

implementing a quality improvement protocol in January 2022 in which pulse rate and frame rate were reduced from 15 p/s to 7.5 p/s and 7.5 f/s to 4.0 f/s respectively. We studied consecutive, unilateral middle meningeal artery embolizations treated with particles. Total radiation dose, radiation per angiographic run, total radiation exposure, and exposure per run were calculated. Multivariable log-linear regression was performed to account for patient body mass index (BMI), number of angiographic runs, and number of vessels catheterized. Statistical analysis was performed using STATA MP Version 17.0 (Stata Corp LP, College Station, Texas). Significance was defined as  $p < 0.05$ .

**Results** A total of 16 consecutive, unilateral middle meningeal artery embolizations were retrospectively analyzed, 8 prior to the protocol change and 8 after (table 1). Univariable analysis revealed that radiation dose (660.9 vs. 407.5 mGy,  $p=0.002$ ), radiation dose per angiographic run (40.3 vs. 25.7,  $p<0.001$ ), total radiation exposure (8825.8 vs. 5510.4  $\mu\text{Gym}^2$ ,  $p=0.002$ ), and exposure per run (537.9 vs. 353.5,  $p=0.002$ ) were all significantly decreased after the protocol was implemented. Average patient BMI, fluoroscopy time, number of vessels catheterized, and number of angiographic runs did not differ between groups, demonstrating consistency in practice despite the change in protocol.

On multivariable log-linear regression adjusting for BMI, number of runs, vessels catheterized, and fluoroscopy time, the radiation reduction protocol was associated with a 33.8% decrease in the total radiation dose (95% Confidence Interval [CI] 8.0-59.6%,  $p=0.015$ ) and a 34.8% decrease in radiation dose per run (11.7-57.8%,  $p=0.007$ ). The protocol was associated with a 32.8% decrease in the total radiation exposure (6.5-59.1%),  $p=0.019$  and a 33.8% decrease in exposure per run (10.0-57.6,  $p=0.010$ ).

**Conclusion** Radiation reduction protocols can be readily applied to neuroendovascular interventions without increasing overall fluoroscopy time and reduce radiation dose and exposure by 32.8% and 33.8% respectively. We strongly encourage all interventionalists to be cognizant of pulse rate and frame rate when performing routine interventions to avoid unnecessary radiation towards patients, providers, and health care staff.

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Abstract E-079 Table 1

Factor	Before	After	p-value
N	8	8	
BMI, mean (SD)	27.9 (4.0)	22.5 (6.2)	0.058
Total mGy, mean (SD)	660.9 (104.8)	407.5 (159.2)	0.002
Total Exposure, mean (SD)	8825.8 (1763.4)	5510.4 (1816.3)	0.002
Fluoroscopy time (minutes), mean (SD)	20.0 (8.9)	21.7 (5.9)	0.65
Total mGy per minute of fluoroscopy time, mean (SD)	37.1 (11.6)	18.6 (5.7)	0.001
Vessels catheterized, mean (SD)	2.0 (0.0)	2.0 (0.0)	
Total mGy per vessel catheterized, mean (SD)	330.4 (52.4)	203.8 (79.6)	0.002
Total exposure per run, mean (SD)	537.9 (115.5)	353.5 (71.4)	0.002
N of runs, mean (SD)	16.9 (4.3)	15.6 (4.6)	0.58
Total mGy per run, mean (SD)	40.3 (6.9)	25.7 (6.4)	<0.001

### E-080 EARLY EXPERIENCE WITH OPTIMA AND OPTIMAX COIL SYSTEM IN NEUROENDOVASCULAR PROCEDURES: A SINGLE-CENTER CASE SERIES OF 20 PATIENTS

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**Background** Endovascular coiling has become a routine modality for intracranial aneurysms. Scientific reports on the safety and feasibility of the Optima and OptiMAX coil system (Balt USA, LLC) are scarce in the neuro-interventional literature. We here report the first US experience of the early safety and outcome of using the Optima and OptiMAX coil system.

**Objective** To report our single-center experience with Optima and OptiMAX Coil system in a series of consecutive patients having different neuroendovascular procedures

**Methods** A retrospective, single-center analysis of an IRB-approved and prospectively maintained database was conducted. Patients between October 2020 and February 2023 undergoing neuroendovascular procedures with Optima and OptiMAX coil system were included. A total of 20 patients were involved in our series. Patient demographics, procedural details, Angiographic parameters, periprocedural complications, and Angiographic and clinical follow-up information were collected.

**Results** A total of 20 patients were included. 70% (14/20) were females. The mean patient age was  $53.55 \pm 22.19$  years. Of the patients treated 85% (17/20) were intracranial aneurysms (IA), 10% (2/20) were arteriovenous fistula (AVF), and 5% (1/20) were arteriovenous malformation (AVM). Of the aneurysmal cases, 5 patients presented with ruptured aneurysms. The majority of the aneurysms were located in the ICA ( $n=11$ ). The mean aneurysmal diameter was  $6.72 \pm 2.34$ . Coil system deployment was successful in all cases ( $n=20$ ). No Optima or OptiMAX Coils-related complications or adverse events were encountered. Complete aneurysmal obliteration, measured as Raymond- Roy class 1, was achieved in ( $n=13$ ) cases. Of the ruptured aneurysmal cases, ( $n=3$ ) patients achieved Raymond Roy Class 2, and ( $n=1$ ) achieved Raymond Roy class 3. On Follow-up, none of the patients showed aneurysmal recanalization or required retreatment.

