations even in combat conditions. Standard open repairs successfully treat these injuries.

AUTHOR DISCLOSURES: J. W. Dennis: Nothing to disclose; **R. Fang**: Nothing to disclose; **C. A. Meghoo**: Nothing to disclose; **C. Tuman**: Nothing to disclose

PVSS14 **Norman M. Rich Military Vascular Surgery Presentation** - Microarray and Functional Cluster Analysis Implicates Transforming Growth Factor Beta1 in Endothelial Cell Dysfunction and Valproic Acid Benefit in A Swine Hemorrhagic Shock Model
M. W. Causey1, Z. Hoffer1, N. Singh1, S. Miller1, L. Houston1, M. Martin1, J. Stallings1
Madigan Army Medical Center, Ft. Lewis, WA

OBJECTIVES: Aortic injury following trauma results in widespread tissue hypoxia, anaerobic metabolism, and inflammatory cytokines injurious to the vascular endothelium. Previous studies have demonstrated a metabolic protective effect with the administration of Valproic acid (VPA) following traumatic injury. In an effort to identify the gene transcriptional changes, we employed fluorescent microarray analysis to elucidate critical pathways and gene products involved in endothelial cell dysfunction in order to determine the protective mechanism of VPA.
METHODS: A hemorrhage/ischemia-reperfusion (H/I-R) model mimicking the physiologic changes following a ruptured abdominal aortic aneurysm was performed on fifteen Yorkshire swine. This model consisted of 35% hemorrhage, a 50 minute supraceliaic aortic cross clamp, and six hours of full resuscitation divided into three equal groups: a sham group, a H/I-R, and an intervention group receiving VPA at the time of cross clamp application. Aortic endothelium was analyzed by microarray technique and functional clusters were identified through the Database for Annotation, Visualization, and Integrated Discovery (DAVID) software.
RESULTS: Swine in the H/I-R group developed profound acidosis, anemia, and coagulopathy with massive resuscitative fluid requirements and validated histologic injury. These changes were significantly mitigated in swine receiving VPA. In the experimental group, 1,536 gene transcripts (529 up and 1,007 down) underwent significant change. The analysis focused on 232 up regulated genes and 183 down regulated genes that were similar in the VPA intervention and sham groups compared to the H/I-R group. This comparison identified the TGFβ pathway as being critical in endothelial dysfunction and that VPA interacted through this pathway for clinical benefit.
CONCLUSIONS: TGFβ plays a crucial role in the development of endothelial cell injury and VPA partially mitigates these adverse changes.

AUTHOR DISCLOSURES: M. W. Causey: Nothing to disclose; **Z. Hoffer**: Nothing to disclose; **L. Houston**: Nothing to disclose; **M. Martin**: Nothing to disclose; **S. Miller**: Nothing to disclose; **N. Singh**: Nothing to disclose; **J. Stallings**: Nothing to disclose

PVSS15. Risk factors for surgical site infections and early graft failure following dialysis access procedures

Dorian J. deFreitas[1], David Benkeser[2], Ravi Veeraswamy[1], Thomas Dodson[1], Joseph Ricotta[1], Atef Salam[1], Karthikeshwar Kasirajan[1], Matthew Corriere[1]

[1]Emory University and Atlanta VA Medical Center, Atlanta, GA; [2]The University of Georgia College of Public Health, Athens, GA.

OBJECTIVES: Outcomes associated with arteriovenous (AV) access for hemodialysis are poorly characterized. We evaluated incidence and predictors of surgical site infections and early graft failure following AV access procedures using the ACS-NSQIP datafile.
METHODS: Procedures were identified from the 2005-2008 ACS-NSQIP datafile using primary CPT codes. Predictors of perioperative surgical site infection (SSI) and graft failure were evaluated using logistic regression; univariate P<0.10 was required for multivariate model entry.
RESULTS: 3864 dialysis access procedures were identified; mean patient age was 60.6 ± 15.2 years, and 53.9% of patients were men. SSI occurred in 84 patients (2.2%), and graft failure in 86 patients (2.2%). Risk factors associated with SSI included obesity [OR (95%CI): 2.46 (1.57-3.84); P<0.001] and preoperative infected or open wound [OR (95%CI): 2.29 (1.22-4.29); P=0.010)] (Table 1); risk factors for graft failure included operative time [OR (95%CI): 2.21 (1.39-3.54); P=0.001 for highest quartile versus other] and history of disseminated cancer [OR (95%CI): 7.36 (1.56-34.86); P=0.012]. (Table 2).
CONCLUSIONS: SSI and early graft failure occur with low incidence following dialysis access procedures. Obesity, infected or open wound, operative time, and disseminated cancer are risk factors for these complications.

