vessel (such as a ThP or an AchA) between January of 2014 and January of 2022. Males were more represented than females in our cohort (16 (57.1%) vs 12 (42.9%)). Of these 28 patients, 14 (50%) are currently undergoing treatment, 13 (46.4%) have achieved at least 95% and up to complete cure of the VOGM, and one patient (3.6%) passed away. A total of 46 thalamoperforator embolizations were performed during the treatment course of our cohort with an average of 1.64 (SD: 1.13) treatments per patient. A total of 20 patients underwent neuromuscular junction monitoring on at least one occasion to ascertain avoidance of eloquent brain in the embolization procedure. This was typically performed as a selective WADA test with a 2% Xylocaine (Lidocaine) solution and 25mg of Sodium Amytal, but has also included methohexital in later years. In one case, neuromonitoring revealed that the MEP wave disappeared for five minutes after two rounds of 2% Xylocaine and 25mg Sodium Amytal infusion. This led to termination of embolizing the thalamoperforator.

Conclusion We have found that ThP and AchA embolization are feasible and effective means for achieving cure of VOGM and tectal/thalamic AVM. We report favorable, post-procedural outcomes in the majority of our patients; however, as with any embolization within the thalamic region of the brain, we maintain that caution should always be used due to the risk of stroke which we observed in one of our patients. If there is any doubt as to the safety of a given embolization, provocative testing with neuromonitoring is performed. In the case of the patient who experienced a post-procedural stroke, neuromonitoring was performed and still MEP/SEP waves were maintained after injection of amytal and lidocaine. To improve the safety of ThP and AchA embolization, we perform intraoperative neurophysiological monitoring of MEP and SEP with sodium amytal and lidocaine. We intend to expand this practice beyond VOGM and tectal/thalamic AVM into other eloquent AVMs as we have seen great success in our own clinic and in the literature.

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E-181 QUANTIFYING THE EXTENT OF MENINGIOMA PREOPERATIVE EMBOLIZATION THROUGH VOLUMETRIC ANALYSIS: A RETROSPECTIVE CASE SERIES

Introduction Endovascular embolization is an adjunct to surgical treatment of meningiomas.1-4 There is controversy regarding the utility of preoperative tumor embolization, however, highlighted by one recent meta-analysis suggesting that endovascular embolization does not significantly improve patient outcomes. Preoperative embolization is most often used in an attempt to minimize blood loss during resection, but embolization has also been implicated in inducing tumor necrosis, reducing tumor volume, and leading to improvement in postoperative symptoms.5,6 Direct, quantitative assessments of the efficacy of tumor embolization are lacking to date, however, given that embolization is almost universally followed by surgery. For this reason traditional measures of surgical outcome reflect a complex interaction of two procedures. Here we demonstrate the feasibility of direct assessment of extent of embolization through volumetric segmentation on pre- and post-embolization magnetic resonance imaging (MRI).

Methods Twenty-six consecutive patients who underwent preoperative meningioma embolization underwent an additional MRI after tumor embolization, prior to resection. MRI images were acquired on a 1.5T or a 3.0T scanner. Contrast-enhanced T1-weighted axial volumetric simulation images were used for analysis. Manual image segmentation was conducted with Slicer software (slicer.org). Embolization was quantified as the ratio of residual contrast-enhancing volume to post-procedure tumor volume. Percent embolization was computed as a voxel-based ratio obtained through digital volumetric analysis of the appropriate image sequences, and defined as low (≤25%), medium (25–75%) or high embolization (>75%) efficacy.

Results Thirty-five percent of patients (9/26) showed low extent of embolization, 38% showed medium extent of embolization (10/26), and 27% (7/26) showed high extent of embolization. Average extent of embolization was 42.64% (SE 6.48%). No significant decrease in tumor tissue volume was observed immediately following embolization, with a cohort-wide mean reduction of 4.87% (p=0.118).

Conclusion This study demonstrates the feasibility of additional MR imaging prior to the resection of embolized tumors, enabling precise quantification of embolization extent prior to tumor removal. Embolization extent may play a role in determining the surgical utility of preoperative embolization, and may have an impact on parameters such as embolization-induced liquefactive tumor necrosis (and other factors related to resectability), as well as tumor-related intraoperative blood loss. Imaging and quantitative analysis may also lead to improved embolization techniques. Further studies are underway both to automate this process of embolization quantification and to enable the quantification of embolized tumors through other imaging modalities, such as angiography.


E-182 A MULTICENTRIC EXPERIENCE FOR THE USE OF FLOW DIVERTER IN THE TREATMENT OF ANTERIOR COMMUNICATING ARTERY ANEURYSMS

Introduction Endovascular therapeutic strategies have significantly advanced the treatment of intracranial aneurysms. However, the use of flow diverters (FDs) has gained popularity as an alternative to conventional endovascular coiling for selected aneurysms. The purpose of this study is to report our experience in using FDs in the treatment of anterior communicating artery (AcomA) aneurysms, a complex aneurysm type that is challenging to treat.

Methods We retrospectively reviewed the charts of all patients with AcomA aneurysms treated with a flow divider at our institution from January 2015 to December 2020. The inclusion criteria were: (1) AcomA aneurysm ≥10 mm in diameter, (2) suitable for flow divider implantation, (3) no previous treatment history, and (4) at least 6 months follow-up.

Results A total of 38 patients with AcomA aneurysms were included in the study. The mean follow-up time was 12 months. The primary outcome was technical success, defined as successful implantation without any complications. The secondary outcomes included clinical success, defined as an absence of any neurological deficit, and angiographical success, defined as complete aneurysm occlusion.

Conclusion Flow diverters offer an effective treatment option for selected AcomA aneurysms, with a high technical success rate. However, long-term outcomes and complications need to be further studied to fully assess the role of FDs in this complex aneurysm type.