

Learning Objectives

To define the utility and safety profile of flow diversion embolization for high cervical and intracranial dissecting and pseudoaneurysms.

Introduction

- Dissecting and pseudo-aneurysms of the brain and cervical vasculature present unique therapeutic challenges.
- There are limited reports of flow diversion for the treatment of these aneurysms

Methods

A prospective, IRB-approved database was analyzed for all patients with dissecting aneurysms and pseudo-aneurysms treated by Pipeline flow diversion (PED) at our institution.

Table 1.		
	Total	
	Count / Average (range)	% / SD
Total cases	39	
Age	50 years (8 months-77years)	± 15
Morphology		
Dissecting	33	85%
Pseudo	6	15%
Prior treatment	5	13%
Presentation: Acute SAH	3	8%
Anterior circulation	25	64%
Posterior circulation	14	36%
Aneurysm size (average)	8.4 mm	± 4.3
Demographics and aneurysm characteristics.		

Results

39 consecutive cases were selected for analysis:

- Cervical and petrous internal carotid artery aneurysms accounted for 44% of the cases.
- 33% (13/39) required more than one PED.
- Adjunctive coiling was performed in 8% of cases.
- The average length of stay was 4.4 days with 77% patients discharged home on post-embolization day 1 or 2.
- The overall major complication rate was 2.5%, with one patient suffering an ischemic stroke.
- The minor complication rate was 5%, which accounts for two TIAs.
- All complications were from posterior circulation cases.
- There were no procedural related hemorrhages.
- Follow-up catheter angiography was available on 28/39 patients (72%) at an average of 11 months.
- Complete occlusion was 75% at 6 months and 79% at 12 months.
- Of those without complete occlusion: 1 case had complete occlusion at 24 months, 3 had trace filling, and 2 had persistent filling.

Figure 1. PED treatment of a 4.4 mm dissecting pseudoaneurysm of the right vertebral artery at the V1-2 junction, with occlusion at 12 months.

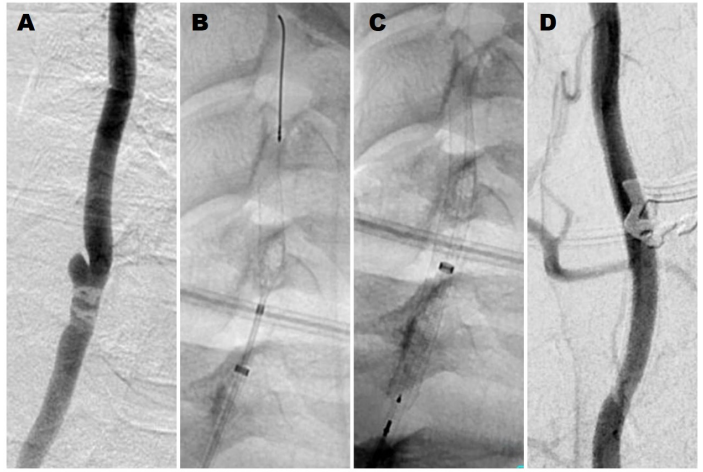


Figure 1. (A) Pre-embolization digital subtraction angiogram (DSA; lateral view) demonstrating a 4.4mm dissecting pseudoaneurysm of the right vertebral artery at the V1-2 junction. (B, C) Native fluoroscopy, lateral view, demonstrates successful deployment of a 4.0mm x 20mm PED positioned in the right vertebral artery across the dissection. Complete occlusion was demonstrated at 6-month follow-up, with confirmation by DSA at (D) 12-month follow-up with no evidence of in-stent stenosis or thrombosis.

Conclusions

This is a large single-institution series of Pipeline for dissecting and pseudo-aneurysms and demonstrates low complication rates and high obliteration rates for these challenging cases.