

Low Yield of Cerebral Angiography in Adequately Occluded Aneurysms after Flow Diversion

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Introduction

Flow diversion has emerged as a highly effective treatment for intracranial aneurysms. We assess the yield of further angiographic follow-up in aneurysms that have achieved adequate occlusion after treatment with the Pipeline Embolization Device (PED).

Methods

This is a single institution, retrospective study. Inclusion criteria were as follows: 1) patients with one or more aneurysms treated with PED, 2) available shortterm (<12 months) follow-up digital subtraction angiography (DSA), 3) complete (100%) or near-complete (>95%) occlusion on short-term follow-up DSA, and 4) available further angiographic follow-up (DSA, MRA, or CTA).

Results

A total of 146 patients were identified. Aneurysm size was 8.4 ± 5.1 mm on average. Mean angiographic follow-up time was 29.7 ± 12.2 months. On short-term follow-up DSA images, 132 (90.4%) had complete aneurysm occlusion and 14 (9.6%) had near-complete occlusion. Four patients (3%) had further DSA follow-up alone, 30 patients (21%) had further DSA and MRA/CTA follow-up, and 112 patients (76%) had further MRA/CTA follow-up alone. On further angiographic follow-up (DSA, MRA, and/or CTA), no patient had a decrease in the degree of aneurysm occlusion (recurrence) or required retreatment. Of the 14 patients with near-complete occlusion on initial DSA images, 7 patients (50%) progressed to complete aneurysm occlusion on further angiographic follow-up.

Conclusions

This study did not find any diagnostic yield in repeating cerebral angiography in adequately occluded aneurysms with the PED.

Learning Objectives

We do not recommend repeat angiographic follow-up once aneurysms have achieved complete occlusion with