#1 - CAROTID STENTING AND ENDARTERECTOMY IN THE UNITED STATES: AGE AND OUTCOMES

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Objectives: With the evolution of endovascular techniques, carotid artery stenting (CAS) has been compared to carotid endarterectomy (CEA). However, the majority of aging studies in this area are derived from high-volume or single institutions and their results may not be extrapolated to all hospitals offering such treatment.

Methods: We evaluated the 2005 Nationwide Inpatient Sample for hospitalizations with a procedure of CAS or CEA within two days after admission at age 60 years and above. Procedures were analyzed with respect to patient demographics and associated complications.

Results: 80,498 carotid interventions (73,929 CEA and 6,569 CAS) were identified. The overall incidence of stroke was 4.16% after CAS and 2.66% after CEA (p<.0001). CAS was more often utilized in octogenarians than in younger patients (7.92% in 60-69 vs. 8.55% in 80+ years; p< .0002). Increased age was not associated with a greater stroke rates after CAS or CEA (p=NS). Cardiac and pulmonary complications after CEA were greater in octogenarians (3.0% vs.1.9% and 2.2% vs. 1.3% respectively; p<.0001); this was not seen after CAS (p= NS). When adjusted by age, gender, complications and Elixhauser comorbidities, patients after CAS were1.6 times as likely to have a stroke (CI= 1.37-1.78) when compared to CEA. Significant predictors of postoperative hospital mortality were stroke (OR=29.0; 95% CI=21.54-39.08), cardiac complications (OR=6.4; 95% CI=4.44-9.09), and pulmonary complications (OR=3.5; 95% CI=2.31-5.19). With increasing age, overall mortality steadily increased after CAS (from 0.23% to 0.67%; p= .0409) but remained stable after CEA.

Conclusions: Elderly patients did not have a higher risk of stroke after CAS when compared to younger patients. Stroke was the strongest predictor of hospital mortality. The increased utilization of CAS in the aged, which had significantly higher stroke rates in all age groups studied, may account for the greater hospital mortality seen after CAS with aging. Further research is needed to improve outcomes of carotid disease in the elderly.

#2 - INTRAOPERATIVE SSEP MONITORING DURING CAROTID ENDARTERECTOMY- IS IT ENOUGH?

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Objective: Somatosensory evoked potential (SSEP) monitoring has been suggested as a highly specific and sensitive method for neuromonitoring during carotid endarterectomy (CEA). We analyze and report the results of SSEP in pts undergoing CEA.

Materials and Methods: This is a retrospective study involving pts undergoing CEA. Over a 6 years period from 2001-2007, we performed CEA on 600 pts with intraoperative SSEP monitoring. The recordings of 50/10 (more than 50%drop in the amplitude or 10% increase in the latency of the SSEP average recordings) were considered abnormal. Data was collected from retrospective review of charts and SSEP recordings of selectively shunted pts.

Results: Results of 600 pts undergoing CEA with SSEP intraoperative neuromonitoring were analyzed. The M: F ratio was 1.4:1. Selective shunts were placed in 8.7% of pts (46/527) based on abnormal SSEP recordings. Prophylactic shunts were placed in 11.9% of pts (73/600). There was no difference in abnormal SSEP recordings between normal and diabetic pts (p=0.064). SSEP changes failed to resolve in 2 pts despite shunting and all these pts had a stroke. In this series there was a 2.0% (11/527) risk of postoperative major/minor strokes with 1.5% 30 days mortality. The Mantel-Haenszel common odds ratio estimate suggests that pts with symptomatic carotid disease and intra operative SSEP changes are 3.75 times more likely to have a stroke. Of the 11 pts with perioperative strokes 6 had normal SSEP findings. However, only 1 of these was felt to be a failure of SSEP to identify ischemia. The remaining stroke pts had technical problems with reconstruction and developed neurologic events after SSEP was completed. Progressive severity of contralateral carotid stenosis resulted in increasing risk of SSEP changes (table). Our data suggest that SSEP recordings have a sensitivity of 93.7%, specificity of 33%. The positive predictive value of the SSEP was 99.5%. Pts with normal SSEP findings are very unlikely to have ischemia.

Conclusion: SSEP is a highly sensitive method for detecting cerebral ischemia. Pts with contralateral carotid occlusion or high-grade stenosis are at high risk for SSEP changes. Diabetes does not have any impact on SSEP recordings. Patients with symptomatic carotid disease and SSEP changes have a higher risk of perioperative stroke.

Table : Contralateral Stenosis for Selective Shunts and SSEP changes

Contralateral Stenosis (Data not available- 5 pts)	Total N=522	SSEP Changes	Strokes
0-49%	299	38 (12.7%)	7
50-79%	179	22 (12.2%)	2
80-99%	23	7 (30.4%)	1
Occlusion	21	9 (42.9%)	1

TABLE

#3 - REDUCTION OF POST-PROCEDURE MICROEMBOLI FOLLOWING RETROSPECTIVE QUALITY ASSESSMENT AND PRACTICE IMPROVEMENT MEASURES FOR CAROTID ANGIOPLASTY AND STENTING

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Objective: We have previously demonstrated a 70% incidence of microemboli on diffusion weighted magnetic resonance imaging (DW-MRI) following carotid angioplasty and stenting (CAS). The purpose of this study is to compare the incidence of microemboli in two distinct time periods when procedural modifications were implemented into a CAS program.

Methods: Following a retrospective quality review of our CAS cohort (n=27) from November 2004 through April 2006 (Period 1), we enrolled patients (n=22) from May 2006 through February 2008 (Period 2) undergoing CAS into a prospective cohort that included obtaining pre- and post-procedure DW-MRI exams. Procedural modifications during Period 2 included the preferential use of closed-cell systems (59%), early heparinazation, and elimination of performing a routine arch angiogram. The hospital records of these 49 patients were reviewed; symptoms, co-morbidities, lesion characteristics, peri-procedural information, and postoperative outcomes were collected. The incidence and location of acute, post-procedural microemboli were determined using DW-MRIs.

Results: Twenty (74%) CAS patients from Period 1 and eight (36%) patients from Period 2 demonstrated acute microemboli on post-procedural DW-MRI (P=.02). The mean number of microemboli in Period 1 was 4.1 ± 5.3 vs. 1.5 ± 2.7 during Period 2 (P=.04). Three of the 27 patients (11%) during Period 1 experienced temporary neurologic changes that resolved within 36 hours. None of the patients during Period 2 exhibited any neurologic changes. There were no differences between the two groups with respect to demographics, comorbidities, and presenting symptoms. Period 2 patients when compared to Period 1 had more technically challenging anatomy with more calcified lesions (68% vs. 27%), longer lesions (15.9 mm vs. 8.2 mm), and higher incidence of ulceration (55% vs. 27%) (all P<.04).

Conclusion: Despite successful performance of 49 consecutive CAS procedures without permanent

neurologic sequelae, significant reductions in peri-procedural embolic events as identified via DW-MRI lesions may be achieved through implementation of quality improvement measures identified through continuous outcome analysis. The long term neurologic benefits associated with reduced sub-clinical neurologic events remains to be determined.

#4 - OPEN-CELL VS. CLOSED-CELL STENT DESIGN DIFFERENCES IN BLOOD FLOW VELOCITIES AFTER CAROTID STENTING

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Objective: The differential effect of stent design, i.e. open-cell vs. closed-cell configuration, on carotid velocities detected by duplex ultrasonography (DUS) has not been established. To identify possible stent design differences in carotid velocities, we analyzed our experience with DUS obtained before and immediately after CAS.
Methods: In a series of 141 CAS procedures performed over a 3-year period, data from postintervention DUS and carotid angiograms were evaluated for each patient. Peak systolic velocities (PSV), end-diastolic velocities (EDV), and internal carotid artery-to-common carotid artery (ICA:CCA) PSV ratios were compared according to stent design. Differences in carotid velocities were analyzed using parametric and nonparametric statistical tests.
Results: Completion angiogram revealed successful revascularization and less than 30% residual stenosis in each case. The 30-day stroke-death rate in this series was 1.6% and was unrelated to stent type. Postintervention DUS was obtained a median of 5 days after CAS (interquartile range [IQR], 1-25 days). Closed-cell stents were used in 41 cases (29%) and open-cell stents in 100 (71%). The median PSV was significantly higher for closed-cell stents (122 cm/s; IQR, 89-143 cm/s) than for open-cell stents (95.9 cm/s; IQR, 77.3-122.8)(P=.007). Median EDV (36 vs. 29cm/s; P=.006) and median ICA:CCA PSV ratio (1.6 vs.1.2; P=.017) were also significantly higher for closed cell-stents. 44.7% of closed-cell stents had carotid velocities that exceeded the threshold of 50% stenosis by DUS criteria for a nonstented artery compared with 26.1% of open-cell stents (P=.04). After adjusting for carotid tortuosity and degree of residual stenosis, closed cell-stents had a 2.2-fold increased risk of showing abnormally elevated carotid velocities after CAS compared with closed-cell stents (odds ratio, 2.2; 95% confidence interval, 1.02-4.9).
Conclusions: Carotid velocities are disproportionately elevated after CAS with closed-cell stents compared with open-cell stents, which suggests that velocity criteria for quantifying stenosis may require modification according to stent design. The importance of these differences in carotid velocities related to stent design and the potential relationship with recurrent stenosis remains to be established.

