E-187 COMPARATIVE ANALYSIS OF PROCEDURE RELATED MORBIDITY AND MORTALITY BETWEEN PIPELINE, PIPELINE FLEX EMBOLIZATION DEVICE AND SURPASS

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10.1136/neurintsurg-2020-SNIS.218

Introduction The purpose of this study is to compare peri-procedural complication rates in patients at a single academic medical center treated with Surpass or Pipeline/Pipeline Flex flow diverter stents.

Methods We performed a retrospective chart review of patients who underwent placement of a flow diverter stent from the last 3 years. We evaluated major complications including mortality, stroke, intracranial hemorrhage (ICH) or failure of device deployment, and minor complications including radial and groin access site hematoma, retroperitoneal hematoma (RPH), arterial dissection. We also recorded hospital course complications including urinary tract infection (UTI), pneumonia (PNA) and deep vein thrombosis (DVT). We examined the length of hospital stay (LOS), and disposition at discharge. We adjusted for the following variables: Patient age, gender, pre-existing medical comorbidities, laterality, anatomic location of treated aneurysm, device utilized, number of devices deployed per case, longest length and diameter of all devices deployed per case.

Results We identified 23 Surpass cases and 99 pipeline cases performed on a total of 106 patients. The median number of devices used for Surpass was 1 (IQR 1,1) compared to Pipeline/Pipeline Flex 1 (IQR 1,3) which was statistically significantly different (p=0.0003)We found no significant difference in mortality(p=0.4949), stroke(p=0.3565), intracerebral hemorrhage(p=0.3310), or aborted procedures(p=0.4021). There was no significant difference in minor complications or hospital complications. The median length of stay was 1 day for both devices. Interquartile length for Surpass 1–3(75th%); and Pipeline 1–26(75th%), mann-whitney p=0.238 between the medians.

Conclusions These results suggest that Surpass is non-inferior to Pipeline in regards to major and minor peri-procedural complications. Pipeline on average required a statistically significant more number of devices per procedure. There was no difference in the length of stay between Surpass and Pipeline. Further prospective data is needed to further confirm this hypothesis.

Disclosures C. Feigen: None. **N. Haranhalli:** None. **R. Holland:** None. **A. Brook:** None. **D. Altschul:** 2; C; Microvention, Stryker.

E-188 HOW FAR CAN WE GO? – WEB TECHNOLOGY FOR THE TREATMENT OF SIDEWALL IA. INITIAL EXPERIENCE IN A SINGLE INSTITUTION

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10.1136/neurintsurg-2020-SNIS.219

Introduction Few years after introduction, Flow disruption technology using WEB device has been used safely for the treatment of wide-neck bifurcation aneurysms, but the use of this endosaccular approach to treat side-wall lesions in terms of feasibility, safety, stability and aneurysm occlusion rate after this treatment is unknown.

Materials and Methods Patients were carefully selected IRB approved. Clinical, anatomical, angiographical and technical considerations were analyzed. Procedure related complications, procedural time, antiplatelet therapy requirements. Web Occlusion Scale (WOS) was used for the Follow-up.

Results From August 2017 and March 2020 a total of six wide-necked, sidewall, IA were selected for WEB treatment. Aneurysm mean size 5.3 mm in width and 5.8 in height. Aneurysm Location: ICA 3 cases (two Carotid-ophtalmic segment, one AChoA segment), Superior Cerebellar Artery SCA in two patients (33%), and one impressive case in posterior circulation associated with a basilar fenestration next to VBJ. Four cases were unruptured (66%), and two cases with history of SAH. DAPT used pre operatively in all cases but none patient remain under antiplatelets after procedure. Technical success of 100%. Mean procedure time: 24 min. None related procedure complications recorded. Immediately angiographic occlusion was evidenced in 3 cases (two SCA and one ICA). Radiological Follow up (ranging 1-26 months) available in 4/6 showed a WOS adequate occlusion in all cases.

Conclusion In our early experience using WEB device to treat different conditions than bifurcation IA´s, the results showed that endossacular approach was feasible in highly selected patients, safety profile in agreement with previous bifurcation experiences and very effective to treat challenge cases with a high probability of recurrence or therapeutic failure. Larger series and controlled studies are required to expand its indications in a near future.

Disclosures B. Pabon Guerrero: None. **J. Gutierrez Banos:** None. **M. Patino Hoyos:** None. **V. Torres:** None. **L. Moreira Ponce:** None. **O. Vargas:** None. **J. Mejia:** None.

E-189 SYSTEMATIC REVIEW AND META-ANALYSIS OF VESSEL WALL IMAGING OF INTRACRANIAL ANEURYSMS: A SECOND LOOK

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10.1136/neurintsurg-2020-SNIS.220

Our group has previously performed a systematic review and meta-analysis regarding the utility of vessel wall imaging with high-resolution magnetic resonance imaging which demonstrated an association between intracranial saccular aneurysm wall enhancement and aneurysm instability. Given the likely increased utilization of vessel wall imaging technology in the time since our previous review, we sought to perform an updated analysis of the association between aneurysm wall enhancement and unstable intracranial aneurysms. This study was performed according to Preferred Reporting Items for Systematic reviews and Meta-Analyses guidelines. Eligible studies were identified through a comprehensive literature review. A meta-analysis was conducted to examine the association between aneurysm wall enhancement and aneurysm instability by using a random-effects model. Seven studies constituting 728 saccular aneurysms in 564 patients were included. Aneurysms that showed vessel wall enhancement had statistically significant higher odds of being unstable (odds ratio [OR]: 10.7; 95% confidence interval [CI]: 6.8–16.8; I^2: 64.3%). The

sensitivity, specificity, positive predictive value, and negative predictive value of vessel wall imaging in identifying unstable aneurysms were 87.2% (81.8–91.5), 61.1% (56.8–65.3), 46.5% (43.5–49.4) and 92.5% (89.6–94.7), respectively. A statistically significant association between vessel wall enhancement and aneurysm instability is once again demonstrated. The lack of wall enhancement is a strong predictor of aneurysm stability. Vessel wall imaging may represent a useful tool in guiding the management of intracranial aneurysms.

