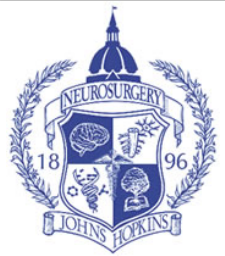


Staged Endovascular Treatment of Ruptured Intracranial Aneurysms: Acute Coiling Followed By Delayed Flow Diversion

Erick Michael Westbroek MD; Matthew Bender MD; Narlin B. Beaty MD; Bowen Jiang MD; Risheng Xu AB AM MD PhD; Jessica K. Campos MD; Rafael Jesus Tamargo MD; Judy Huang MD; Geoffrey P. Colby MD, PhD, FAANS; Alexander L. Coon MD



Introduction

ISAT demonstrated that coiling is effective for aneurysm treatment in subarachnoid hemorrhage (SAH); however, complete occlusion of wide-necked aneurysms frequently requires adjuvants relatively contraindicated in SAH. As such, a limited “dome occlusive” strategy is often pursued in the setting of SAH. We report a single institution series of coiling of acutely ruptured aneurysms followed by delayed flow diversion for definitive, curative occlusion.

Methods

A prospectively collected IRB-approved database was screened for patients with aneurysmal SAH who were initially treated by coil embolization followed by planned flow diversion at a single academic medical institution. Peri-procedural outcomes, complications, and angiographic follow-up were analyzed.

Results

50 patients underwent both acute coiling followed by delayed, planned flow diversion. Average aneurysm size on initial presentation was 5.3mm. Common aneurysm locations included Pcomm (38%), Acomm (24%), ACA (18%), and MCA (10%). Dome occlusion was achieved in all cases following initial coiling. Second-stage implantation of a flow diverting stent was achieved in 49/50 cases (98%). Follow-up angiography was available for 33/50 patients (66%), with mean follow-up of 11 months. 27 patients (82%) had complete angiographic occlusion at last follow up. All patients with residual filling at follow-up still had dome occlusion. There were no mortalities (0%). Major complication rate for stage I coiling was 2% (1 patient with intra-procedural aneurysm re-rupture causing increase in a previous ICH). Major complication rate for stage 2 flow diversion was 2% (1 patient with ischemic stroke). Minor complications occurred in 2 additional patients (4%) with transient neurological deficits.

Conclusions

Staged endovascular treatment of ruptured intracranial aneurysms with acute dome-occlusive coil embolization followed by delayed flow diversion is a safe and effective treatment strategy.

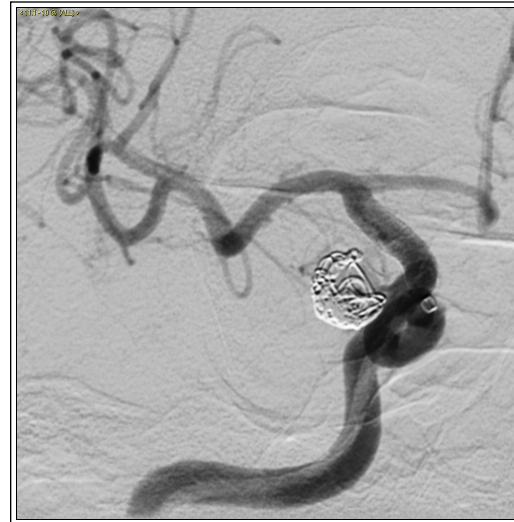
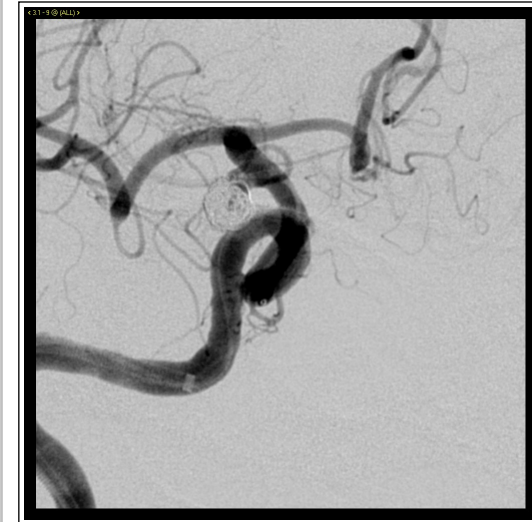


Figure 1:(Top left) DSA showing 14mm right ICA posterior communicating segment aneurysm. (Top right) Post acute coiling with dome control but residual neck and base filling. (Bottom left) Post delayed pipeline with immediate contrast stasis in residual. (Bottom right) One-year follow up angiogram shows complete occlusion.



Learning Objectives

Endovascular management of acutely ruptured aneurysms.

