

calcifications were then further imaged with Micro CT for characterization of calcified structures.

Results 120 human cadaveric carotid artery specimens and 60 carotid endarterectomy specimens were imaged. Of these, 23 specimens were shortlisted for recurrent distinguishable patterns of calcifications with SFE and imaged with Micro CT. The patterns of calcifications were divided into three major categories namely juxta-luminal, intra-luminal and mixed. Juxta-luminal calcifications were further divided into either covered, if covered by intima or exposed if not covered by non-calcified intima. Intra luminal calcifications were further divided into nodules (smooth protrusion) and coral calcifications (numerous disorganized spiculae and loosely consolidated small fragments of calcified particles). Coral calcifications could be either immobile (covered with tissue) or mobile (loosely attached to the arterial surface by thin threads of tissue).

Conclusion Laser angioscopy revealed recurrent phenotypes of intimal calcification with possible diagnostic, prognostic, and therapeutic relevance.

Disclosures S. Madhani: None. J. Arturo Larco: None. Y. Liu: None. L. Savastano: None.

E-100 NEW OR DEVELOPING INTRACRANIAL HEMORRHAGE AFTER MECHANICAL THROMBECTOMY

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10.1136/neurintsurg-2022-SNIS.211

Introduction Mechanical thrombectomy (MT) serves as an alternative measure to medically refractory cases of cerebral venous thrombosis (CVT). Here we describe new or increased intracerebral hemorrhage (ICH) as a periprocedural complication to MT for CVT and its correlative factors.

Methods A retrospective review of all CVT cases treated with venous thrombectomy between June 2016 and August 2021 was performed within our institutional, neuroendovascular database.

Results Peri-procedural new or increased ICH was identified in 8/30 (26.7%) of patients overall. In all of these patients, new or increased ICH was identified post-MT. Presence of stupor or coma was identified in 10/30 (33.3%) of patients. Among these, 5/10 (50%) experienced new or increased ICH. Partial recanalization after MT occurred in 13/30 (43.3%) of patients. Among these, 6/13 (46.1%) experienced new or increased ICH. Among the 17 who did not achieve partial recanalization (13 with complete and 4 with none), 15/17 (88.2%) did not experience new or increased ICH ($p < 0.01$). Internal jugular (IJ) sinus occlusion was identified in 9/30 (30%) of our CVT cohort. A strong negative correlation was identified between IJ thrombosis and development of new or increased ICH (0/9, $p < 0.01$).

Conclusion Periprocedural new or increased ICH showed a strong positive correlation with presence of stupor/coma, partial recanalization, and a negative correlation with IJ thrombosis. The association with partial recanalization will be incorporated in future studies with a larger cohort to determine if incomplete MT may be predictive of other outcomes as well.

Disclosures J. Scaggiante: None. M. Bazil: None. J. Mocco: None. C. Kellner: None.

E-101 RESCUE STENTING FOR INTRACRANIAL STENOSIS IN EMERGENT LARGE VESSEL OCCLUSION PATIENTS USING THE NEUROFORM ATLAS STENT THROUGH THE GATEWAY BALLOON: PRELIMINARY REPORT

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10.1136/neurintsurg-2022-SNIS.212

Background Management of acute large vessel occlusion due to intracranial stenosis remains challenging with high complications and poor recanalization rates. Morbidity is also related to the intracranial exchange that is required for stent placement after the rescue angioplasty. We aim to present our initial experience of deployment of Neuroform Atlas stent through the lumen of a Gateway angioplasty balloon to avoid microcatheter exchange.

Methods Patients were identified from prospectively collected mechanical thrombectomy stroke database from Feb 2019 to July 2021. Demographic and clinical information was collected. Primary outcomes were favorable functional outcome at hospital discharge (modified Rankin Scale (mRS) score of 0–3), and the rate of intracranial hemorrhage (ICH). Good angiographic recanalization (TICI \geq 2b), and mortality at 30 days were other outcomes.

Results We identified 5 patients treated with this approach [mean age 54 ± 14 years, all were men] who presented with large vessel occlusion of middle cerebral artery. Initial median NIHSS was 8 (range 6–16) with one patient received IV t-PA. Patient initially underwent mechanical thrombectomy using the Solumbra technique. Due to reocclusion or impending occlusion with evidence of atherosclerotic plaque, rescue angioplasty with stent placement was performed. Patients were loaded with 650 mg of aspirin and 180 mg of ticagrelor through nasogastric tube prior. Balloon angioplasty was performed using the gateway balloon size ranging from 1.5 to 3 mm which was inflated to subnominal pressures over 1 minutes. This was followed by placing Neuroform atlas stent through the gateway balloon with size ranging from 3 to 4 mm diameter and length 21–24 mm. TICI \geq 2b was achieved in 4 patients. Mean time from symptoms onset to revascularization was (336 ± 90) minutes. One patient had asymptomatic ICH. 2 patients had mRS 0–3 at the time of discharge and one patient was dead at 1 month.

Conclusion Our preliminary experience showed the diminished risk of guidewire perforation as well as potentially decreased operative time and early reperfusion by deploying the Neuroform stent through a compatible gateway balloon microcatheter. This should be investigated further in large multicenter studies

Disclosures M. Memon: None. T. Nisar: None. J. Lee: None. A. Biswas: None. A. Singla: None. P. Khandelwal: None.

E-102 COMBINED ASPIRATION AND STENTRIEVER INTERVENTION FOR CEREBRAL VENOUS THROMBOSIS

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10.1136/neurintsurg-2022-SNIS.213

Introduction Mechanical thrombectomy (MT) serves as an alternative measure to medically refractory cases of cerebral venous thrombosis (CVT). Varying techniques to achieve

complete recanalization are utilized in the angio-suite such as aspiration, stent retrievers, the Fogarty technique, combinations therein, and others. We describe our experience and outcomes associated with these techniques in our cohort of CVT patients treated through MT over a 5-year period.

