Low-grade cerebral arteriovenous malformation

- Repeated stereotactic radiosurgery for residual intracranial dural arteriovenous fistulas
- Curative Treatment of Brain Arteriovenous Malformations Combining Endovascular and Surgical Approaches Consecutively
- Awake Craniotomy for Eloquent Brain Arteriovenous Malformations: A Systematic Review and Individual Patient Data Meta-Analysis
- Conservative management of brain arteriovenous malformations: results of the prospective observation registry of a pragmatic trial
- Synchronous intracranial arteriovenous malformation and papillary glioneuronal tumour: hypothesis or reality?
- Surgical Results with Low-Grade Arteriovenous Malformations : A Single Center 14-Year Experience
- Pilot Trial on Awake Surgery for Low-Grade Arteriovenous Malformations in Speech Area and Systematic Review of the Literature
- Primary Embolization of Cerebral Arteriovenous Malformations With Intention to Cure: A Systematic Review of Literature and Meta-Analysis

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One of the pressing constraints in the cerebral arteriovenous malformation treatment is the potential development of new neurological deficits, mainly when the AVM is in an eloquent area. The risk of ischemia when an “en passage” arterial supply is present is not negligible. In this regard, awake surgery holds promise in increasing the safety of low-grade AVMs resection.

Pérez-Alfayate et al. conducted a pilot trial on 3 patients with low-grade cerebral arteriovenous malformations affecting speech areas to evaluate the safety of awake craniotomy. Each feeder was temporarily clipped before the section. Also, they performed a systematic review to analyze the existing data about the impact of awake surgery in eloquent AVM resection.

None of the 3 patients presented with neurological deficits after the procedure. Awake craniotomy was useful in one case, as it allowed the detection of speech arrest during the temporal clipping of one of the feeders. This vessel was identified as an “en passage” vessel, closer to the nidus. The second attempt revealed the feeder of the AVM which was sectioned. Systematic review yielded 7 studies meeting our inclusion criteria. Twenty-six out of 33 patients included in these studies presented with AVM affecting speech area. Only 2 studies included the motor evoked potentials, 6 studies used direct cortical and subcortical stimulation. In all the studies asleep-awake-asleep (AAA) technique was used.

Awake craniotomies are safe procedures and may be helpful in avoiding ischemic complications in low-grade AVMs, either affecting eloquent areas and/or when “en passage” feeders are present [1].

1)
Pérez-Alfayate R, Torregrossa F, Rey-Picazo J, Matías-Guiu J, Sallabanda Diaz K, Grasso G. Pilot trial on awake surgery for low grade AVMs in speech area and systematic review of the literature. World Neurosurg. 2024 Jun 8:S1878-8750(24)00960-4. doi: 10.1016/j.wneu.2024.06.012. Epub ahead of print. PMID: 38857871.