AUTHOR DISCLOSURES: D. Benkeser: Nothing to disclose; **M. Corriere**: Nothing to disclose; **D. J. deFreitas**: Nothing to disclose; **T. Dodson**: Nothing to disclose; **K. Kasirajan**: Nothing to disclose; **J. Ricotta**: Nothing to disclose; **A. Salam**: Nothing to disclose; **R. Veeraswamy**: Nothing to disclose

Table 1. Surgical Site Infection: multivariate model. Univariate p<0.01 for all covariates displayed

Variable	OR (95% CI)	P Value
Wound-Open/Infection	2.29 (1.22-4.29)	0.010
Obesity (BMI >30)	2.46 (1.57-3.84)	<0.001
Rest pain/Gangrene	2.25 (0.76-6.66)	0.144
CHF	1.62 (0.73-3.62)	0.237
Female	1.32 (0.85-2.05)	0.225
Emergent Operation	1.51 (0.56-4.09)	0.422
Bleeding Disorder	1.43 (0.82-2.50)	0.206
Contaminated Case	1.84 (0.81-4.21)	0.146

Table 2. Graft Failure: multivariate model. Univariate p<0.01 for all covariates displayed

Variable	OR (95% CI)	P Value
Operative Time (highest quartile vs. other)	2.21 (1.39-3.54)	0.001
Disseminated Cancer	7.36 (1.56-34.86)	0.012
Rest pain/Gangrene	3.42 (0.95-11.01)	0.060
Redo Operation	0.73 (0.38-1.37)	0.323
Emergent Operation	1.53 (0.45-5.25)	0.499
General Anesthetic	1.28 (0.77-2.12)	0.342
Platelets (1000/µL)	1.00 (1.00-1.01)	0.131

PVSS16 - Effect Of Lipid Modifying Drug Therapy On Aortic Aneurysm Repair

Gaurav M Parmar, MD MPH, Bruce Lowman, MD, Bart R Combs, MD, Steve M Taylor, MD, Mark A Patterson, MD, Marc A Passman, MD, William D Jordan Jr, MD
University of Alabama at Birmingham, Birmingham, AL

BACKGROUND: Lipid modifying drug therapy (LMDT) is recommended in all patients having coronary or