Methods A retrospective review of all CVT cases treated with venous thrombectomy between June 2016 and August 2021 was performed within our institutional, neuroendovascular database. Primary outcomes of recanalization and secondary outcomes of reocclusion were assessed.

Results Of the 30 CVT patients selected for detailed review, 19 (63.3%) patients were treated with a combination of stent retriever and aspiration for thrombus removal, seven (23.3%) were treated with aspiration therapy alone, and three (10%) were treated with a combination of the Fogarty and aspiration techniques. Within the stentriever/aspiration group, 13/19 (68.4%) achieved complete recanalization, 5/19 (26.3%) achieved partial recanalization, and 1/19 (5.3%) was unable to be recanalized. Within the Fogarty/aspiration group, 1/3 (33%) achieved complete recanalization and 2/3 (67%) achieved partial recanalization. Within the aspiration-alone group, 0/7 (0%) achieved complete recanalization, 4/7 (57.1%) achieved partial recanalization and 3/7 (42.9%) achieved no recanalization. One of these cases reoccluded and, after an attempt at mechanical thrombectomy with stentriever alone, the procedure was unable to recanalize the sinus. Reocclusion rate was 5/30 (16.6%) in the cohort overall.

Conclusion In our case series, patients were more likely to achieve complete and/or partial cerebral venous sinus recanalization when a combination of aspiration/stentriever was used versus aspiration/Fogarty or aspiration alone. On the contrary, when aspiration alone was used, we never obtained complete CVT recanalization and patients had significantly higher chances of treatment failure.

Disclosures J. Scaggiante: None. M. Bazil: None. J. Mocco: None. C. Kellner: None.

E-103 DE NOVO INTRACRANIAL ANEURYSM FORMATION IN YOUNG (≤ 40 YEARS) ANEURYSM PATIENTS

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10.1136/neurintsurg-2022-SNIS.214

Introduction Denovo intracranial aneurysm (IA) formation is the most interesting in young population with high life expectancy. Currently there is a lack of studies dedicated to young (≤ 40 years old) IAs population.

Methods Hospital aneurysm prospective registry was used to retrieve young IA patients (≤ 40) from 2000–2010 with ruptured or unruptured aneurysms with follow-up imaging. We analyzed the incidence and risk factors for de novo aneurysms.

Results 338 patients ≤ 40 years old at admission with aneurysms were recognized. 132 patients (65 patients presented with ruptured and 67 with unruptured aneurysms) had angiographic (digital subtraction angiography, computed tomography angiography, magnetic resonance angiography) follow-up. Median 10 years (0–17.8 years) of angiographic follow-up data was available. 19 (14.4%) patients had developed 22 de novo aneurysms (3 ruptured). De novo development was seen in a median of 8 years (4–17 years) and one patient

developed 2 separate de novo aneurysms during 17 years' time period. Cumulative years of follow-up was 1174.8 patient-years, and the incidence of de novo IAs formation was 1.87% per patient-year in this cohort. In regression analysis only multiple aneurysms was significantly correlated to de novo IAs formation ($p < 0.05$).

Conclusion Aneurysm patients ≤ 40 years' age have significant risk to develop de novo IAs. Patients with IAs 40 years old or younger constitute a new entity with need to change the follow up protocol. Imaging follow-up would be recommended at five and 10 years, based on the median de novo discovery time in this cohort. Multiple aneurysms patients' follow-up should be more aggressive.

Disclosures B. Rezaei Jahromi: None. S. Naderi: None. O. Rustemi: None. J. Silva: None. R. Kivisaari: None. H. Kaukovaalva: None. M. Niemelä: None.

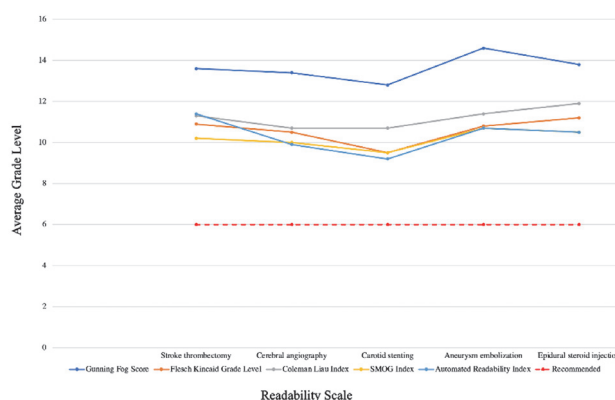
E-104 THE COMPLEXITY OF ONLINE PATIENT EDUCATION MATERIALS ABOUT INTERVENTIONAL NEURORADIOLOGY PROCEDURES PUBLISHED BY MAJOR ACADEMIC INSTITUTIONS

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10.1136/neurintsurg-2022-SNIS.215

Introduction Health literacy is an independent predictor of population health status and is directly related to the readability of available patient education material. The National Institutes of Health (NIH) and the American Medical Association have recommended that patient education materials be written between a 4th- and a 6th-grade education level. The authors assessed the readability of online patient education materials about neurointerventional procedures that have been published by several academic institutions across the US.

Methods Online patient education materials regarding five common neurointerventional procedures, including mechanical thrombectomy for large vessel occlusion, cerebral diagnostic angiography, carotid artery stenting, endovascular aneurysm embolization, and epidural steroid injection were collected from the websites of 20 top institutions in Neurology and Neurosurgery. The materials were assessed via 5 readability scales and then were statistically analyzed and compared to non-institutional education websites (Wikipedia.com and WebMD.com).



Abstract E-104 Figure 1