

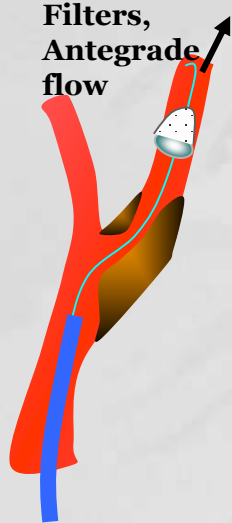
Clinical Analysis Comparing Efficacy between Distal filter Protection Device and Proximal Balloon Occlusion Device during Carotid Artery Stenting

Seung Young Chung

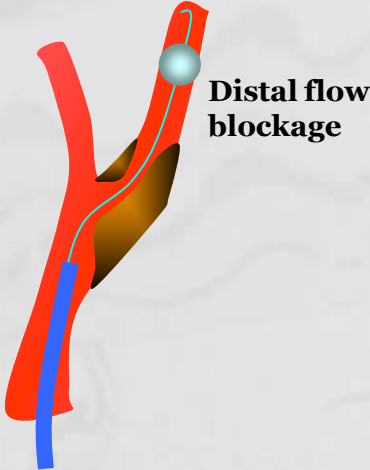
*Department of Neurosurgery,
Eulji University Hospital, Daejeon, Korea*

Cerebral Protection Strategies

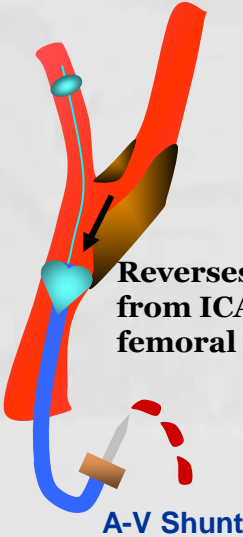
Distal Filter



Distal flow blockage by ICA Occlusion

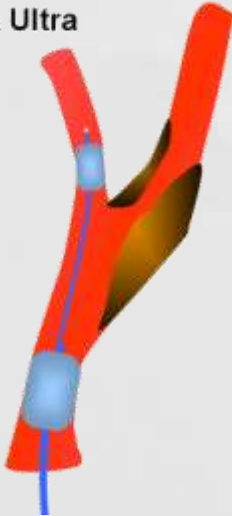


Flow reversal by proximal CCA and ECA Occlusion, blood shunting into the vein

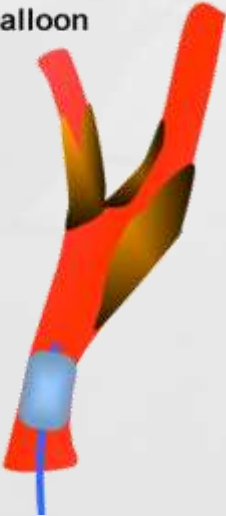


Flow arrest by proximal CCA and ECA Occlusion

Standard Mo.Ma Ultra



Mo.Ma Ultra mono-balloon



INTRODUCTION

- Distal filters are certainly the most widely used for the protection with CAS
- Proximal flow blockage device, the MO.MA, designed to establish a cerebral protection before the first crossing of the stenosis as one of the major drawbacks of distal filters
- We, therefore, used DW-MRI to investigate cerebral embolism in patients with undergoing CAS with distal filter and PFD

METHOD

- 76 consecutive cases during 5 years
 - Symptomatic or asymptomatic ICA stenosis $\geq 70\%$
- Device
 - Filter-protected device: 30
 - Proximal flow blockage device, MO.MA: 46
- Underwent preoperative & postoperative DW-MRI



RESULT

	Filter-protected device	Proximal flow blockage device	P-value
Mean age	71.2	69.1	0.25
Mean stenosis	83±11%	83±16%	0.58
Technical success	30/31(97%)	46/48(96%)	

* In two group, three patients are impossible to pass through lesion

RESULT

		Filter-protected device	Proximal flow blockage device	P-value
New ischemia		22/30(73%)	23/46(50%)	0.291
De novo lesions	Ipsilateral	87(1-10)	64(1-6)	0.032*
	Contralateral & post fossa	27(1-6)	6(1-2)	0.031*
	Total	114	70	0.013*
	Mean	3.8	1.52	

* Number of ischemic lesion per patient when present, was lower in PFD compared to FPD (p=0.013, Mann-Whitney U test)

RESULT

	Filter-protected device	Proximal flow blockage device	p-value
Asymptomatic	17(57%)	13(27%)	0.24
Cerebral infarction	11(37%)	23(50%)	0.11
TIA or amaurosis fugax	2(6%)	10(22%)	

