

5 Fr diagnostic catheters with the arteriotomy of a traditional 4Fr sheath. This is achieved by decreasing the wall thickness of the sheath thereby making it much softer and more likely to kink. We report our experience using this for femoral angiography.

**Methods** We retrospectively reviewed a prospectively-maintained IRB-approved institutional database of the senior authors to identify all cases where the 5/4RS was utilized. Case details were recorded including types of catheters used, incidence of kinking, closure technique, and length of lying flat (LOF). Technical success was defined as femoral access that allowed catheterization of all desired vessels with a 5Fr diagnostic catheter.

**Results** Over the study period, 50 consecutive femoral access diagnostic angiography cases were identified where the 5/4RS was utilized. A 5Fr JB1 glide catheter (Terumo) was utilized in all 50 cases and a SIM2 (Terumo) was utilized in 12 (24%). Kinking of the 5/4RS occurred in 5 (10%) patients, which was managed by restoring the lumen with the 5Fr diagnostic catheter, did not preclude technical success. Each of the incidents of kinking occurred in patients with BMI > 30. Exovascular non-dilating groin closure (Mynx, Cardinal) was performed in 32 (64%) cases and manual compression in 18 (36%). All patients were discharged from recovery with 4 hours of total flat time with no symptomatic groin hematomas.

**Conclusion** The safety of trans-femoral cerebral angiography can be enhanced using a 4Fr groin access with a radial 5/4 slender sheath with the known benefits of utilizing 5Fr diagnostic catheters.

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#### E-028 IMMEDIATE PROCEDURAL OUTCOMES OF HIGH MESH-DENSITY FLOW DIVERTER PLACEMENT IN THE UPPER BASILAR ARTERY/BASILAR APEX FOR THE TREATMENT OF CEREBRAL ANEURYSMS: EXPERIENCE WITH 15 CONSECUTIVE SURPASS™ FLOW DIVERSION CASES

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**Background** Recent studies have demonstrated acceptable safety and efficacy of posterior circulation flow diversion for cerebral aneurysms. However, these studies have overwhelmingly included V4 segment and proximal basilar aneurysms (range 70–90%) and analyzed 48-wire devices (Pipeline, Silk, etc.) that have lower mesh densities. The Surpass flow diverter (Fremont, CA) with its 64, 72, and 96-strand designs is a high-mesh density device that is known for its increased flow diversion and perforator preservation properties. We present

here the first known dedicated series of upper basilar and basilar apex flow diverter cases using the Surpass device.

**Methods** We retrospectively reviewed a prospectively-maintained IRB-approved institutional database of the senior authors to identify all cases where a Surpass™ flow diverter (Streamline or Evolve) was implanted in the upper basilar or basilar apex. Case details were recorded including patient demographics, aneurysm type, device used, and periprocedural events and complications. Technical success was defined as successful implantation of the device without intraprocedural device removal.

**Results** Over the 20-month study period, 15 cases of Surpass flow diversion (9 (60%) Evolve, 6 (40%) Streamline) cases were performed where a device was placed in the upper basilar artery/basilar apex with the basilar apex being crossed in 11 cases. The aneurysms treated included 5 (33%) basilar apex, 5 (33%) superior cerebellar basilar, and 5 (33%) basilar trunk aneurysms. Dual antiplatelet therapy was established with ticagrelor 90 mg BID and aspirin 81 mg QD in each patient. Intraprocedural tirofiban bolus (1/2 cardiac dose) and subsequent drip was employed in 11 (73%) of cases regardless. Technical success was achieved in 100% of cases and there were no instances of in-stent platelet aggregation. No major strokes were observed in the first 30 days after each case, and all patients were discharged at their MRS baseline.

**Conclusion** The treatment of upper basilar and basilar apex aneurysms with the high mesh-density Surpass can be safely performed. Further studies are needed to evaluate occlusion rates and efficacy as well as the applicability of these results to lower mesh-density 48-wire implants.

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#### E-029 RESCUE INTRACRANIAL ANGIOPLASTY WITH OR WITHOUT STENTING IN ACUTE ISCHEMIC STROKE

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**Introduction** The appropriate management of acute ischemic strokes secondary to hemodynamic intracranial atherosclerotic disease refractory to the conventional mechanical thrombectomy remains unclear. We aimed to investigate the clinical outcome of the patients who underwent rescue intracranial angioplasty with or without stenting in the setting of acute ischemic stroke at our institution.

**Method** This is a retrospective single-arm observational study to evaluate the effect of acute rescue angioplasty with or without stenting on clinical symptom burden and functional outcome. We included all patients that underwent such rescue intervention within 7 days of presenting with acute ischemic stroke with large vessel occlusion between the years of 2017

to 2020. We evaluated the change in NIHSS from presentation to hospital discharge as well as mRS at discharge and 3 months. We further evaluated for stent or vessel reocclusion as well as symptomatic hemorrhagic conversion as the cause of clinical decline.

