

TCT - Washington

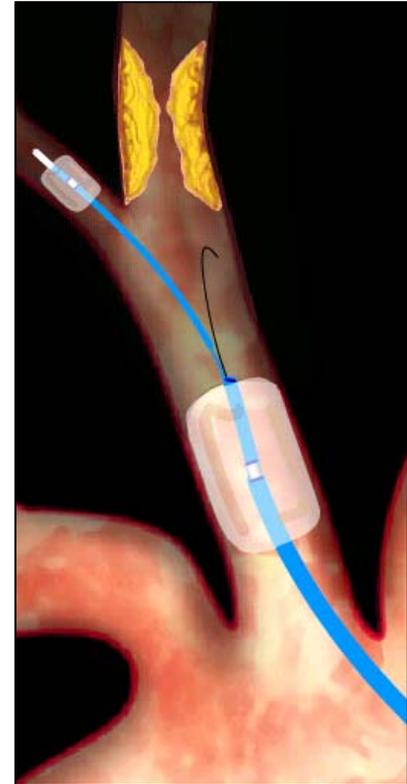
October 22, 2007

*Proximal protection
during carotid
intervention:*

*Devices, data, and
when to use rather
than distal*

protection

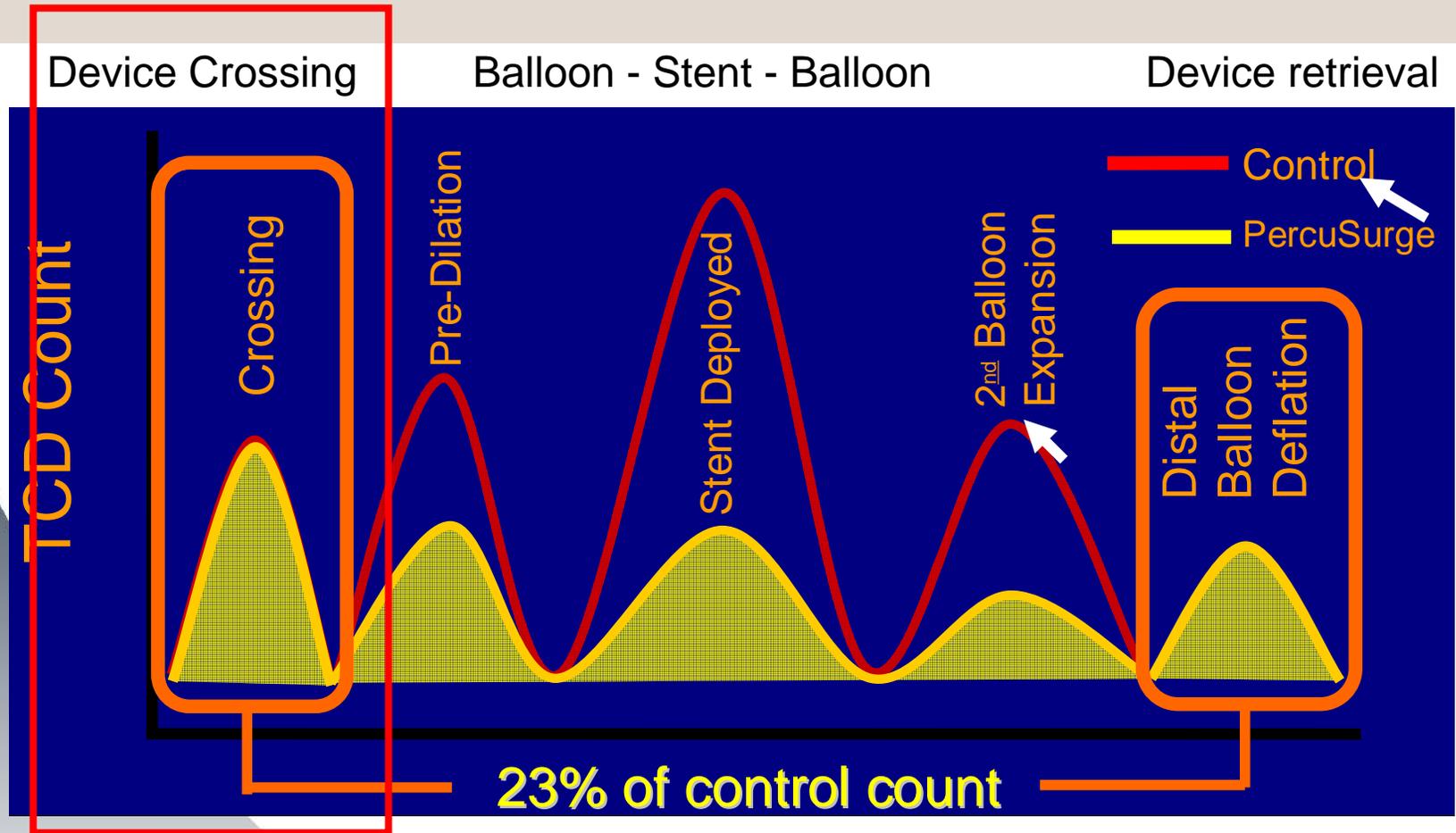
Bernhard Reimers, Mirano



Disclosure Statement of Financial Interest

I, Bernhard Reimers DO NOT have a financial interest/arrangement or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of this presentation.

Why pursuing a new concept of cerebral protection?



Embolism may occur during all phases for the procedure

Why pursuing another concept of cerebral protection?

- 1) Distal protection requires crossing of stenotic lesion = not the entire procedure is “protected”
- 2) In some cases it’s impossible to cross with protection device or predilatation is needed
- 3) Protection device related ICA complications do occur
- 4) Filters have limitations

Filter Protection during CAS

Predilatation for Filter Crossing



Baseline,
filter does not cross



2.0mm coronary
balloon
predilatation



Crossing of
6.0mm filter



Wallstent

Distal Protection: Possible Difficulties



Baseline



Spasm



Slow Flow



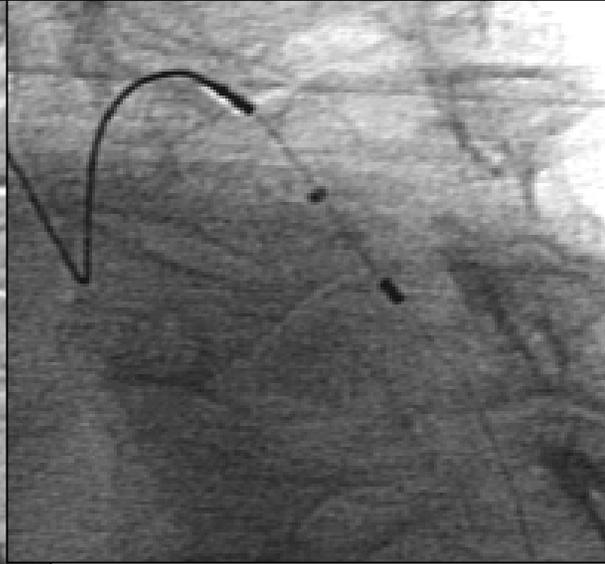
Final Result

Distal Vessel Tortuosity

Filter
did not advance



Baseline



Final result

Distal Tortuosity



Good support from sheath. Angioguard and Filterwire did not cross despite buddy-wire; Spider delivery catheter crossed but filter could not be advanced