RESULT

	Filter-protected device	Proximal flow blockage device	p-value
Open cell	20(67%)	2(4%)	0.12
Closed cell	9(30%)	0 (0%)	0.57
Mixed cell	1(3%)	44(96%)	0.10

DISCUSSION

- In recent study, proximal flow blockage devices showed a better result in postoperative emboli

www.jkns.or.kr	http://dx.doi.org/10.3340/jkns.2015.58.4.316	Print ISSN 2005-3711 On-line ISSN 1598-7876	ection
J Korean Neurosurg Soc 58 (4) : 316-320, 2015		Copyright © 2015 The Korean Neurosurgical Society	No.
Clinical Article			
Clinical Analysis Comparing Efficacy between a Distal Filter Protection Device and Proximal Balloon Occlusion Device during Carotid Artery Stenting			31
			19
			34
			124
Jong Hyeok Lee, M.D., Hee Eon Sohn, M.D., Seung Young Chung, M.D., Moon Sun Park, M.D., Seong Min Kim, M.D., Do Sung Lee, M.D.			139
Department of Neurosurgery, Eulji University Hospital, College of Medicine, Eulji University, Daejeon, Korea			731
Maleux G	AJNR Am J Neuroradiol 27:1830-33	32.07%	53

Patient Intolerance

CHALLENGING CASES

CAS in a High-Risk Patient

Complex clinical and technical decision making for carotid artery stenting.

BY SUMAIRA MACDONALD, MBChB (Comm.), FRCP, FRCR, PhD

"Luck is what happens when preparation meets opportunity."

—Seneca

Carotid artery stenting (CAS) represents a technically challenging procedure and, in many health care units, has traditionally been offered to patients who are considered to have an increased risk for carotid endarterectomy. Many of these patients have medical comorbidities that do not necessarily affect outcomes with CAS¹ but do require careful periprocedural management.

This article describes a case that represents an unacceptably high risk for carotid endarterectomy on the grounds of hostile anatomy and reflects on a number of factors that also rendered the case high risk for CAS.

A 51-year-old woman with a history of nasopharyngeal carcinoma requiring previous head and neck radiotherapy presented within 1 week of a left hemispheric transient ischemic attack. The patient was referred from a peripheral hospital and had undergone duplex ultrasound imaging of the carotid arteries and contrast-enhanced computed tomography (CT) scanning of the carotid circulation from the arch origins of the great vessels to the Circle of Willis.

Ultrasound revealed high-grade (> 90%), long-segment, bilateral internal carotid artery stenoses with hypochoic plaque and obvious ulceration. CT confirmed low-attenuation material with dense axial packing of both carotid bulbs (Figures 1 through 4). Furthermore, there was a sizeable ulcer crater at the distal left common carotid artery (CCA), just at the site where one might ordinarily wish to place the CCA occlusion balloon of a proximal embolic protection device (EPD) (Figure 1).

CLINICAL DECISIONS

This patient was very recently symptomatic. It is understood that the "numbers needed to treat" to prevent one stroke at 5 years in recently symptomatic patients are significantly lower than in patients with temporally remote



Figure 1. CT angiogram showing the ulcerated left and left internal carotid artery (B).



Figure 2. CT angiogram showing right internal carotid artery stenosis (arrow).

yet timely fashion. Alternative strategies of dealing with intolerance include intermittent clamping at emboligenic stages or the placement of a filter under flow reversal/flow arrest with subsequent release of the CCA balloon, which allows completion of the procedure under antegrade filtered flow.

Generally, any symptomatic intolerance, no matter how unpleasant to witness, is transient and much better tolerated by the brain than an embolic shower. In our practice, patients are not permitted to eat from midnight the night before until we perform CAS with proximal EPD, not because we have any intention of administering general anesthesia, but because we wish to avoid any undue complication of aspiration of stomach contents should seizure

DISCUSSION

- Our result compares well with those obtained after CAS in embolic incidence and number of DW-MRI
- Number of ischemic lesion per patient was lower in the PFD with statistically significant, shows clear trend towards a reduction of procedural embolic load with proximal occlusion

LIMITATIONS

- Non-randomized observational study
- Used DW-MRI to evaluate the postoperative brain damage but the real clinical impact of postoperative lesions has not yet to be clarified
- This tool has, nevertheless, advantage to allow an objective estimate of the procedural embolization risk

CONCLUSION

- CAS with PFD achieves good technical and clinical results
- Postoperative number of new ischemic lesions with PFD is inferior to FPD
- Further study about directly comparing the results of DW-MRI after CAS with FPD and PFD, are needed to confirm this trend

Clinical Analysis Comparing Efficacy between Distal filter Protection Device and Proximal Balloon Occlusion Device during Carotid Artery Stenting

Seung Young Chung

*Department of Neurosurgery,
Eulji University Hospital, Daejeon, Korea*