

INTERNAL CAROTID ARTERY FLOW REVERSAL DURING CAROTID STENTING DEMONSTRATES ENCOURAGING RESULTS IN COMPARISON TO FILTER DEVICES

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OBJECTIVES: Distal cerebral protection devices (DCPDs), such as filters and internal carotid occlusion balloons, do not protect against cerebral embolization during the initial crossing of the target lesion. The ArteriA system creates angiographically verifiable flow reversal in the internal carotid artery prior to crossing the target lesion. We compared procedural outcomes with ArteriA flow reversal versus DCPDs for carotid angioplasty and stenting (CAS). **METHODS:** Prospective, single-center database of all CAS patients from 9/2003 through 12/2004. Each patient had carotid stenosis $\geq 70\%$, and was at high risk for carotid endarterectomy (CEA) due to one or more factors: severe cardiopulmonary disease (47.4%), restenosis after CEA (31.6%), remote lesion (17.9%), previous cervical XRT or radical neck dissection (10.5%), or previous CN injury (2.1%). CAS patients were grouped into those who received 1) no cerebral protection, 2) ArteriA flow reversal, or 3) DCPD (Filterwire or Accunet). Statistical comparisons were performed using Student's t test and Fisher's exact test. **RESULTS:** CAS was performed on 95 arteries in 86 patients, with technical success of 98.9%. Procedural outcomes for stroke (Str), death (D), and stroke + death (Str+D) did not significantly differ between groups (**Table**). Male patients were more likely to receive ArteriA or DCPD use.

Protection Type	n	Selected Demographics			Outcomes		
		Male (%)	Age>80 (%)	Symptomatic (%)	Str (%)	D (%)	Str+D (%)
No Protection	12	2 (16.7)*	1 (8.3)	5 (41.7)	0 (0.0)	1 (8.3)**	1 (8.3)**
ArteriA	30	22 (73.3)	6 (20.0)	11 (36.7)	0 (0.0)	0 (0.0)	0 (0.0)
DCPD	53	34 (64.2)	8 (15.1)	12 (22.6)	3 (5.7)	0 (0.0)	3 (5.7)
All Patients	95	58 (61.1)	15 (15.8)	28 (29.5)	3 (3.2)	1 (1.1)	4 (4.2)

* $P < 0.05$ in comparison to ArteriA and DCPD groups. ** Non-neurologic death after CABG.

CONCLUSIONS: Our vascular surgeons utilized the ArteriA device for those lesions with the most unfavorable appearance on initial angiogram. Despite this negative selection bias, the ArteriA catheter performed well, with no procedural strokes or deaths. Our data support the use of internal carotid artery flow reversal during percutaneous transfemoral CAS, while recognizing that further studies are needed to precisely define the role of this technique.