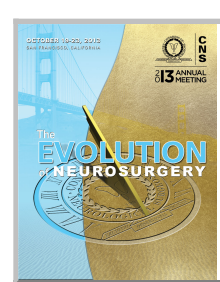


Balloon Remodeling of Complex Anterior Communicating Artery Aneurysms: Single-Center Experience and Technical Considerations

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Introduction

Reports of adjunctive balloon remodeling for the treatment of complex anterior communicating artery (ACoA) aneurysms are scarce. We report our experience with the limitations and feasibility of this technique.

Methods

Ninety-nine patients were treated with balloon-assisted coil embolization for ACoA aneurysms from 8/2004-10/2012. Records were reviewed for aneurysm size, subarachnoid hemorrhage, balloon location, treatment-related complications, and aneurysm recurrence. Endovascular treatment was categorized as “complete,” or “near-complete” in cases with a small neck remnant. Treatment was labeled “incomplete” if significant post-treatment filling was observed.

Results

Fifty-three (53.5%) aneurysms were unruptured and 46 (46.4%) were ruptured. Complete or near complete obliteration was achieved in 89 (89.9%) patients. Three (3.0%) were incompletely embolized, and treatment was aborted in six (6.1%). Average aneurysm size was 6.5 mm. Balloon trajectories were from the A1 to both the ipsilateral and contralateral A2. In seventeen (17.2%) cases, bilateral A1 access was utilized in order to achieve balloon protection of the contralateral A2 during coil embolization. In four (4.0%) cases, balloon remodeling was aborted due to technical difficulty; instead stent-assisted coiling was used for one case, and the other three were primarily coil embolized, all with complete obliteration. There were 15 (15.2%) treatment-related complications. Of these, there were five (5.1%) intraoperative ruptures. Three were due to coil perforation of the aneurysm dome but did not result in permanent deficits. The remaining two were due to parent vessel rupture during balloon inflation, one resulted in a significant stroke and the other resulted in death. All other complications were clinically silent. Mean radiographic follow-up was 2.5 years, and six (6.1%) patients were retreated for recurrence or remnant.

Conclusions

Balloon remodeling for ACoA aneurysms should be considered for broad-based, complex ACoA aneurysms. This technique provides a high rate of complete aneurysm occlusion with an acceptable complication profile. Balloon trajectory depends on aneurysm morphology and bilateral access may be useful in select cases.

Learning Objectives

- 1) Identify endovascular interventions for ACoA aneurysms
- 2) Describe technical nuances of balloon remodeling for ACoA aneurysms
- 3) Describe potential complications and pitfalls of balloon remodeling for ACoA aneurysms

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