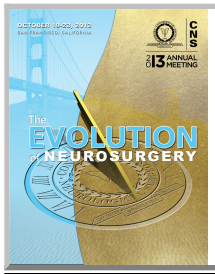

Downgrading of an Inoperable High Grade Arteriovenous Malformation for Surgical Resection with Preoperative Stereotactic Radiosurgery

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Introduction

High-grade intracranial arteriovenous malformations (AVMs) can be devastating when clinically symptomatic. Currently, no effective methods available for

obliterating Spetzler-Martin grade IV or V (Class C) lesions without a high incidence of perioperative morbidity and mortality. Reports on the utility of preoperative radiation in preparing the nidus have produced conflicting results, and no prospective studies of a radiosurgical treatment paradigm prior to resection have been reported.

Methods

A 28-year old male presented with the worst headache of his life and evidence of a ruptured right temporal Spetzler-Martin Grade V AVM with deep venous drainage, involvement of the internal capsule, deep perforator supply, and evidence of a diffuse nidus on angiography. He underwent staged embolization followed by a single Gamma Knife radiation session to the deepest portion of the nidus in anticipation of surgical resection. Three

years after radiosurgery, he underwent complete surgical resection of the residual AVM nidus.

Results

Postoperative angiography confirmed the successful removal of the AVM. He suffered no long-term neurological deficits and has returned to work symptom-free (mRS score, 0).

Conclusions

Preoperative stereotactic radiosurgery represents an effective method for downgrading high-grade AVMs in preparation for surgery by targeting the deeper portions of large AVMs that abut or involve eloquent territory, such as the basal ganglia, thalamus, internal capsule or corona radiata. This method represents a new treatment paradigm for patients with

certain anatomically amenable lesions that previously would have been deemed untreatable.

Learning Objectives

1. Spetzler-Martin Grade V AVMs can be sucessfully treated with preoperative radiation

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