

Pipeline flow diversion of aneurysms near the ICA terminus: long-term outcomes of jailing the A1 segment

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Learning Objectives

By the conclusion of this session, participants should be able to:

- Describe the anatomic configuration of "jailing" or covering the A1 vessel with the Pipeline embolization device (PED)
- Describe the safety and efficacy of covering the A1 with the PED

Introduction

Achieving stable neck coverage with flow diversion to treat aneurysms located along the distal supraclinoid ICA, ICA termination, and proximal MCA or ACA sometimes requires covering the ACA origin. The clinical and angiographic outcomes of this have not been described.

Methods

A prospective, IRB-approved database was analyzed for patients treated with the Pipeline Embolization Device (PED) from the MCA into the ICA across the ACA as a treatment for cerebral aneurysm.

Results

- 29 cases were identified from 2011-2017.
- Average patient age was 56.6 +/- 14.2 years.
- 33 aneurysms were treated with an average size of 8.3mm (range 3-25mm).
- Aneurysm location was: 18 (55%) supraclinoid ICA, 9 (27%) ICA termination, 5 (15%) proximal M1, 1 (3%) fusiform proximal A1.
- Adjunctive coiling was performed in 4 patients and 4 patients had multiple PEDs implanted
- Pre-embolization angiography revealed: 14 (48%) patients with dominant A1 ipsilateral to the aneurysm, 13 (45%) of which filled the contralateral A2; 27 (93%) patients had contralateral A1 with 17 (59%) filling the ipsilateral A2 on contralateral injection.
- PED deployment was successful in 100%.
- Periprocedurally, 6 (21%) required verapamil, 3 (10%) required balloon angioplasty, and 2 (7%) required abciximab for observed platelet aggregation.
- Follow-up angiography at an average of 11 months showed 21 (72%) patients with complete aneurysm occlusion and 8(28%) with partial occlusion.
- The ipsilateral A1 regressed in 26 (90%) patients, with 24 (86%) showing flow reversal across the ACoA, and 25 (86%) showing interval pial collateral development from ipsilateral MCA or PCA.
- There were zero ischemic complications or SAH occurrences.
- One patient who received abciximab for stent thrombosis had 20cc cerebellar ICH which resolved and from which she was never symptomatic.

Conclusions

This is a large, single-institution series demonstrating the safety and efficacy of covering the A1 when using flow diversion to treat aneurysms in the region of the ICA termination.

References

Rangel-Castilla L, Munich SA, Jaleel N, Cress MC, Krishna C, Sonig A, Snyder KV, Siddiqui AH, Levy EI. Patency of anterior circulation branch vessels after Pipeline embolization: longer-term results from 82 aneurysm cases. *J Neurosurg.* 2017 Apr;126(4):1064-1069.