#5 - SIMULTANEOUS PRE- AND POST-FILTER TRANSCRANIAL DOPPLER MONITORING DURING CAROTID ARTERY STENTING

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Objective: Carotid artery stenting (CAS) is emerging as an acceptable treatment alternative to surgery for patients with carotid artery stenosis. The major risk of CAS is cerebral embolization of plaque and thrombus causing stroke or asymptomatic brain infarction. Use of embolic protection devices (EPD) to catch emboli before they reach the brain is now standard practice in CAS. The pore size of the currently available filters is >100 microns and emboli smaller than the EPD pores can still reach the brain. While the use of EPD is widespread, little evidence exists of their in vivo hemodynamic effects or their efficacy in preventing distal embolization. Our aim was to determine the hemodynamic effects of EPD and to quantify the number of emboli reaching the brain with the device in place. Methods: Patients were monitored with ipsalateral simultaneous dual probe transcranial Doppler (TCD) during CAS. By placing TCD probes both proximal and distal to the EPD, we quantify the microembolic signals before the EPD and how many reach the intracranial circulation after the EPD. One probe is placed submandibularly to monitor the internal carotid artery and another probe is placed transtemporally to monitor the middle cerebral artery. We compare the number of extracranial emboli prior to the EPD with the number of intracranial emboli after the EPD. Results: Dual probe monitoring was successful. Significantly more microembolic events were recorded proximal to the EPD in the internal carotid artery than were recorded distal to the EPD in the middle cerebral artery. Movement of the deployed filter caused distal microembolization not seen in the proximal internal carotid artery. Additionally, emboli were noted to emanate from the filter. Conclusions: EPD significantly reduces but does not eliminate the number of microemboli reaching the brain during carotid artery angioplasty and stenting. We propose to monitor all cases of CAS with submandibular and transtemporal TCD probes to further evaluate the practice of distal embolization protection. Such information is vital in assessing the various devices and the techniques of utilization.

#6 - METABOLIC SYNDROME: A PREDICTOR OF ADVERSE OUTCOMES AFTER CAROTID REVASCULARIZATION?

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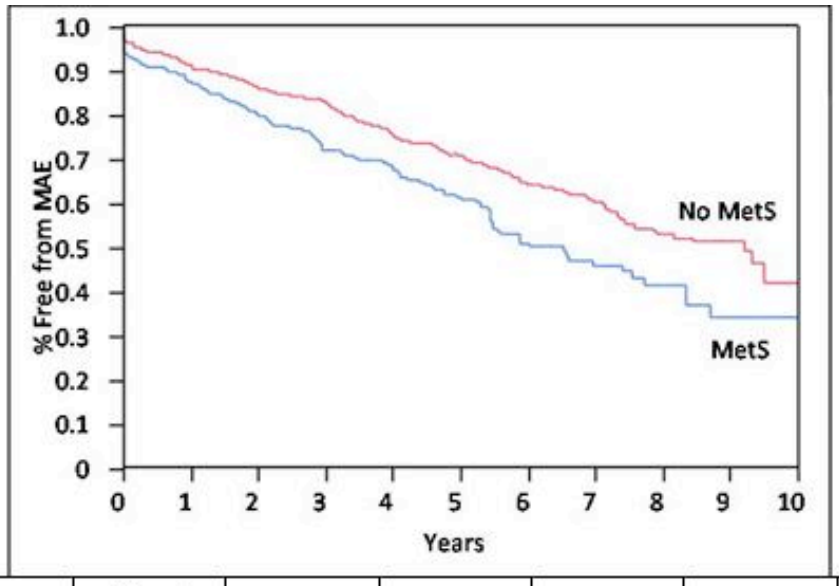
Background: Metabolic syndrome (MetS) is rapidly increasing in prevalence and is associated with carotid plaque development and is a risk factor for stroke. The aim of this study is to describe the outcomes for patients with metabolic syndrome after carotid revascularization (carotid endarterectomy (CEA) and carotid stenting (CAS)).

Methods: A database of patients undergoing carotid revascularization for primary atherosclerotic lesions was queried from 1998 to 2006. MetS was defined as the presence of ≥3 of the following criteria: Blood pressure ≥130mmHg/≥80mmHg; Triglycerides ≥150mg/dl; HDL ≤50mg/dl for women and ≤40mg/dl for men; Fasting blood glucose ≥110mg/dl; or Body Mass Index ≥30kg/m2. Multivariate and Kaplan-Meier analyses were performed to outcomes. The average follow-up period was 4.5 yrs.

Results: 843 patients (mean age: 71 ±10yrs; 64% male) underwent 750 CEAs and 171 CAS. 31% were

identified as having MetS. 63% were asymptomatic. 87% had hypertension. 27% had hyperlipidemia. 32% were considered diabetic, and 14% had chronic renal insufficiency. The perioperative morbidity and 30-day mortality rates were 16.4% and 1.1%, respectively. MetS patients were more likely to experience a complication than Non-MetS patients (19% vs 14%, p=0.04). The 30- and 90-day Major Adverse Events (MAE) rates (Death, Stroke, MI) were 4.3% and 5.9%, respectively; however those with MetS experienced a higher 30-day MAE (6.9% vs 3.5%, p=0.02) and 90-day MAE (8.7% vs 4.9%, p=0.03). MetS patients were more likely to experience stroke (8.0% vs 4.3%, p=0.03) and MI (17.4% vs 5.7%, p<0.001) during follow-up versus Non-MetS patients. By Kaplan-Meier analysis, there was no difference between MetS and Non-MetS patients with respect to patency, restenosis, re-intervention, or survival, but a difference existed for freedom from stroke, MI, and MAE. See table for 3-year outcome rates.

Conclusion: MetS is prevalent among patients undergoing carotid revascularization. MetS patients are at a greater risk for perioperative morbidity as well as stroke, MI and MAE during follow-up when compared to patients without MetS. Long-term stroke prevention is poor in the presence of MetS. MetS should be considered a significant risk factor for patients undergoing carotid revascularization.



3-Year	Total (%)	MetS	No MetS	p Value	CEA	CAS	p Value
Patency	98 ±0.5	96 ±1.4	99 ±0.5	NS	98 ±0.6	100	NS
Free from Restenosis	82 ±1.6	80 ±3.0	84 ±1.8	NS	84 ±1.6	70 ±5.4	<0.001
Free from Stroke	95 ±0.7	93 ±1.3	96 ±0.7	0.03	96 ±0.8	94 ±1.8	NS
Free from MI	93 ±0.9	88 ±2	96 ±0.9	<0.001	94 ±0.9	87 ±3.1	0.03
Survival	86 ±1.1	84 ±2.2	87 ±1.4	NS	87 ±1.3	82 ±3.2	NS
Free from MAE	79 ±1.4	72 ±2.7	83 ±1.5	0.0005	81 ±1.5	73 ±3.9	NS

Freedom from MAE (above). 3-Year Outcomes (below).

#7 - THE PHASE I MULTICENTER TRIAL OF THE APTUS™ ENDOVASCULAR REPAIR SYSTEM: RESULTS AT 6 MONTHS AND 1 YEAR

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Objective: This FDA Phase I IDE study evaluated the primary endpoints of safety (major device-related adverse events at 30 days) and feasibility (successful deployment of all endograft components) of the Aptus™ Endovascular AAA Repair System to treat abdominal aortic aneurysms (AAA).

Methods: A prospective, single arm FDA Phase I IDE study was performed. The Aptus™ endograft is a three-piece modular device with an unsupported main body and two fully supported limbs in a 5.3 O.D. (16 Fr) delivery system. EndoStaples that measure 4 mm (length) by 3 mm (diameter) provide transmural graft fixation and are applied independent of the endograft delivery system. Inclusion criteria included a proximal aortic neck length of 12 mm and iliac landing zone of 10 mm. Secondary endpoints included freedom from endoleaks, rupture, migration and device integrity.

