

# Outcomes of Posterior Circulation Pipeline in 52 Cases at a Single Institution

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### **Learning Objectives**

To report on the safety and efficacy of flow diversion for posterior circulation cerebral aneurysms

#### Introduction

Posterior circulation cerebral aneurysms are at higher risk of rupture and are more commonly symptomatic than anterior circulation aneurysms. Microsurgical clipping and to a lesser extent endovascular coiling carry significant morbidity. Early and limited reports of flow diversion for posterior circulation cerebral aneurysms have suggested high complication and low occlusion rates.

## Methods

A prospective, IRB-approved database was analyzed for all patients with posterior circulation aneurysms treated by flow diversion at our institution.





(a)Pre-embolization DSA showing 15mm basilar apex aneurysm (b)Post-Right PCA to basilar pipeline embolization with adjunctive coiling

## Results

52 procedures (98% successful) were performed on 48 patients. Average aneurysm size was 9.4mm, including 14 large (29%) and 3 giant (6%). A majority were fusiform (33%) or dissecting (25%). 37% of patients were symptomatic, most commonly with stroke (19%) or prior/acute SAH (10%). Vessel of origin was 67% vertebral, 21% basilar, and 12% PCA/SCA. Most common locations were: vertebrobasilar junction (19%), PICA (17%), midbasilar (13%), and basilar apex (8%). Average number of devices was 1.6 (range 1-18) with 17% adjunctive coiling. Major complication rate was 10%, all major ischemic strokes with mRS at last follow-up of (4,1,6,3, and 4), with one mortality and no ICH or SAH. The minor complication rate was 8%, including minor stroke, TIA, and CN palsy. On univariate analysis, male gender (OR 8.615, p=0.013) and large or giant aneurysm size (OR 7.000, p=0.024) were predictors of any complication, however neither was significant on multivariate logistic regression. Follow-up angiography was performed on 79% of patients, with complete aneurysm occlusion in 74% at last follow-up. Large or giant aneurysm size (p=4.800, p=0.004) and fusiform or dissecting morphology (as compared to saccular) (OR 3.846, p=0.017) were significant predictors of aneurysm persistence at 6 months on both univariate and multivariate logistic regression.

#### Conclusions

This is the largest single-institution series of Pipeline for posterior circulation aneurysms and demonstrates acceptable safety and effectiveness in these challenging cases.





(a)Pre-embolization DSA showing 9mm dissecting midbasilar aneurysm (b)Six-month follow-up DSA showing aneurysm obliteration