Flow Diversion for the Treatment of Intracranial Dissecting Aneurysms: A Single Center Experience

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Introduction

Intracranial dissecting aneurysms are complex and technically challenging to treat.

Traditional techniques such as parent vessel occlusion +/- bypass or reconstruction with conventional stents are associated with less-than-ideal morbidity and failure rates.

Recently developed flow-diverting stent technology may provide a safer and less invasive option for dissecting aneurysms through reconstruction of the diseased vessel segment. We present our experience with flow-diversion in 26 patients with intracranial dissecting aneurysms.
Methods

• The charts of 26 patients with intracranial dissecting aneurysms treated with flow-diverting stents at our institution from 2011 – 2016 were retrospectively reviewed.
Results

- Twenty-six patients (16 females and 10 males; Age 25 - 78) with twenty-seven dissecting aneurysms underwent treatment using a Pipeline embolization device (N = 23) or a Flow Re-direction Endoluminal Device (FRED, N = 11) at our institution over the study period.
- Four of the patients (14.8%) presented with subarachnoid hemorrhage.
- The most common location of treated dissecting aneurysms were the internal carotid artery (N = 11, 40.7%), followed by the vertebral artery (N = 6, 22.2%), posterior cerebral artery (N = 5, 18.5%) and middle cerebral artery (N = 2, 3%).
Results

- Embolic coils were used in 4 cases (14.8%), and multiple stents were deployed in 9 cases (33.3%). The mean radiographic follow-up was 8 months.
- 11.1% of aneurysms were completely occluded (O’Kelly-Marotta [OKM] D) immediately after embolization (OKM C, 7.4%; OKM B, 18.5%; OKM A, 51.9%), and 51.9% were completely occluded at latest radiographic follow-up (OKM C, 11.1%; OKM B, 7.4%; OKM A, 22.2%).
- The stent failed to open completely in a single patient, requiring stent recapture and use of another device. Clinically significant complications occurred in a single patient (3.8%, post-embolization infarct).
• Flow-diverting stents offer a promising treatment solution for intracranial dissecting aneurysms, but the long-term efficacy of flow-diverting technology in these complex aneurysms requires further study.
Summary Points

- Flow diversion is an accepted treatment option for intracranial dissecting aneurysms.

- This method is safe to use for treatment of intracranial dissecting aneurysms.

- Further research is needed to establish the timeframe of when 100% of the aneurysm are occluded.