Results: Twenty-one (21) patients enrolled at six centers. All patients received the Aptus™ endograft and EndoStaples without conversion. Ninety-six EndoStaples (range: 2-10, median: 4) were implanted. All patients (n=21) completed one month and six month follow-up evaluation and eleven completed one-year follow-up. Endoleak and aneurysm diameter changes are listed in Table 1. Two proximal cuffs and one limb extension were used as adjunctive devices at implantation. Three secondary interventions were performed in two patients for limb thrombosis. There were no EndoStaple adverse events, device integrity failures or migration.

Conclusions: These results document the acute safety and feasibility of the Aptus™ endograft and EndoStaples. Early follow-up demonstrates excellent six-month and one-year results. A pivotal Phase II trial is underway at 25 U.S. centers.

AAA change> 5 mm	30 Days n=21	6 months n=19	1 Year n=11
Reduction	N/A	7 (21%)	8 (73%)
No Change	N/A	12 (79%)	3 (27%)
Enlargement	N/A	0	0
Endoleak	30 Days n=21	6 months n=21	1 Year n=11
Type I	0	0	0
Type II	4 (19%)	4 (19%)	1 (9%)
Type III	0	0	0
Type IV	0	0	0

Table 1: Aneurysm Diameter Change and Endoleak

#8 - ULTRASOUND SURVEILLANCE AFTER ENDOVASCULAR ANEURYSM REPAIR (EVAR): ARE CT SCANS STILL NECESSARY?

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Objective: Contrast CT scan surveillance after EVAR carries inherent, cumulative risks of radiation and contrast nephrotoxicity. Ultrasound provides another modality to follow EVARs without those risks. To better understand the role that ultrasound plays in EVAR surveillance, we reviewed our 10-year experience.

Methods: A retrospective review of all patients who underwent endovascular repair for AAA at our institution was performed. Patient history, demographics, procedural details, clinical follow-up, and ultrasound data were collected and analyzed.

Results: From 1996 through July, 2007, 540 consecutive patients underwent an EVAR procedure. Ultrasound surveillance data could only be obtained in 319 patients. During this time, patients underwent a mean of 3.8± 3.2 ultrasound studies. Fifty patients (16%) required 81 reinterventions. Reinterventions were performed for limb dysfunction (n=30), endoleaks (n=46), and conversion (n=4). Six patients underwent seven reinterventions based only on symptoms such as acute ischemia. A combination of symptoms and a positive, diagnostic study were used as indications for 21 interventions in 16 patients. Ultrasound correctly predicted 18/18(100%) of these re-interventions; three interventions were based on CT scan only and no ultrasound was performed. 53 re-interventions in 40 patients were based solely on diagnostic findings. Ultrasound predicted 51/52 re-interventions (98%); two patients did not undergo ultrasound evaluation and there was one false positive. Overall, using symptoms and ultrasound evaluation resulted in predicting 99% of re-interventions performed after EVAR.

Conclusion: Ultrasound and clinical evaluation after EVAR is an excellent predictor of reinterventions after EVAR without the cumulative risks of CT scans.

#9 - THORACIC ENDOGRAFTS FOR CHRONIC TYPE B AORTIC DISSECTIONS

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Background: One-third of survivors of acute Type B aortic dissection progress to rupture or require surgical repair within 5 years due to progressive false lumen enlargement. This retrospective study was undertaken to evaluate the safety and efficacy of the use of thoracic stent grafts (TSG) for treatment of chronic type B aortic dissection.

Methods: A total of 34 patients (males 20; mean age 56 ± 3 yr) were treated over a 4-year period with custom (2) or the TAG endografts for proximal thoracic false lumen enlargement. The majority of patients were treated with a single component (n=28 [82%]). The mean maximal thoracic aneurysm diameter was 6.9 ±1 cm. The majority (n= 25 [74%]) of patients had symptoms of chronic back pain. The mean time from the initial acute dissection was 4.3±0.8 yr. Two patients had Marfan's syndrome.

Results: All but one patient had successful exclusion of the proximal entry point. The majority (n=31 [91%]) of patients had routine coverage of the left subclavian artery. Bypass adjuncts to improve proximal landing zone included three ascending aorta to innominate and common carotid bypasses, two carotid to carotid and carotid to subclavian bypasses, one bilateral carotid to subclavian bypass, and one total abdominal visceral vessel debranching. None of the patients with isolated left subclavian occlusion required an adjunctive procedure. Perioperative complications included two deaths, one transient paraparesis and one paraplegia. Secondary endovascular interventions were required for two patients with type II endoleaks, one with a type III endoleak, and one distal flare perforation. One patient with a proximal type I endoleak had a successful open surgical conversion. An asymptomatic proximal extension of the aortic dissection was noted in one patient 6 months after initial treatment. At a mean follow-up of 11 ± 8 mos, 31 (91%) of patients had complete false lumen thrombosis across the stented segment. Among patients with false lumen thrombosis, 25 (80%) patients had no growth in the size of the aneurysm and 6 (19%) patients had a mean 3.3 ± 1 mm decrease in the size of the maximal thoracic aortic diameter.

Conclusions: Despite continued perfusion of the false lumen distal to the stented segment, the majority of treated patients had thrombosis and stabilization of the aneurysmal portion of the false lumen. TSG appears to be a safe and effective therapy for patients with chronic type B dissection.

#10 - TEVAR FOLLOWING PRIOR ABDOMINAL AORTIC ANEURYSM SURGERY: WHAT IS THE RISK OF NEUROLOGICAL DEFICIT?

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Objective: Evidence regarding the impact of prior abdominal aortic aneurysm (AAA) repair on the risk of neurological deficit after thoracic endovascular aortic aneurysm repair (TEVAR) is lacking. The EUROSTAR registry reported an overall risk of paraplegia or paraparesis of 2.5% following TEVAR but did not differentiate between patients with and without prior AAA repair. The purpose of this study was to characterize the risk of TEVAR related neurological deficit in patients who previously underwent infrarenal AAA surgery.
Methods: All patients with a history of prior infrarenal AAA repair (open and endovascular) who subsequently underwent TEVAR were selected from six different institutions and included in our cohort. Neurological deficit was defined by temporary or permanent paraplegia or paraparesis. The number of patients with neurological deficit was collected by consulting the treating physicians and documented in a database. The collected patient data were pooled and an overall risk of neurological deficit was calculated for patients with a history of prior infrarenal AAA repair undergoing TEVAR.
Results: 69 patients underwent TEVAR after prior AAA repair and were included in our study. The risk of development of temporary or permanent neurological deficit was 13.0% (9 of 69 patients). The risk of permanent neurologic deficit was 7.2% (5 of 69 patients).
Conclusions: Prior infrarenal AAA repair is associated with a five-fold increased risk of neurological deficit after TEVAR compared to those patients without prior AAA surgery based on historical controls. This high risk of neurological deficit in patients with a history of infrarenal AAA repair compared to patients without prior infrarenal AAA repair suggests a higher threshold for surgical intervention may be more appropriate. If the diameter and rupture risk are large and TEVAR is indicated, best available pre-operative care should be offered to protect the neurological function of this specific group of patients with prior AAA repair.

#11 - A PROSPECTIVE ANALYSIS OF ENDOVASCULAR RUPTURED AAA REPAIR IN HEMODYNAMICALLY STABLE VS. UNSTABLE PATIENTS

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Purpose: In this prospective study, we compared outcomes of patients with ruptured abdominal aortic aneurysms (r-AAA) that were considered hemodynamically stable (Hd-Stable) to those that were hemodynamically unstable (Hd-Unstable) at presentation, and underwent endovascular aneurysm repair (EVAR).

Methods: From 2002-2007, 71 patients presented to our institution with r-AAA and underwent endovascular repair with a variety of commercially available stentgrafts. Prior to EVAR, patients were categorized into 2 groups: Hd-Stable with systolic blood pressure (SBP) ≥80 mmHg, and Hd-Unstable with SBP <80 mmHg. All patients were resuscitated and a preoperative CT scan was not deemed necessary for all patients. Data was prospectively collected and statistical analysis was performed using Chi square analysis.