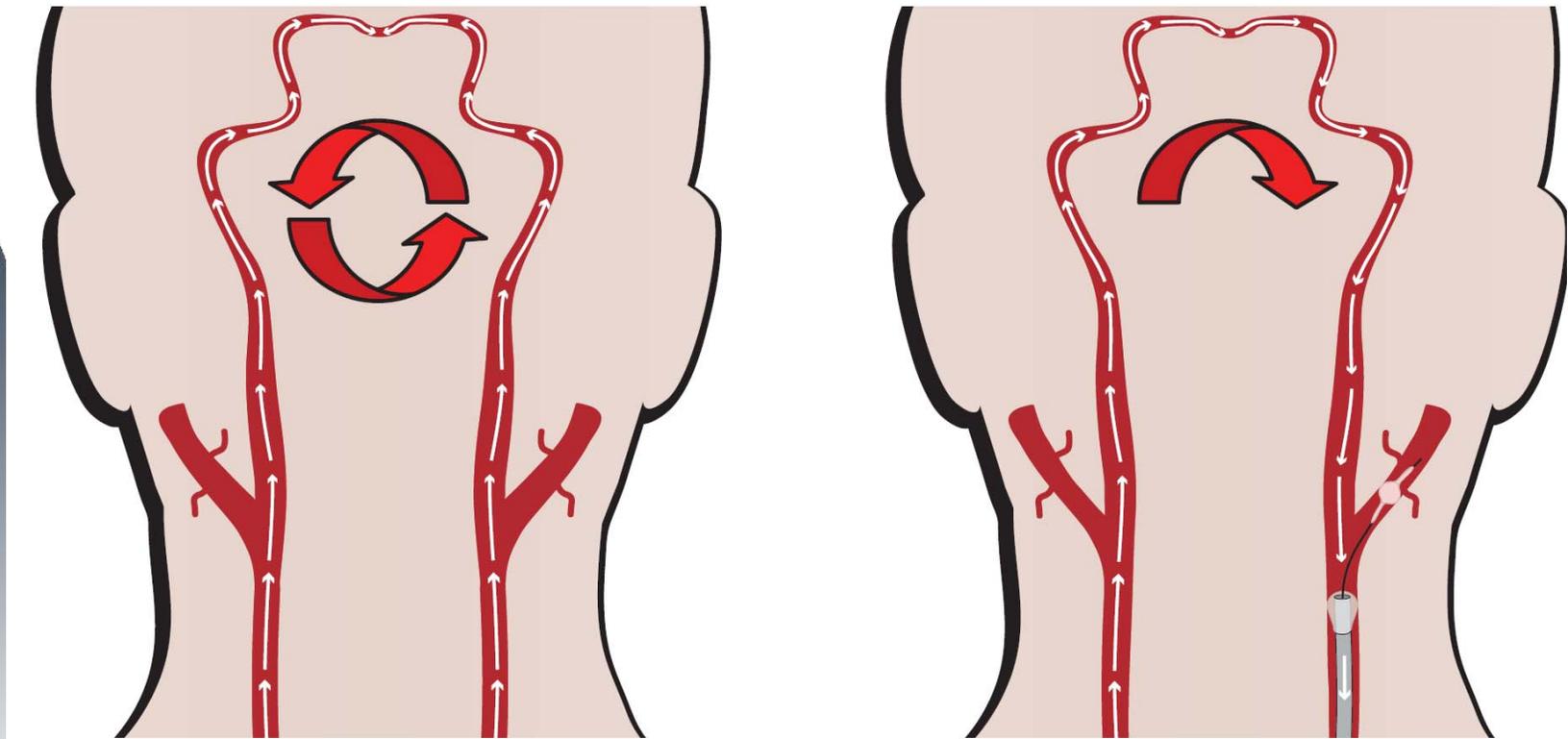


No complication **but** 3 filters and 1 Mo.Ma device used.

Increased risk because of increased procedural time
'working' in the carotid artery.

