

having 33 μm diameter and 145° braid angle and Device-2 – 72 wires having 32 μm diameter with a 115° braid angle. Each device had interwoven platinum wires for radio-opacity. The aneurysm occlusion rate was assessed during final DSA at 10, 20, 30 and 60 day ($n = 2$ per device per timepoint) using a 0–4 score scale.¹ Implanted vessels were analyzed with scanning electron microscopy (SEM) for tissue coverage and endothelialization (scored: 0–5 from no endothelial cells present, 0, to completely mature endothelial layer, 5) and immunogold labeling technique identifying CD 34+ progenitor cells.

Results Baseline characteristics (e.g., aneurysm size, neck size, PRU, parent vessel diameter) were not different between the two groups ($p > 0.1$). CD34 + endothelial progenitor cells (EPCs) were present on both devices (Figure 1) at the center of aneurysm neck and along the entirety of the devices at all timepoints. There was no significant difference in complete aneurysm occlusion rates between the devices; however, complete or near complete occlusion was more frequently observed in aneurysms with neck ≤ 4.2 mm ($p = 0.008$). The total tissue coverage over the surface of device-1 and device-2 was $72 \pm 17.4\%$ and $76.9 \pm 13.5\%$, respectively ($p > 0.05$). The endothelial cell growth over the surface was time dependent for device-2 (Spearman’s rho = 0.86, $p = 0.013$), but not device-1 (Spearman’s rho = 0.59, $p = 0.094$). Endothelialization score was marginally correlated with the distance from the aneurysm neck for device-1 (Spearman’s rho = 1, $p = 0.083$), but not for device-2 (Spearman’s rho = 0.8, $p = 0.33$).

Conclusion Our study supports the hypothesis that the bone marrow derived CD34+ progenitor cells contribute to flow diverter endothelialization and EPCs are present throughout the healing process up to 60 days. Although there was no difference in complete aneurysm occlusion, we have preliminary evidence of temporal and spatial dependence of endothelialization on FD design. Future FD designs can incorporate these analyzes during development to accelerate in situ tissue response to the scaffold.

REFERENCE

1 Darsaut TE, et al. *AJNR Am J Neuroradiol* 2012;**33**:2004–2009.

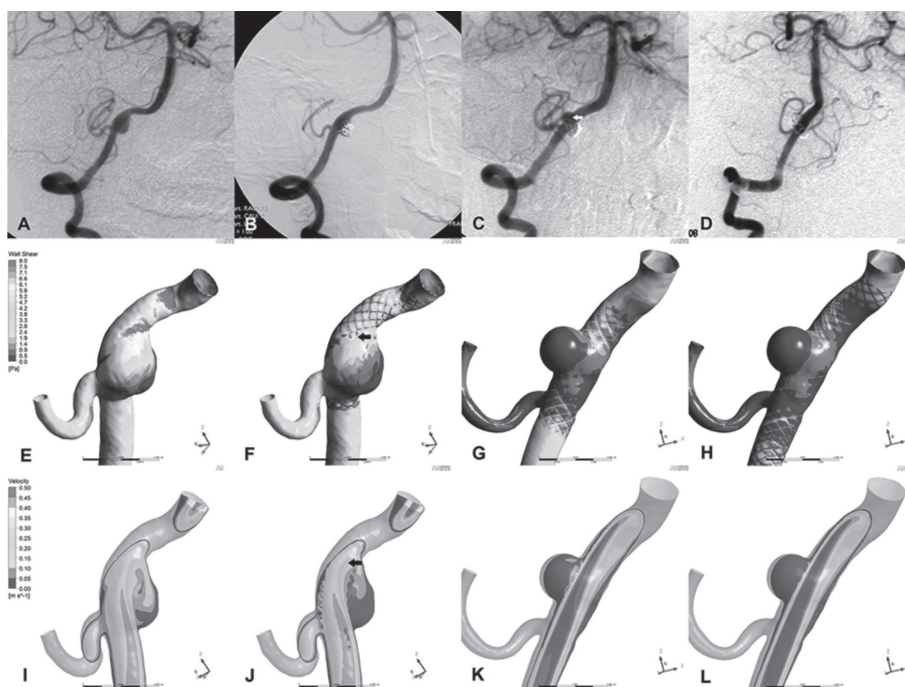
Disclosures M. Marosfoi: None. E. Langan: None. L. Strittmatter: None. K. van der Marel: None. J. Arends: 5; C; Stryker Neurovascular. S. Loganathan: 5; C; Stryker Neurovascular. G. Hendricks: None. A. Puri: 1; C; Stryker Neurovascular, Medtronic Neurovascular. 2; C; Codman Neurovascular, Medtronic Neurovascular, Stryker Neurovascular. A. Wakhloo: 2; C; Stryker Neurovascular. M. Gounis: 1; C; Stryker Neurovascular, Medtronic Neurovascular. 2; C; Stryker Neurovascular, Codman Neurovascular.

