

interposition aortic graft in WT mice. In some mice Eph-B4 was stimulated with Ephrin-B2/Fc injected IP every other day until harvest; other vein grafts were locally treated with WT or mutated Eph-B4 coding adenovirus (1.0×10^9 pfu). Vein grafts were harvested and analyzed after 3-4 weeks.

Results: Stimulation of Eph-B4 with Ephrin-B2/Fc limited wall thickness (0.03 ± 0.01 mm vs 0.06 ± 0.01 mm, $n = 5-7$). Eph-B4 colocalized with cav-1 in sucrose gradient separation and co-immunoprecipitation. Vein grafts derived from cav-1-KO mice had increased wall thickness (0.09 ± 0.01 mm vs 0.05 ± 0.01 mm, $n = 3-5$). Unlike WT grafts, Ephrin-B2/Fc treated Cav-1 KO vein grafts did not have reduced wall thickness (0.09 ± 0.01 mm, $n = 4$). CBD mutated Eph-B4 was unable to phosphorylate tyrosine in vitro; adenovirus incorporating the CBD mutated Eph-B4 did not limit vein graft wall thickness compared to reduced wall thickness with WT Eph-B4 adenovirus (0.09 ± 0.01 mm vs 0.06 ± 0.01 mm, $n = 6$).

Conclusions: Eph-B4 is functional in adult veins and actively limits vein graft wall thickening during adaptation to the arterial environment. Caveolin-1 may act as the shear stress sensor for Eph-B4, suggesting that the Eph-B4-caveolin-1 pathway may be a therapeutic target to improve vein graft patency.

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S2: SVS Plenary Session II

SS7.

Asymptomatic Internal Carotid Artery Stenosis and Cerebrovascular Risk Stratification

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Objectives: To determine the cerebrovascular risk stratification potential of degree of stenosis, clinical features and ultrasonic plaque characteristics in patients with asymptomatic internal carotid artery (ICA) stenosis.

Methods: In this prospective, multicentre, cohort study, 1121 patients with 50-99% asymptomatic ICA stenosis in relation to the bulb (ECST) undergoing medical intervention were followed-up for 6-98 (mean 48) months. Hazard ratios for ICA stenosis, clinical features and ultrasonic plaque texture features associated with ipsilateral cerebrovascular or retinal ischemic (CORI) events were

calculated using univariate analysis and Cox proportional hazard models.

Results: During follow-up, a total of 130 CORI events including 59 strokes occurred. Severity of stenosis, smoking history of more than 10 pack-years, systolic blood pressure, history of contralateral TIA or stroke, low gray scale median (GSM), increased plaque area, plaque types 1, 2 and 3, and presence of discrete white areas without acoustic shadowing (DWA) were associated with increased risk. The area under the curve in ROC curves for stenosis, stenosis combined with clinical features and stenosis combined with clinical features and plaque features was 0.59, 0.66 and 0.82 respectively. In a Cox proportional hazard model, stenosis, history of contralateral TIA or stroke, GSM, plaque area and DWA were independent predictors of stroke. Of the 923 patients with $\geq 70\%$ stenosis ($\geq 50\%$ NASCET) 5-year stroke rates less than 5% were predicted in 524, 5-9% in 149, 10-19% in 176, 20-29% in 40 and rates equal or greater than 30% in 34 patients.

Conclusions: Cerebrovascular risk stratification is possible using a combination of clinical and ultrasonic plaque features. These findings can be used to refine the indications for carotid endarterectomy. However, they need to be validated in additional prospective studies or the medical arm of future randomized controlled trials of medical vs surgical or endovascular therapy.

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SS8.

Effects of Statins on Early and Late Results of Carotid Stenting

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Objectives: Increasing data are suggesting that statins can significantly decrease cardiovascular and cerebrovascular events due to a plaque stabilization effect. However, the benefit of statins in patients undergoing carotid angioplasty and stenting (CAS) for carotid stenosis is not well defined. Aim of this study was to investigate whether statins use was associated with decreased perioperative and late risks of stroke, mortality and restenosis in patients undergoing CAS.

