

**Abstract O-019 Figure 2** Scatter diagram of hemodynamics parameters

**Disclosures** Y. Uchiyama: None. H. Takao: None. S. Fujimura: None. T. Suzuki: None. H. Ono: None. T. Ishii: None. T. Okudaira: None. K. Otani: None. K. Fukudome: None. T. Ishibashi: None. M. Yamamoto: None. Y. Murayama: None.

**O-020 VISUAL PROGNOSIS AFTER ENDOVASCULAR TREATMENT OF OCCIPITAL ARTERIOVENOUS MALFORMATIONS**

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**Introduction** Occipital arteriovenous malformations (AVM) carry a high risk of post-operative morbidity because of their anatomic relation to the visual cortex and optic radiations. We report our single-center experience with occipital AVMs, most of which were treated endovascularly, with a special interest for visual impairment after treatment.

**Materials and methods** From a prospectively collected database, we reviewed the clinical and radiological data of all patients with AVM involving the occipital lobe managed between 1997 and 2017.

The lesions were classified according to the modified Spetzler-Martin grading system. The extension of the nidus to the primary visual cortex was assessed and correlated to the pre- and post-intervention visual symptomatology. Modified Rankin Scale and visual fields were assessed pre and post-treatment and at the last follow-up.

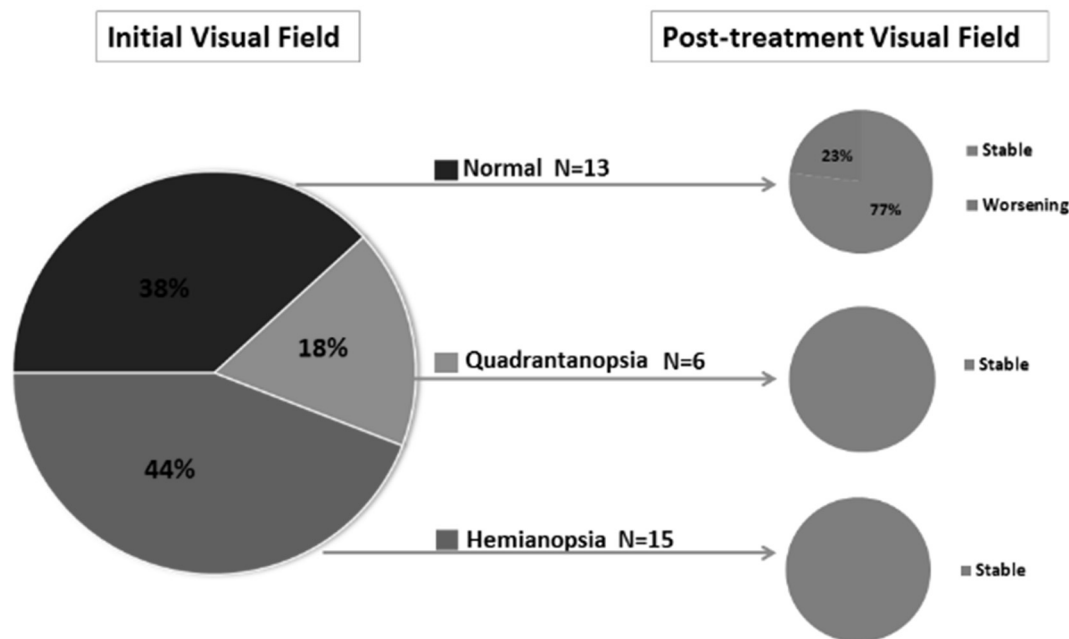
**Results** Eighty-three patients (47 males [56,6%]) with an occipital AVM were included in the study. Mean age at presentation was  $33.5 \pm 15.0$  years old (min-max = 7-76). Thirty-four patients (40,9%) presented with hemorrhage related to the AVM. Fifty-eight patients (69.8%) underwent endovascular treatment alone, 19 (22,9%) embolization and surgery, 3 (3,6%) embolization and radiosurgery and 3 (3,6%) were conservatively managed.

A complete obliteration of the AVM was achieved in 49 patients (59%). The mean follow-up duration after treatment was 19,4 months (max. 330 months). A post-treatment aggravation of the visual field was found in 3 patients (23%) for ruptured AVMs and in 21 patients (45,6%) for unruptured AVMs (figure 1) (figure 2).

Morbidity rate was 3.75% and mortality rate was 2.5%.

