

adverse events, long term angiographic results and clinical outcomes.

Results 140 treatments on 124 MCA aneurysms were performed in 111 patients (18 M1, 91 M1/2 bifurcation, 11 M2, 4 M3 or M4 aneurysms). 45% treated were ruptured aneurysms. 66 were treated with coils alone, 5 with stent-assisted coiling, 19 with a combination of coils and flow diverting stents, 47 with flow diverting stents alone, and 3 with WEB devices. Occlusion rates were 81%, 90% and 88% at 6 months, 2 years and 5 years respectively. Specifically, occlusion rates for aneurysms treated with Pipeline flow diverting stents were 92% at 6 months and 100% at 1 year with no subsequent recurrence. All cause procedure-related morbidity was 3.6% (5/140) and mortality 1.4% (2/140).

Conclusion Endovascular treatment of MCA aneurysms results in high rates of complete aneurysm occlusion with low rates of complication. Treatment with flow diverting stents have resulted in high durable aneurysm occlusion rates.

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E-235

USE OF 45 MG TWICE DAILY TICAGRELOR WITH 81 MG ASPIRIN FOR ENDOVASCULAR TREATMENT OF UNRUPTURED INTRACRANIAL ANEURYSMS: A SINGLE CENTER EXPERIENCE

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Introduction Stent assisted coiling (SAC) and Flow diverter (FD) placement are commonly used techniques for the treatment of unruptured intracranial aneurysms (UIA). Stents and FDs require dual antiplatelet therapy (DAPT) to prevent in-stent thrombosis. The selection of medications is mainly operator dependent. Cardiovascular literature suggests that the use of Aspirin 81 mg in conjunction with low dose Ticagrelor (45 mg twice daily) is superior than the use of Clopidogrel 75 mg and Aspirin 325 mg.

Methods We performed a retrospective chart review of patients who underwent treatment of UIA at our institution using SAC or FD from 2016–2019. The patients who are on anticoagulation or did not have a pre-procedure P2Y12 inhibition assay were excluded. The patient group receiving Brilinta 45 mg twice daily with aspirin 81 mg daily (Group 1) was compared with the patient group receiving Plavix 75 mg daily with aspirin 325 mg daily (Group 2). The primary outcome was defined as intraoperative or acute (during hospitalization) postoperative stroke. Secondary outcomes included ischemic stroke after discharge within one year from treatment, and differences in P2Y12 inhibition assay values between the two groups.

Results A total of 111 patients were identified that met the inclusion criteria, 42 (37.8%) in Group 1, and 69 in Group 2 (62.2%) protocol. There was no significant difference in the primary outcome between the two groups; Group 1, (2 patients, 4.7%), and Group 2 (1 patient, 1.4%) ($p=0.11$). All the primary end point events in both groups were related to

FD. Clinically significant ischemic stroke after discharge within one year was also not significantly different (2 patients (4.7%) in Group 1 Vs. 3 patients (4.3%) in Group 2, $p=0.277$). The P2Y12 inhibition assay level was significantly lower in Group 1, when compared to Group 2 (71.6 Vs 94.8, $p=0.027$). There was no significant difference in the number of patients achieving a therapeutic value for the P2Y12 inhibition assay value (<194 at our institution's laboratory) (83.3 in Group 1 Vs. 82.6%, $p=0.92$). One patient in Group 2 experienced a clinically significant groin hematoma, and one patient in the same group experienced a significant gastrointestinal bleed. No significant hemorrhagic events occurred in patients belonging to Group 2. There was also no instance of remote intracerebral hemorrhage or post treatment aneurysm rupture in either group.

Conclusion Lower preoperative P2Y12 assay values from the use of 45 mg twice daily Ticagrelor with 81 mg Aspirin for treatment of UIAs with SAC or FD placement did not result in decreased rates of perioperative stroke or delayed stroke rates within 1 year of surgery when compared to the well established use of Clopidogrel 75 mg and Aspirin 325 mg.

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E-236

TECHNICAL ASPECTS OF COMBINED INTRASACULAR AND ENDOLUMINAL FLOW DIVERSION

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Introduction The concurrent use of the Pipeline Embolization Device (PED) with coils has been shown to be beneficial when treating complex or large aneurysms. Alternatives to coiling as an adjunctive treatment are currently limited. The FDA recently approved the Woven EndoBridge (WEB) (Microvention, Aliso Viejo, California) device as an intrasaccular flow diverter for wide neck bifurcation aneurysms (FDA). Here in we present the technical aspects of combined WEB plus PED for the treatment of intracranial aneurysms.

Methods A retrospective chart review of all patients treated via intrasaccular flow diversion at a single institution over the last 12 months was done. In total 34 aneurysms were treated via WEB intrasaccular flow diversion; however, only 7 of these aneurysms were treated with the pipeline embolization device as well. Technical aspects of each procedure were recorded.

Results In total 6 patients underwent the treatment of 7 aneurysms via combined intrasaccular and endoluminal flow diversion. All aneurysms were treated in a single setting but for one patient. This patient came in with subarachnoid hemorrhage, had a WEB placed, and subsequently was found to have recanalized their aneurysm due to WEB compaction. This prompted placement of the a Pipeline 4 weeks after initial treatment. There were no complications associated with any treatment. Post embolization MRI/A showed no new infarcts in 3/7 patients and small punctate DWI changes in 4/7 patients with good stent flow in all cases. There were no bifurcation aneurysms: 5 posterior communicating, 1 superior hypophyseal, 1 vertebrobasilar. The majority of the aneurysms required steam shaping of the Via deployment catheter in order to place the WEB orthogonally to the aneurysm dome.

