

age of 75 (19%). *Results:* The 30-day combined stroke, MI and death outcome for all patients was 4.1%. One death occurred (0.46%) in a patient who suffered an MI. One disabling stroke (0.46%) and 3 mild strokes (1.38%) with full recovery by 6 months occurred. Overall 4 patients suffered an MI (1.84%). *Conclusions:* As a result of the CREST trial in our single institutional experience there has been a clear migration to treating average risk patients using CAS, a treatment previously reserved for high risk patients. In this average risk cohort we report favourable outcomes when compared to the CREST trial as well as the firmly established benchmarks for CEA complications derived from the NASCET trial.

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Safety of intrarterial reopro in thrombotic complications during coiling

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Background: Abciximab is used for the treatment of thromboembolism occurring during endovascular procedures, however the experience with intra-arterial infusion is limited. The objective is to evaluate its safety and effectiveness during coiling complications. *Methods:* From an aneurysm coiling database, patients treated with intra-arterial abciximab due to thrombotic complications were selected. Patient were classified either as non-ruptured aneurysm for elective coiling or presenting with subarachnoid hemorrhage. They all had pre and post-procedure cerebral angiography performed at our institution as part of routine work-up. Success rate was based on recanalization seen on cerebral angiography. Complications of using abciximab were reported. *Results:* 35 of 441 coiling patients had a thrombotic complication. 13 of them were treated using intra-arterial infusion of abciximab. 2 patients were male, median age 59. 6 patients presented with sub-arachnoid haemorrhage. 84 % of patients had at least partial recanalization, while 38 % experienced complete recanalization of the parent vessel. 45 % of patients had complications, none severe. 2 patients had aneurysm recanalization, 3 distal migration of thrombus and 1 had haemorrhage (non ruptured aneurysm). *Conclusions:* In spite of being considered a safer alternative, use of intrarterial abciximab has potential risks, including hemorrhage, distal thromboembolism and aneurysm recanalization.

P.098

Arterial wall and plaque remodeling after stent deployment in carotid stenosis: ultrasonographic study

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Background: We evaluated the effects of stents on carotid plaque and the arterial wall using carotid ultrasound in carotid stenting patients *Methods:* From a carotid stent database, 30 consecutive patients were selected. All had Doppler ultrasound performed pre and post-stenting. The diameters of the lumen at the level of stenotic plaque pre and post stenting, the dorsal and ventral plaque thickness, and of the outer arterial wall diameter were measured. Plaque thickness was measured at the level of maximal stenosis. Non parametric

tests were used to determine whether the stent effect and luminal enlargement were based on wall remodeling or on total arterial expansion. *Results:* Patient was followed for an average of 22 months. 18 patients were male, average age 70 years. 87% were symptomatic ipsilateral to the side of stenosis. The luminal diameter increased post stenting in the region of severe stenosis. Plaque thickness, both ventrally, as well as dorsally decreased post stenting, with no significant difference between the ventral and dorsal plaque effects. The measured lumen in the stent increased over time post-stenting. *Conclusions:* Self-expanding nitinol stents alter the baseline ventral and dorsal plaque to a significant degree, and do not significantly affect the native arterial wall and the overall arterial diameter .

P.099

Characteristics of the SOFIA distal access catheter in suction-stentriever acute stroke intervention

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Background: Tri-axial systems are frequently employed in stroke interventions. In addition to more support, the distal access catheter can provide suction aspiration during a stent retrieval. We have recently adopted the 5F SOFIA as part of a tri-axial system for acute stroke interventions, and believe it has improved efficient recanalization. *Methods:* This is a retrospective case series of acute stroke interventions utilizing the 5 F SOFIA 125 cm distal access catheter. Cases were evaluated for distal location of the catheter, number of stent-tri-axial passes, and final TICI score. We describe our angiographic technique. *Results:* Nine acute stroke cases were performed using the SOFIA catheter. LVOs were in the M1(6), M2 (2), distal basilar (1). The 5F SOFIA catheter was advanced into the M1 or Basilar artery in all cases. No dissections or spasm was seen in the catheterized intracranial artery. Mean stent-tri-axial passes was 2 (1-4). Final angiographic results were TICI 3 (6), TICI 2b (2), and TICI 0 (1). *Conclusions:* Efficient thrombectomy is a key part of successful stroke recanalization. We report on our experience with a specific distal access catheter which has reduced the number of stent passes required to restore flow.

