Introduction/Purpose Flow diversion represented a paradigm shift in the treatment of cerebral aneurysms. Previously considered ‘difficult to treat’ aneurysms could be successfully treated endovascularly. Coverage of side branches with subsequent thromboembolic complications or even vessel occlusion remained a concern. We here present our 10-year experience with flow diversion for treatment of anterior choroidal artery aneurysms.

Materials and Methods Retrospective review of a prospectively maintained neurointerventional database and identification of all patients who underwent flow diverter placement for treatment of an anterior choroidal artery aneurysm between April 2012 and March 2022. Patient demographics, procedural data, imaging follow up results and clinical outcome information was collected.

Results A total of 19 patients (15 females) were identified. Patient age ranged from 17 to 72 years (mean 55 years). Two aneurysms were previously treated with coil embolization but showed recanalization. Mean aneurysm diameter (largest dimension) was 3.5 mm. Eighteen patients were treated with a pipeline embolization device and 1 patient with a Surpass Streamline flow diverter. One single flow diverter was implanted 18 cases. One case required placement of a second device in telescopic fashion due to distal fore shortening of the device and uncovering of the aneurysm neck. Additional coiling was performed in one case. All patients were maintained on dual antiplatelet therapy for at least 6 months. No thromboembolic complications were encountered. Two patients did not have any follow-up exam. Six-month follow-up angiogram was available in 17 patients and showed complete occlusion in 12 cases (70.6%), near complete occlusion in 4 cases (23.5%) and partial occlusion in 1 case (5.9%). One patient with near complete occlusion progressed to complete aneurysm occlusion at 6 months. Another patient with near complete occlusion at 6 months showed stable occlusion status at 1 year follow up. Two patients with near complete and one patient with partial aneurysm occlusion at 6 months are not yet due for another follow up. Nine patients underwent a 12-month follow-up and 4 patients were seen for a 3-year diagnostig angiogram follow-up. No delayed complications were observed.

Conclusion Flow diversion for anterior choroidal artery aneurysms is a safe and effective treatment options.

Disclosures O. Asgari: 1; C; 2021 Flinn Foundation Medical Technology Seed Grant. B. Fennell: None. N. Norris: None. A. Ducruet: 2; C; Medtronic, Stryker, Oculus, Koswire, Cerenovus. 4; C; Aneuvas Technologies Inc. 5; C; Barrow Neurological Institute. T. Becker: 1; C; 2021 Flinn Foundation Medical Technology Seed Grant. 4; C; Aneuvas Technologies Inc. 5; C; Northern Arizona University.

Abstract P-013 Figure 1  a) FPR results from theoretical estimation, benchtop modeling, and Computational Fluid Dynamic (CFD) simulation. b) Balloon component of the balloon-stent design c) Ultra complaint coated stent.

Abstract P-014 10-YEAR SINGLE-CENTER EXPERIENCE WITH FLOW DIVERSION FOR TREATMENT OF ANTERIOR CHOROIDAL ARTERY ANEURYSMS

A Kuhn, J Singh, F Massari, A Puri*. Division of Neurointerventional Radiology, Department of Radiology and New England Center for Stroke, University of Massachusetts, Worcester, MA

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P-014

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P-015 IMPLEMENTATION OF A COGNITIVE DYSFUNCTION SCREENING PROTOCOL AFTER ANEURYSMAL SUBARACHNOID HEMORRHAGE

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Background Implementation of a standardized cognitive assessment strategy after aneurysmal subarachnoid hemorrhage (aSAH) has not been reported in the literature, despite frequency of post-aSAH cognitive impairment and recommendations to perform cognitive assessment on all stroke patients. The aim of this study is to implement an evidence-based protocol for cognitive dysfunction screening and management after aSAH.