**Conclusion** Our early single-center experience demonstrates that Optima and OptiMAX Coil system is associated with high technical success and early safety profile in various neurovascular pathologies. A prospective, multicentric, and large sample size with long-term follow-up is warranted to confirm the findings of our study.

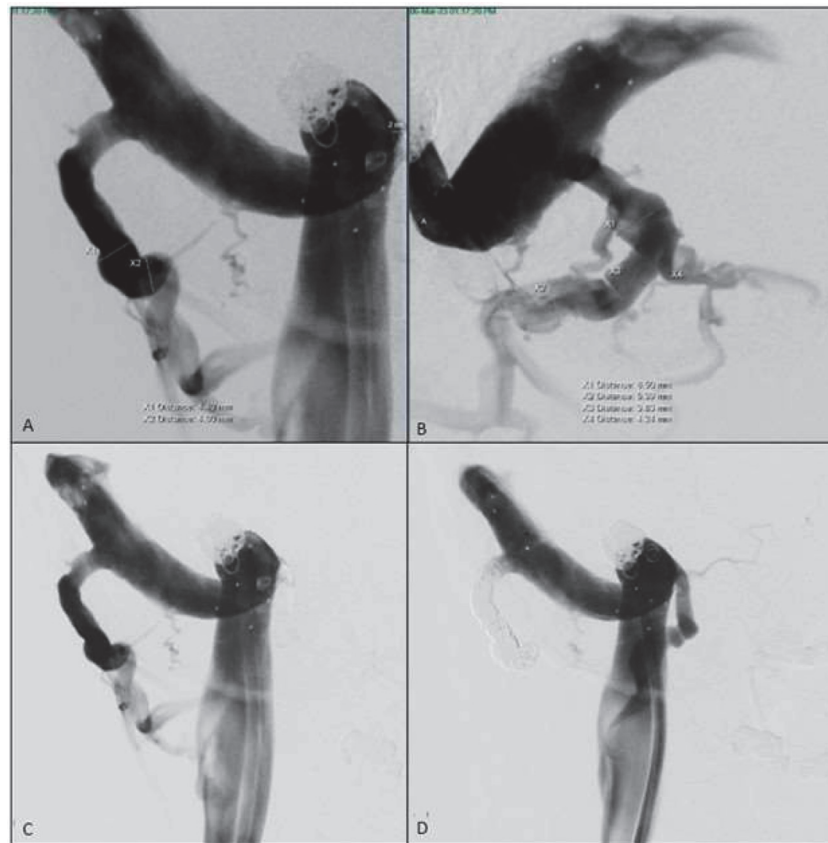
Optima, OptiMAX, Coils, Embolization, Intracranial aneurysms

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### E-081 ENDOVASCULAR TREATMENT OF PULSATILE TINNITUS CAUSED BY A DILATED MASTOID EMISSARY VEIN: A CASE REPORT AND LITERATURE REVIEW

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**Abstract E-081 Figure 1** A: Sagittal view of dilated right MEV. B: Coronal View of dilated right MEV. C: Dilated right MEV prior to embolization. D: Right MEV after coil embolization

**Introduction** The mastoid emissary vein (MEV) is a connecting vein between the sigmoid sinus and the posterior auricular or occipital veins. The MEV carries clinical significance due to its potential involvement in various pathologies. When symptomatic, it typically presents as pulsatile tinnitus (PT), usually resulting from vein dilation. Treatment options for MEV-related disorders have historically included open surgical ligation or take-down. In recent years the efficacy of endovascular interventions for PT has become more popular. However, the literature on endovascular treatment of MEV is sparse. We present a case of endovascular embolization of a MEV presenting with PT. We also review the literature for cases of endovascular treatment of symptomatic MEV.

**Results** A 72-year-old male presented with bilateral PT, headache, and sleep disturbances. Symptoms persisted despite previous coil embolization of a high-riding right internal jugular bulb. A cerebral venogram under conscious sedation revealed dilated bilateral MEVs and balloon test occlusion (BTO) of each MEV at the time showed symptom improvement, more significant on the right, which measured 6.5 mm seen in figure 1. Given the BTO results, he underwent coil embolization of the right MEV under general anesthesia. The patient reported resolution in his right sided PT and felt more comfortable overall. Embolization of the left side MEV is planned for the future.

We searched for relevant articles on Embase, Pubmed, and Medline using search term ‘mastoid emissary.’ There were 119 duplicates removed. Of the remaining 125 articles, only three articles were found describing endovascular treatment of MEV. A total of four patients were described. All four cases

presented with pulsatile tinnitus, and all were treated with MEV coil embolization. Symptoms resolved with successful embolization in all four patients.

**Conclusion** Endovascular coil embolization appears to be an effective treatment for pulsatile tinnitus associated with MEVs, as demonstrated by our case and a review of existing literature. Despite the limited number of reported cases, the consistent success in symptom resolution suggests the potential for this treatment option in similar patients. Additionally, the endovascular approach is advantageous due to the ability to utilize BTO to evaluate symptomatic response prior to embolization. Further research with larger cohorts is needed to establish the long-term efficacy and safety of this approach.

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E-082

**IPSILATERAL POSTERIOR INTERHEMISPHERIC APPROACH FOR RESECTION OF A MESIAL OCCIPITAL ARTERIOVENOUS MALFORMATION**

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Optimal treatment strategy of mesial occipital arteriovenous malformations (AVMs) requires meticulous preoperative planning and a tailored approach however microsurgical resection remains the most definitive treatment option. Their