

Brain arteriovenous malformation treatment

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see also [Intracranial arteriovenous malformation treatment](#).

Current treatment paradigms of ruptured bAVM remain elusive, with substantial heterogeneity in the current literature. A consensus on the definition of “acute” vs “delayed”, management goal, follow-up length, and outcome parameters are required to support the formation of a clear paradigm ¹⁾

Given the risk for [hemorrhagic stroke](#), resection remains the [gold standard](#) for [cerebral arteriovenous malformation treatment](#) compared to the other modalities available, surgery averages 95.9% complete obliteration versus 22.1% for endovascular treatment and 67.4% for radiosurgery.

Still, unique benefits afforded from these alternatives include the ability to reach complex, poorly accessible lesions and is a less invasive option for poor surgical candidates. These alternatives are typically favored for Spetzler-Martin (SM) grade IV-V lesions, which have higher rates of perioperative complications and lower rates of complete removal.

Curative attempts to treat ruptured AVM patients have not been questioned so far, and there is a lack of prospective data on clinical results according to treatment modality. Endovascular treatment is often used aiming to improve the safety or efficacy of surgery or radiation therapy, but benefits have never been documented in a trial. A care trial context is needed to evaluate interventions at the same time they are practised ²⁾.

The publication of the ARUBA trial, showing higher complication rates with treatment compared with the natural history over a short period of follow-up, puts even more pressure on the physician to achieve complete BAVM eradication without complication. These lesions are often treated by

multimodality therapy with some combination of endovascular embolization, radiosurgery, and microsurgical resection; however, multimodality therapy involves the additive risk of procedural complication with each procedure. While surgical resection has long been accepted as monotherapy with good cure rates, staged pre-operative endovascular embolization has facilitated microsurgical resection with lower blood loss. Endovascular embolization is more often utilized in conjunction with surgical resection, and often the portions of the AVM and feeders that are completely embolized with Onyx or glue may not be surgically resected since they have been “internally obliterated.”³⁾

Surgery

see [Cerebral arteriovenous malformation surgery](#).

Radiosurgery

see [Cerebral arteriovenous malformation radiosurgery](#).

Embolization

see [Cerebral arteriovenous malformation embolization](#).

1)

Bintang AK, Bahar A, Akbar M, Soraya GV, Gunawan A, Hammado N, Rachman ME, Ulhaq ZS. Delayed versus immediate intervention of ruptured brain arteriovenous malformations: A case report. *World J Clin Cases*. 2023 Mar 26;11(9):1992-2001. doi: 10.12998/wjcc.v11.i9.1992. PMID: 36998967; PMCID: PMC10044944.

2)

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3)

Bauer AM, Bain MD, Rasmussen PA. Onyx resorbtion with AVM recanalization after complete AVM obliteration. *Interv Neuroradiol*. 2015 Jun;21(3):351-6. doi: 10.1177/1591019915581985. Epub 2015 May 26. PubMed PMID: 26015523.

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