Results: Of the 71 patients with r-AAA that had EVAR, both Hd-Stable (n=49, 69%) and Hd-Unstable (n=22, 31%) patients had similar co-morbidities of CAD (61% vs. 57%), HTN (77% vs. 73%), COPD (29%

vs. 23%), and CRI (18% vs. 18%). The 30-day mortality in the Hd-Stable group was significantly less than the Hd-Unstable group (12.2% vs. 31.8%, p<0.05), there was no difference in the need for 'on-table' conversion to open surgical repair between the groups (4.1% vs. 4.5%), and the overall mortality of both groups combined was 18.3%. Over a mean follow-up of 18 months, both Hd-Stable and Hd-Unstable groups also had similar incidence of non-fatal complications (40% vs. 39%), and secondary interventions (27% vs. 29%).

Table:

	Hd. Stable	Hd. Unstable	P-value
N	49	22	
Myocardial infarction	3 (6.1%)	0	NS
Ischemic colitis	3 (6.1%)	1 (4.5%)	NS
Abd. compartment synd.	3 (6.1%)	4 (18.2%)	NS
Open surgical conversion	2 (4.1%)	1 (4.5%)	NS
30-day mortality	6 (12.2%)	7 (31.8%)	<0.05

Conclusions: EVAR for r-AAA is feasible in both hemodynamically stable and unstable patients. The mortality of Hd-Stable patients is significantly less than Hd-Unstable patients, and there is no difference in the incidence for conversion to open surgical repair, non-fatal complications, or the need for secondary interventions. Furthermore, the acceptable mortality in Hd-Unstable patients in this series would suggest that hemodynamic instability in patients with r-AAA should not be a contraindication to EVAR.

#12 - OUTCOMES OF ENDOVASCULAR ABDOMINAL AORTIC ANEURYSM REPAIR COMPARED TO OPEN SURGICAL REPAIR IN HIGH-RISK PATIENTS: RESULTS FROM THE SWEDISH VASCULAR REGISTRY

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Background:
The management of infrarenal aortic aneurysms in high-risk patients remains a challenge. Endovascular repair is associated with superior short term mortality rates but unclear long-term results in high-risk populations and has not been shown to improve survival in patients unfit for open repair. The aim of this study was to evaluate the outcome following elective endovascular aneurysm repair (EVAR) compared to open repair (OR) in a high-risk patient cohort

Methods:
Prospectively collected data from January 2000 to December 2006 were retrieved from the Swedish Vascular Registry. The high-risk cohort was defined as age ≥60 years, ASA 3 or 4, and at least one cardiac, pulmonary or renal comorbidity. There were 217 of 1000 EVAR patients and 483 of 2831 OR patients that met these criteria. Primary end-points were 30-day and 1-year all-cause mortality. Kaplan-Meier curves for survival and multivariate Cox regression analyses were performed

Results:
The crude 30-day and 1-year all-cause mortality for the whole treatment group (n=3831) were 1.8%

(EVAR) vs. 2.8% (OR) and 8.0% (EVAR) vs. 7.2% (OR), respectively

In the high-risk cohort (n=700) mean age was 75±7 years (EVAR) vs. 73±6 years (OR) [P=0.001], women 15% (EVAR) vs. 17% (OR) [NS], smoking 30% (EVAR) vs. 47% (OR) [P=0.001], cardiac 87% (EVAR) vs. 86% (OR) [NS], pulmonary 33% (OR) vs. 32% (EVAR) [NS], and renal disease 26% (EVAR) vs. 18% (OR) [P=0.02], and ASA 3 92% (EVAR) vs. 95% (OR) [NS]

The mean follow-up time was 2.6 [95% CI 2.5-2.8] years. There was no difference in all-cause mortality at 30-days [EVAR 4.6% vs. OR 3.3%], but OR had lower 1-year mortality [9.3% vs. 17.9%; P=0.003]. EVAR was associated with increased mortality risk after adjusting for age, ASA, and comorbidities [hazard ratio 1.50, 95% CI 1.07-2.12; P=0.02]. Kaplan-Meier survival analysis showed a lower mortality for patients undergoing OR which remained greater than EVAR during follow-up [P=0.001]

Conclusions:
Open elective aortic aneurysm repair seems to have a better outcome compared to EVAR in this specific high-risk patient cohort after adjusting for covariates. We can not confirm the benefit for EVAR from previous registry studies with a similar high-risk definition. In clinical practice, open repair may be at least as good as EVAR in high-risk patients fit for surgery

#13 - IMPROVED OUTCOMES RESULT FROM MULTILEVEL ENDOVASCULAR INTERVENTION INVOLVING THE TIBIAL VESSELS COMPARED TO ISOLATED TIBIAL INTERVENTION

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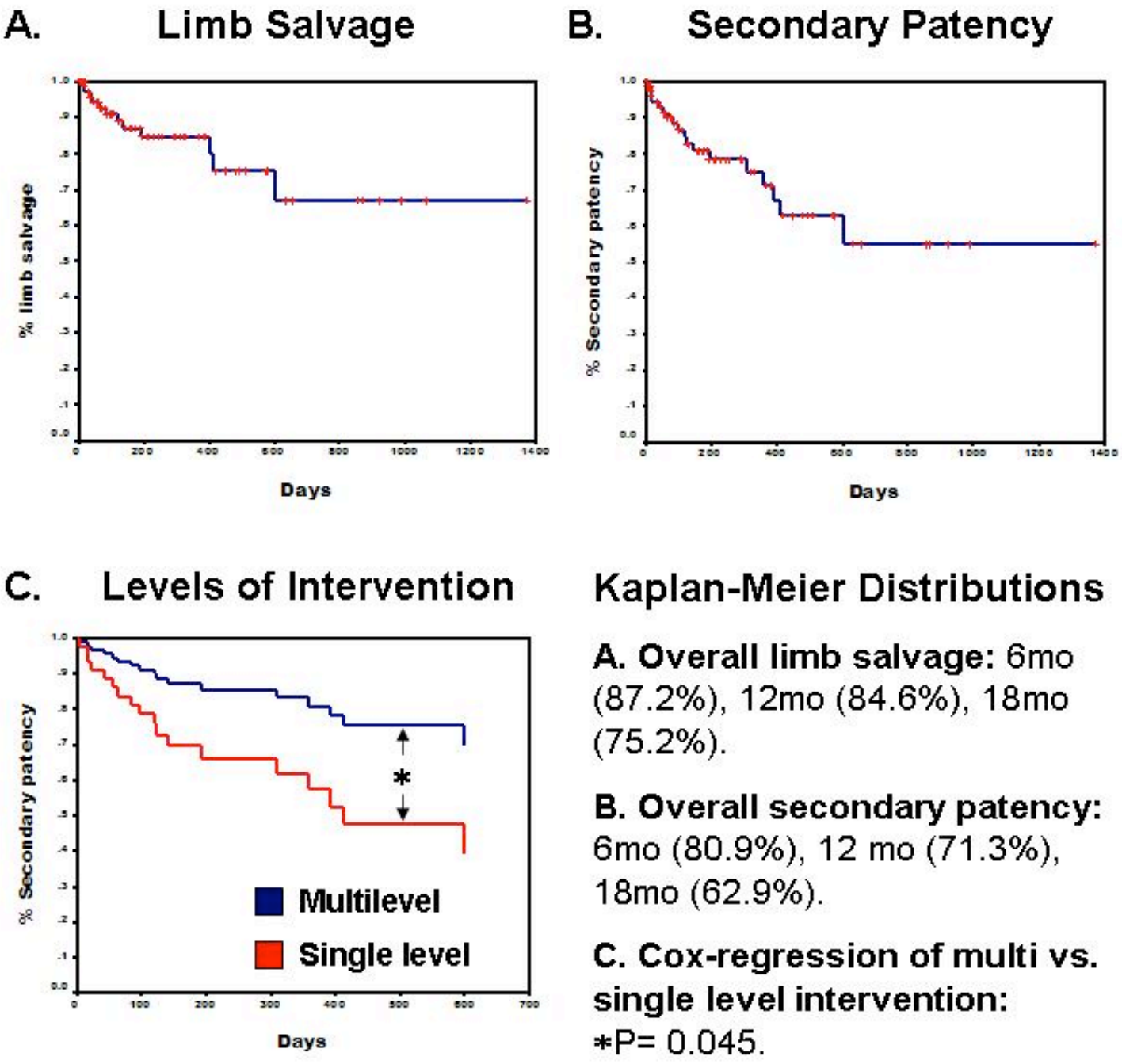
OBJECTIVE: There is increasing acceptance of percutaneous intervention as an alternative to surgery for disease of the tibial vessels. Tibial vessel disease can occur in conjunction with proximal level disease or in isolation. This study sought to determine whether requirement for multilevel intervention affected outcome.
METHODS: Consecutive patients undergoing infrapopliteal interventions from 11/2002 to present were evaluated for primary patency, secondary patency and limb salvage. Reintervention anywhere along the infrainguinal vessels was used in the evaluation of patency. Results were determined using Kaplan-Meier analysis.
RESULTS: The study included 87 patients, 91 limbs and 116 procedures [age 70.3+/-12.7years, males 66.7%, and follow-up 245.8+/-290.8days]. Procedural outcomes were: primary patency [6mo (68.3+/-6.2%), 12mo (49.9+/-8.0%), 18mo (36.6+/-8.9%)] and secondary patency [6mo (80.9+/-5.0%), 12mo (71.3+/-6.9%), 18mo (62.9+/-8.3%)]. Limb salvage rates in patients with CLI were: 6mo (84.5+/-0.1%), 12mo (81.2+/-0.1%), 18mo (68.7+/-0.1%). Factors associated with reduced patency were critical limb ischemia, creatinine>1.2 and diabetes. Multilevel compared to single-level intervention was associated with significantly improved secondary patency (P=0.045) (Figure). End-stage renal disease, angina and chronic obstructive pulmonary disease were more prevalent in patients who underwent multilevel interventions. Otherwise, no significant demographic differences correlated with multilevel vs. single-level disease, including %CLI vs. claudication. Perioperative complications occurred infrequently: hematoma 4.3%,