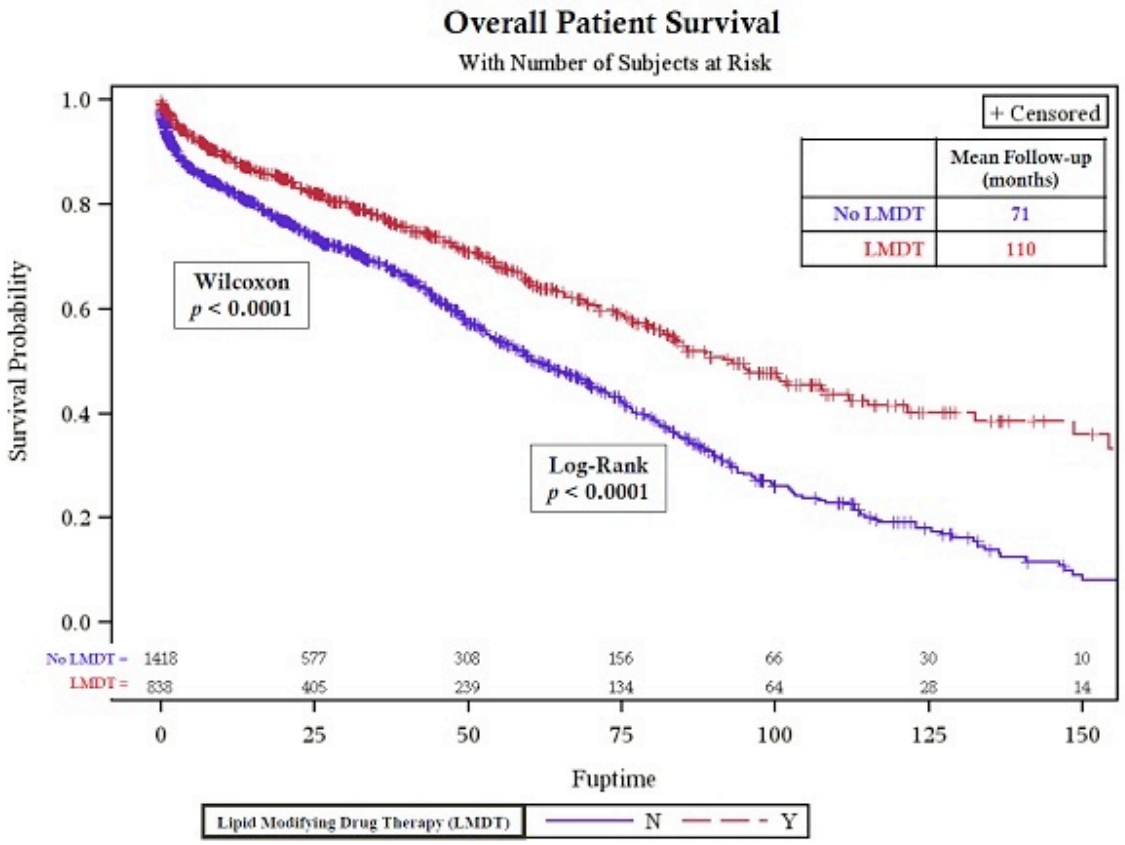
noncoronary atherosclerotic disease. However, the effect of LMDT after aortic aneurysm (AA) repair especially in the absence of other atherosclerotic manifestations is unclear. We examined the distribution of prevalence of LMDT among patients undergoing AA repair and its effect on survival in the presence and absence of other atherosclerotic diseases.

METHODS: We identified index AA repair procedures performed between 1985 and 2010 at the University of Alabama at Birmingham Vascular service from a prospectively maintained registry. Information was collected from health system medical charts, medical communication, and national death indices. We assessed the predictors of prevalence of LMDT by univariate analysis using t-test for continuous and chi-square test for categorical variables, and then performed multivariate logistic regression. The survival was determined using Kaplan-Meier plots and adjusted hazard ratios were calculated using Cox-Proportion regression.

RESULTS: 2431 patients underwent AA repair procedure. 13% were African American and 19% were female. 37% received LMDT and 32% died during the follow-up period of 250 months. White race (OR-1.7, 95% CI: 1.2-2.3), presence of other atherosclerotic disease or diabetes (OR-2.7, 95% CI: 2.2-3.4),Pa hypertension (OR-4.2, 95% CI: 3.3-5.4), and endovascular AA repair (OR-1.8, 95% CI: 1.5-2.2) were significant predictors of LMDT. LMDT was associated with improved survival (Hazard Ratio-0.6, 95% CI: 0.6-0.8) after controlling for traditional risk factors and other atherosclerotic diseases.

CONCLUSIONS: Aggressive management of dyslipidemia should be recommended in all irrespective of atherosclerotic disease status and risk factor profile.

AUTHOR DISCLOSURES: Gaurav M Parmar, MD MPH: Nothing to disclose; **Bruce Lowman, MD:** Nothing to disclose; **Bart R Combs, MD:** Nothing to disclose; **Steve M Taylor, MD:** Nothing to disclose; **Mark A Patterson, MD:** Nothing to disclose**; Marc A Passman, MD:** Nothing to disclose; **William D Jordan Jr, MD:** Nothing to disclose



PVSS17. Surgical Site Infection in Venous Surgery: The Benefit of a Single Dose of Preoperative Antibiotic

Ranjodh Singh[1], Amir Aryaie[1], Alok Dwivedi[3], Brent Marsden[1], Rakesh Shukla[3], Alan Annenberg[2], Gregory Zenni[2], Charles Mesh[1]

[1]Department of Surgery, Jewish Hospital, Cincinnati, OH; [2]Cardiac, Vascular, and Thoracic Surgeons, Inc., Cincinnati, OH; [3]Center for Biostatistical Services, Department of Environmental Health, College of Medicine, University of Cincinnati, Cincinnati, OH.

