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Improving your safety profile through proximal protection: experiences from a high volume carotid artery stenting center

Horst Sievert (FAAC, FESC, FSCAI)

Kolja Sievert, Stefan Bertog, Sameer Gafoor, Predrag Matić, Markus Reinartz, Bojan Jovanovic, Shahrak Zaker, Iris Grunwald, Nalan Schnelle, Anja Vogel, Pamela Ilioska, Kai Ruffmann, Gerhard Sell, Natalia Galeru, Judith Steffan

CardioVascular Center Frankfurt - CVC,

Frankfurt, Germany

Disclosures

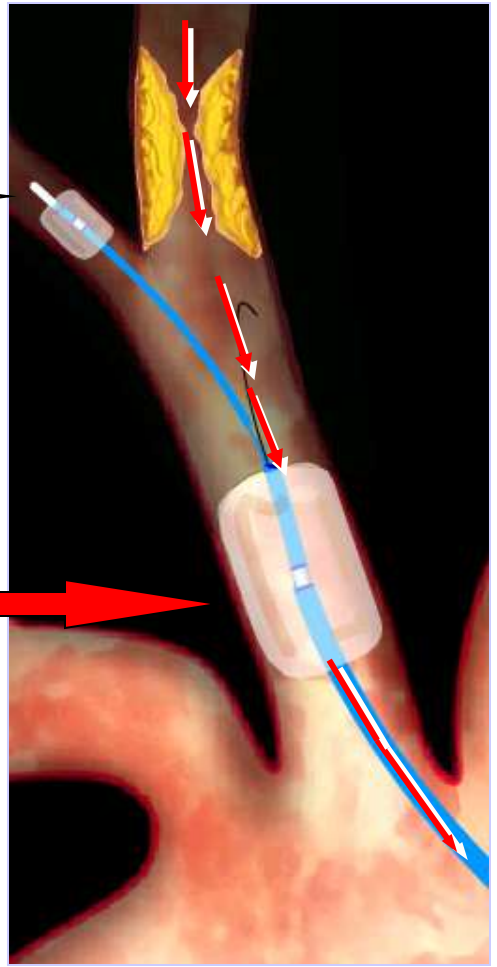
Physician name	Company	Relationship
Horst Sievert	4tech Cardio, Abbott, Ablative Solutions, Ancora Heart, Append Medical, Axon, Bavaria Medizin Technologie GmbH, Bioventrix, Boston Scientific, Carag, Cardiac Dimensions, Cardiac Success, Cardimed, Celonova, Contego, CVRx, Dinova, Edwards, Endobar, Endologix, Endomatic, Hemoteq, Hangzhou Nuomao Medtech, Holistick Medical, Intershunt, K2, Lifetech, Maquet Getinge Group, Medtronic, Mitralix, Mokita, Occlutech, Recor, Renal Guard, Terumo, Trisol, Vascular Dynamics, Vectorious Medtech, Venus, Venock, Vivasure Medical, Vvital Biomed	Study honoraria to institution, travel expenses, consulting fees to institution[1]

Proximal Protection during carotid stenting

MO.MA

External carotid balloon

Common carotid balloon



Aspiration of Debris with Syringe

Multiple studies have shown that proximal occlusion is effective!