pseudoaneurysm 1.7%, myocardial infarction 1.1% and mortality 1.1%.
CONCLUSIONS: Patients who undergo multilevel intervention involving the tibial vessels have improved patency compared to those who undergo intervention for lesions isolated to the tibial vessels. This may reflect increased disease burden for those patients who undergo isolated tibial intervention.



#14 - IS LOWER EXTREMITYREVASCULARIZATION SAFE IN NONAGENARIANS?

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Purpose: The average lifespan in the US continues to lengthen leading to an increased number of nonagenarians presenting with critical limb ischemia. The objective of this study is to evaluate the outcomes of lower extremity revascularization in patients older than 90 years of age.
Methods: The vascular registry at our institution was retrospectively reviewed for all lower extremity bypasses performed between 1996 and 2006. We evaluated patient demographics, indications, procedure, patency rates, and complications. Patients were divided into groups based on age greater than 90 years of age (>90) and less than or equal to 90 years of age (<90). Variables were evaluated by Chi square analysis. Outcomes were prepared using life table methods and compared through log rank analysis.
Results: Over the last 10 years, 5443 lower extremity bypasses were performed on the <90 and 150 on the >90 groups. The <90 group had significantly more males (61.4% vs. 29.3%) and was obviously younger (68 yrs; range 7-89 vs. 92yrs; 90-101) than the >90 group. The <90 group had more comorbidities in terms of diabetes, active tobacco use, and hypercholesterolemia. There was no significant difference in coronary artery disease or chronic renal insufficiency between the groups. Critical limb ischemia as an indication was significantly higher in the >90 group (149, 99% vs. 4472, 82%; p<0.05). Strikingly, the primary patency rate was higher in the >90 group at 4 years (77% vs. 62%;p<0.05). However, secondary patency did not differ. Complications were similar between the groups except for a higher rate of late occlusion (824, 15% vs. 11, 7%; p<0.05) in the <90 group. The amputation rates did not differ between the groups.(<90, 3.3% vs. >90, 1.3%; p<0.05). The perioperative (15% vs. 3%; p<0.05) and one year (45% vs. 11%; p<0.05) mortality rates were significantly higher in the >90 group.
Conclusion: Lower extremity bypass for nonagenarians offers acceptable patency and limb salvage but at a significantly higher mortality rate. Less invasive endovascular options may offer a benefit in this patient population.

#15 - LEFT RENAL VEIN TRANSPOSITION (LRVT) FOR NUTCRACKER SYNDROME: PATIENT SELECTION, EARLY AND LATE OUTCOMES

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Objective: Nutcracker syndrome, caused by compression of the left renal vein (LRV) between the superior mesenteric artery and the aorta, results in left renal and gonadal venous hypertension. Several treatment options have been described to relieve associated symptoms. The purpose of this study was to evaluate late results of LRVT and identify risk factors affecting outcomes.

Methods: Clinical data from 22 consecutive patients diagnosed with nutcracker syndrome from January 1996 to October 2007 were retrospectively reviewed.

Results: There were 10 males and 12 females (median age 22 years; range 14-67) with radiological evidence of LRV compression. On ultrasound evaluation (16/22 patients), the mean ratio of LRV peak systolic velocity measured at the site of compression and the renal hilum was 7.5 (range, 2.5 - 12). On venography (13/22 patients), the mean renocaval pressure gradient was 4 mmHg (range 2-6 mmHg). Eleven patients with atypical abdominal pain (n=4), transient hematuria (n=4), and varicocele (n=6) were managed expectantly. Eleven patients underwent LRV transposition through a transperitoneal exposure. Symptoms in these patients were more prominent and included severe left flank pain (n=10), hematuria (n=7), and varicocele (n=3). In 2/11 patients, the LRV was found to be occluded at operation. There were no early post-operative complications. All conservatively managed patients remained stable or improved. Over a mean follow-up of 39 months (range 0.13 - 144 months) in surgically managed patients, symptoms of flank pain and hematuria resolved or improved in 8/10 and 7/7, respectively. Varicoceles recurred in 2/3 patients in spite of resolution of flank pain. Both pre-operatively occluded LRVs re-thrombosed; 1 underwent thrombolysis with stenting, the other underwent reimplantation of the left gonadal vein into the IVC.

Conclusions: Left renal vein transposition is a safe, effective procedure in selected patients with persistent, severe symptoms. Patients with progression to occlusion of the LRV should be considered for alternative therapeutic procedures. Varicoceles, in the setting of nutcracker syndrome, may need independent repair.

#16 - CLOSURE DEVICE USE FOLLOWING ARTERIAL ACCESS IS ASSOCIATED WITH DECREASED RATE OF PSEUDOANEURYSM FORMATION

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Introduction: Pseudoaneurysm (PSA) formation following arterial access occurs in 0.04% to 6.3% of patients. The aim of the current study was to determine whether the use of manual compression or closure devices (CD) affected the incidence of PSA formation following diagnostic arteriography (DA) and percutaneous intervention (PI).

Methods: The medical records of14,063 consecutive patients undergoing DA or PI between January 1, 2006 and September 30, 2007 were reviewed. Subject demographics, medical history, access site complications

and management, and PSA characteristics were recorded. Continuous variables were compared using a t-test and categorical variables were compared using the chi-square statistic. A p-value of <0.05 was considered significant.

Results: PSA were detected in 51 (0.36%) patients. Patients with PSA were older (68.53±12.182 v. 64.06 ±12.669 years, p=0.010), had a lower weight (78.93±18.995 v. 87.08±20.980 kg, p=0.004), and had a lower BMI (27.66±5.401 v. 29.72±6.581 kg/m2, p=0.024). Hypertension was more common in PSA patients (68.63%) compared to those without (52.50%, p=0.021). PSA was more frequent following PI compared with DA (0.27% v. 0.57%, p=0.006). The majority of PSA (78.4%) involved the distal external iliac or common femoral arteries, and 80.4% were single chambered. The mean PSA size was 22.0±9.10 mm (range 7-53mm). Mean time to diagnosis was 3.47±6.03 days (range 0-39 days). A CD was used in 6779 patients including Angioseal (75.26%), Perclose (21.40%), Starclose (3.17%), and other (0.53%). The rate of PSA formation was lower in those patients treated with a CD compared with manual compression (MC) (0.21% v. 0.51%, p=0.003). For DA, PSA incidence was 0.12% with CD and 0.38% with MC (p=0.015). For PI, PSA incidence was 0.34% with CD and 0.91% with MC (p=0.015).

Conclusions: PSA incidence is low, but increases with older age, lower BMI and hypertension. PSA was most common in patients undergoing PI treated with manual compression. This study suggests that patients may benefit from the use of a closure device, particularly if they are undergoing an intervention. The study is underpowered to determine differences among specific CD. Further study is needed to determine if one device is superior to another.

#17 - THE BRACHIAL ARTERY: A CRITICAL ACCESS FOR COMPLEX ENDOVASCULAR PROCEDURES

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Objective: The brachial artery is often used for coronary angiography. However, data on brachial access for aortic and peripheral interventions is scant. The purpose of this study was to evaluate our experience with brachial artery catheterization for diagnostic arteriography and endovascular interventions.

