Spetzler Martin grade 3

There is uncertainty regarding the management of unruptured cerebral arteriovenous malformations Spetzler-Martin AVM grading system 3 (SMG3 ubAVM).

Case series

A single-surgeon database of consecutively enrolled bAVMs (between 1989 and 2014) was analyzed. Adverse outcomes due to surgery were assigned within the first 6 weeks following surgery and outcome was prospectively recorded and assigned at the last follow-up visit by using modified Rankin Scale (mRS) score.

Of the 137 reviewed patients, 112 (82%) were treated by surgery, 15 (11%) were treated elsewhere or by radiosurgery, and 10 (7%) were recommended for conservative management. Surgery for SMG3 ubAVM was associated with adverse outcomes with a new permanent neurological deficit of mRS >1 in 23 of 112 (21%) patients. Permanent neurological deficit leading to a mRS >2 from surgery was 3.6% (95% confidence interval, 1.1%-9.1%). Late recurrence of a bAVM occurred in 3 of 103 (2.9%) patients who had complete obliteration of bAVM confirmed immediately after surgery and who were subsequently later followed with radiological studies during the mean follow-up period of 3.0 years (range, 6 days to 18.8 years).

When discussing surgical options for SMG3 ubAVM, a thorough understanding of the significance and incidence of adverse events and outcomes is required to fully inform patients. For this series, the additional subclassification of SMG ubAVM (based on variables contributing to the SMG or age) would not have been of use [1)].

Case reports

A 42-yr-old man presented with a history of sudden right-sided facial and right arm weakness and dysarthria. Head computed tomography showed a left frontal-parietal blood clot. An intra-arterial digital subtraction angiography demonstrated a left subcortical postcentral, Spetzler-Martin Grade 3 arteriovenous malformation (AVM) with a diffuse nidus, measuring 2.1 × 1.5 cm, supplied by branches of the left MCA, and draining into a cortical vein and a deep vein, which was going toward the ventricle. Preoperative embolization was not possible. The patient underwent left frontal-parietal craniotomy with intraoperative motor and sensory mapping. No arterialized veins were visible on the cortical surface. Neuronavigation localized the AVM in the subcortical postcentral gyrus. Through an incision in the postcentral sulcus, microdissection led to a yellowish gliotic plane. The large cortical vein was in the gliotic area and traced to the AVM. Circumferential microdissection was performed around the AVM. It had a very diffuse nidus; the arterial feeders were cauterized and divided, and the superior superficial and inferior deep draining veins were finally occluded, and AVM was removed.

Postoperative angiogram showed total removal of the AVM. At discharge, his right arm weakness had improved (power 5/5), and facial weakness and dysarthria were improving (modified Rankin Scale (mRS) 2). At 1-yr follow-up, facial weakness and dysarthria had improved considerably, and patient returned to work (mRS 1). This video shows microsurgical resection of an AVM by neuronavigation and tracing of the subcortical draining vein. The technique of cauterizing the perforating arteries after temporary clipping with flow arrest is shown in the video. Informed consent was obtained from the

patient prior to the surgery that included videotaping of the procedure and its distribution for educational purposes. All relevant patient identifiers have also been removed from the video and accompanying radiology slides [2].

1)

Morgan MK, Assaad N, Korja M. Surgery for Unruptured Spetzler-Martin Grade 3 Brain Arteriovenous Malformations: A Prospective Surgical Cohort. Neurosurgery. 2015 Sep;77(3):362-70. doi: 10.1227/NEU.0000000000000774. PubMed PMID: 25860430.

2)

Zeeshan Q, Carrasco Hernandez JP, Sekhar LN. Localization and Microsurgical Resection of Left Postcentral Gyrus Spetzler-Martin Grade 3 Arteriovenous Malformation by Intraoperative Neuronavigation and Tracing of Subcortical Draining Vein: 3-Dimensional Operative Video. Oper Neurosurg (Hagerstown). 2019 Dec 7. pii: opz383. doi: 10.1093/ons/opz383. [Epub ahead of print] PubMed PMID: 31811300.