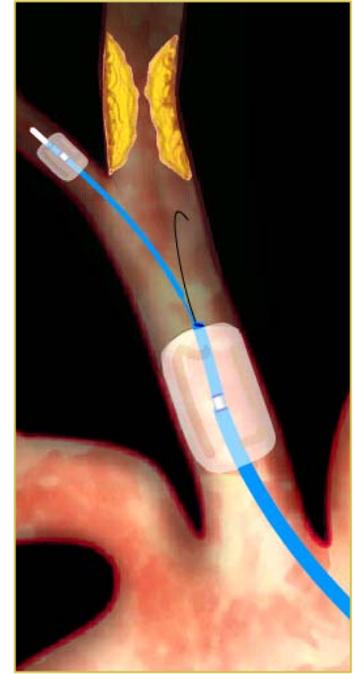
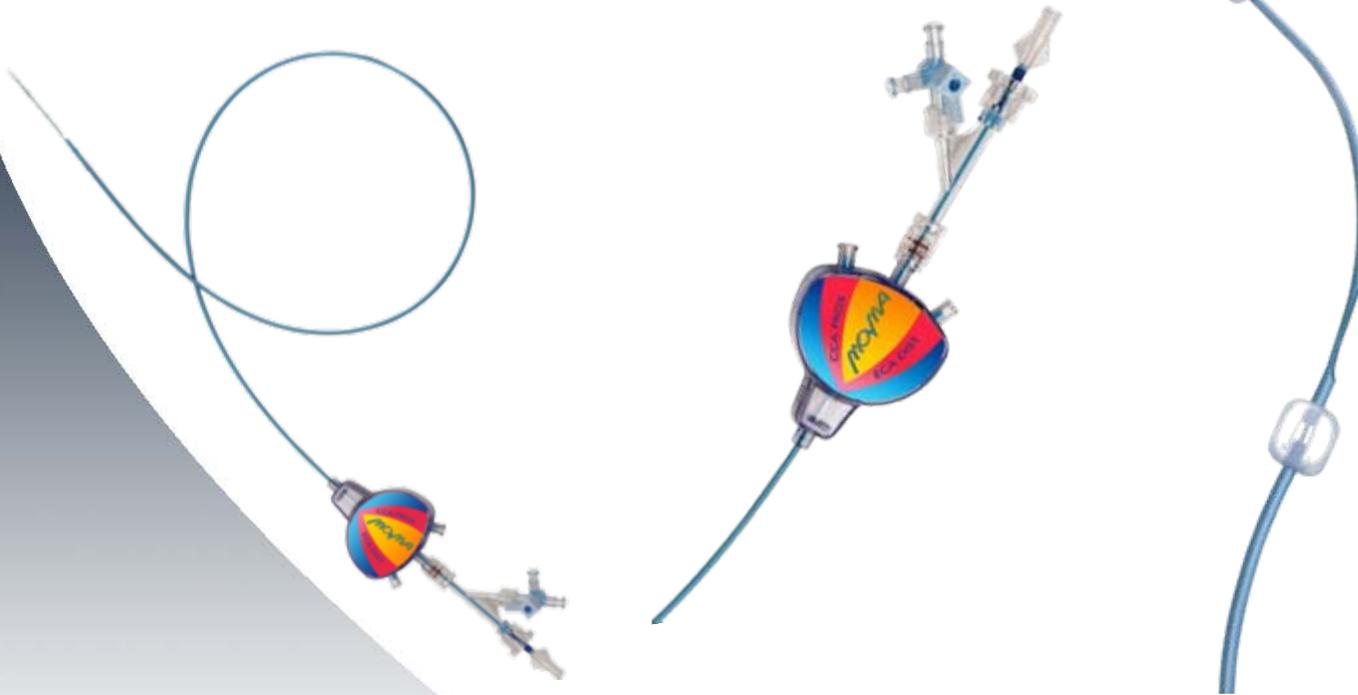
Proximal Neuro Protection: *The concept!*

Willis circuit

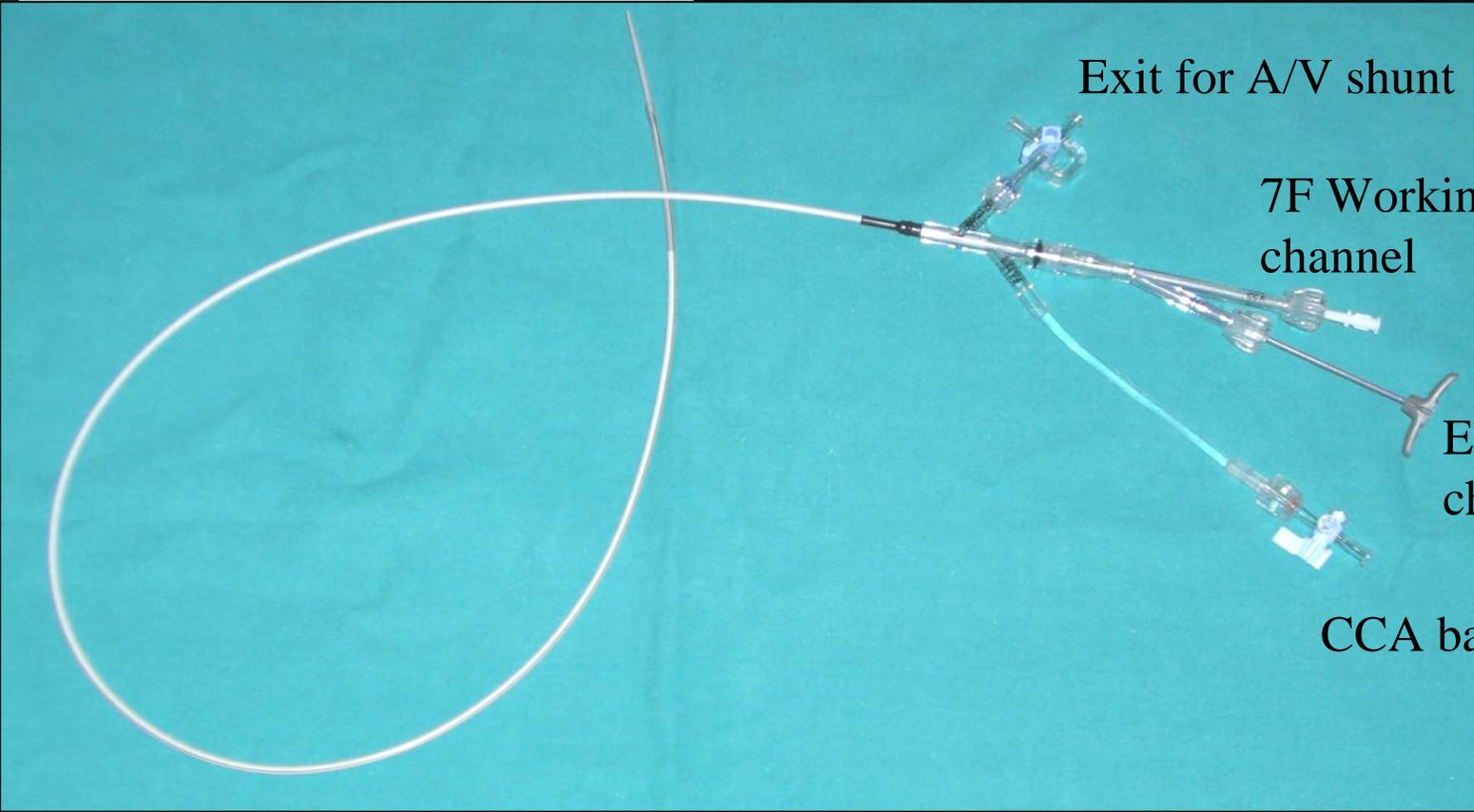
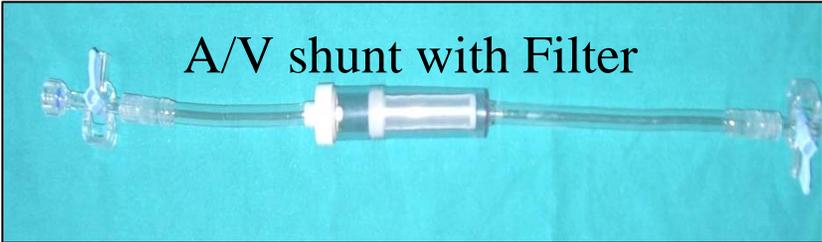


