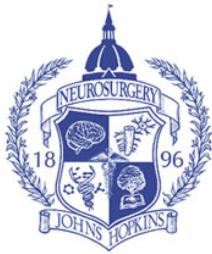


Bilateral Anterior Cerebral Artery Pipeline Embolization “H-pipe” for Anterior Communicating Artery-Region Aneurysms



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Introduction

Anterior communicating artery (ACoA) aneurysms account for a disproportionate share of SAH. Surgical approaches have high morbidity and recurrence after coiling is common. Early experiences with flow diversion are promising but ACoA aneurysms may continue to fill after unilateral anterior cerebral artery (ACA) Pipeline Embolization (PED).

Methods

A prospectively-maintained database of cerebral aneurysm patients treated with PED was reviewed to identify patients with ACoA-region aneurysms.

Learning Objectives

To understand the role, risks, and efficacy of bilateral ACA flow diverting stents for treatment of anterior communicating artery aneurysms

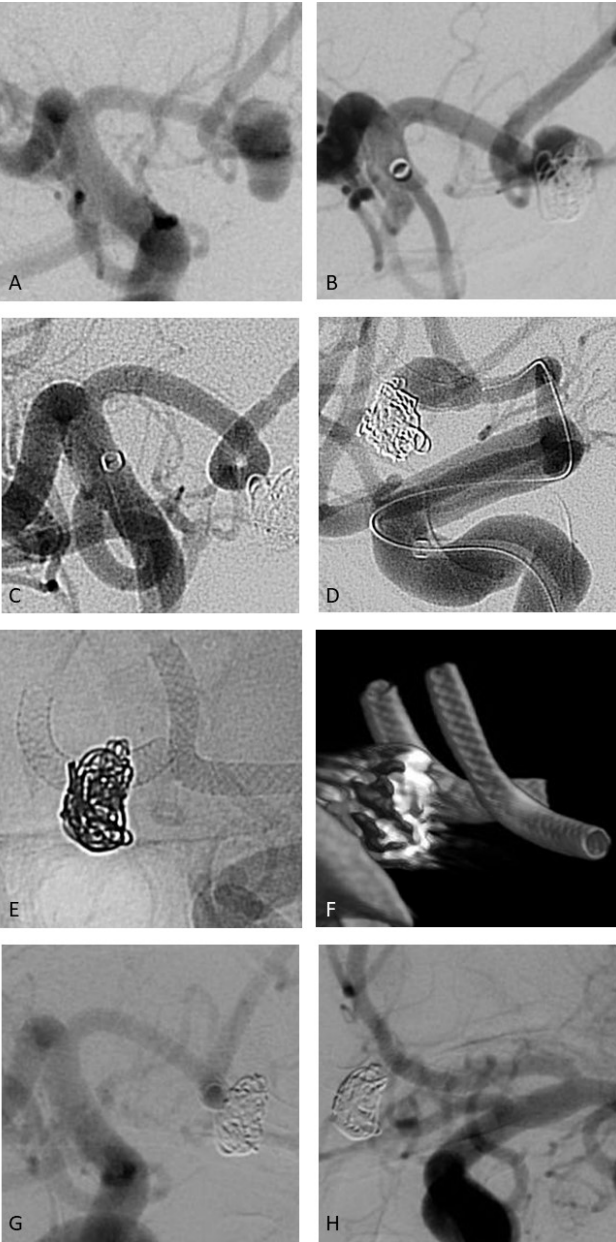
Results

A total of 80 PED were performed on patients with ACoA-region aneurysms, 53 true ACoA and 27 aneurysms eccentric to the A1-2 junction. Bilateral ACA PED was performed on 11 patients (10 ACoA, 1 A1-2) in a total of 23 procedures. The average age was 59 and 82% were male. The average aneurysm size was 6mm (range 2-25mm). Four patients had a history of SAH and six had prior treatments. There was one major complication (4% of procedures, 9% of patients). The major complication was a quaternarian male with recurrent, previously-ruptured 3mm ACoA aneurysm who after second-stage R ACA PED awoke with left lower extremity paresis. DSA showed stent thrombosis, refractory to intra-arterial Abciximab, balloon angioplasty was performed, the vessel ruptured, and the patient did not survive. There were no other complications. Follow-up DSA obtained at an average of 9 months after stage two was available in 70% (7/10) of cases and showed complete occlusion in 86% (6/7). One patient with persistent filling from the right side after H-pipe underwent repeat R ACA PED and continued to fill the aneurysm at 6-month DSA following this procedure.

Conclusions

A minority of true ACoA aneurysms may continue to fill after unilateral ACA PED; contralateral ACA PED in an “H-pipe” configuration may be used to achieve complete occlusion.

H-pipe



Bilateral PED “H-pipe” treatment of recurrent previously ruptured and coiled 6mm ACoA aneurysm: (A) Right ICA DSA showing 6mm ruptured ACoA aneurysm; (B) 6-month follow-up right ICA DSA with neck recurrence; (C) right ICA DSA post right A1-A2 PED placement; (D) left ICA DSA showing neck filling 6 months after right A1-A2 PED; (E) left ICA DSA and (F) Dyna CT post bilateral A1-A2 PED placement; (G) right ICA DSA and (H) left ICA DSA with complete occlusion of ACoA aneurysm 6 months post left A1-A2 PED to finish “H-pipe”.