O-017 RECURRENT INTRACRANIAL VERTEBRAL ARTERY DISSECTING ANEURYSMS AFTER STENT-ASSISTED COIL EMBOLIZATION-A COMPUTATIONAL FLUID DYNAMIC ANALYSIS

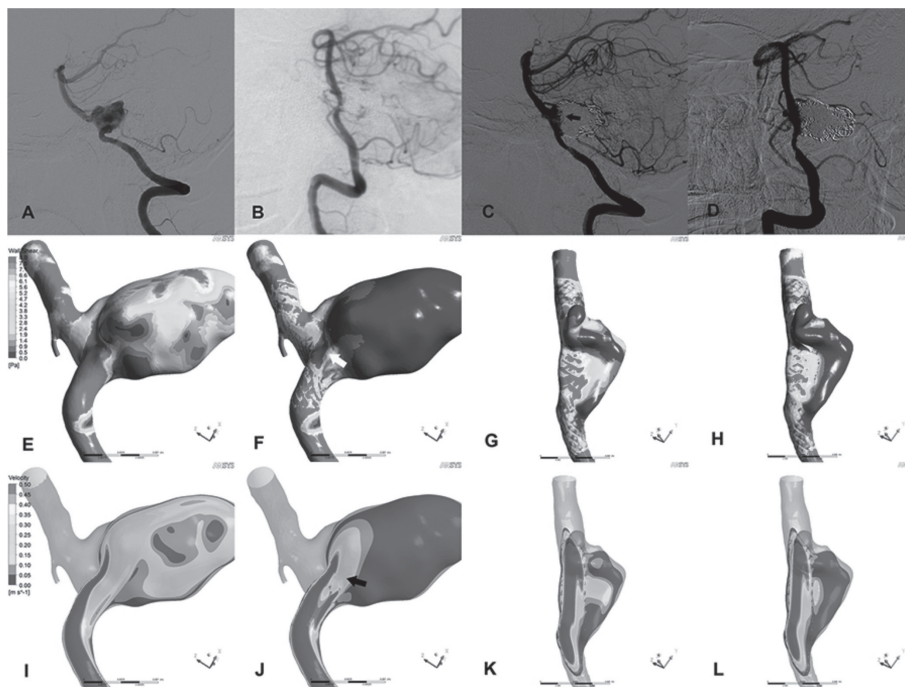
J Liu, ¹L Jing, ¹Y Zhang, ¹Y Song, ¹Y Wang, ¹C Li, ¹Y Wang, ¹S Mu, ²N Paliwal, ²H Meng, ³I Linfante, ¹X Yang. ¹Department of Interventional Neuroradiology, Beijing Neurosurgical Institute and Beijing Tiantan Hospital, Beijing, China; ²Toshiba Stroke and Vascular Research Center, and Department of Mechanical and Aerospace Engineering, University at Buffalo, The State University of New York, Buffalo, NY; ³Miami Cardiac and Vascular Institute and Baptist Neuroscience Center, Miami, FL

10.1136/neurintsurg-2016-012589.17

Introduction Intracranial vertebral artery dissecting aneurysms (VADAs) tend to recur despite successful stent-assisted coil embolization (SACE). Computational fluid dynamic (CFD) can assess hemodynamic alterations in wall shear stress (WSS) and velocity in the aneurysmal wall. CFD has proven to be useful in evaluating aneurysmal formation, growth and rupture. Our aim was to evaluate the hemodynamic patterns of VADA’s recurrence by CFD.