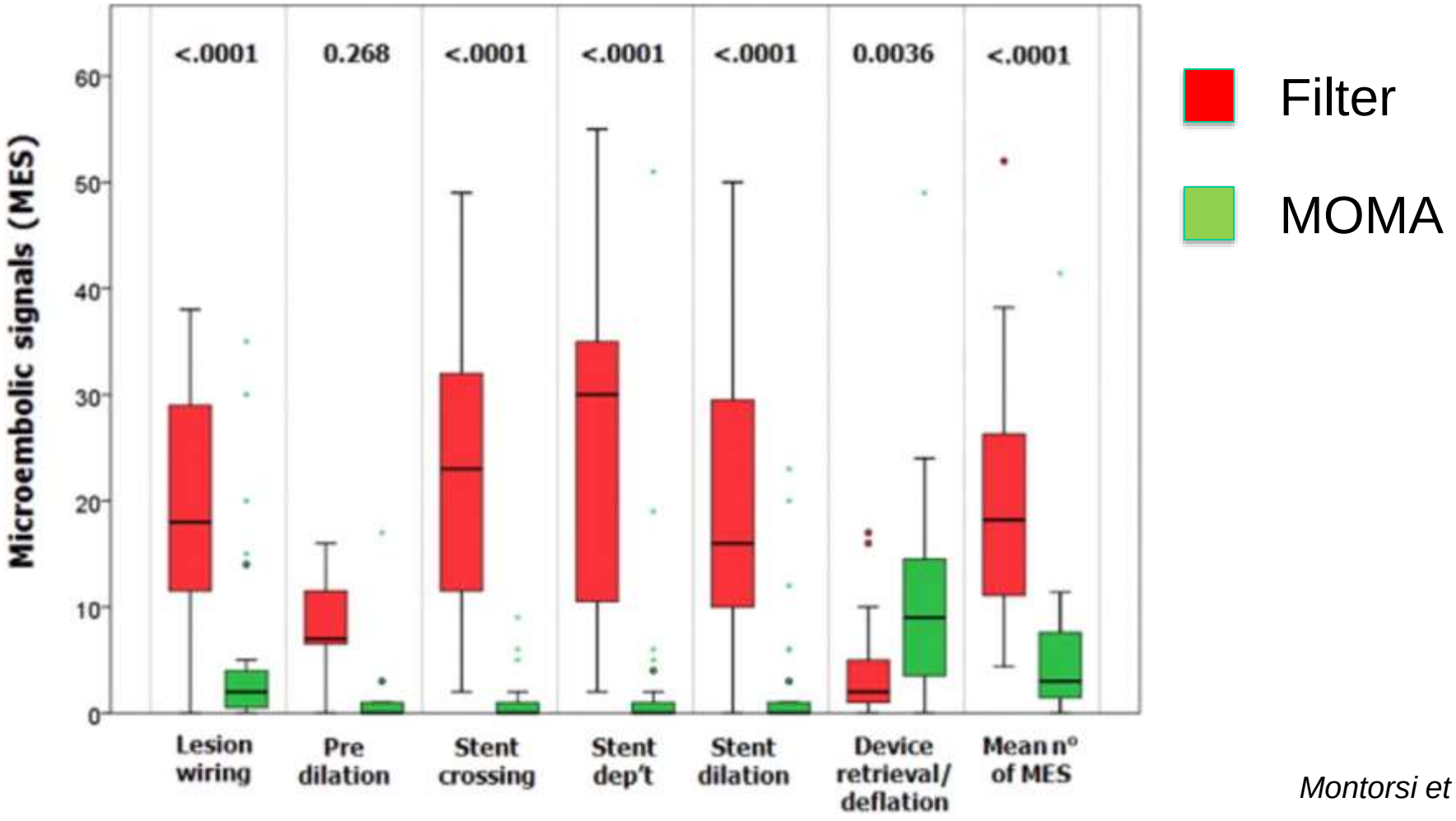
Less Microemboli Signals During Different Phases of Carotid stenting

	Filter Group	MO.MA Group	p Value
Sheath placement-protection device placement	20 ± 15	18 ± 10	NS
Wiring of the stenosis	25 ± 22	2 ± 3	< 0.0001
Stent deployment	73 ± 49	11 ± 19	< 0.0001
Balloon dilation	70 ± 31	12 ± 21	< 0.0001
Retrieval of the protection device	14 ± 15	19 ± 15	NS
Total	196 ± 84	57 ± 41	< 0.0001

Data are mean values ± SD or n (%).
Abbreviations as in Table 3.

Schmidt A, et al; JACC 2004; 44:1966-9

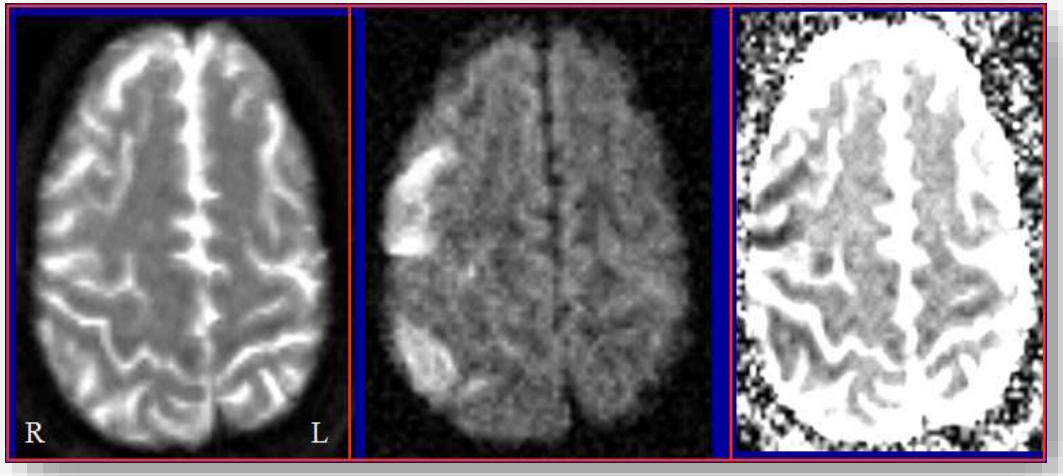
Less Microemboli Signals
During Different Phases of Carotid stenting



