

Material and Methods We prospectively analyzed 74 patients with 81 carotid artery stenoses (58 men; age 54-94 years [mean 76.7 years]; symptomatic stenosis, 36 lesions; mean stenosis rate, 82%) who underwent CAS using Casper stent from October 2020 to March 2023. Technical success rate, incidence of PP during CAS and delayed PP (within 1 week after CAS), incidence of ischemic lesions within 48 h after CAS and major adverse event (MAE) (stroke, MI, death) within 30 days were assessed using diffusion weighted images. All CAS was performed by a standard procedure using embolic protection devices.

Result Technical success rate was 100%. PP occurred in one patient (1.2%) during CAS. Delayed PP occurred in three patients (3.7%). Two patients of them were performed with additional stent placement. No stroke was found in these patients. New ischemic lesions were found in twenty patients (26.0%). MAE was observed in one patient without PP (1.2%).

Conclusion Micromesh stent seemed to reduce ischemic complication by preventing PP during CAS. In addition, delayed PP also should be carefully followed-up.

Disclosures K. Takayama: None. K. Myouchin: None. T. Wada: None.

E-226 ENDOVASCULAR TREATMENT OF PEDIATRIC ARTERIOVENOUS SHUNTS

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Background Pediatric arteriovenous malformations (AVM) and pial/dural arteriovenous fistulas (AVF) are rare but life-threatening diseases that can lead to congestive heart failure and hemorrhagic stroke in newborns and pediatric patients. The pronounced shunting in these conditions is associated with early complications and necessitates aggressive surgical management.

Materials and Methods For 10 years, our team at the Meshalkin National Medical Research Center and Federal Center of Brain Research and Neurotechnologies has accumulated extensive experience in endovascular treatment of pediatric patients with congenital cerebrovascular pathology; we have conducted a total of 158 procedures in 70 patients, including 18 endovascular interventions in 16 newborns. Overall complication rate was 14,3% (10 pts) with 10,0% (7 pts) morbidity rate. Total cure was achieved in 41 patients (58,6%).

Results Based on our experience of using various embolic agents, we believe that cyanoacrylate compositions are the most suitable for AVF embolization. Due to their adhesive properties, they allow for controlled and effective occlusion of high-flow fistulas (more than 70% of procedures in our series of cases). Non-adhesive compositions are effective for final embolization of residual small feeders (28,5%). In one case (AVF formed direct communication between basilar artery and dilated deep cerebral vein) we have performed subtotal embolization of the AVF by 0,020" coils, which led to progressive thrombosis of the fistula with restoration of normal arterial blood flow. The patient was discharged 18 days after surgery, and MRI at 1.5 and 6 months showed the absence of blood



Abstract E-226 Figure 1 Anteroposterior (A, C) and lateral (B, D) vertebral angiograms before (A, B) and after (C, D) AVF embolization in the same phase of contrast enhancement. A significant improvement in contrast enhancement of cerebral vessels and a pronounced decrease in blood flow through the fistula are observed

flow through the fistula and satisfactory condition of the infant without physical and mental developmental delay.

Conclusion Endovascular treatment of pediatric arteriovenous shunts is extremely difficult and associated with high risks of complications. However, excellent clinical results can be achieved in specialized clinics. The choice of embolic agent should depend on the hemodynamic load of the pathological blood flow.

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E-227 THE RETROGRADE VEIN APPROACH AS A CURATIVE TREATMENT STRATEGY FOR YAKES TYPE I, IIB AVMS, IIIA AVMS, AND IIIB AVMS

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Purpose To evaluate the role of Retrograde Vein and Direct Puncture Retrograde Vein Endovascular Repair of Large Peripheral AVMS.

Material and Methods 87 patients (45 males, 42 females; age: 14 - 72, mean age: 27 years) presented for repair of AVMS involving head and neck, shoulder, chest wall, intra-thoracic, abdominal, renal, pelvic, buttock, and extremities. Ethanol and ethanol/coils were the embolic agents used. Retrograde transvenous catheterizations and vein direct puncture retrograde vein approaches were used in all patients.

Results 85 of 87 patients are cured at long-term follow-up (f/ up: 14 months to 138 months; mean: 42 months) and 2

patients' therapy is on-going. Complications include 1 pelvic AVM post-Rx small bleed not requiring transfusion; 1 pelvic AVM coils eroded into bladder wall removed uneventfully via trans-urethra endoscopy; 2 infections treated with antibiotics; 2 patients' coils superficially eroded and uneventfully removed; and 1 patient subcutaneous hematoma removed (7/87 patients; 8% minor complications).

Conclusions Retrograde vein and direct puncture vein access and embolization of AVMs in many anatomic locations have proven curative at long-term f/up of AVMs in multiple anatomic locations with a low complication rate. Reproducible and consistent results of this technique have been reported only in 4 publications in the world's literature: by Yakes (1990), Gomes (1994), Jackson (1996) and Cho (2008). In the Yakes AVM Classification System, these approaches can routinely effect AVM cures in Yakes Types I, IIa, IIIa, and IIIb.

