Spetzler-Martin AVM grading system

The Spetzler-Martin grading scale published in 1986 assigned one to three points for AVM size, one point for involvement of eloquent cortex, and one point for deep venous drainage for a total of five points. In their retrospective study, Spetzler and Martin retrospectively applied their scoring scale to 100 AVM patients. Higher Spetzler-Martin grade demonstrated a direct correlation between post-operative neurologic deficit as well as an inverse correlation between likelihood of surgical resection.

see also Supplementary Spetzler-Martin AVM grading scale.

The Spetzler-Martin AVM grading system allocates points for various features of Cerebral arteriovenous malformation to give a score between 1 and 5 in order to estimate the risk of surgery for that patient.

Size of nidus small (<3 cm) = 1

medium (3-6 cm) = 2

large (>6 cm) = 3

Eloquence of adjacent brain non-eloquent = 0

eloquent = 1

Venous drainage superficial only = 0

deep = 1

2)

see Spetzler Martin grade 3

The Spetzler-Martin AVM grading system is the most widely used grading system for AVMs.

However, it is crude and has deficiencies such as lumping the heterogeneous group of grade III AVMs together without clarifying the management of subtypes.

The SM system also has redundancies, with low-grade AVMs managed similarly with surgery and high-grade AVMs managed conservatively.

Therefore, Spetzler and Ponce condensed the original 5-tier grading system into 3 tiers and made broad treatment recommendations based on AVM class. Proponents of this simplification emphasize that the fewer classes correspond more directly with treatment recommendations. Opponents of this simplification argue that it does not simplify the analysis because the same scoring steps of the original SM scale are required along with an additional step to reclassify the AVM. Opponents also emphasize that the class-specific recommendations are vague and encumbered with exceptions. For example, the class system still does not shed light on the heterogeneous grade III lesions. Patient selection is a sophisticated process that requires more complexity, not less, which is why the supplementary grading system was proposed.

see Spetzler Ponce classification

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High grade arteriovenous malformations (AVMs), such as Spetzler-Martin AVM grading system 4 and 5. are generally considered difficult to cure using any modalities such as surgery, embolization, and/or radiosurgery. However, endovascular treatment potentially offers an advantage over the other two methods because of the ability to immediately target certain areas of an AVM. Partially targeted embolization could be effective in controlling the bleeding point when treating high-grade AVMs; however, it is not curative.

1), 2), 4), 5)

3)

6)

7)

8)