OBJECTIVES: High ligation and division (L/D) of the saphenofemoral junction (SFJ) can protect against the danger of thromboembolism (TE) associated with greater saphenous vein radiofrequency ablation (GSV RFA). Although L/D SFJ is regarded as a clean procedure, surgical site infection (SSI) can offset its TE benefit. We questioned if SSI associated with SFJ L/D could be minimized by a single pre-operative dose of antibiotic (ABx).
METHODS: A retrospective cohort study of ABx in GSV RFA and L/D SFJ was conducted in a population of 953 consecutive limbs (April 2002 to December, 2010; Venous Severity Score 1 to 3) with the single outcome measure of SSI. Controls (April 2002 to July 2006) received no ABx. SSI was categorized based on required therapy: 0-none, 1-oral ABx, and 2-hospitalization for intravenous ABx and/or wound debridement. Statistical analysis included unpaired Student's t-test for quantitative measures, Fischer's exact for categorical variables, and multiple logistic regression to assess effect of Abx on SSI after adjustment for age, body mass index (BMI), and diabetes (DM).
RESULTS: Total SSI and groin SSI rates are shown in Table 1. All category 2 SSI (n=8) occurred in controls and the majority were located in the groin. BMI and DM significantly increased risk for groin SSI. ABx significantly reduced both overall SSI risk [OR:0.55; (95%CI: 0.33, 0.90), p=0.02]and groin SSI risk [OR:0.36; (95%CI:0.17, 0.76), p=0.01]. Finally, ABX eliminated category 2 SSI (p=0.045).
CONCLUSIONS: L/D SFJ and RFA, when treated as a clean procedure and not prophylaxed with Abx, carries a significant risk of SSI. While DM and BMI are patient-associated risk factors, a single dose of preoperative antibiotic significantly reduces the rate of all SSI and eliminates the danger of serious infection requiring hospitalization.

AUTHOR DISCLOSURES: A. Annenberg: Nothing to disclose; **A. Aryaie**: Nothing to disclose; **A. Dwivedi**: Nothing to disclose; **B. Marsden**: Nothing to disclose; **C. Mesh**: Nothing to disclose; **R. Shukla**: Nothing to disclose; **R. Singh**: Nothing to disclose; **G. Zenni**: Nothing to disclose

Surgical Site Infection

	Total (n=953)	No ABx (n=504)	ABx (n=449)	p-value
Groin (n/%)	37/3.88	27/5.36	10/2.23	0.02
Total (n/%)	78/8.18	50/9.92	28/6.24	0.04

PVSS18 - Timing of TEVAR Does Not Influence Mortality After Hybrid Repair of Thoracoabdominal Aneurysms

Nathan J Aranson, MD, Emel Ergul, MS, Virendra I Patel, MD, Glenn M LaMuraglia, MD, Christopher J Kwolek, MD, Richard P Cambria, MD, Mark F Conrad, MD
Massachusetts General Hospital, Boston, MA

INTRODUCTION: Thoracoabdominal aneurysm (TAA) repair carries significant morbidity and mortality. A hybrid approach involving open visceral vessel debranching followed by TEVAR may decrease perioperative mortality; however, the optimal timing of TEVAR is controversial. The study goal was to determine the effect of TEVAR timing on mortality.
METHODS: ICD-9 codes were used to retrospectively identify patients with intact TAA who underwent visceral vessel debranching and TEVAR from 2004-2007 in the Medicare database. Patients were divided into two cohorts: immediate and delayed TEVAR. The primary outcome was mortality; secondary outcomes included morbidity, length of stay(LOS), and cost.

RESULTS: Four-hundred-ninety-four patients were identified (75% immediate v. 25% delayed). There was no difference in 30-day mortality (7.3% immediate v. 4.0% delayed, p=0.29). Immediate cohort patients were more likely to be males (70% immediate v. 53% delayed, p=0.006) and without chronic renal insufficiency (9.5% immediate v. 21.5% delayed, p=0.006). Postoperative morbidity, including renal insufficiency, was similar in both cohorts except that the delayed group developed more pulmonary complications (14.3% immediate v. 24.1% delayed, p=0.042). As expected, delayed cohort patients had a longer hospital LOS (10.1±10.9 immediate v. 19.8±17.0 delayed, p<0.001) and ICU LOS (5.1±8.5 immediate v. 10.6±13.5 delayed, p<0.001). The mean hospitalization cost was also higher ($176,552 immediate v. $273,355 delayed, p<0.001). The 3-year actuarial survival was similar between cohorts (59% immediate vs. 57% delayed, p=0.524).
CONCLUSIONS: The timing of TEVAR for hybrid TAA repair does not influence mortality or postoperative renal function. However, delaying TEVAR is associated with increased pulmonary complications, longer LOS and higher hospitalization cost.