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E-228 SINGLE CENTER EXPERIENCE USING 3MM TREVO STENT RETRIEVERS IN MEDIUM VESSEL OCCLUSION THROMBECTOMY

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Introduction Medium vessel occlusions in stroke patients account for 25–40% of acute ischemic strokes, and recanalization with endovascular thrombectomy has been shown to be of benefit in select patients. Advancements in mechanical thrombectomy devices with structural features that aid navigation through narrower medium/distal vessel vasculature offer promise for improving success in medium vessel occlusion thrombectomy. In this study, we aim to evaluate the safety and efficacy of using the 3mm Trevo NXT stent retriever (Stryker, Kalamazoo, MI) for mechanical thrombectomy in stroke patients with acute ischemic stroke caused by medium vessel occlusions.

Materials and Methods Acute ischemic stroke patients within the past 5 years (2018–2022) who underwent mechanical thrombectomy for medium vessel occlusions (i.e., M2–M4, ACA, PCA) with a 3mm Trevo NXT stent retriever were retrospectively reviewed from a single-center registry. Primary efficacy outcomes included successful recanalization rate using Trevo NXT (modified thrombolysis in cerebral infarction [mTICI] ≥ 2 B) and groin-to-revascularization time. The primary safety outcome was rate of Trevo-associated procedural complications. The primary clinical outcome examined was National Institutes of Health Stroke Scale (NIHSS) at 24 hours after intervention.

Results Of 81 patients with acute ischemic stroke from medium vessel occlusions treated with thrombectomy, 44 patients (52.2% female, mean age of 71.1 years, median initial NIHSS of 15 [IQR 8–22.8] at presentation) underwent thrombectomy with 3mm Trevo NXT stent retrievers. Of 106 total thrombectomy passes, 51 passes involved use of 3mm Trevo, which comprised 15.7% M1, 39.2% M2, 29.4% M3, 9.8% ACA, and 5.9% PCA occlusions. Stent retriever-assisted aspiration was performed in 82.4%. 3mm Trevo stent retrievers were used in the first pass in 56.9% of individuals, with 72.4% achieving successful recanalization. 3mm Trevo

stent retrievers were used as 'rescue' after initial revascularization failure in 43.1% of individuals. Successful recanalization following use of 3mm Trevo as a rescue intervention was achieved in 60.0% of passes. Of cases that failed 3mm Trevo rescue, 66.67% never achieved successful revascularization during the procedure. Acute complications attributed to 3mm Trevo stent retriever usage were reported in 2.4% of cases (1 case of self-resolving contrast extravasation and 1 case of vasospasm resolved with verapamil). Median NIHSS at 24 hours after intervention was 12 (IQR 4–20.8).

Conclusion Use of 3mm Trevo NXT stent retriever in medium vessel occlusion for first line and rescue thrombectomy in our single center experience demonstrated an adequate safety and efficacy profile, thus endorsing its use in mechanical thrombectomy applications beyond large vessel occlusion cases. Future multicenter studies will build upon this initial experience to further characterize the utility of novel stent retrievers in medium vessel occlusions.

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E-229 MECHANICAL THROMBECTOMY IN LOW ALBERTA STROKE PROGRAM EARLY CT SCORE (ASPECTS) IN HYPERACUTE STROKE – A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction/Purpose Major randomized controlled trials of mechanical thrombectomy (MT) for acute ischemic stroke (AIS) failed to include patients presenting hyperacutely with low baseline Alberta Stroke Program Early CT Score (ASPECTS 0-5). Patients experiencing hyperacute strokes (last known well ≤ 6 hours) can potentially benefit the most from MT. We conducted a systematic review and meta-analysis to report presentation severity and radiographic, clinical, and functional outcomes for hyperacute stroke patients presenting with low ASPECTS.

Materials and Methods Our comprehensive literature search of PubMed, Embase, and Cochrane databases up to August 31, 2022 included articles reporting patients presenting hyperacutely who underwent MT for AIS with an ASPECTS ≤ 5 on baseline imaging. Pooled averages were calculated for age and presenting National Institutes of Health Stroke Scale (NIHSS) score. Fixed-effects and random-effects meta-analyses for weighted estimation of overall rates were performed. Forest plots were generated for proportions and estimated overall outcome rates.

Results Eighteen studies (1958 patients) were included (mean age=64.1 years; presenting NIHSS score=18.4). Final modified Thrombolysis in Cerebral Infarction 2b-3 grade was achieved in 76.4% (figure 1a), with symptomatic intracranial hemorrhage in 12.1%. Good (modified Rankin Scale [mRS] 0-2 score) (figure 1b) and ambulatory (mRS 0-3 score) 3-month outcomes were achieved by 27.4% and 46.7%, respectively; 90-day mortality was 26.4%.

Conclusion MT in hyperacute stroke patients with low ASPECTS (≤ 5) may result in ambulatory clinical outcomes with acceptable hemorrhage risk. Although a high proportion