Methods A cognitive dysfunction screening protocol was developed, which included the Montreal Cognitive Assessment (MoCA) tool. Patients with identified cognitive dysfunction defined as MoCA score <26 were referred to neurocognitive rehabilitation and those with MoCA score 26–29 were referred for neuropsychological evaluation. The modified Rankin scale (mRS) was also used to assess functional status. Following a peer-led education session with nurses and physicians, the protocol was implemented over a six-month period in the Cerebrovascular Clinic associated with a large academic medical center.
Results A total of 20 patients were seen for post-hospital follow-up after aSAH between February 1 and July 31, 2021. Patients were included if the appointment was in-person, they spoke English, and were able to follow commands. Of the 16 patients included, 93.8% (15) underwent cognitive screening, with mean MoCA score 21 and mean mRS score 1.6. Clinician compliance with the protocol for cognitive dysfunction screening and management was observed in 93.8% of eligible patient encounters. In the 86.7% (13) of study patients who had cognitive impairment (MoCA <26), the mean mRS was 1.8. For patients (2) without cognitive impairment, the mean mRS was 1.0. There was no statistically significant difference in mRS between those with and without cognitive dysfunction.

Conclusion We successfully implemented an evidence-based screening protocol for cognitive dysfunction after aSAH. Most of these patients did exhibit cognitive dysfunction using the MoCA despite a good functional recovery, defined as mRS score ≤2. Screening only with the mRS is inadequate to identify the substantial cognitive dysfunction within this patient population. Further research is necessary to understand the impact of early cognitive intervention on long term outcomes for patients with cognitive impairment following aSAH.


P-016 PRELIMINARY RESULTS OF A MULTICENTER STUDY OF ENDOVASCULAR AND MICROSURGICAL TREATMENT FOR 679 MIDDLE CEREBRAL ARTERY BIFURCATION ANEURYSMS

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Introduction Though an increasing number of aneurysms have been treated with neurointervention in the last decades, those located at the middle cerebral artery bifurcation (MCAb) remained treated mostly with microsurgery. In the recent years, many new alternatives have been added to the endovascular armamentarium, and are yet to be directly compared. The current study is a multicenter experience of microsurgical and endovascular treatment of MCAb aneurysms.

Methods Databases of 8 US centers were retrospectively reviewed. We included MCAb aneurysms treated with microsurgical clipping (MC), simple coil (SC), stent-assisted coil (SAC), flow-diversion (FD) and flow disruption (FDr; e.g Woven EndoBridge device). Characteristics of patients and aneurysms, complications, clinical and angiographic follow-up were extracted and compared among these groups.

Results 679 aneurysms were included (509 MCs, 20 FDs, 81 SCs, 47 SACs, and 25 FDr). There were no differences in age, sex, and comorbidities. Mean aneurysm height and dome width were not different, but neck width was significantly larger (P=0.003) in the FD (3.32 mm). In unruptured aneurysms: intraoperative thromboembolic events, aneurysm rupture and vessel injury were not significantly, but SAC had significantly (P=0.004) higher rates of technical issues (10.3%); in-hospital complications and mortality were not different; thromboembolic complications during follow-up was significantly higher (P<0.001) in FD (21.1%); aneurysm rupture during follow-up was also significantly higher (P=0.02) in FD (5.3%). In ruptured aneurysms: intraoperative thromboembolic complication were significantly (P=0.003) higher in SAC (22.2%); intraoperative rerupture, vessel injury and technical issues were not different; the rate of in-hospital thromboembolic complications was significantly (P=0.029) higher in FDr (33.3%), while there was no difference in vasospasm and hemorrhagic events; in-hospital mortality was not different; there were no differences in thromboembolic events and rerupture during follow-up. Overall (ruptured and unruptured), median length of angiographic follow-up was significantly (P=0.03) longer in aneurysms treated with MC (22 months). Retreatment rate was significantly (P=0.002) higher in SC (15.6%). The rate of complete occlusion was significantly (P=0.01) higher in MC (80.6%).

Conclusions In this multicenter study of MCAb aneurysms, neck width and rupture status seemed to have played a role in modality choice, but the majority was still treated with microsurgery. Stent-assisted coiling appears to have comparable safety in unruptured cases but with greater technical difficulty at this specific location. Though flow-diversion is feasible, it seems to carry a higher risk of ischemic events and delayed rupture at the MCA bifurcation. In ruptured cases, SAC and FDr had a high rate of periprocedural thromboembolic complications. In spite of that, in-hospital mortality did not seem to be different among treatments regardless of rupture status. Better angiographic results and lower retreatment rates were achieved with MC.