Methods: Between August 2004 and August 2005), 2026 endovascular procedures were performed. Of these, 323 cases (16%) in 299 patients required brachial artery access forming the basis for this study. Patients subjected to multiple interventions but with a single access (i.e. thrombolysis) were considered a single case. Demographic and clinical data were recorded onto a database and analyzed. Average length of follow-up was 18.6 +/- 11 months. Data were analyzed using Fisher's exact test and logistic regression analyses.

Results: The mean age of all patients was 66.4 years with 57% male. Brachial access was used for diagnostic purposes in 27.2% and for interventions including angioplasty, stenting, and thrombolysis in 72.8%. The use of brachial access was considered obligatory in 40%, adjunctive in 19% (i.e. endovascular AAA and TAA repair) and preferential to femoral access in 41%. Brachial artery access was achieved in all but three patients (99% technical success rate). Hemostasis after catheterization was achieved by manual

compression in 88% of the cases. Operative mortality rate was 5.8% and not related to brachial artery access in any case. Brachial access site related complications occurred in 21 patients (6.6%). Thirteen patients (62%) required a surgical procedure mostly for brachial artery thrombosis or pseudoaneurysm. Patients with complications were more commonly female (Odds Ratio 4.7, P=0.003) and had a long interventional sheath (OR 6.8, P=0.012). The risk of a brachial artery complication was not associated with thrombolysis, procedure type or vascular territory treated. Also, the use of heparin, protamine or closure device was not associated with increased complication risk. There was no upper extremity limb/finger loss in this experience.

Conclusion: Brachial artery access is necessary for complex endovascular procedures and can be achieved in most patients safely. Post-procedure vigilance is warranted since a majority of patients with complications will require operative correction.

#18 - COMPLEMENT ACTIVATION LEADS TO SYSTEMIC INFLAMMATION AFTER RUPTURED ABDOMINAL AORTIC ANEURYSM

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Objective: Ruptured abdominal aortic aneurysm (RAAA) is associated with systemic inflammation that results in multi-organ injury, which contributes to the 40% mortality rate. We sought to determine 1) if there was differential complement activation between RAAA and Elective Abdominal Aortic Aneurysm (EAAA) repair in humans and 2) were there differences in which complement pathways were activated. Methods: 6 RAAA and 8 EAAA patients enrolled in a blood sampling protocol after ethics approval. Blood was drawn pre-incision (PI), pre-release of the aortic cross clamp (PR), 2 and 4 hours post-release (2PR, 4PR), and post-op days 1-2 (D1,D2). Classical, MBL, and alternative pathway complement activation was tested in plasma using ELISA. Whole blood was used to assess neutrophil oxidant burst in response to stimulation with un-opsonized zymosan and phorbal myristate acetate (PMA). Results: see table
Conclusions: This data provides the first human evidence of complement activation following RAAA. In the early phase of reperfusion, complement activation is both classical and MBL dependent, with a sustained response through the classical pathway in the post-op period. RAAA patients also have a primed neutrophil oxidant burst beginning at the pre-incision sample. These primed inflammatory cells have significant potential to generate an oxidant burst and tissue injury in response to a second stimulus such as aortic clamping. The mechanism defined by these data suggests that an anti-complement intervention aimed at both the classical and MBL pathways may hold promise for improved outcome following RAAA.

		PI	PR	2PR	4PR	D1	D2
Classical Pathway Activation (au/mL)	RAAA	0.73±0.25	0.98±0.39*	1.50±0.83*	1.08±0.46	1.16±0.35*	1.25±0.41*
	EAAA	0.33±0.06	0.30±0.05	0.43±0.08	0.40±0.09	0.43±0.07	0.39±0.06
Classical/MBL Pathway Activation (nM)	RAAA	4.03±2.03	6.08±3.65	13.8±13.8	16.19±5.56*	3.93±2.23	10.64±1.62
	EAAA	5.65±1.03	5.30±1.22	4.37±1.34	4.83±1.37	8.95±2.38	10.49±2.66
Alternative Pathway Activation (ug/mL)	RAAA	0.75±0.15	1.36±0.38	1.76±0.17	2.04±0.42	2.24±0.36	2.00±0.43
	EAAA	1.32±0.20	1.47±0.23	1.75±0.27	1.72±0.32	1.76±0.26	2.45±0.21
Zymosan Stimulated Oxidant Burst (CL/Phago/30min)	RAAA	315.3 ± 48.9*	355.1 ± 72.8*	447.5 ± 129.6*	403.9 ± 98.4*	352.1 ± 87.0*	138.3 ± 29.5*
	EAAA	171.8 ± 13.1	182.6 ± 48.3	169.3 ± 35.2	180.4 ± 25.8	166.1 ± 18.9	102.7 ± 16.0
PMA Stimulated Oxidant Burst (CL/Phago/30min)	RAAA	1490.6 ± 200.7*	2085.7 ± 603.7*	2029.4 ± 566.4*	2109.9 ± 493.9*	1872.6 ± 516.6*	959.4 ± 124.6
	EAAA	726.9 ± 138.1	934.0 ± 157.0	1072.3 ± 195.2	1209.2 ± 205.9	916.4 ± 116.3	911.6 ± 136.4

All results expressed as Mean ± SEM. *$P<.05$ vs. EAAA by ANOVA using SAS 9.1

Table 1.

#19 - CAROTID ARTERY STENTING IN WOMEN IS A SAFE PROCEDURE WITH EQUIVOCAL OUTCOMES COMPARED TO MEN

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Objective(s): Historically, large randomized controlled studies have indicated an increased peri-operative risk for women undergoing CEA. The outcomes of carotid stenting in women as compared to men have not been adequately investigated. We sought to determine the results in women treated by carotid stenting (CAS). Methods: 80 carotid stents were performed on 77 women between 2003-2006. Procedures, complications, demographics, comorbidities, and follow-up data were entered into a prospective database for review. Arterial anatomic characteristics evaluated using angiographic images were common carotid/internal carotid lesion length ratio, common carotid /internal carotid diameter, index lesion length, and index lesion calcification. Outcomes compared included post-operative length of stay, need for post-operative pressors, stroke, myocardial infarction, and death. Results: Between 2003 and 2006, 194 patients underwent 201 procedures. 110 images were available for retrospective review. Cerebral protection devices were used in 192 cases; self-expanding stents were placed in all. A total of 80 percutaneous interventions performed in 77 women were compared with 121 interventions in 116 men. Mean age in women was 72.6 yrs, in men was 72.7 (p=0.91); 32.5% of women had symptomatic disease and 37.5% had bilateral disease

compared to 27.3% and 33.0% of men, (p=0.47, p=0.66), respectively. Co-morbidities in females including HTN (96.3%), hypercholesterolemia (72.5%), and CAD (53.2%) were not statistically different from males (87.8%, 68.7%, 64.2%, respectively). There were no significant differences seen in anatomic arterial characteristics. There were no significant differences seen in overall 30- day peri-procedural stroke rate (1.25% in women and 4.2% in men, p=0.40), death rate (0% vs. 0.9%, p=1), cardiac events (3.6% vs. 0.9%, p=0.31), or post-operative need for pressors (23.8% vs. 19.1%, p=0.55). Conclusions: Despite previous concerns over adverse outcomes in women undergoing carotid endarterectomy, our data shows carotid stenting to be a safe modality in women with equivalent outcomes when compared to men. Although large prospective trials are necessary to validate our experience, women should be favorably considered for carotid stenting

#20 - DUPLEX-DERIVED ACCESS VOLUME FLOW (DAVQ): A NOVEL PREDICTOR OF SUCCESS FOLLOWING ENDOVASCULAR REPAIR OF FAILING OR NON-MATURING ARTERIAL-VENOUS FISTULAS (AVF) FOR HEMODIALYSIS

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Objective: To evaluate the feasibility of DAVQ to predict success or failure of AVFs after interventions.
Methods: DAVQ measurements were available following 88 AVFs in 59 patients. Of these, 23 were found to be either non-maturing (12) or failing (11) by clinical exam and/or duplex scanning. Outflow stenoses (1 to 4, mean 1.2±0.8) were confirmed by contrast fistulograms in all cases (17 peripheral; 6 central). These 23 cases underwent successful endovascular repair (17 balloon angioplasty; 6 stents) and had pre and post-intervention DAVQ measurements within 2 weeks of the procedure. Each was measured 3x in a non-tortuous venous segment with laminar flow and mean values were used for comparison.
Results: Overall mean DAVQ for 65 functioning AVFs was 1199 ± 485 ml/min while it was 652 ± 438ml/min (150 to 1840ml/min) for the remaining failing or non-maturing 23 cases ($p<0.0001$). Post-intervention, the latter values changed to 867±517ml/min (257 to 2020ml/min) with a $P<0.13$. Of these, 11 were still non-functional after endovascular procedures and had a mean DAVQ of 404 ± 111ml/min (257 to 652ml/min). The remaining 12 cases had a mean DAVQ of 1280 ± 382ml/min (762 to 2020ml/min) and were functional and usable for at least 6 months follow-up ($p<0.0001$). It is of interest to note that none of the AVF cases with post-intervention DAVQ<700 ml/min became functional and usable while all cases with higher DAVQ underwent successful hemodialysis treatments.
Conclusion: This early experience suggests that DAVQ can be used to predict the success or failure of an AVF following endovascular procedures. To our knowledge this is the first such report.

