

Reduced Efficacy of the Pipeline Embolization Device in the Treatment of Posterior Communicating Region Aneurysms with Fetal Posterior Cerebral Artery Configuration

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Introduction

Aneurysms at the origin of the posterior communicating artery (PcommA) have been demonstrated to be effectively treated with the Pipeline Embolization Device (PED) (Daou et al, 2016, Rangel-Castilla et al., 2016). Much less is known about the efficacy of the PED for aneurysms associated with a fetal posterior cerebral artery (fPCA) variant.

Methods

A prospectively maintained university database of aneurysm patients treated with the PED was retrospectively reviewed. Demographics, treatment details, and imaging were reviewed for all PcommA and fPCA aneurysms.

Results

Out of a total of 285 patients treated with PED, 50 patients (mean age 57.5 ± 12.2 years, 42 females) with unruptured PcommA (9 fPCA) aneurysms were identified. Mean follow-up duration was 14.0 ± 11.6 months (48 patients). Roy-Raymond Class I occlusion on follow up Magnetic Resonance or catheter angiography (mean time 11.7 ± 6.8 months) was achieved in 30 patients (62.5%), Class II occlusion in 11 patients (22.9%) and Class III occlusion in 7 patients (14.5%). The PcommA was occluded in 56% of patients without any clinical symptoms. No deaths or permanent neurological complications occurred. In fPCA aneurysms, Class I occlusion was seen in 1 patient, Class 2 occlusion in 2 patients, and Class III occlusion in 6 patients. Multivariate analysis revealed an independent association between incomplete occlusion and fPCA configuration (OR 73.65; 95% CI [5.84-929.13]; $p=0.001$).

Learning Objectives

To discuss the efficacy and the PED for the treatment of Pcomm aneurysms and to highlight considerations for patients with fetal PCA anatomy.

Conclusions

The PED is a safe and effective treatment for Pcomm aneurysms although fetal anatomy should increase consideration of traditional endovascular techniques or surgical clipping.

References

1. Daou B, Valle-Giler EP, Chalouhi N, et al. Patency of the posterior communicating artery following treatment with the Pipeline Embolization Device. *J Neurosurg.* May 6 2016:1-6.
2. Rangel-Castilla L, Munich SA, Jaleel N, et al. Patency of anterior circulation branch vessels after Pipeline embolization: longer-term results from 82 aneurysm cases. *J Neurosurg.* Jun 10 2016:1-6

Figure 1B

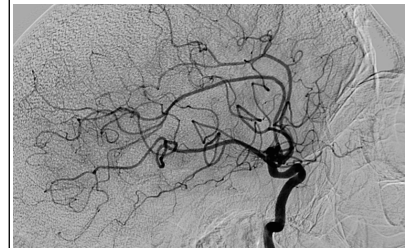


Figure 2A

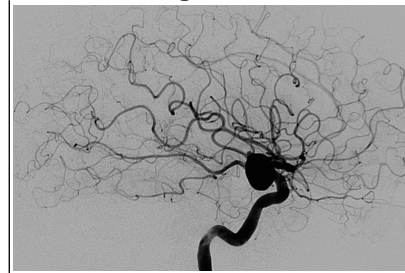


Figure 2B



Figure 1A

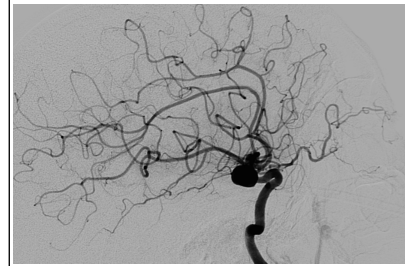


Figure 2C

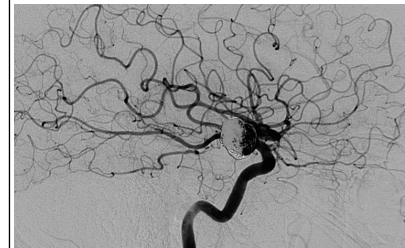


Figure 2D

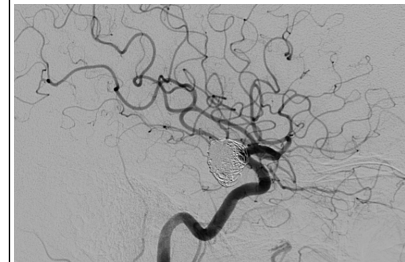


Figure 3A

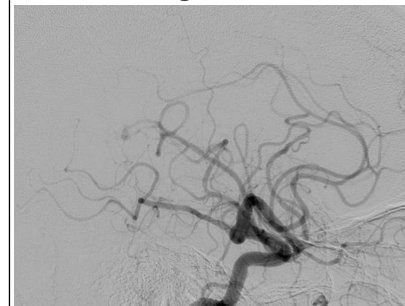
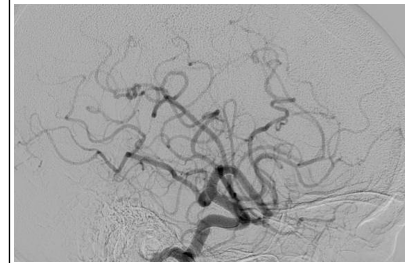


Figure 3B



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