Oral abstracts

O-001 PARASPINAL VEIN EMBOLIZATION FOR TREATMENT OF CSF-VEIN FISTULAS: TIPS, TRICKS, AND PITFALLS

¹T Huynh*, ¹D Miller, ²H Cloft, ²L Savastano, ²W Brinjikji. ¹Mayo Clinic, Jacksonville, FL; ²Mayo Clinic, Rochester, MN

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Introduction/Purpose Paraspinal venous embolization is emerging as a highly efficacious minimally invasive novel treatment for patients with cerebrospinal fluid venous (CSF-venous) fistulas. We sought to describe the technical nuances of transvenous embolization in our series of 35 treatments.

Materials and Methods Retrospective review of all patients undergoing endovascular paraspinal venous embolization of CSF-venous fistulas at two sites of single institution. Procedural details including venous access site, venous navigation, site of embolization, equipment and embolization material used, procedural technical outcome, and complications were reviewed.

Results 35 paraspinal vein embolization were performed in 33 patients with CSF-venous fistulas confirmed by digital subtraction myelography in all cases. All procedures had technical success in paraspinal vein embolization without immediate complication. Treatment targets ranged from C7 to L2. Venous access site was from right common femoral vein (27/35, 77%), left common femoral vein (5/35, 14%), cubital vein (3/35, 9%), and jugular vein (1/35, 3%). Venous navigation to the paraspinal vein including transit through azygous/hemiazygous (24/35, 68%), vertebral (6/35, 17%), and supreme intercostal (3/35, 9%) veins. Embolization with combination of Onyx 34 and/or 18 was used for all cases using DMSO-compatible catheters (Headway Duo or Echelon-10) or balloon-catheter (Scepter XC/C).

Conclusion Paraspinal venous embolization is a highly efficacious novel minimally invasive treatment for CSF-venous fistulas. Our review of procedures highlights important venous anatomy and technical nuances of transvenous navigation required for successful paraspinal venous embolization.

Disclosures T. Huynh: None. D. Miller: None. H. Cloft: None. L. Savastano: None. W. Brinjikji: None.

O-002 FLOW DIVERSION VS BYPASS SURGERY FOR COMPLEX ANEURYSMS TREATMENT: RESULTS OF A RANDOMIZED CLINICAL TRIAL

¹R Kiselev, ²D Andrey, ^{1,3}K Orlov*. ¹Meshalkin National Medical Research Center, Novosibirsk, Russian Federation; ²Federal Center of Neurosurgery, Novosibirsk, Russian Federation; ³Federal Center for Brain Research and Neurotechnologies, Moscow, Russian Federation

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Background Complex aneurysms are ones with a broad neck (dome/neck ratio < 2), with no neck (fusiform), partially thrombosed, with side branching, or giant ones. The prevalence of these lesions ranges from 5 to 14.4% of all anterior circulation aneurysms. There is no universal strategy for complex aneurysm treatment, so the choice of surgical technique is based upon surgeon experience and preference.

Objective To reveal whether clinical outcomes of flow diversion are superior to bypass surgery in the treatment of anterior circulation complex aneurysms.

Methods An open, prospective, randomized, parallel-group, multicenter study of complex aneurysms treatment (clinicaltrials.gov NCT03269942) was conducted. The patients who met inclusion criteria were randomized into 2 groups with 1:1 allocation (55 patients each) to undergo flow diverter (FD) implantation or bypass surgery, respectively. Clinical examination and DSA were performed in 6 and 12 months to assess primary (clinical outcome by mRS score) and secondary endpoints (aneurysm occlusion, reoperation rate).

Results Favorable clinical outcome was maintained in 52 patients (94.5%) from the FD group during 12 months follow-up. In the bypass group were 39 (70.9%) patients with favorable outcomes ($p = 0.001$). The morbidity and mortality rates were 5.5% and 1.8% for the FD group and 25.4% and 3.6% - for the bypass one. Complete aneurysm occlusion in 6 months was achieved in 46.3% of the patients from the FD group and in 94.3% from the bypass one ($p < 0.0001$). The occlusion rate in 12 months was 64.8% and 98.1% for the FD and bypass groups, respectively ($p < 0.001$). There were no significant differences between groups in the rate of hemorrhagic complications ($p = 0.297$), but an incidence of ischemic complications was higher in the bypass group ($p = 0.004$).

Conclusion The study has demonstrated superior clinical outcomes for flow diversion in comparison with bypass surgery in treatment of complex aneurysms. At the same time, being associated with a significantly lower early obliteration rate, flow diversion put patients at risk of prolonged dual antiplatelet regimen and delayed rupture.

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O-003 ADEQUATE LATERAL COMPRESSION IS A STRONG INDEPENDENT PREDICTOR OF ANEURYSM OCCLUSION AND RETREATMENT AFTER ENDOVASCULAR TREATMENT WITH WEB

J Delgado Almandoz*, Y Kayan, A Copelan, J Scholz. Neurointerventional Radiology, Abbott Northwestern Hospital, Minneapolis, MN

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Purpose To determine the effect of lateral compression on aneurysm occlusion after endovascular treatment of intracranial aneurysms with the Woven Endo-Bridge (WEB) device.

Methods We retrospectively reviewed intracranial aneurysms treated with WEB without adjunctive flow-diverter or coil usage at our institution. Baseline patient and aneurysm characteristics were collected. Aneurysm occlusion at last follow-up was determined by 3 neurointerventionalists using the WEB occlusion scale. Lateral compression (LC) was determined by (1) measuring the average implanted WEB width at its equator in 2 orthogonal working projections, and (2) subtracting it from the nominal WEB width ($LC = \text{nominal} - \text{average implanted WEB width}$). The patient cohort was categorized according to empirically-derived, technically-achievable adequate LC thresholds (table 1). Univariate analysis was conducted using Chi-Square or Fisher's Exact test. Independent predictors of complete and adequate aneurysm occlusion at last follow-up as well as aneurysm retreatment