Montorsi et al. JACC 2011

Less MRI lesions and smaller lesions with proximal protection compared to filter

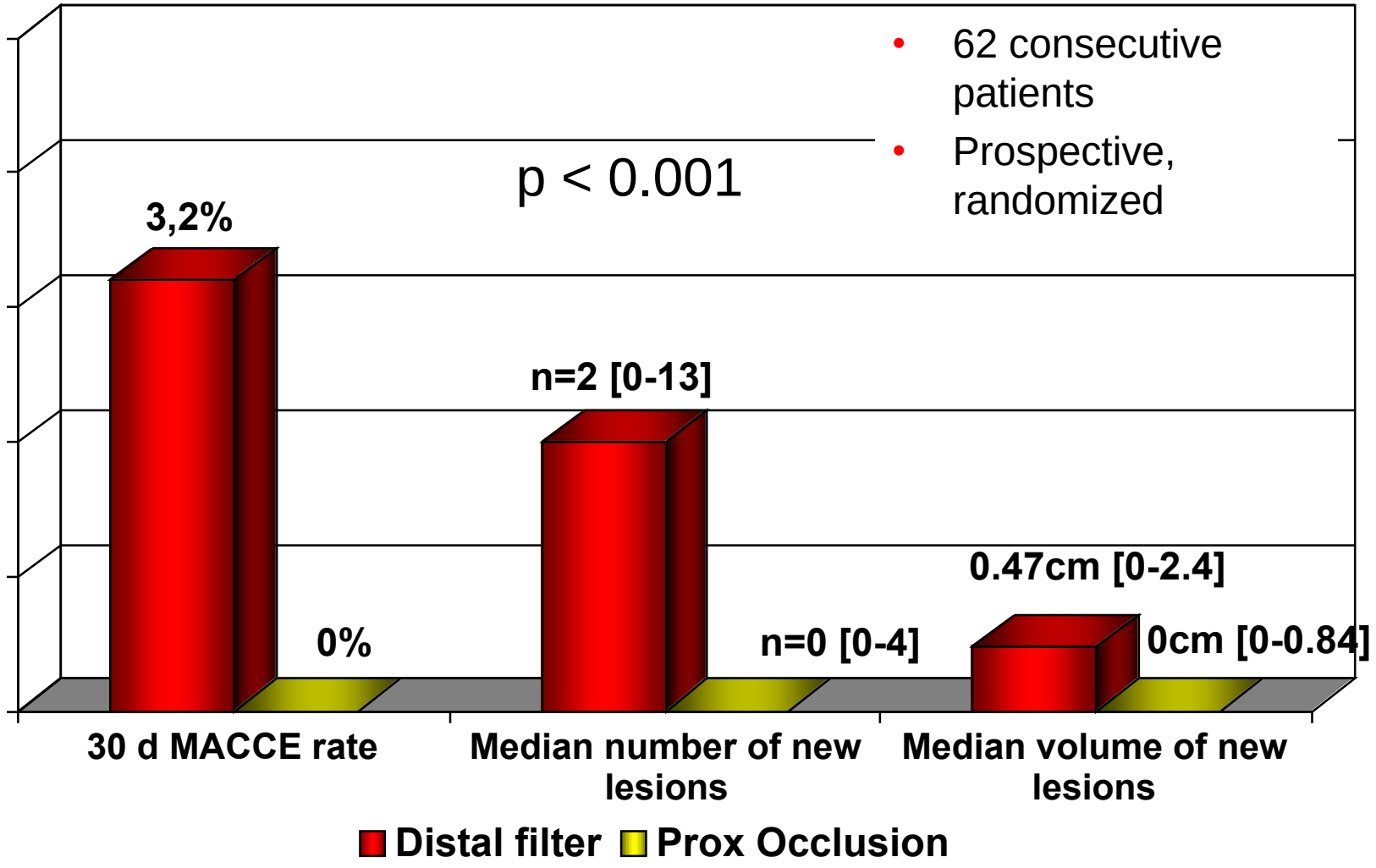
	DWMRI Subgroup	
	MO.MA	*Filter*
# new lesions	7	38
# pts with new lesions	14.2%	42.8%