MOMA

**Single Device consisting of
long 90 cm sheath and 2
occlusion balloons**

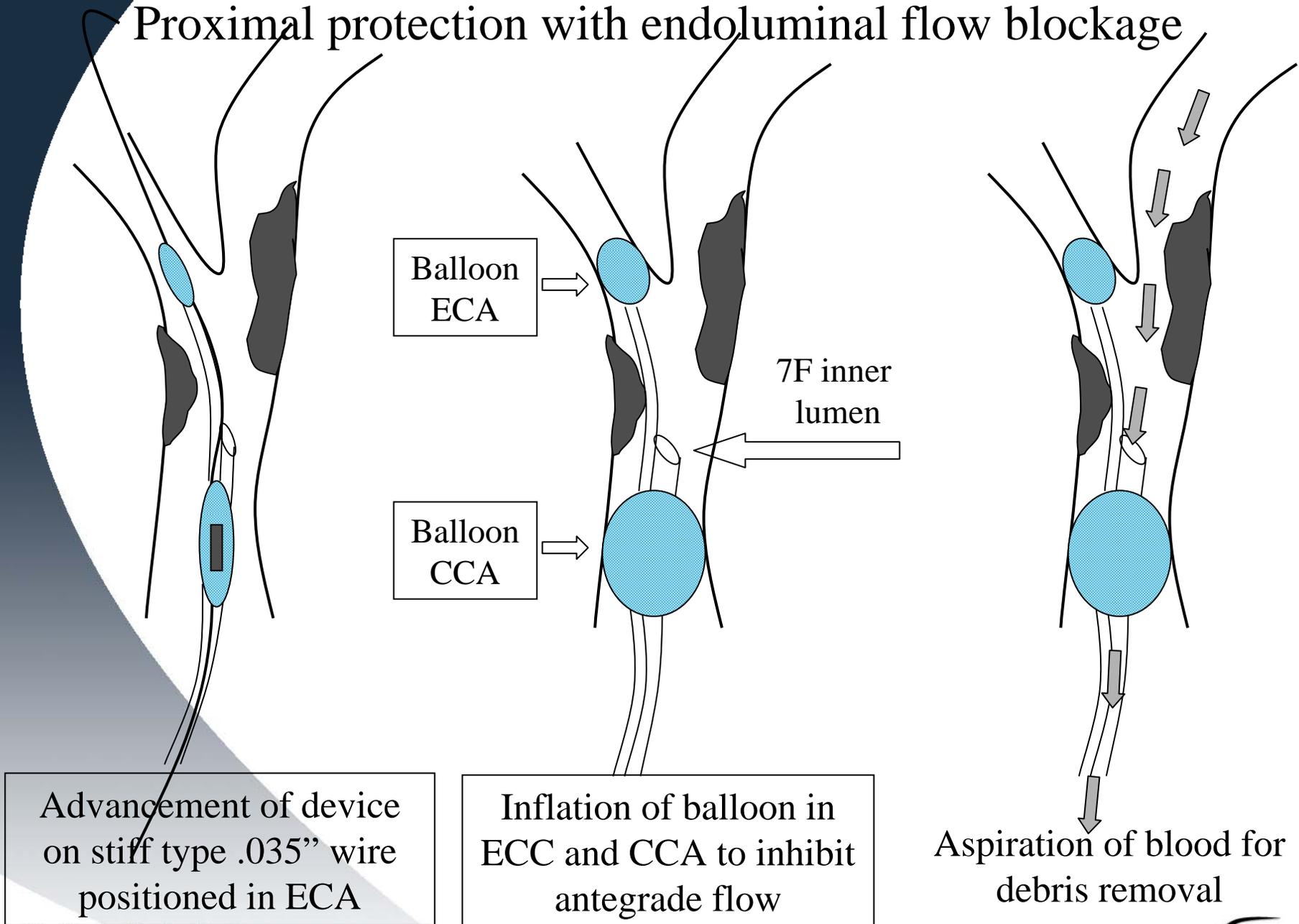


9F device



Parodi EPD system (Gore)