Methods: All patients undergoing CAS for primary carotid stenosis from 2003 to 2009 were reviewed. The independent association of statins and perioperative morbidity was assessed using multivariable analysis. Survival curves and Cox regression models were used to assess late morbidity and restenosis.

Results: A total of 1083 consecutive patients were treated (29% females, mean age 71.6y); 464 (43%) patients were on statin medication before treatment. Statin use was associated with a reduction of perioperative stroke and death (HR 0.37; 95% CI 0.14-0.93; $p = 0.034$) and major stroke rate (HR 0.12; 95% CI 0.016-0.99%; $p = 0.049$) according to multivariable analysis. Statin effect was more significant in reducing stroke and death in symptomatic patients (HR 0.11; 95% CI 0.013-0.95; $p = 0.045$). At 60 months survival (78% vs 82%; $p = 0.024$) and stroke free interval ($p = 0.042$) rates were higher in statin group of patients. Adjusting for demographics and comorbidities in Cox regression analysis, statin use independently reduced long-term mortality risk (HR 0.6; 95% CI 0.36-0.98; $p = 0.043$) and borderline decreased the risk of late stroke (HR 0.24; 95% CI 0.053 to 1.09; $p = 0.06$). There was no effect on restenosis rates.

Conclusions: These data suggest that statin use may decrease both, perioperative and late stroke and mortality rates in patients undergoing CAS. Statin therapy should be considered part of the best medical treatment in current CAS practice.

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SS9.

Long-term Results of Endovascular Treatment of Subclavian and Innominate Arterial Stenosis

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Objectives: Obstructive lesions of the Brachiocephalic and Subclavian arteries have been traditionally managed using open surgery, but the advent of endovascular techniques offers a new approach to the management of these lesions. The aim of our study is to report clinical and imaging results of a 10-year experience of the endovascular management of these lesions with evaluation of end-points at 3-year follow-up.

Methods: A retrospective review of a prospectively collected data was undertaken of 112 patients (41 women; mean age 58.9 years, range 36-84) who presented to our institutions between 1997 and 2006 for endovascular treatment of 141 innominate or subclavian arterial occlusive lesions. End-points of the study were Primary Patency,

Secondary Patency and Blood pressure differential in the affected limb at 1, 2 and 3 years follow-up.

Results: Initial technical success was achieved in 134 (95.03%) lesions. Primary patency was 97.01% at 1 year, 91.7% at 2 years and 91.5% at 3 years. Secondary patency was 98.5% at 1 year, 97.7% at 2 years and 95.5% at 3 years. A sustained nonrecurrence of symptoms and a BP differential improvement by >10 mm Hg was observed in 90% cases at 3 years. Sub-analysis of data for stenotic lesions revealed that Balloon Angioplasty performed as well as Stenting. Stenting was superior to Balloon Angioplasty for total occlusions. There was a complication rate of 7.8% (2.84% major, 4.96% minor) with an attendant mortality rate of 0.89%.

Conclusions: In our experience, endovascular interventions can be accomplished safely with a high degree of technical success and excellent long-term clinical results making it an attractive first line treatment for intrathoracic supraortic arterial occlusive disease. In addition, we advocate primary stenting for all ostial lesions as well as total occlusion in this setting.

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SS10.

Urgent Carotid Endarterectomy in Mild-to-Moderate Acute Strokes: Preventing Recurrence and Improving Neurological Outcome

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Objectives: To evaluate the safety and benefit of urgent carotid endarterectomy (CEA) in patients with carotid disease and acute stroke.

Methods: The study involved patients with acute minor and major strokes related to a carotid stenosis $\geq 50\%$ who underwent urgent CEA. Preoperative workup included neurological assessment with National Institute of Health Stroke Scale (NIHSS) on admission or immediately before surgery and at discharge, carotid duplex scan, transcranial Doppler ultrasound, head computed tomography or magnetic resonance imaging. Endpoints were: perioperative (30-day) neurological mortality, NIHSS score improvement or worsening (defined as a variation ≥ 4), hemorrhagic or ischemic stroke recurrence. Patients were evaluated according to NIHSS score on admission (4-7 or ≥ 8), clinical and demographic characteristics, timing of surgery (< or > 6 hours), presence of brain infarction on neuroimaging. $p < 0.05$ was considered statistically significant.