Cases of Brain AVM Surgery Without Pre-Operative Angiogram

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Introduction

Angiograms are often used to plan AVM surgery. However, CTA studies may provide sufficient detail to safely resect hemorrhaged and non-hemorrhaged brain AVMs. DSA carries a risk of stroke that adds to the overall risk of surgery for bAVMs. Early career results are important to review technique and indication (i.e. first 3 years in this case).

Methods

A retrospective review of a prospective database was conducted. This involves the first three years of practice after fellowship training in cerebrovascular surgery. Those cases operated only with pre-operative CTA are specifically analyzed for rationale, for surgical details and compared to information we normally gain from angiograms.

Results

35 cases of brain AVM are included over a 3 year period. 10 cases were operated without a preoperative angiogram. Only SMG 1-3 were operated. 3 had prior embolization. 10 cases were imaged preoperatively with CTA only. The CTA provided inflow and outflow information sufficient to safely resect the bAVMs. There were 0 deaths, 4 cases were worse after surgery than before, while 31 were improved or the same. All cases had post-operative DSA that showed no residual. 9 cases in the same 3 years were not operated for either fear of surgical risk, or comorbid disease was deemed worse than the natural history of AVM rupture.

Conclusions

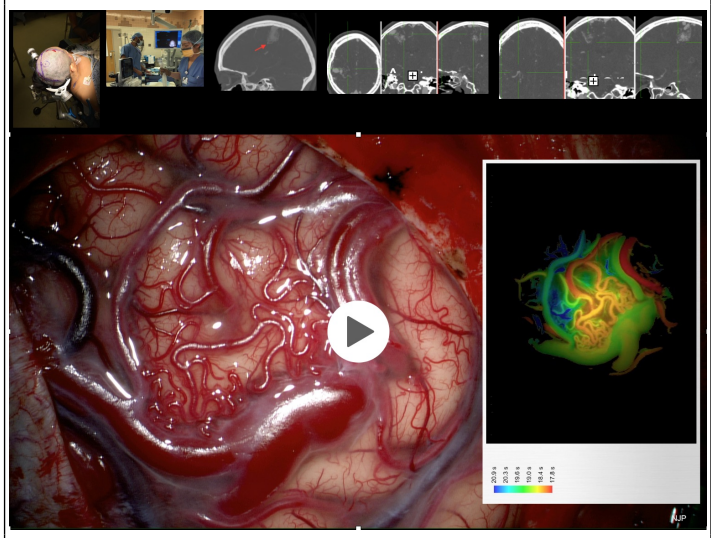
CTA can be used alone to determine important details of inflow and outflow needed to resect bAVM safely in select cases. CTA does not replace DSA for diagnosis, especially for nidal aneurysms or flow considerations. Early experience and results in this series suggests that brain AVM surgery is safe in our context and we ought to continue.

Learning Objectives

To view CTA imaging for AVMs and understand surgical details needed to resect safely, without DSA.

Case section for surgery without DSA.

Preoperative CTA images used in the OR for AVM resection



This SMG 3 AVM (<3, motor cortex, superficial drainage), was resected using only preoperative CTA imaging. The CTA images are shown on the top indicating the arterial targets that are occluded early after a sulcal dissection.

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