#21 - IMPROVED OUTCOMES IN MILDLY OBESE VASCULAR SURGERY PATIENTS:THE OBESITY PARADOX

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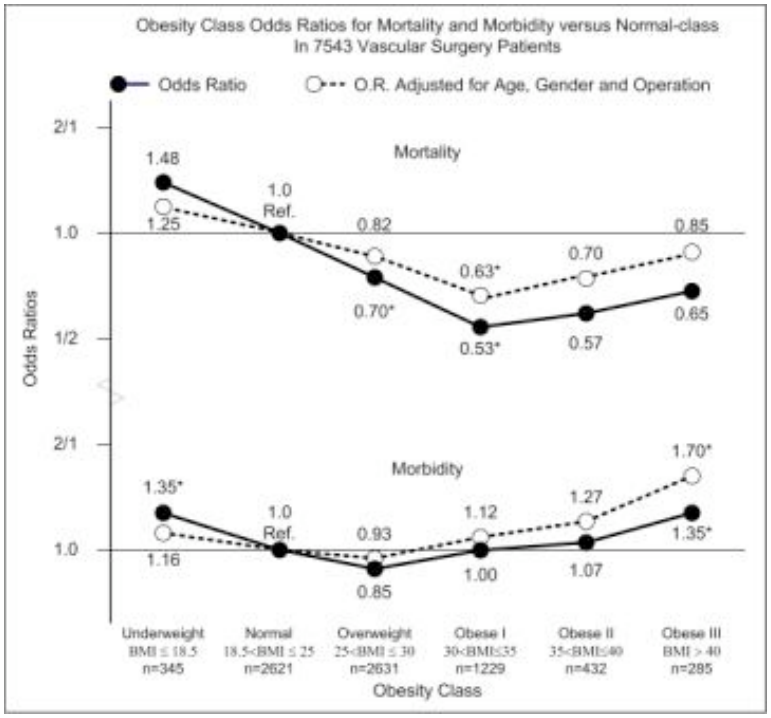
OBJECTIVE(S): Mild obesity may have a protective effect against some diseases, termed an “obesity paradox”. This study examined the effect of body mass index (BMI) on surgical 30-day morbidity and mortality in patients undergoing vascular surgical procedures.
METHODS: As part of the National Surgical Quality Improvement Program (NSQIP), demographic and clinical risk variables, mortality, and 22 defined complications (morbidity) were obtained over 3 years from vascular services at 14 medical centers. At each medical center, patients from the operative schedule were systematically enrolled according to NSQIP protocols. Outcomes and risk variables were compared across NIH-defined obesity classes using analysis of variance and means comparisons. Logistic regression was used to control for other risk factors.
RESULTS: Vascular procedures in 7,543 patients included lower extremity revascularization (24.5%), aneurysm repair (17.4%), cerebrovascular procedures (17.3%), amputations (9.4%), and “other” procedures (31.3%). In the entire cohort, there were 1,659 (22.0%) patients with complications and 295 (3.9%) deaths. Risk factors of hypertension and diabetes increased with BMI ($p<0.05$) as expected; smoking, disseminated cancer and stroke decreased ($p<0.01$). Twenty other risk factors, as well as mortality and morbidity (Figure), had “U”-shaped distributions with the highest incidence in underweight and/or morbidly obese extremes but reduced minimums in overweight or obese I classes. After controlling for age, gender and operation type, mortality risk remained lowest in obese-I patients (Odds ratio 0.63, $p=0.023$) while morbidity risk was highest in morbidly obese patients (Odds ratio 1.70, $p=0.0003$), primarily due to wound infection.
CONCLUSIONS: Underweight patients have poorer outcomes and morbid obesity is associated with increased morbidity. Mildly obese patients have reduced co-morbid illness, surprisingly even less than normal-class patients, with correspondingly reduced mortality. Mild obesity is not a risk factor for vascular surgery and confers an outcome advantage.



The Influence of Obesity Class on Morbidity and Mortality

#22 - EXTRAANATOMIC BYPASS VS ENDOVASCULAR THERAPY IN HIGH RISK PATIENTS WITH AORTO-ILIAC OCCLUSIONS

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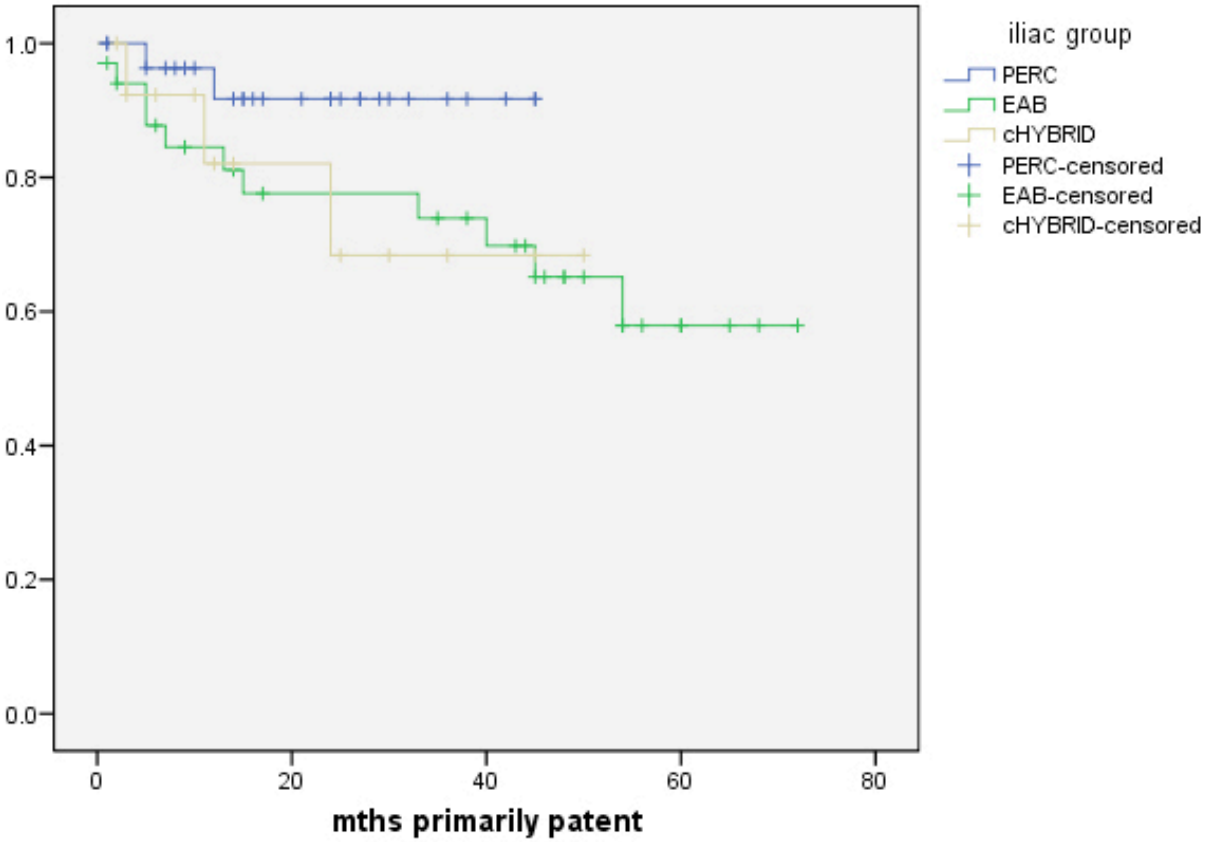
OBJECTIVES: The purpose of this study was to compare the outcomes of endovascular revascularization (EVR) to extraanatomic bypass (EAB) for high risk patients with aortoiliac (AI) occlusions.
METHODS: Between 06/2001-05/2007, 77 patients with AI occlusions who were deemed high risk for direct aortoiliac reconstructions underwent either EAB (n=34), or EVR (n=43, 29 percutaneous (PERC), 14 complex hybrid procedures (cHYBRID)) for claudication (35%), rest pain (38)%, and tissue loss (27%). Patient morbidities, patency and survival (Kaplan-Meier) were compared using SPSS.
RESULTS: Mean age and comorbidities were similar between EVR and EAB groups (Table I). In EVR group, 7% had TASC (II) B, 23% had C, and 70% had D iliac lesions. Femoral endarterectomy was performed in 29% of EAB, and 93% of cHYBRID groups (P<0.001). Simultaneous infrainguinal bypass was performed in 6% and 21% of EAB and cHYBRID groups. Covered stents were used in 5 patients in cHYBRID, and nitinol bare stents were used in all others. Runoff included both SFA and DFA in 70% of EVR, and 41% of EAB group (P=0.02). ABI increased significantly in all groups, but was significantly higher following EVR than EAB. There was no postoperative mortality, one MI in cHYBRID group (7%), one embolization in PERC group (3%), one hemorrhage in EAB group (3%). Groin wound complications occurred in 8 patients in EAB (24%), and 2 in cHYBRID group (7%), and none in PERC group (P=0.011, PERC vs others). LOS was significantly less for PERC (1.8±2.2 days) than both EAB (7.2±6.0 days) and cHYBRID (8.1±6.0) groups. Mean follow-up was 32±19 months. Primary, assisted primary, secondary patency, limb salvage and survival were similar between EVR and EAB groups (Table II). PERC group had better PP (24 month 92±6% vs 76±7, P=0.089) and APP (96±4% vs 81±6%, P=0.073) than EAB/cHYBRID groups (Figure 1). Percutaneous treatment (P=0.089), claudication (P=0.018), and lack of hypertension (P=0.024) were associated with better PP.
CONCLUSIONS: High risk patients with AI occlusions can be treated safely with EAB or EVR with or without concomitant open procedures with similar results. The percutaneously treated patients have shorter LOS, and significantly less morbidity, likely due to less groin complications. Additional interventions at the femoral level is frequently necessary in open and hybrid groups, and the better PP and APP in patients who could be percutaneously treated may simply be a reflection of less overall atherosclerotic disease load.

