

Microsurgical Approach for a Giant Posterior Cerebral Artery Aneurysm after Unsuccessful Occlusion with Endovascular Flow Diversion

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Introduction

Giant posterior circulation aneurysms have a very high risk of rupture. Treatment of these lesions, via endovascular or microsurgical approaches, carries a substantial rate of morbidity and mortality. While flow-diverting stents (FDS) represent a potent therapy for endovascular reconstruction of complex aneurysms, they are also associated with novel complications for which effective salvage techniques have not been described.

Methods

We present a unique complication from failed treatment with a FDS.

Results

A 51 year-old male presented with increasing headaches secondary to a giant, fusiform aneurysm of the left posterior cerebral artery (PCA) which was largely thrombosed. Due to progressive enlargement of the aneurysm corresponding to worsening clinical symptoms, the lesion was treated with two Pipeline Embolization Devices (PED). Three months after PED treatment, complete PCA occlusion was observed at the origin of the proximal stent. Despite the lack of arterial inflow, the aneurysm dome continued to grow, resulting in obstructive hydrocephalus. Therefore microsurgical intervention was performed to trap and excise the aneurysm. The sigmoid sinus was injured during the approach which resulted in extensive postoperative venous infarcts and patient mortality.

Conclusions

Successful microsurgical obliteration of aneurysms previously treated with FDSs is extremely difficult. A combination of judicious preoperative planning and meticulous intraoperative surgical technique are requisite for effective management of these complex cases. The optimal microsurgical strategy for aneurysms which have failed endovascular treatment with a FDS is currently unknown.

Learning Objectives

By the conclusion of this session, participants should be able to 1) Describe the importance of complete occlusion of giant intracranial aneurysms, 2) Discuss, in small groups the potential complications associated with microsurgical treatment of aneurysms which have undergone prior endovascular flow diversion, and 3) Identify an effective treatment for giant aneurysms which have failed endovascular occlusion with flow-diverting stents.

References

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