AUTHOR DISCLOSURES: Nathan J Aranson MD: Nothing to disclose; **Emel Ergul, MS:** Nothing to disclose; **Virendra I Patel, MD:** Nothing to disclose; **Glenn M LaMuraglia, MD:** Nothing to disclose; **Christopher J Kwolek, MD:** Cordis, Medronic, WL Gore, Cook, research grants; **Richard P Cambria, MD**: WL Gore, Cook, Medtronic, research grants; **Mark F Conrad, MD:** WL Gore, consulting fee or other remuneration

PVSS19. Performing Complete Superficial Vein Ablation in Patients with Obesity and Severe Chronic Venous Disease: Who Benefits?

Frank Vandy, Susan Blackburn, Jess Bloom, Amber Clay, Elaine Fellows, Ken Guire, Michele Kantola, William Laforge, Cathy Stabler, Nicole Baker, Emily Cummings, Lisa Pavone, John Rectenwald, Thomas Wakefield
University of Michigan, Ann Arbor, MI.

OBJECTIVES: The relationship between CEAP class and Venous Clinical Severity Score (VCSS) change following great saphenous vein ablation (GSVa) is under reported. We further defined this relationship in patients including those with severe chronic venous disease (CVD) and the obese.
METHODS: We reviewed our prospectively collected venous procedural database from January 2007 to October 2010 for patients who had undergone GSVa (± phlebectomies). A CEAP class 5 or 6 designated severe CVD. VCSS were obtained preoperatively and at the 1st, 2nd, and 3rd follow up visits.
RESULTS: 265 limbs in 216 patients underwent GSVa.(Table 1) Follow up was done at a mean of 7.5, 102.7, and 242.6 days postoperatively. A significant association between CEAP class and a declining VCSS following GSVa was seen, such that more severe CVD does not improve to the same degree as less severe CVD.(Fig 1) A direct correlation between increasing BMI and higher VCSS by a coefficient of .053 was demonstrated. ($p < .001$)
CONCLUSIONS: Although all groups improved, the degree of improvement was influenced by BMI and CEAP class. Realistic outcomes must be considered when counseling patients.

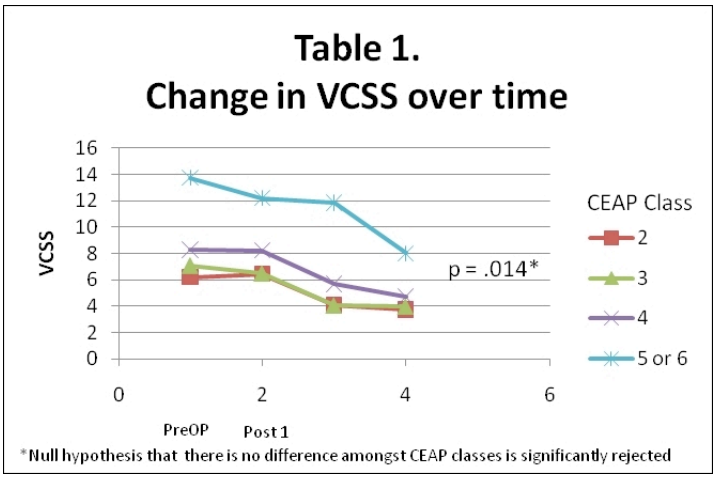
AUTHOR DISCLOSURES: N. Baker: Nothing to disclose; **S. Blackburn**: Nothing to disclose; **J. Bloom**: Nothing to disclose; **A. Clay**: Nothing to disclose; **E. Cummings**: Nothing to disclose; **E. Fellows**: Nothing to disclose; **K. Guire**: Nothing to disclose; **M. Kantola**: Nothing to disclose; **W. Laforge**: Nothing to disclose; **L. Pavone**: Nothing to disclose; **J. Rectenwald**: Nothing to disclose; **C. Stabler**: Nothing to disclose; **F. Vandy**: Nothing to disclose; **T. Wakefield**: Nothing to disclose