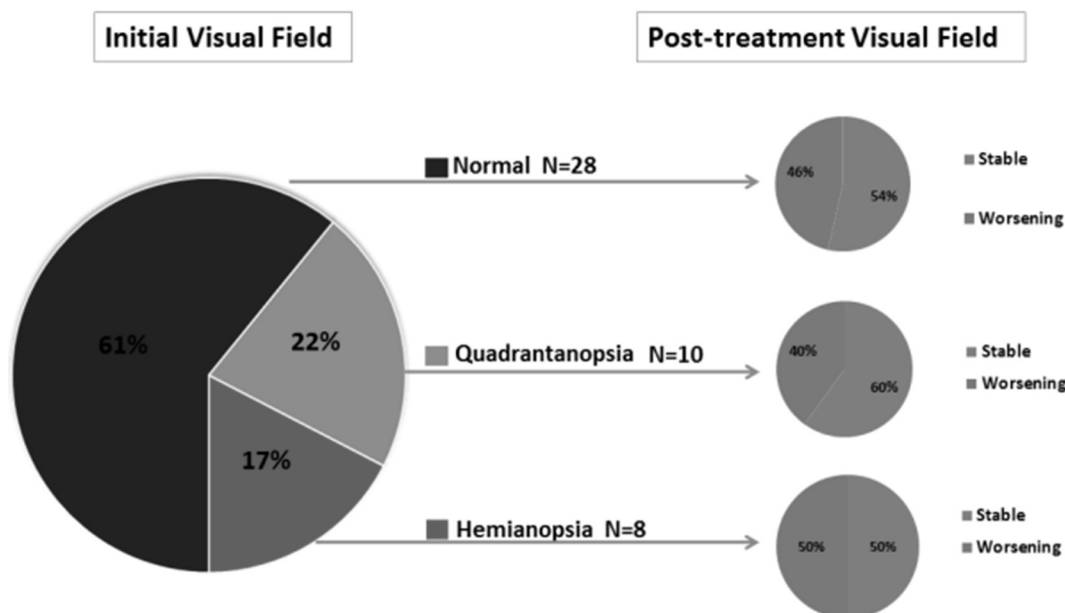
**Conclusion** Endovascular treatment of occipital AVM ( $\pm$  combined with surgery) might be a feasible technique. However

**Ruptured AVMs**



**Abstract O-020 Figure 1**

## Unruptured AVMs



Abstract O-020 Figure 2

the complication rate (especially regarding visual functions) remains non-negligible.

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O-021

### SAFETY AND EFFICACY OF TRANSVENOUS EMBOLIZATION OF RUPTURED BRAIN ARTERIOVENOUS MALFORMATIONS AS A LAST RESORT: A PROSPECTIVE SINGLE ARM STUDY

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**Purpose** Due to limited data of 69 cases reported up to now, the transvenous embolization for brain AVMs is still considered an unproven salvage therapy. Our aim was to explore the safety and curability of transvenous embolization treatment.

**Materials and methods** Between November 2016 and November 2018, 21 consecutive patients with ruptured brain AVMs who underwent transvenous embolization were prospectively followed. The Spetzler-Martin grade was: grade I and II (33.3%, n = 7), grade III (52.4%, n = 11), and grade IV and V (14.3%, n = 3). Safety was evaluated by observing the procedure-related complications occurred within 1 month, and the primary outcome of efficacy was complete angiographic obliteration of the AVMs nidus on the 6-month follow-up angiography. Functional outcome was established using the mRS.

**Results** The procedure was technically feasible in 19 of 21 (90.5%) cases. Procedure-related complications were 6 (28.6%), including 5 hemorrhages and 1 infarction, which caused 1 (4.8%) disability and 1 (4.8%) death. Sixteen (84.2%) patients had immediate angiographic obliteration in

technically feasible patients. The median angiographic follow-up for 14 surviving patients was 5.5 (range, 3 – 15) months, and in 13 (92.9%) patients complete obliteration of the nidus conformed. Among them, 1 patient in whom immediate angiographic obliteration was not achieved showed spontaneous obliteration at the 13-month follow-up. There were no recurrences during the follow-up period. The good functional outcome (mRS $\leq$ 2) ratios improved from 57.1% (12/21) at preoperation, to 66.7% (14/21) at 1-month follow-up and 100% (19/19) at 6-month follow-up respectively.

**Conclusion** This prospective study demonstrates that transvenous embolization for brain AVMs may have a high rate of complete angiographic obliteration but also a high rate of procedure-related morbidity and mortality.

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O-022

### CFD SIMULATION FOR CEREBRAL ARTERY WITH PATIENT-SPECIFIC INFLOW CONDITIONS EXTRACTED FROM 4D-DSA

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**Introduction** Hemodynamics is believed to be related to the pathology of cerebral aneurysms such as rupture and growth, so those phenomena have been investigated using