Proximal protection with endoluminal flow blockage

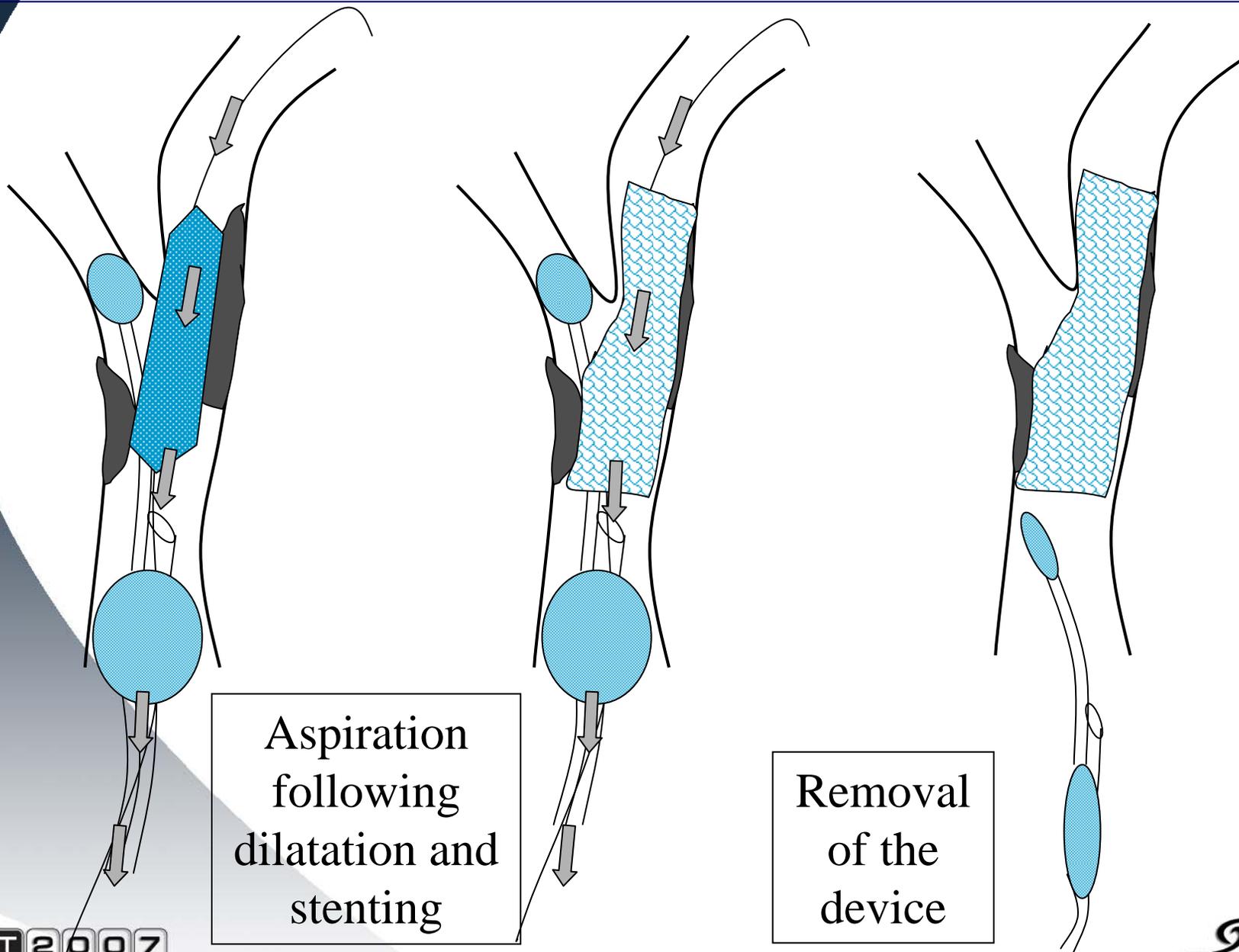


Advancement of device on stiff type .035" wire positioned in ECA

Inflation of balloon in ECC and CCA to inhibit antegrade flow

Aspiration of blood for debris removal

Proximal protection with endoluminal clamping of ECA and CCA



Emboli protection during carotid artery stenting



“Effect of Two Different Neuroprotection Systems On Microembolization During Carotid Artery Stenting” - Comparison of MicroEmbolic Signal (MES) count (by Transcranial Doppler) between Mo.Ma and E.P.I. FilterWire*

Patients	42	
Selection of Patients	21 pts. Filter	21 pts. Mo.Ma
symptomatic	6 (29%)	7 (33%)
Evidence of macroscopic debris	14 (67%)	18 (89%)
Plaque Morphology		
Calcification	71%	76%
Eccentricity	52%	57%
Ulcer	33%	27%
Total MES count	196 ± 84	57 ± 41
	(p<.0001)	

Clinical Experience

The Mo.Ma Trial

“Proximal Endovascular Flow Blockage for Cerebral Protection During Carotid Artery Stenting: Results from a prospective multicenter registry”*

Patients	157
Symptomatic Patients %D.S. > 50%	19.7%
Asymptomatic Patients %D.S. > 70%	80.3%
High surgical risk (>80y, EF<30%, COPD, CHD with stenosis >70%, unstable angina, uncontrolled diabetes, restenosis after endarterectomy, inaccessible lesion by surgery..)	75.2%
Procedural Success	100%
All stroke and death rate @ 30 days	5.7%
Neurological events defined by independent neurological team	

Clinical data

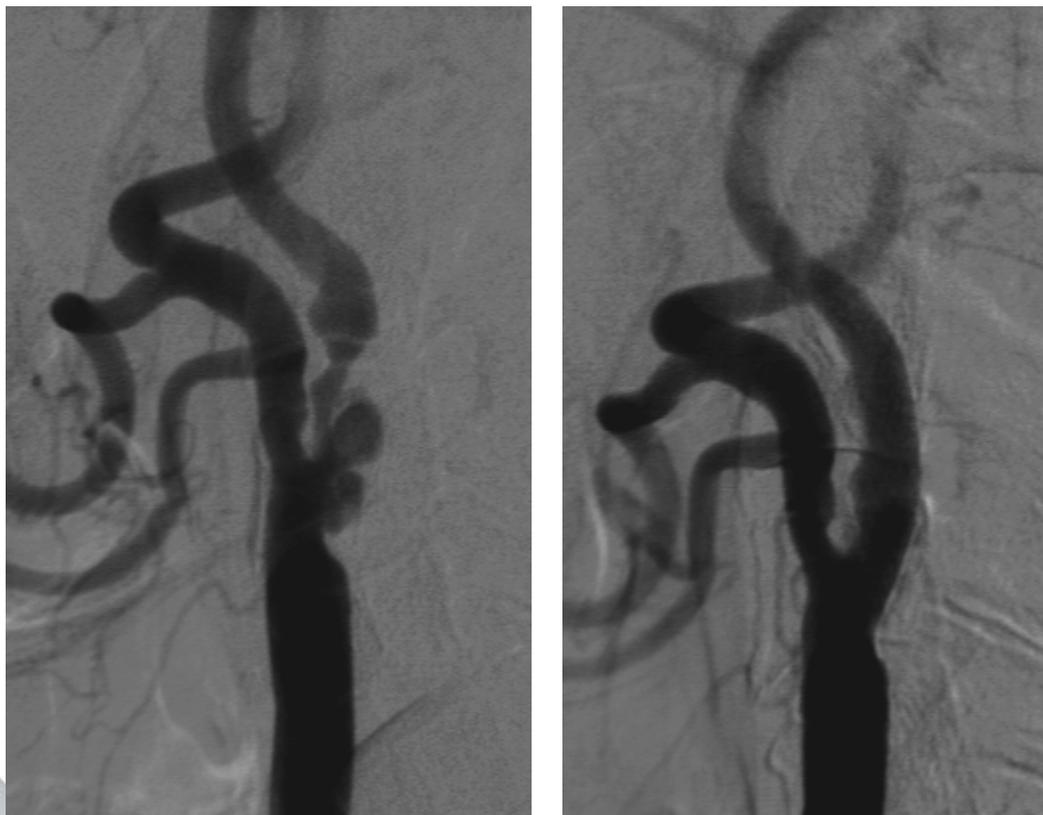
Treatment of soft carotid lesions

“Endovascular treatment of soft carotid plaques: a single-center carotid stent experience”*

Patients	84
Stenosis rate	84.1 ± 8.4%
Plaque Morphologies Heterogeneous soft	100%
Procedural Success with Mo.Ma	100%
Intolerance of flow blockage	5.9%
Macroscopic evidence of debris after filtering the blood	66.7%
All stroke and death rate @ 30 days	2.4%

