Objective: To evaluate the outcomes of carotid artery stenting (CAS) vs historical open surgery (OS) controls in patients with radiation-induced carotid stenosis (RICS), with or without prior radical neck dissection (RND).

Methods: We retrospectively reviewed 55 patients treated for 68 RICS from a group of 5,824 patients who had carotid interventions from 1992-2009. Twenty-six patients (29 arteries) were treated with CAS and 29 patients (39 arteries) with OS. CAS was performed using embolic protection as part of a prospective registry since 2003, after which only 3 patients had OS for RICS. Patients were analyzed according to their RND status (+ or −) for the end-points of mortality, stroke/TIA, cranial nerve injury, wound complication, restenosis (>50%) and reintervention.

Results: Clinical and anatomical characteristics were similar between groups. There were no early deaths. At 30-days, OS was associated with stroke/TIA in 1 patient (2.5%), cranial nerve injury in 3 (8%), and wound complications in 7 (18%), with mean length of stay (LOS) of 16 ± 33 days. Wound complications were more common in RND+ patients (36% vs 6%, p < 0.01). In the CAS group, 2 patients (7%) had stroke/TIA at 30-days, but none had cranial nerve injury or wound complication, with mean LOS was 5 ± 4 days (p < 0.01). Median follow-up was 26 months. OS was associated with higher freedom from stroke/TIA at 3-years (100% vs 86 ± 9%) and lower rates of restenosis (7% vs 32%) and reintervention (0% vs 18%) than CAS (p < 0.05). The higher rate of restenosis and reintervention for CAS was observed among both RND+ (33% and 17% vs 0% and 0%) and RND-patients (25% and 25% vs 10% and 0%).

Conclusions: CAS for RICS had shorter LOS, no cranial nerve injury or wound complication, and similar early stroke rate as compared to OS. However, the higher rates of late neurologic events, restenosis and reintervention during follow-up may offset the early benefits of CAS in patients who are candidates for OS.

Author Disclosures: T. C. Bower: Nothing to disclose; R. Brown: Nothing to disclose; H. Cloft: Nothing to disclose; A. A. Duncan: Nothing to disclose; P. Gloviczki: Nothing to disclose; M. Kaira: Nothing to disclose; G. Lanzino: Nothing to disclose; F. Meyer: Nothing to disclose; G. S. Oderich: Cook Medical, Consulting fees or other remuneration (payment) WL Gore, Consulting fees or other remuneration (payment); J. J. Ricotta: Nothing to disclose; T. Tallarita: Nothing to disclose.

RR16.
Changing Trends in Assessment and Management of Carotid Body Tumors: A 35-Year Experience
Efthimios D. Avgerinos1, Elias Brountzos2, Andreas M. Lazaris1, Anastasios Papapetrou1, Nikolaos Ptohis2, Triantafilos Giannakopoulos1, Christos Liapis1. 1Department of Vascular Surgery, Attikon University Hospital, Athens Medical School, Chaidari, Athens, Greece; 22nd Department of Radiology, Attikon University Hospital, Athens Medical School, Chaidari, Athens, Greece

Objective: Conventional and modern functional imaging techniques, genetic screening and evolving surgical/endovascular techniques accompanied (or not) with radiotherapy and/or chemotherapy have altered the overall management of carotid body tumors (CBT). We review our 35-year experience, emphasizing on the changing trends in the evaluation and treatment of CBT.

Methods: Medical records of 27 patients diagnosed with a CBT between 1975 and 2009 were retrospectively reviewed.

Results: Our study cohort consisted of 8 Shambin I, 10 II, and 9 III (3 with intracranial spread) tumors. During the early years (18 cases up to 1998) CT-scanning and angiography were used for diagnosis, while surgical excision following selective embolization, when indicated, was standard care. Local lymph node invasion established the diagnosis of malignancy in two patients. One of these patients developed distal metastases 3 years later. After 2000 (9 cases), patients were co-evaluated by DOTAvonineotide and MR imaging (3D TOF MRA), while also by genetic screening when necessary. Among those, two sisters with CBT and free parental history were assessed and operated. A missense mutation Y114C, in exon-4 of the SDHD gene, in the unaffected father and both affected sisters was identified. Four other patients with large CBT were pretreated via a covered stent placement in the “tumor supplying” external carotid artery. One of these patients required further neo-adjuvant chemotherapy which permitted successful tumor resection.

Conclusions: Improved understanding of the pathophysiology of CBT along with contemporary imaging, surgical techniques and radio-chemotherapies have vastly improved outcomes for patients. Surgeon and institutional competence are critical in achieving maximal outcomes.

Author Disclosures: E. D. Avgerinos: Nothing to disclose; E. Brountzos: Nothing to disclose; T. Giannakopoulos: Nothing to disclose; A. M. Lazaris: Nothing to disclose; C. Liapis: Nothing to disclose; A. Papapetrou: Nothing to disclose; N. Ptohis: Nothing to disclose.

RR17.
Learning Curve Associated With the Use of the Carotid Flow Reversal System
Karthikeswar Kasirajan1, Daniel Clair2. 1Emory, Atlanta, GA; 2Cleveland Clinic, Cleveland, OH

Objective: Flow reversal for cerebral protection during carotid angioplasty and stenting introduces a variety of new imaging concepts and techniques that maybe associated with a significant learning curve to achieve optimal outcomes. The aim of the study was to evaluate the learning curve with the use of this new reverse flow technology.