Table I. Demographics, comorbidities, perioperative features. ENDO (n=43) OPEN (n=34) P value
Age 65.6±10.2 66.1±9.4 0.837
CAD 51% 68% 0.168
Htn 53% 76% 0.795
DM 23% 21% 0.99
COPD 37% 38% 0.99
Hyperlipidemia
81% 59% 0.042
Renal insuff/dialysis
14%/7% 12%/0% 0.99/0.251
CLI 63% 68% 0.810
LOS 3.9±5.1 days 7.2±6.0 days 0.01
Follow-up 23±13 mo 43±19 <0.001

Table II. Patency rates, limb salvage, and survival comparison between groups.

PP APP SP
12 mo 24 mo 12 mo 24mo 12 mo 24 mo
ENDO 89±6 84±7 92±5 87±6 97±3 93±5
OPEN 85±6 78±8 91±5 84±7 94±4 91±5
P value 0.229 0.364 0.386

LS Survival
12 mo 24 mo 12 mo 24 mo
ENDO 98±2 98±2 91±4 84±6
OPEN 97±3 94±4 88±6 82±7
0.406 0.576



Primary patency rates in PERC, EAB and HYBRID groups.

#23 - CHEST AND ABDOMINOPELVIC CT SCANS ARE IMPORTANT TOOLS FOR EVALUATING PATIENTS WITH ILIOFEMORAL VENOUS THROMBOSIS

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Introduction: Iliofemoral deep venous thrombosis (DVT) affects less than 5% of DVT patients, but is associated with severe postthrombotic morbidity and recurrence rates rivaling those of cancer patients. The central location of the thrombus puts patients at high risk for pulmonary embolus (PE), and the extensive nature of the presenting thrombotic episode suggests there may be a prothrombotic condition present other than underlying thrombophilia. The purpose of this study is to assess the value of chest, abdominal, and pelvic CT scans as part of the routine evaluation of patients with iliofemoral DVT for detecting PE and other associated pathology.

Methods: Thirty-five patients with iliofemoral DVT had abdominopelvic CT scans and 29 also had chest CT scans as part of their clinical evaluation and form the basis of this study. The majority of the CT scans were performed prior to definitive therapy of their iliofemoral DVT.

Results: Chest CT scans identified PE in 14/29 (48%) patients, of which 12/14 (86%) were asymptomatic. Malignant lesions were found in 3/29 (10%) patients (2 lung carcinomas, 1 mediastinum lymphoma). Abdominopelvic scans identified benign lesions in 15/35 (43%) patients and malignant lesions in 12/35 (34%) patients. Of patients with abdominopelvic malignancy, DVT was the initial presentation in 9/12 (75%). DVT presented prior to the diagnosis of tumor recurrence in the remaining 3/12 (25%). Metastatic lesions were observed in 3/35 (9%).

Conclusion: CT evaluation of the chest, abdomen, and pelvis in patients with iliofemoral DVT has a high yield of clinically important findings. Both malignant and benign lesions were found at higher frequencies than anticipated. These data indicate the value of chest, abdominal, and pelvic CT scans as part of the routine evaluation in patients with iliofemoral DVT.

#24 - BLEEDING INCREASES THE RISK FOR MAJOR ISCHEMIC EVENTS IN PATIENTS WITH PERIPHERAL ARTERIAL DISEASE USING ANTITHROMBOTIC TREATMENTS

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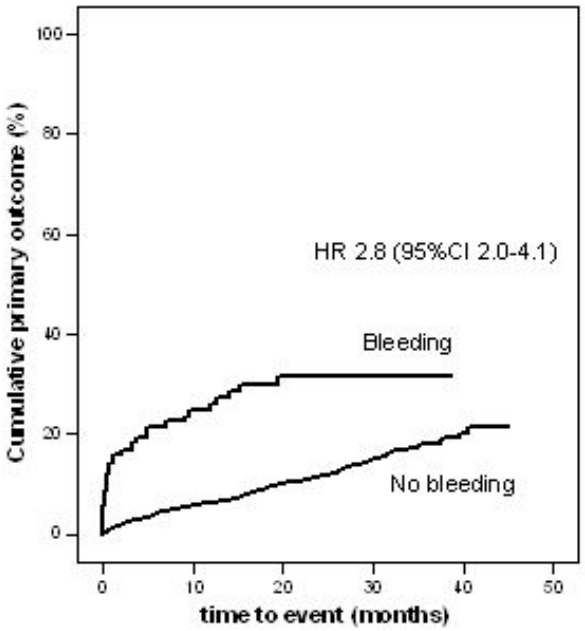
Objective. To study if bleeding was associated with the subsequent occurrence of ischemic events in patients with peripheral arterial disease (PAD) receiving antithrombotic therapy.
Methods. All patients from the Dutch BOA (Bypass and Oral anticoagulants or Aspirin) Study, a multicenter randomised trial, comparing oral anticoagulants with aspirin after infrainguinal bypass surgery were included. Bleeding was defined as all non-fatal bleedings requiring hospital admission, excluding intraocular and direct postoperative bleedings. The primary outcome event was the composite of non-fatal myocardial infarction, non-fatal ischemic stroke, and death from cardiovascular causes. Univariable and multivariable Cox regression analyses were performed to identify independent risk factors for bleeding. These independent risk factors were entered in a multivariable Cox regression model to calculate the adjusted hazard ratio (HR) for ischemic events in patients with bleeding versus no bleeding.
Results. From 1995 until 1998, a total of 2650 patients were included and followed for a mean period of 21 months. In total 137 non-fatal bleedings occurred. The primary outcome event occurred in 317 patients, of

which 35 events were preceded by a bleeding. Independent risk factors for bleeding were age (HR 1.1; 95%CI 1.03-1.08) and oral anticoagulants (HR 1.9; 95%CI 1.31-2.65). Bleeding was associated with a nearly threefold increased risk of subsequent ischemic events (HR 2.8; 95%CI 2.00-4.08; figure). Conclusions. In patients with PAD bleeding was strongly associated with major vascular complications. Without compromising the benefits of antithrombotic therapies, these findings call for cautiousness regarding the risks of bleeding. Further research in pooled trial databases is ongoing.



Kaplan-Meier curves of the cumulative percentage of the primary outcome between patients with and without bleeding.