Abstract O-017 Figure 1



Abstract O-017 Figure 2

Materials and methods Between September 2009 and November 2013, all consecutive patients presenting with recurrent VADAs after SACE in our institutions were enrolled in the study. Recurrence was defined as recanalization and regrowth. We assessed the hemodynamic alterations in WSS and velocity by CFD simulation after initial SACE and subsequently after retreatment of aneurysms that recurred.

Results In the study period, 112 consecutive patients with intracranial vertebralbasilar dissecting aneurysms (VBDAs) underwent endovascular treatment. Seventy-two of them were treated with SACE. Angiographic follow-up was available in 59 patients (81.9%). Recurrence was present in 10 patients (16.9%) and 6 needed retreatment. Finally, 5 patients with VADAs were included (1 was excluded because of inadequate 3D imaging). After initial treatment, three cases showed recanalization and 2 cases showed regrowth. In the 2 regrow cases, the 2 original aneurysms maintained complete occlusion, however de-novo aneurysm regrowth was confirmed near the previous site. Compared with 3 recanalised aneurysms, the completely occluded aneurysms showed high mean reductions in velocity and WSS after initial treatment (77.6% versus 57.7% in velocity, 74.2% versus 52.4% in WSS), however, remaining high WSS at region near the previous lesion where the new aneurysm originated. After the second retreatment, there was no recurrence in all cases. Compared with the 3 aneurysms that recanalised, the 4 aneurysms that maintained complete occlusion showed higher reductions in velocity (62.9%) and WSS (71.1%).

Conclusion Hemodynamics by CFD may be useful in predicting recurrence of VADAs after SACE.

Disclosures J. Liu: None. L. Jing: None. Y. Zhang: None. Y. Song: None. Y. Wang: None. C. Li: None. Y. Wang: None. S. Mu: None. N. Paliwal: 1; C; National Institutes of Health (R01 NS091075). H. Meng: 1; C; National Institutes of Health (R01 NS091075). I. Linfante: None. X. Yang: 1; C;

National Natural Science Foundation of China (Grant No. 81301003, 81171079, 81371315, 81471167 and 81220108007), Special Research Project for Capital Health Development (Grant No. 2014-1-1071).

O-018 SINGLE INSTITUTION EXPERIENCE WITH TWO FLOW DIVERTERS: A HEAD TO HEAD COMPARISON

A Paul, J Dalfino, J Yamamoto, A Boulos. *Department of Neurosurgery, Albany Medical Center, Albany, NY*

10.1136/neurintsurg-2016-012589.18

Introduction There has been an increasing use of flow diverting stents in the endovascular management of intracranial aneurysms which previously would have been considered difficult to treat. Currently there are two flow diverting stents available in the United States. The Pipeline Embolization Device™ (Covidien) was approved by the FDA in 2011 and the Flow Redirection Endoluminal Stent (FRED™, MicroVention) is currently involved in a clinical trial. There have been no comparisons of the two devices to date.

Materials and methods Patients treated with any means of Flow Diversion over a 2 year period were identified. Records and images were reviewed retrospectively. Statistics were calculated in Excel.

Results Twenty one aneurysms were treated in 19 patients using the FRED stent and 42 aneurysms were treated in 36 patients using a Pipeline stent. The age of the FRED patients was significantly higher than the Pipeline patients. There was no difference between in other demographic characteristics (Table 1).

Conclusion We present a single institutional experience with two flow diverting stents. There was no significant difference in neurological morbidity or mortality. There was a trend