Table 1. Patient Demographics

	CEAP 2	CEAP 3	CEAP 4	CEAP 5 and 6	p value
NUMBER OF LIMBS	111	109	29	16	N/A
MALE:FEMALE	28:87	22:87	13:16	5:11	.036
MEAN AGE	49.67	52.49	54.79	53.19	.094
MEAN BMI	28.92	29.60	32.82	35.41	.01

RFA:EVLT	59:51	40:69	10:19	13:3	.001
PHLEBETOMIES n(%)	66 (59%)	32 (29%)	8 (28%)	2 (13%)	<.001

BMI - Body Mass Index (kg/m2); RFA - Radiofrequency Ablation; EVLT - Endovenous Laser Treatment



PVSS20 - Results of an Aggressive Surveillance and Retrieval Protocol for Inferior Vena Cava (IVC) Filter Removal

Elizabeth Blazick, MD, Mounir J Haurani, MD, , Virendra I Patel, MD, Glenn M LaMuraglia, MD, Christopher J Kwolek, MD, Mark F Conrad, MD,
Massachusetts General Hospital, Boston, MA

OBJECTIVES: The use of retrievable IVC filters has come under increased scrutiny due to concerns about poor retrieval rates (often <20%) and the long-term risk of fracture and embolization. This study details the results of an aggressive protocol of follow-up and retrieval of IVC filters.
METHODS: We identified all patients who had Bard G2 or G2X filters placed from 1/2006-4/2010. A registry was established and patients were followed in the office and counseled regarding filter removal. 76% (186/244) of patients underwent CT scanning prior to this visit to assess the integrity of the filter and IVC patency.
RESULTS: There were 244 patients in the study cohort with a mean follow-up of 461 days. 92 (38%) were placed in the ICU using intravascular ultrasound. Filter indications included: 148 (61%) thrombotic event with a contraindication to anticoagulation, 9 (4%) failure of medical therapy and 87 (35%) prophylaxis. 100 (41%) patients had a deep venous thrombosis (DVT) at the time of placement and 73 (30%) had pulmonary emboli (PE). Follow-up was available on 228 (93%) patients. 69 (28%) patients died prior to removal, the average time to death was 162 days with no filter related deaths. Retrieval was attempted in 99/175 (57% of live patients) and successful in 94(95%); average time to retrieval was 246 days (range 8-1548 days). The remaining 76 (31%) filters were permanent: 31 due to patient preference, 29 for clinical indication and 16 were lost to follow-up. There was 1 (0.5%) filter fracture identified, 6 (3%) IVC occlusions, 30(16%) filters were tipped to one side and 63 (34%) had some degree of penetration of the IVC.
CONCLUSIONS: Through aggressive follow-up, 93% of patients were evaluated for filter removal. Retrieval was successful in 95% of those attempted. An aggressive follow-up protocol can double the retrieval rates previously reported while the risk of fracture/embolization is <1% when filters are aggressively removed at a mean of 246 days.

AUTHOR DISCLOSURES:;
Elizabeth Blazick, MD: Nothing to disclose; **Mounir J Haurani, MD:** Nothing to disclose; **Virendra I Patel, MD:** Nothing to disclose; **Glenn M LaMuraglia, MD:** Nothing to disclose; **Christopher J Kwolek, MD:** Cordis,

Medronic, WL Gore, Cook, research grants; **Mark F Conrad, MD:** WL Gore, consulting fee or other remuneration

PVSS21. Caval Perforation by Retrievable IVC Filters and Considerations for Open Explantation

Peter Connolly[2], Vinod Balachandran[1], Govind Nandakumar[1], David Trost[1], Darren Schneider[1], Harry L. Bush[1]
[1]New York-Presbyterian Hospital, Weill Cornell Medical Center, New York, NY; [2]Columbia Presbyterian, New York, NY.