T2 **DWI** **ADC**

Montorsi et al. JACC 2011

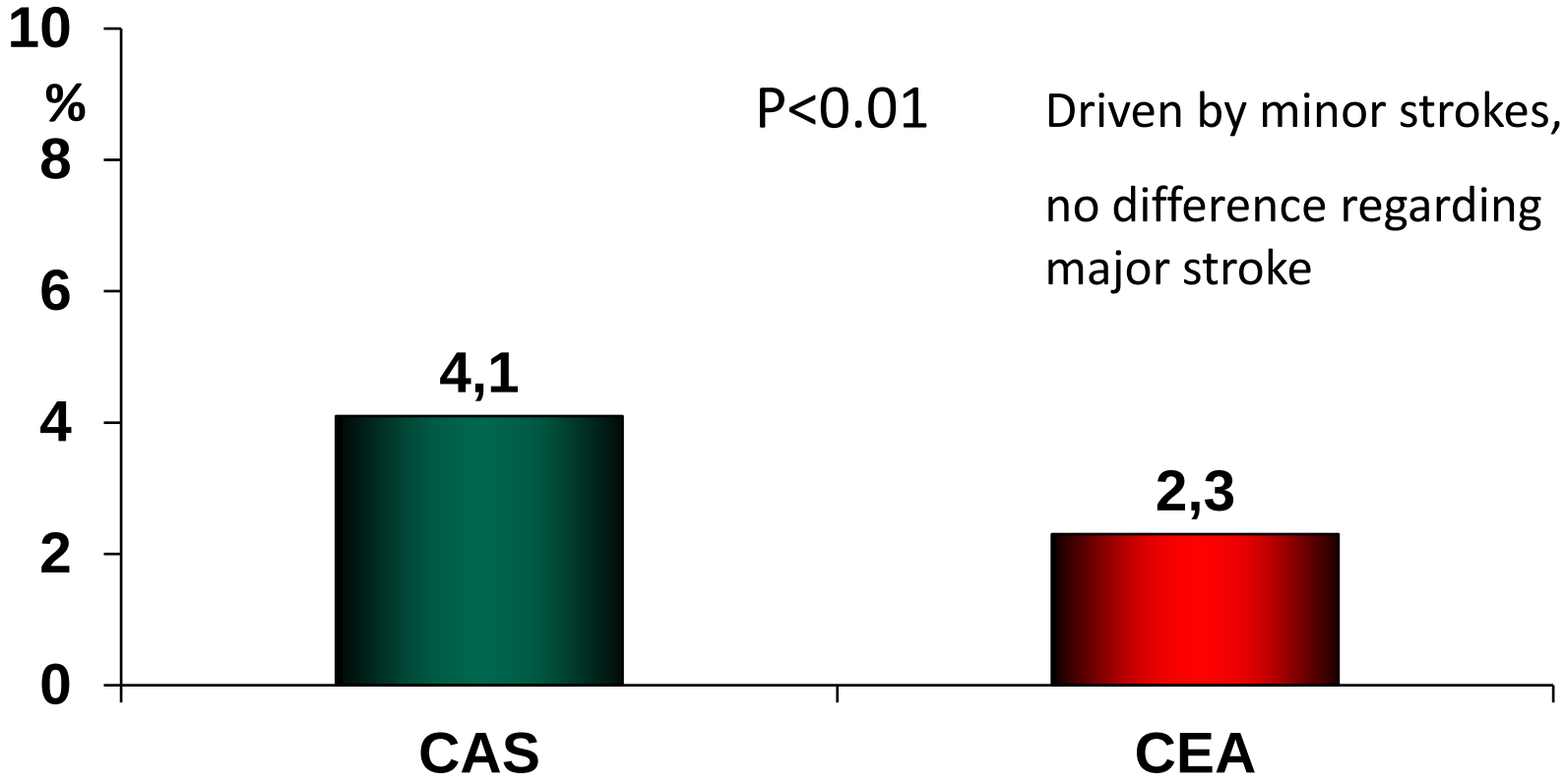
Lower MACCE rate and less MRI lesions and smaller lesions with proximal protection compared to filter



Bijiklic K et al., J Am Coll Cardiol 2012 Jan 19. [Epub ahead of print]

For comparison CREST

30 Day Results: Stroke



P<0.01

Driven by minor strokes,

no difference regarding major stroke

In all trials using proximal protection the stroke rate was lower than in CREST!