The Promise

Irregular Lesion

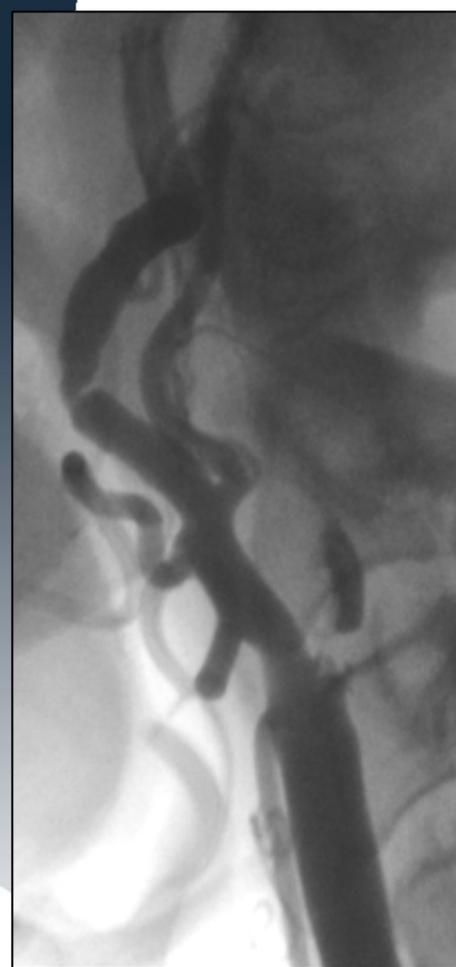


String sign with thrombus and distal slow flow

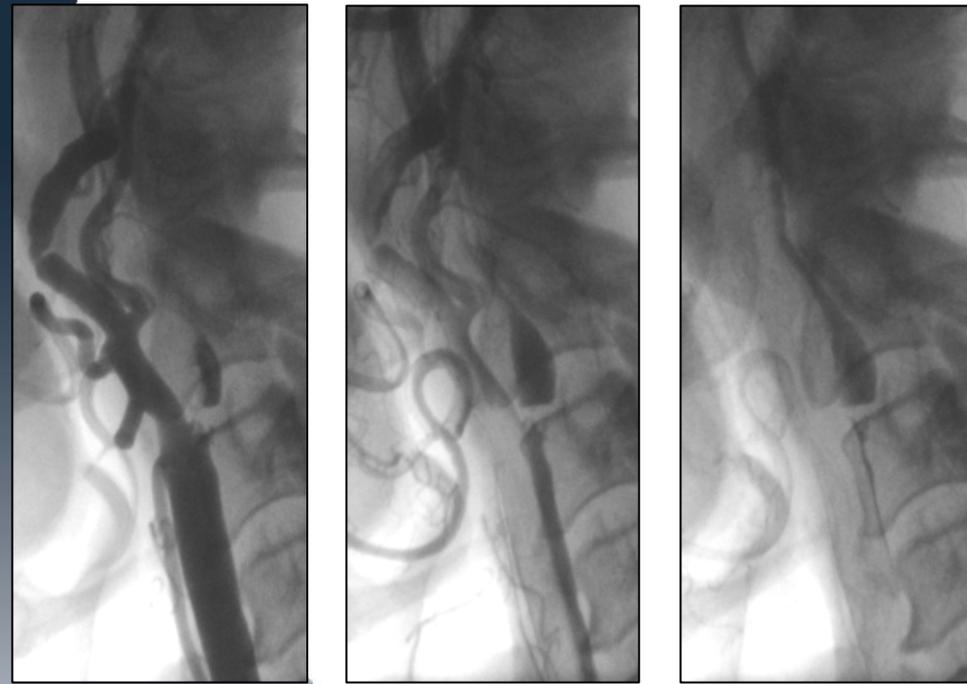


2004: not treated

2007: 67yrs, 3 crescendo TIA's



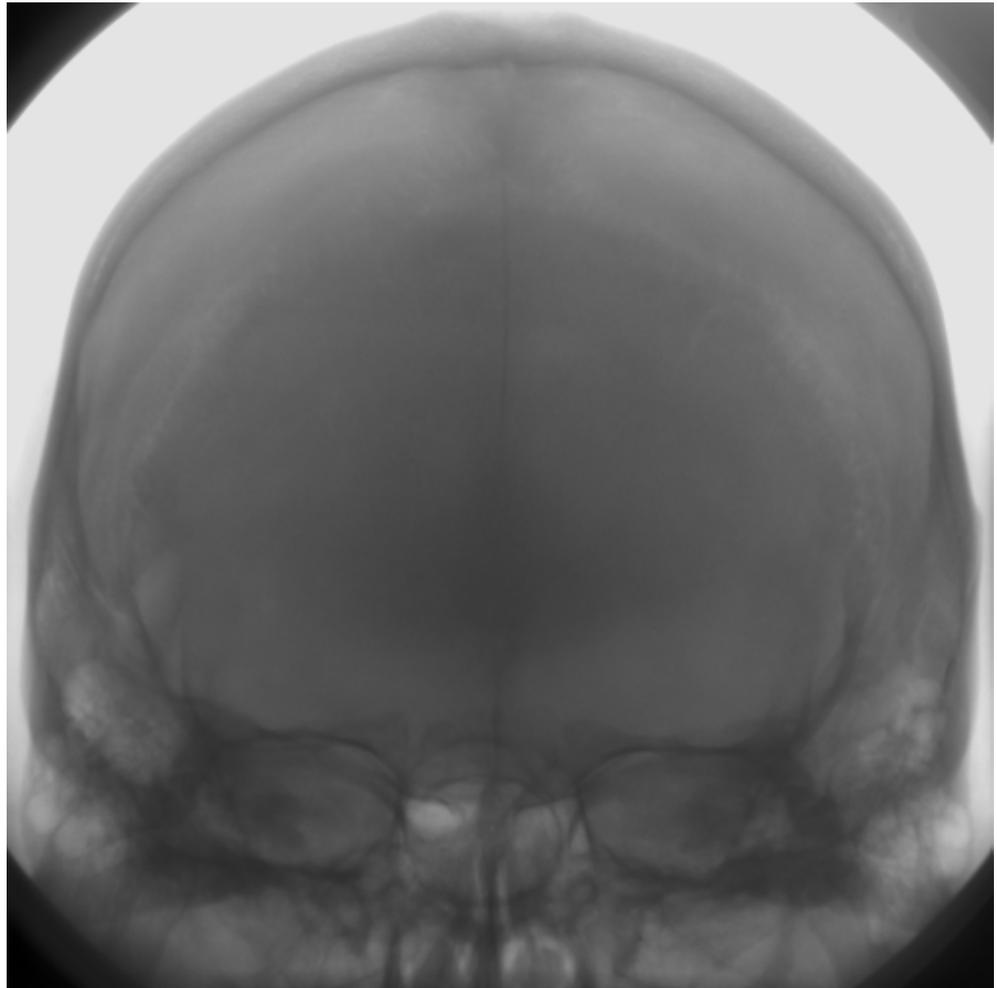
String Sign



Definition of string-sign:

High-grade stenosis of the internal carotid artery associated with the angiographic appearance of a long, thin, tapered, poststenotic segment of markedly reduced caliber with reduced antegrade flow.