OBJECTIVES: Retrievable inferior vena cava (IVC) filters were introduced to provide protection from pulmonary emboli (PE) in patients with short-term PE risk, with the option to be removed once the PE risk subsides. However, many filters are not removed and there are increasing reports describing complications from retrievable filters including IVC perforation, erosion into adjacent structures, migration, and filter fracture. Importantly, the frequency of these complications is likely to increase as greater numbers of IVC filters are being placed and we describe our experience with open filter explantation for IVC perforation.
METHODS: We describe 5 cases of open filter explantation for IVC perforation by retrievable IVC filters following unsuccessful endovascular retrieval.
RESULTS: Five patients underwent successful laparotomy and explantation of retrievable IVC filters. Three filters were placed for PE prophylaxis in high-risk patients prior to elective surgical intervention. Two others were placed in patients with PE and contraindications to anticoagulation. All patients had radiographic evidence of cava penetration by the filter. 4 patients had symptoms attributed to erosion into adjacent bowel, including one patient with endoscopic evidence of duodenal penetration. One patient was asymptomatic but had radiographic evidence of aortic penetration by a filter leg. All patients had improvement in symptoms and uncomplicated recoveries following explantation.
CONCLUSIONS: This is the largest case series to date describing the open explantation of IVC filters for IVC perforation and erosion into adjacent structures. We advocate early endovascular retrieval of IVC filters as soon as PE risk subsides to avoid long-term complications of retrievable IVC filters. In cases of IVC perforation open removal of IVC filters can be performed safely with minimal risk when endovascular retrieval is unsuccessful.

AUTHOR DISCLOSURES: V. Balachandran: Nothing to disclose; **H. L. Bush**: Nothing to disclose; **P. Connolly**: Nothing to disclose; **G. Nandakumar**: Nothing to disclose; **D. Schneider**: Nothing to disclose; **D. Trost**: Nothing to disclose

PVSS22. Statin Therapy is Associated with Superior Clinical Outcomes after Endovascular Treatment of Critical Limb Ischemia

Francesco A. Aiello, Muhammad A. Khan, Katherine A. Gallagher, John K. Karwowski, Harry L. Bush, James F. McKinsey, Darren B. Schneider
New York Presbyterian Hospital-Weill Cornell/Columbia University, New York, NY.

OBJECTIVES: Statin therapy has been shown to reduce adverse cardiovascular events in patients with peripheral artery disease, but their effect on outcomes after lower extremity endovascular interventions remains uncertain. The aim of this study was to determine if statin therapy improves clinical outcomes after endovascular intervention in patients with critical limb ischemia (CLI).
METHODS: A retrospective review of all patients undergoing endovascular treatment for CLI was performed. Patients were grouped based on whether or not they were receiving statin therapy at the time of intitial intervention for CLI. Demographics, lesion type and TASC classification as well as overall mortality, primary and secondary patency and limb salvage were then compared between these groups. Analysis was performed using multivariate regression and Kaplan-Meier analysis.
RESULTS: 646 patients (904 limbs) underwent endovascular intervention for CLI between 2004 and 2009. The statin group had significantly higher rates of diabetes mellitus, coronary artery disease, congestive heart failure, previous myocardial infarction and coronary artery bypass procedure ($P<0.05$). The two groups had similar lesion characteristics, TASC classification and primary procedure. At 24 months, the statin-treated group had higher rates of primary patency (43% vs. 33%; P=.007), secondary patency (66% vs. 51%; P=.001), limb salvage (83% vs. 62%; P=.001) and overall survival (77% vs. 62%; P=.038). Statin therapy was also independently associated with

improved limb salvage by multivariate regression analysis (HR=0.315; P<.001).
CONCLUSIONS: Patients receiving statin therapy at the time of initial intervention for treatment of CLI had significantly improved overall survival, primary and secondary patency and limb salvage rates. Our findings suggest that statins should be part of the periprocedural treatment regimen for patients undergoing endovascular treatment of CLI and supports further investigation into the beneficial effects of statins in CLI.

AUTHOR DISCLOSURES: F. A. Aiello: Nothing to disclose; **H. L. Bush**: Nothing to disclose; **K. A. Gallagher**: Nothing to disclose; **J. K. Karwowski**: Nothing to disclose; **M. A. Khan**: Nothing to disclose; **J. F. McKinsey**: Nothing to disclose; **D. B. Schneider**: Nothing to disclose

PVSS23. PAD patients who undergo more invasive revascularization procedures are more likely to decrease or quit smoking

Sareh Rajaee, Edward J. Marcaccio, Wilfred I. Carney, Tze Tec Chong, Manuel Garcia-Toca, Jeffrey M. Slaiby
Department of Vascular Surgery, Warren Alpert Medical School at Brown University, Providence, RI, RI.