Methods: Data were prospectively collected as part of the EMPiRE study group evaluating the GORE Flow Reversal System (WL Gore, Flagstaff, AZ) and divided into 4 groups. Group I (n = 62) was the initial 2 training cases
required per site before the study initiation, group II (n = 142) included the next 3-10 procedures, group III (n = 74) included the next 11-20 procedures, and group IV (n = 76) included ≥ 21 procedures. Variables evaluated include procedure time, total flow reversal time, fluoroscopic time, contrast volume, hospital length of stay, and any major adverse events (death, stroke, transient ischemic events and myocardial infarction through 30 days). P-values based on mixed effects linear model.

Results: Procedure time (minutes) in each group respectively was 105.4 ± 38.6, 92.2 ± 42.8, 80.5 ± 37.9, and 57.5 ± 20.7 (p < 0.001). Flow reversal time (minutes) was 18.4 ± 13.4, 16.1 ± 8.9, 15 ± 9.7, and 11.5 ± 7.7 (p = 0.0028). Fluoro time (minutes) was 25.5 ± 15.2, 23.3 ± 17.2, 19 ± 7.9, and 15 ± 6.2 (p = 0.23). Contrast volume (mL) was 160.3 ± 86.8, 163.6 ± 99.1, 126.6 ± 62.8, 99.7 ± 44.9 (p = 0.017). Length of stay (days) was 2 ± 1.6, 2.2 ± 2.9, 1.7 ± 2.3, and 1.8 ± 1.7 (p = 0.357). Major adverse events (%) in each group was 1.61, 4.23, 6.76, and 2.63 (p = 0.4).

Conclusions: Despite a significant decrease in the total procedure and flow reversal times, with increased experience, there was no impact upon clinical outcomes, establishing the safety of this cerebral protection strategy even among early users.


RR18.
Open AAA Repair Is Feasible and Can Be Done With Excellent Results in Octogenarians
Edward Y. Woo1, Brant Ullery1, Jeffrey P. Carpenter2, Grace J. Wang2, Ronald M. Fairman1, Benjamin M. Jackson1. 1University of Pennsylvania, Philadelphia, PA; 2University of Wisconsin, Madison, WI

Objectives: To determine the feasibility of open AAA repair in octogenarians during the time of multiple commercially-available endografts where only proximal aneurysms or the most challenging anatomy is not stented.

Methods: A retrospective review was performed. Records for open AAA repair were obtained in patients over 80 from 2003-2009.

Results: Sixty-five patients (27M) had a median age of 82. Mean AAA size was 6.7cm. Morphology consisted of Type IV-19, Suprarenal-14, Pararenal-19, Infrarenal-13. A tube graft was used in 58 and the left renal was reimplemented in 32. Fifty-two required a suprarenal or supraceliac clamp (mean ischemic time-22 minutes). Mean EBL was 1800cc. Mortality was 6% at 30 days. Median ICU and hospital LOS were 3 and 9 days, respectively with 61% of patients discharged directly home. Overall, 28 patients suffered some type of complication, 25% being an arrhythmia. Six patients developed acute renal failure although no patients progressed to dialysis. Mean serum creatinine preoperatively was 1.3 and at discharge 1.5. Only one patient developed bowel necrosis (sigmoid colon) requiring resection. Follow-up ranged from 1-81 months. Survival is demonstrated in the Figure.

Conclusions: With an increasing population of elderly patients, vascular surgeons are continually confronted with patients over 80 years of age. Our patients consisted of those not amenable to EVAR for anatomic reasons. Despite a predominance of proximal aneurysms our results demonstrate excellent morbidity and mortality. Thus, open AAA can be done safely in octogenarians and age alone should not exclude repair.

Author Disclosures: J. P. Carpenter: Nothing to disclose; R. M. Fairman: Nothing to disclose; B. M. Jackson: Nothing to disclose; B. Ullery: Nothing to disclose; G. J. Wang: Nothing to disclose; E. Y. Woo: Nothing to disclose.

R2: Paper Session II
RR19.
Carotid Artery Disease: Risk Factor Analysis in a Cohort of 3.9 Million Individuals
Giampaolo Greco1, Natalia N. Egorova1, K. Craig Kent2, Robert M. Zwolak3, Andrew Manganaro4, Alan Moskowitz4, Annetine Gelijns1, Thomas S. Riles4. 1Mount Sinai School of Medicine, New York, NY; 2University of Wisconsin, Madison, WI; 3NYU Langone Medical Center, New York, NY; 4Life Line Screening Inc., Independence, OH; 5Dartmouth-Hitchcock Medical Center, Lebanon, NH

Objectives: To develop a risk stratification tool that permits the identification of patients with clinically important carotid artery stenosis (CAS) for medical or surgical intervention.

Methods: In 2003-2008, demographics and risk factors were collected from a uniquely large patient population (3.9 million), who underwent ultrasound screening for CAS by Life Line screening. Using multivariable logistic regression analysis, we identified risk factors and developed a scoring system to predict the presence of CAS (>50%).