The radial force of the Pipeline was able to push a herniated WEB device into the aneurysm in all but one case where a balloon was employed to angioplasty the stent.

Conclusions We believe this is the first series reporting combined use of WEB and Pipeline for the treatment of intracranial aneurysms. Treatment failure rates of PED as a stand-alone treatment have been reported to be from 11.9% to 20%. Intracascular flow diversion with the WEB device allows for increased metal coverage at both the aneurysm neck, preventing inflow, and the aneurysm dome, protecting from rupture. For larger aneurysms the WEB device theoretically protects from a destabilizing mural thrombus. Also, in larger aneurysm were WEB devices have been shown to be less enduring, endoluminal remodeling provides a durable treatment. This series demonstrates the WEB device as a feasible and safe alternative to adjuvant coiling for achieving immediate intracascular flow diversion when using the PED.

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E-237 **RUPTURED BLISTER-TYPE CEREBRAL ANEURYSM TREATED WITH FLOW DIVERSION USING A NOVEL ANTIPLATELET AGENT CANGRELOR**

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Introduction Blister type aneurysms are challenging to treat surgically and endovascularly with the ideal treatment approach debated. Recently, endovascular procedures, specifically, flow diversion, gained popularity in treating blister aneurysms; however, the need for dual antiplatelet therapy arouses concern, especially in blister aneurysms with their high risk of intraprocedural rupture that may require further intervention. Cangrelor is a novel intravenous P2Y12 platelet receptor antagonist with reversible binding and rapid onset and offset of action. These characteristics are appealing for use in endovascular procedures and may mitigate some concerns associated with other P2Y12 receptor antagonists.

Case Summary This is a 42-year old female who presented with sudden onset of severe headache, nausea, and vomiting. On exam, she was drowsy with no focal neurologic deficits. Initial CT head, CT angiogram, and digital subtraction angiography (DSA) were negative for aneurysm or other vascular pathology. On post bleed day (PBD) 7, repeat DSA demonstrated severe vasospasm and a nonspecific ectatic segment along the distal intracranial internal carotid artery (ICA). On daily angiograms for intraarterial spasmolysis, the ectatic segment remained unchanged until PBD 14, when it began to enlarge and exhibited rapid growth over several days.

Management We treated this patient endovascularly using a pipeline flow diversion device. Immediately prior to pipeline placement, in addition to aspirin and heparin, we also began infusing cangrelor, a novel, reversible, intravenous P2Y12 platelet receptor antagonist with rapid onset and offset of action. After the procedure, she transitioned from cangrelor to prasugrel. Our patient tolerated the procedure well, and on post-procedure day 4, she was discharged home on daily prasugrel and aspirin. To date, our patient is doing well clinically, and her pipeline appears patent with no evidence of aneurysm recurrence.

Conclusion This is one of the first reports of the use of cangrelor in neuro-endovascular procedures. This is important as cangrelor has the potential for improving the safety of endovascular procedures especially in patients where treatment is associated with high risks of intraprocedural bleeding or other complications that may require further intervention, such as in treatment of blister aneurysms.

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E-238 **RELATIVE ANGLE OF DEFLECTION CORRELATES WITH ANEURYSMAL RUPTURE STATUS IN POSTERIOR COMMUNICATING ARTERY ANEURYSMS**

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Background The ability to prognosticate rupture for cerebral aneurysms is paramount to prevent the risks inherent to open clipping or endovascular coiling. The goal of this study was to create a mathematical model to predict the probability of rupture incorporating the salient biomorphometric characteristics of the aneurysm.

Methods Posterior communicating artery aneurysms confirmed by computed tomography angiography were subjected to three-dimensional reconstruction to ascertain the following biomorphometric parameters: height, width, neck size, aspect ratio, bottle neck factor, aneurysm angle, deflection angle, neck angle, and proximal internal carotid artery- distal internal carotid artery angle. Significant factors related to rupture were determined and a forward stepwise binary logistic regression was performed to establish the log-odds of rupture.

Results A total of 101 aneurysms (80 ruptured and 21 unruptured) were included. Of the six statistically significant biomorphometric parameters measured, aneurysm deflection angle and aspect ratio both were considerably larger ($p=0.001$) in ruptured cases compared to unruptured ones. Binary logistic regression applied to the dataset demonstrated a 96% sensitivity and 89% overall accuracy.

Conclusions This updated binary logistic regression model was able to identify aneurysm rupture more robustly when compared to previous models. Future studies combining patient specific characteristics, along with previously determined biomorphometric parameters may further enhance this model.

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E-239 **INTRA-ANEURYSMAL FLOW AFTER TREATMENT WITH THE WOVEN ENDOBRIDGE (WEB) MEASURED BY QUANTITATIVE DIGITAL SUBTRACTION ANGIOGRAPHY**

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Introduction The Woven EndoBridge (WEB) is an intra-saccular flow-diverting device that is rapidly becoming popular in the treatment of wide-neck bifurcation aneurysms. However,