**Results** There were twenty procedures in nineteen patients during this time period. In three procedures acceptable caliber improvement was achieved using angioplasty alone (15%), with the other 17 procedures requiring a stent. Fourteen procedures (70%) resulted in improvement in NIHSS following the procedure and upon discharge. Out of the 6 procedures with worsening clinical outcome, 1 had reocclusion of the lesion, 2 with symptomatic hemorrhagic conversion, and 1 with perforator occlusion. Eleven cases resulted in mRS less than or equal 2 at 3 months and 3 patients had passed away by 3 months.

**Conclusion** Even though rescue angioplasty with or without stenting can have a high rate of periprocedural morbidity, it leads to marked clinical improvement in the majority of the patients in this selected cohort.

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E-030

#### ENDOVASCULAR TECHNIQUES FOR TREATING INTRACRANIAL VERTEBRAL ARTERY DISSECTION – A SINGLE CENTER EXPERIENCE

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**Introduction** Dissection of the intracranial segment (V4) of the vertebral artery (VAD) is a rare and serious condition. It can present either with ischemic symptoms related to stenosis, thrombosis or embolic phenomenon or with subarachnoid hemorrhage (SAH). Various endovascular techniques have been described for managing VAD. This study was conducted to review our institutional experience with patients with intracranial VAD who required endovascular intervention. Understanding clinical and treatment variables will yield preferred management options and guide our practice.

**Methods** A retrospective, single-center study to review cases of intracranial vertebral artery dissection treated with endovascular intervention.

**Results** A total of 20 patients with intracranial vertebral artery dissection were identified. Mean age (SD) was 50.8 (13.1), and M:F ratio was 1:1. Presentation was with SAH in 11 (55%) patients, ischemic symptoms in 4 (20%) patients and headache only in 5 (25%) patients. Dissection involved unilateral codominant VA in 10 cases, dominant artery in 2 cases, non-dominant artery in 3 cases and bilateral VAs in 5 cases. Angiographic anatomical review identified 11 VAD (55%) were distal to the PICA origin, 6 (30%) were at the origin of the PICA, and 3 (15%) were proximal to the PICA origin. Most common dissection etiology was spontaneous in 15 (75%) patients followed by fibromuscular dysplasia in 3 (15%) patients and traumatic in 2 (10%) patients. The treatment methods used were parent vessel coil occlusion in 12 (60%) cases, coil embolization of the aneurysm with vessel latency preservation in 5 (25%) cases and flow-diversion in 3 (15%) cases. Periprocedural complications were encountered in 3

cases with symptomatic ischemic symptoms in 2 cases and rebleeding in 1 case (early rerupture after flowdiversion). Median modified Rankin Scale (mRS) on discharge was 2 (0.5–3.5) and on 3 months follow up was 1 (0–2). Two cases of late aneurysmal recanalization were encountered and both cases in patient who were treated with aneurysmal coiling. There were 2 mortalities in the cohort. Both mortalities were due to withdrawal of care: one because of advanced age and the second was due to poor prognosis with massive brainstem infarction.

**Conclusion** Endovascular treatment provides effective treatment for VAD. In our study, we demonstrated that sacrificing the parent artery with coil occlusion remains an effective and permanent treatment option for ruptured VAD. Risk of complications is low if the occlusion is distal to the origin of PICA as there is adequate collateral blood flow via ipsilateral AICA. Preservation of blood flow to the parent artery with stent assisted coiling or flow diversion stents provides alternative approach for treatment but in the setting of ruptured aneurysms, and the use of antithrombotic carries high rebleeding risk.

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E-031

#### VERTEBROBASILAR JUNCTION ANEURYSMS ASSOCIATED WITH SUBCLAVIAN STEAL PHYSIOLOGY: SHOULD AN ASYMPTOMATIC SUBCLAVIAN ARTERY OCCLUSION BE TREATED?

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**Introduction/Purpose** Vertebrobasilar aneurysms are infrequent accounting from 0.5% of all intracranial aneurysms. Subclavian steal physiology resulting in abnormal flow across the vertebrobasilar junction to supply the distal territory beyond a proximal subclavian artery occlusion or stenosis has been reported as a likely etiology for a subset of vertebrobasilar junction aneurysms. Moreover, subarachnoid hemorrhage due to ruptured vertebrobasilar aneurysms has been reported as a rare initial presentation of otherwise asymptomatic subclavian steal physiology. There are several case reports in the literature of endovascular treatment of vertebrobasilar aneurysms associated with subclavian steal syndrome. However, the long term risk of vertebrobasilar junction aneurysm re-growth and re-rupture in the setting of untreated subclavian steal physiology is unknown. Moreover, few specific recommendations for management of the underlying subclavian artery occlusion in patients with vertebrobasilar aneurysms exist in the literature.

**Materials and methods** We present two cases of patients with asymptomatic subclavian steal physiology initially presenting with ruptured vertebrobasilar junction aneurysms with differing clinical courses.

**Results** Case 1 is a 70 year old female with a wide-necked 10 mm vertebrobasilar junction aneurysm successfully treated with stent-assisted coiling. Follow-up imaging demonstrated 1 year stability in complete occlusion of her aneurysm. Her left subclavian origin occlusion remained clinically asymptomatic and was managed conservatively. Case 2 is a 50 year old female presenting initially with a ruptured 4 mm vertebrobasilar junction aneurysm successfully treated with primary coil