OBJECTIVES: To determine if PAD patients who undergo surgical revascularization procedures are more likely to change their smoking habits than those who undergo percutaneous revascularization. This study assesses changes in smoking habits following intervention via patient-answered surveys and retrospective chart review.
METHODS: Study participants included patients seen between 2005 and 2010 and assigned ICD.9 code diagnoses of PVD, claudication, or PAD. 500 participants were identified belonging to 1 of 3 intervention groups (medical, percutaneous, or surgical), of which 142 submitted surveys. Here we present a preliminary analysis of 55 patients who were active smokers at the time of intervention. An interrater reliability analysis using the Kappa statistic was used to compare survey-reported and medical record documented smoking habit change. A Fisher's exact test was used to compare smoking habit change among percutaneous and surgically treated groups. A logistic regression analysis was performed to determine if surgical revascularization independently predicts a decrease in smoking while controlling for potential confounders. Historical elements were extracted from the medical record and included: ABIs, history of CAD, diabetes, COPD, stroke, alcohol use, and marriage status.
RESULTS: 36% (n=20) of the patients underwent surgical revascularization and 42% (n=23) underwent percutaneous revascularization. The Kappa value was 0.54 ($p<0.001$). 94% of the patients believed that smoking was a significant contributor to their PAD. The Fisher's exact test revealed a higher proportion of patients who quit or cut down on smoking after surgical intervention compared to percutaneous intervention (95% vs 61%, p=0.011). This association remained after controlling for confounders (OR 0.02, 95% CI 0.001-0.47, p=0.03).
CONCLUSIONS: Patients with PAD who undergo a more invasive revascularization, such as surgical bypass, are more likely to quit or cut down on smoking than those who undergo percutaneous procedures.

AUTHOR DISCLOSURES: W. I. Carney: Nothing to disclose; **T. Chong**: Nothing to disclose; **M. Garcia-Toca**: Nothing to disclose; **E. J. Marcaccio**: Nothing to disclose; **S. Rajaee**: Nothing to disclose; **J. M. Slaiby**: Nothing to disclose

PVSS24. Duplex-Guided Office Based Arterio-Venous Fistula Thrombectomy: A Novel Technique

Anil Hingorani
Division of Vascular Services, Maimonides Medical Center, Brooklyn, NY.

OBJECTIVES: Autologous arterial-venous accesses (AVA) have been shown to be superior to the ones created with synthetic material. Accordingly, several strategies have been developed to extend the salvage rates for failing or failed AVAs. We analyzed our aggressive approach to salvaging acutely occluded AVAs in an office setting using duplex scanning.
METHODS: Over 12 months, 14 patients with acute thrombosis of their AVA underwent 18 procedures for salvage at our office. there were 10 (71%) radial-cephalic and 4 (29%) brachial-cephalic fistulas.Presence of thrombus, as confirmed by preoperative duplex, served as the indication for 16 (89%) of the cases. Acute thrombosis during routine angioplasty was the indication for the remaining 2(11%) of the cases. Of the 14 patients, thrombus was

located at the perianastomotic AVF in 6 (43%), prx-mid AVF in 6 (43%), mid AVF in 1 (7%), dist AVF in 1 (7%). Treatment included balloon dilation and maseration (group A), 10(56%) or pharmaco-mechanical thrombectomy (group B), 8,(44%). Of the 18 procedures, 13 (72%) were successful.
RESULTS: All patients were treated under duplex-guidance alone. Full restoration of fistula flow was established in 14 cases (78%). Early re-thrombosis (<1 mo patency) occurred in 3 cases (17%), these patients received new fistulas. From group A, 6 (60%) were successful. From group B, 7 (88%) were successful. The 1 case that was unsuccessful was the patient with a history of PCV. Of the 14 patients, 8 (57%) are currently on hemodialysis via fistula. 3 patients (21%) had newly placed fistulas after failed interventions. 2 patients (14%) are not on dialysis yet. 1 patient (7%) with PCV disorder is on dialysis via tesio.
CONCLUSIONS: This small series demonstrates that ultrasound alone can be not only be used as an important diagnostic tool preoperatively but also to guide treatment of acutely occluded arteriovenous fistulae.

AUTHOR DISCLOSURES: A. Hingorani: Nothing to disclose