Disclosures A. Larson: None. **G. Lanzino:** None. **W. Brinjikji:** None.

E-190 DETERMINING THE OPTIMAL TIMING OF DUAL ANTIPLATELET THERAPY FOR FLOW DIVERSION

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10.1136/neurintsurg-2020-SNIS.221

Introduction The flow diverter is a unique and important tool in the endovascular treatment of aneurysms. However, its use requires patients to be on dual antiplatelet therapy to prevent thromboembolic complications. The duration of dual antiplatelet therapy has not been standardized due to the relative risks of thromboembolic (too short) and hemorrhagic (too long) complications. The objective of this study is to compare the thromboembolic and hemorrhagic complication rates of patients on a shorter versus a longer course of dual antiplatelet therapy.

Methods Patients undergoing flow diversion were prospectively enrolled in an institutional registry. After 3 to 6 months of dual antiplatelet therapy, patients were converted to aspirin 325 mg up to the 12 month period. Patients on dual antiplatelet therapy for <100 days were included in the short cohort while those on dual antiplatelet therapy for ≥100 days were included in the long cohort. The proportions of thromboembolic and hemorrhagic complications in these respective cohorts were compared using the Fisher's exact test.

Results A total of 110 cases were eligible (mean age: 56.7 years). The majority were female (81.8%) and received the Pipeline Embolization Device (83.6%). 7.3% of patients presented with ruptured aneurysms. More than 1 flow diverter was required in 7.3% of cases. The majority (90.9%) of the dual antiplatelet regimen involved aspirin 325 mg and clopidogrel 75 mg. Most patients were on dual antiplatelet therapy between 3–6 months in duration prior to transitioning to aspirin monotherapy (325 mg). In the shorter duration cohort, the thromboembolic complication rate was 9.3% compared to 12.5% in the longer duration cohort (p=0.76). Similarly, the hemorrhagic complication rate was 5.6% in the short duration cohort compared to 14.3% in the longer duration cohort (p=0.20).

Conclusion A shorter duration of dual antiplatelet therapy after flow diversion was not associated with a higher thromboembolic complication rate. While the duration of antiplatelet therapy should be personalized for each patient, transitioning to monotherapy after 3 months is likely safe.

Disclosures V. Ban: None. **M. Pernik:** None. **T. Binyamin:** None. **J. Corona:** None. **Y. Kim:** None. **R. de Oliveira Sillero:** None. **R. Novakovic:** None. **G. Pride:** None. **J. Barr:** None. **J. White:** None. **H. Batjer:** None. **B. Welch:** 2; C; Medtronic, Stryker, MicroVention. 6; C; Peter Lazic.

E-191 THE SAFETY AND EFFECTIVENESS OF THE LVIS STENT FOR THE TREATMENT OF ACUTELY RUPTURED INTRACRANIAL ANEURYSMS WITHIN 24 HOURS: A MULTICENTER RETROSPECTIVE STUDY

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10.1136/neurintsurg-2020-SNIS.222

Background and Purpose Stent-assisted coiling is a feasible and effective treatment of ruptured aneurysms and is increasingly used in acutely ruptured aneurysms. The Low Profile Visualized Intraluminal Support (LVIS) stent is a self-expanding, retrievable, single-wire braid microstent system. Very small numbers of acutely ruptured aneurysms are reported. We aimed to evaluate the safety and effectiveness of the LVIS stent for the treatment of ruptured intracranial aneurysms within 24 hours of ictus compared with treatment between 25 and 72 hours.

Methods This was a multicenter retrospective study of acutely ruptured intracranial aneurysms treated with the LVIS stents. Acutely ruptured aneurysms were treated with LVIS stent-assisted coiling within 72 hours after the initial subarachnoid hemorrhage. 110 consecutive patients with ruptured aneurysms underwent LVIS stent-assisted coiling from January 2017 to December 2017. The timing of treatment was grouped into the treatment within 24 hours of ictus and the treatment between 25 and 72 hours. Baseline characteristics, perioperative complications, angiographic results, and clinical outcomes were compared between the two groups.

Results A total of 101 patients with 101 acutely ruptured aneurysms were included in this study. 16(15.8%) patients had multiple aneurysms. 49 (48.5%) patients underwent stent-assisted coiling within 24 hours. There were no statistically significant differences in age, sex, WFNS grade, Fisher grade, aneurysm location, and aneurysm characteristics. The intraoperative complications occurred in 7 patients (6.9%) and postoperative ischemia occurred in 5 patients (5%). Perioperative complications occurred in 2 (4.1%) patients treated within 24 hours compared with those in 10 (19.2%) treated between 25–72 hours (P=0.019). The multivariate logistic regression analysis of predictor of perioperative complications showed that preoperative WFNS grade (P=0.017) and timing of treatment (P=0.042) were independent predictors of perioperative complications after stenting. The total aneurysm occlusion rate