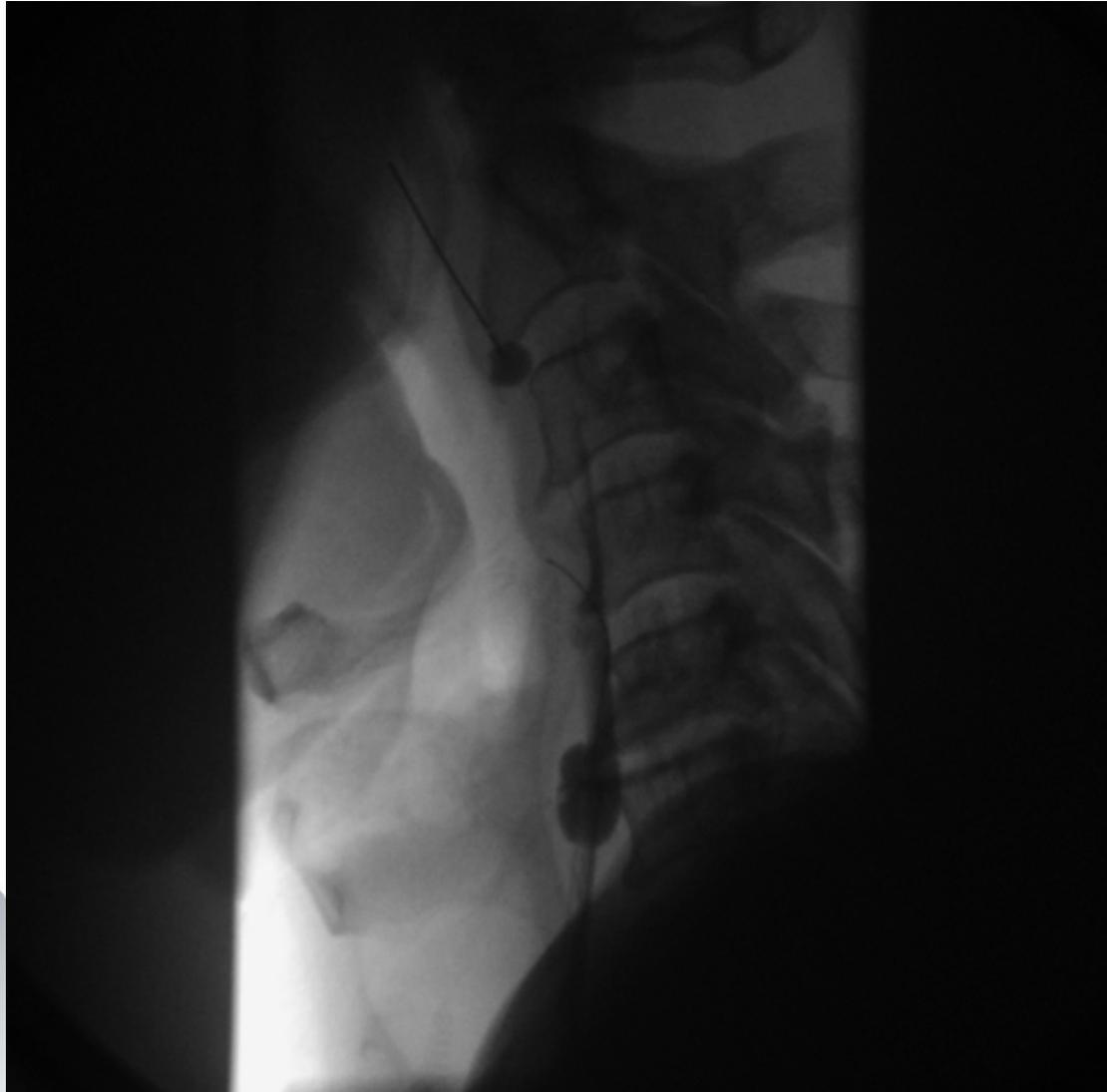
Poor intracranial flow



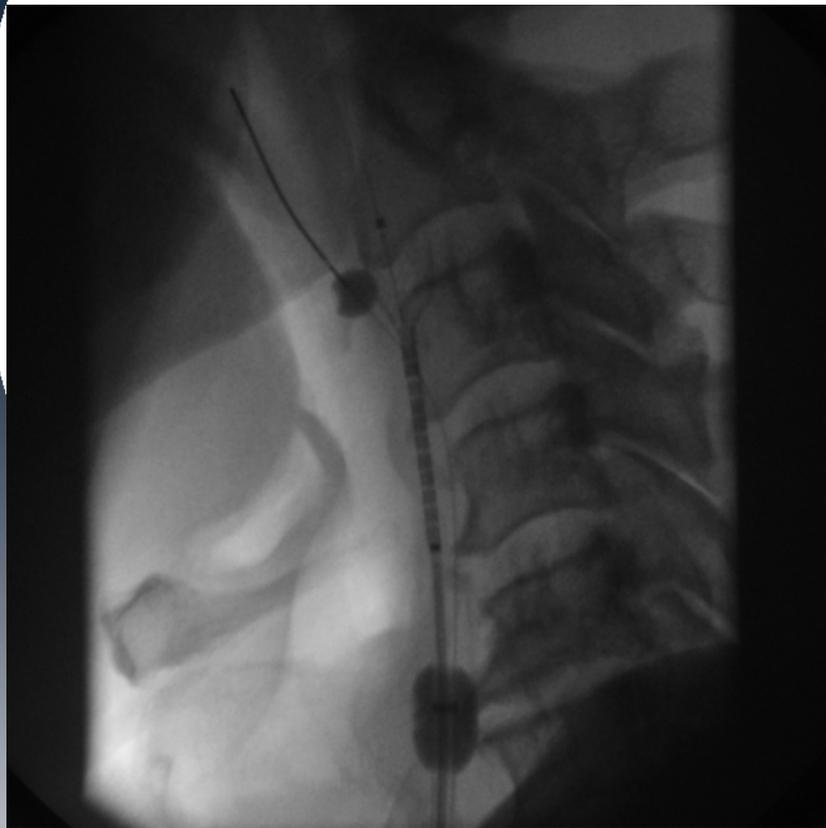
Proximal Protection



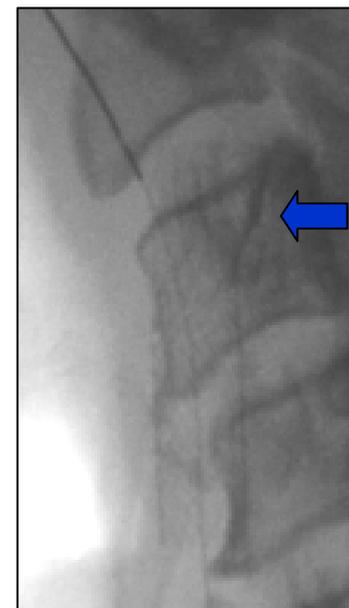
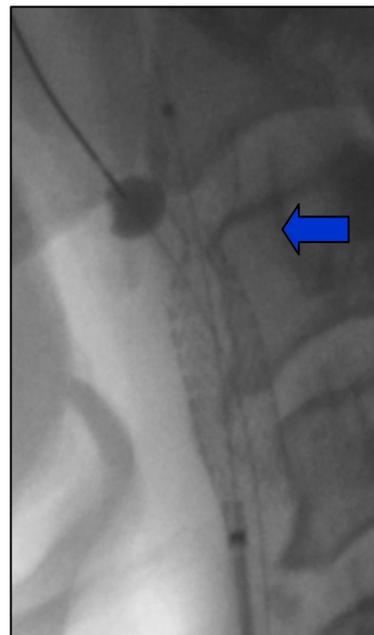
Flow Reversal



Open Cell Stent



Stent Precise,
7x30 mm, Cordis



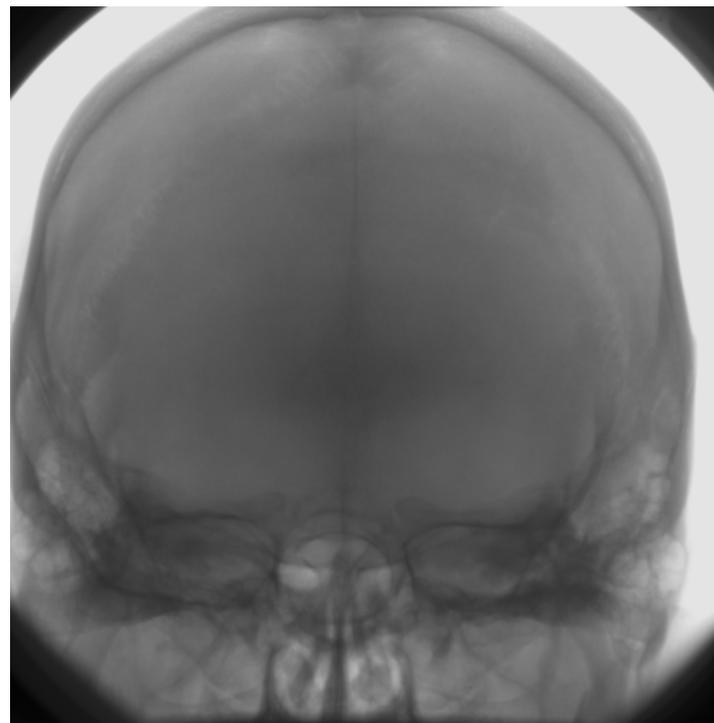
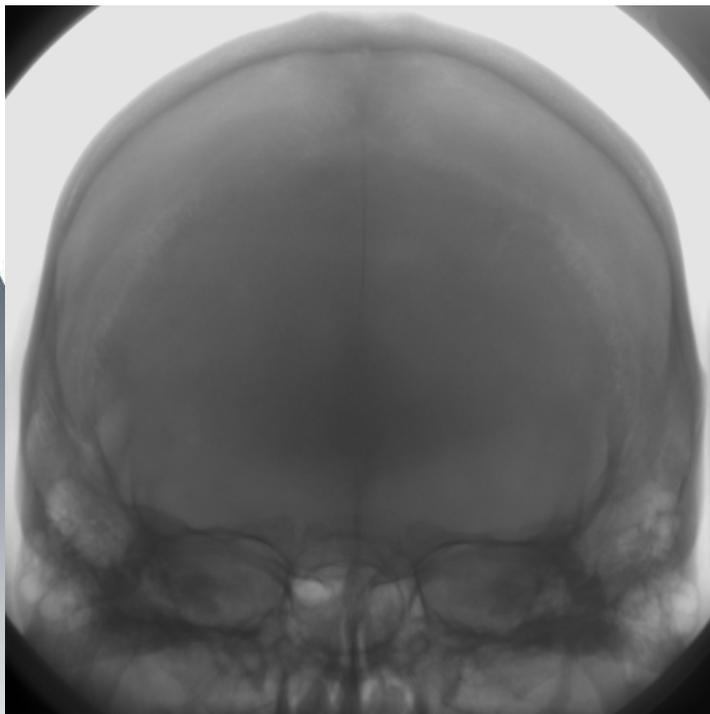
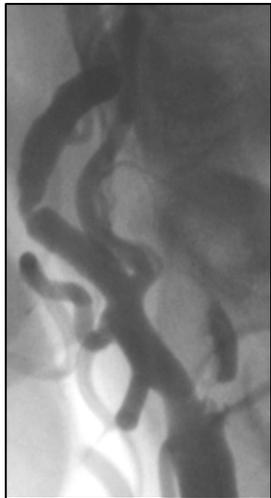
Postdilatation 5.5x20mm
balloon, 10 atm

Stent Result



- Apparently good scaffolding of soft, symptomatic plaque without evidence of prolaps,
- residual stenosis approx. 30%,
- good wall apposition (also in post stenotic dilatation).

Final Result



Conclusions

- **Filters will probably remain the most commonly used protection system for CAS, but..**
- **in certain anatomic, lesion specific, and clinical subsets alternatives are needed to guarantee procedural success with low complications.**
- **The CAS operator should be able to use both devices. Proximal protection is a little more complex but can give very much satisfaction to patient and operator.**