P.100

Carotid stent fracture post balloon angioplasty for unilateral recurrent ICA stenosis with pre-existing occlusion of contralateral ICA and literature review

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Background: Closed cell carotid stent fracture is rare. From our literature review, we present the first reported case in English literature of a carotid stent fracture post angioplasty for an in-stent stenosis. *Methods:* Case Report *Results:* 72-year-old male underwent left carotid stenting for symptomatic ulcerated stenosis of the proximal aspect of left ICA (71% stenosis with post-stenting 55% residual stenosis). His right ICA and right vertebral artery were occluded. 2 months later, he presented with TIA's and severe in-stent stenosis in the proximal left ICA measuring 1 mm in diameter. Satisfactory balloon (5 x 40 mm) angioplasty was done with residual stenosis measuring 2.5 mm in diameter. 8 months later he presented

with symptoms of compromised cerebral perfusion. Workup showed a stent fracture distally at the site of severe ICA stenosis secondary to atherosclerotic calcified plaque causing blood flow changes. His PSV (peak systolic velocity) in the left ICA was 383 m/s. As such he underwent left ICA re-stenting for symptomatic severe left ICA stenosis of 70% with 40% residual stenosis following stent deployment. *Conclusions:* Carotid stent fracture post balloon angioplasty for recurrent stenosis is rare but of paramount importance. We demonstrate re-stenting as a viable treatment modality when patient profile is not amenable to a surgical revascularization procedure.

NEURO ONCOLOGY

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A spatial analysis of forces applied during virtual reality brain tumor resection: the force pyramid

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Background: Virtual reality simulators allow development of novel methods to analyze neurosurgical performance. Force pyramids provide visual and spatial analysis of 3 dimensional force application by any instrument used during simulated tumor resection. This study was designed to answer three questions: 1) Do study groups have distinct force pyramids? 2) Do handedness and ergonomics influence force pyramid structure? 3) Are force pyramids dependent on visual and haptic characteristics of simulated tumors? *Methods:* NeuroVR (formerly NeuroTouch), a virtual reality simulator, continually assessed simulated ultrasonic aspirator force application of neurosurgeon, resident and medical student groups during resection of 18 simulated brain tumors with different visual and haptic characteristics. *Results:* Sixteen neurosurgeons, 15 residents and 84 medical students participated. Neurosurgeon, resident and medical students groups displayed easily distinguishable 3 dimensional 'force pyramid fingerprints'. Neurosurgeons had the lowest force pyramids, indicating application of the lowest forces, followed by resident and medical student groups. Handedness, ergonomics, visual and haptic tumor characteristics resulted in distinct well-defined 3 dimensional force pyramid patterns. *Conclusions:* 'Force pyramid fingerprints' provide 3 dimensional spatial assessment displays of instrument force application during simulated tumor resections. Neurosurgeon force utilization and ergonomics data form a basis for understanding and modulating resident force application and improving patient safety during tumor resection.

P.104

Glioblastomas located in the right hemisphere are associated with worse quality of life

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Background: Because glioblastoma is currently incurable, the goal of therapy is the optimization of the patient's quality of life (QOL). Tumor location is critical in screening surgical candidates, yet the impact of tumor location on QOL has never been demonstrated. By using a novel computer-driven algorithm, we set out to investigate the impact of tumor location on QOL. *Methods:* The tumors of forty consecutive glioblastoma patients were segmented and the Euclidian distance between 90 brain regions and each tumor's margin was calculated and correlated to the patients' self-reported QOL as measured by the SNAS questionnaire. *Results:* QOL was statistically associated with proximity to three areas: the right para-hippocampal gyrus, the right posterior cingulate cortex and the right postcentral gyrus. We postulate that the adverse relation between proximity to these areas and QOL results from disruption in large-scale networks involved in high-order functions such as visuospatial memory. While harder to detect with a bedside clinical examination, such deficits are likely more impactful on QOL than those related to the motor cortex or Broca's area. *Conclusions:* Tumor proximity to right parietooccipital region are associated with decreased QOL. This should be considered in the management strategies of glioma patients.

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Clinical impact of functional magnetic resonance imaging for pre-operative planning in patients with low grade gliomas

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Background: This study aims to evaluate the impact of pre-operative functional magnetic resonance imaging (fMRI) on low grade glioma (LGG) patients' outcomes. *Methods:* In this retrospective matched cohort study (N = 48) of a single surgeon's patients, we are comparing two groups of LGG patients (WHO grade II) based on exposure to fMRI. A 1:2 propensity score match from a pool of 764 brain tumour patients was performed. *Results:* Within the group of 16 LGG patients who have undergone fMRI studies over a 12-year period, mean age was 40 years, and most presented with seizures (81%). Most lesions were left-sided (81%), and the lobes most commonly involved were frontal (75%) and temporal (31%). Patients underwent either craniotomy (50%), stereotactic biopsy (25%) or nonsurgically management (25%). In surgical patients, between presurgical assessment and eight week post-surgical follow-up, mean modified Rankin scale improved from 1.80±0.79 to 1.50±0.97. In our cohort, 5-year mortality was 12.5% (patients followed for a mean duration of 5.46 years). *Conclusions:* Data analysis is ongoing with plans to compare relevant demographics and outcomes via 1:2 propensity score matching of LGG patients who underwent fMRI against a control cohort.