Brott et al. @ International Stroke Conference 2010

Proximal Protection MO.MA

- Advantages
  - Complete block of distal flow
  - Protects agains emboli of all sizes
  - Full protection during all steps of the procedure
    - Lesion crossing, pre-dilatation, stent implantation, post-dilatation
- Disadvantages
  - "more complex" to use than distal filter
  - Intolerance in some patients
    - Contraindicated in contralateral occlusions and "isolated hemisphere"?

Due to the disadvantages, many operators use distal filter for "low risk carotid stenoses" and proximal protection for "high risk stenoses"

But proximal protection is not that complex!

Intolerance?

- Just do it fast
- Or do it stepwise
  - Pre-dilate → aspirate → deflate MOMA → inflate MOMA → stent → aspirate → deflate MOMO → inflate MOMA → post-dilate → aspirate → deflate MOMA

If proximal occlusion is good for complex high risk lesions …

… it should also be good for simple low risk lesions

So why not …

- … to use proximal protection in all patients?
- In complex and simple lesions?
- In patients without or with contralateral occlusion?

Evaluation of proximal protection devices during carotid artery stenting as the first choice for embolic protection

Marius Hornung, MD; Stefan C. Bertog, MD; Jennifer Franke, MD; Dani Id, MD; Iris Grunwald, MD; Horst Sievert*, MD

CardioVascular Center Frankfurt, Frankfurt, Germany

EuroIntervention. 2015 Mar;10(11):1362-7

CVC Frankfurt

- Carotid stenting with proximal protection in all-comers
- 207 consecutive patients regardless of anatomy
  - No periprocedural stroke
  - One stroke after discharge due to stent thrombosis
    - 30 day stroke rate 0.5%

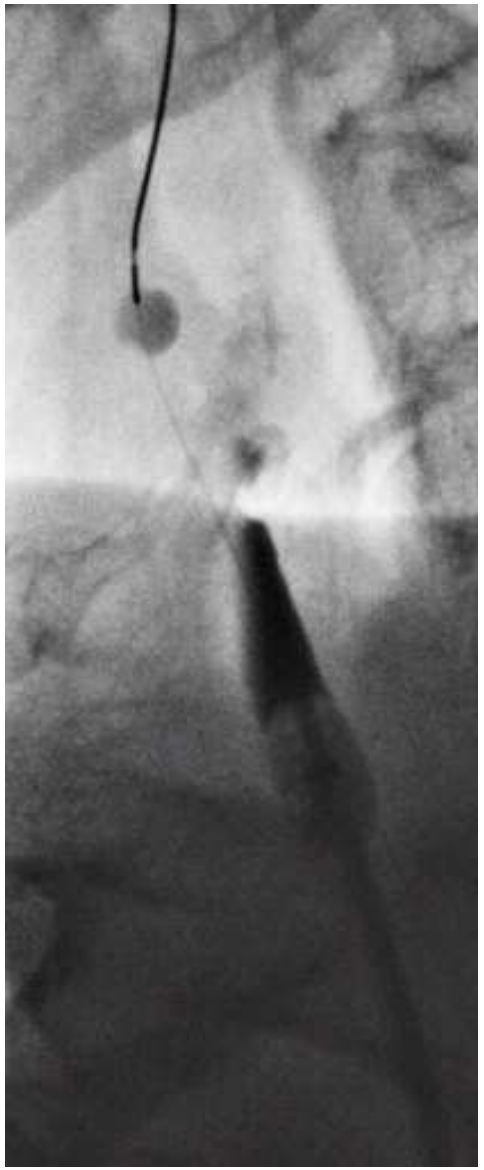
First 124 patients: Hornung M et al: http://www.ncbi.nlm.nih.gov/pubmed/25042420

Tips and Tricks:

- Do it fast!
  - You should be finished before the patient can count to 200
- Leave the proximal hub of the MOMA open so that you have continous backflow during the entire procedure
- Make sure that you have 100% protection
  - Also side branches of the the external carotis artery should be occluded

Case Example

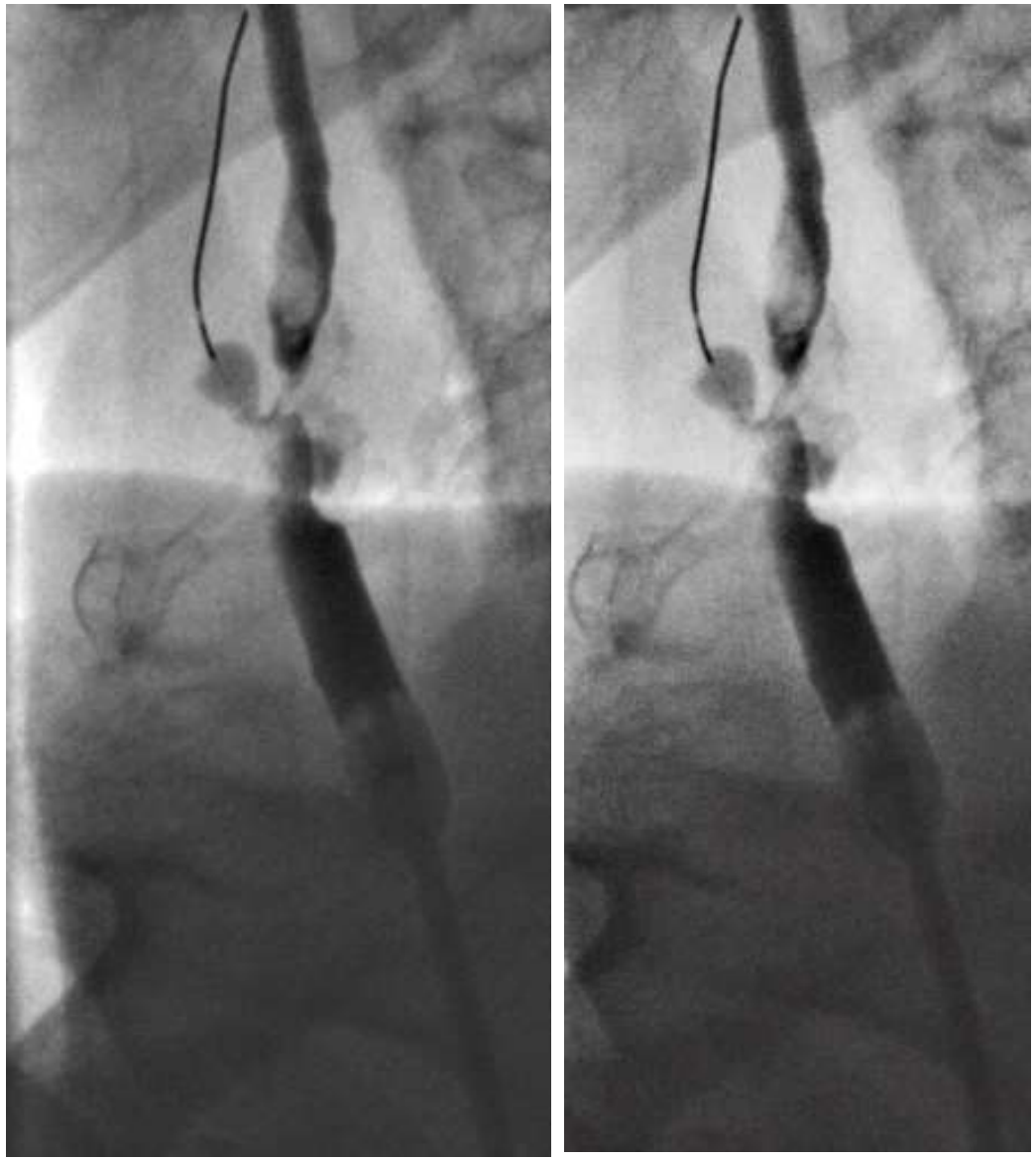
- Tight bifurcation stenosis
- Thrombus in the ICA



- Both occlusion balloons are inflated …

➢ … but we have persistent flow into the ICA !!

  ➢ No protection!



- Occlusion balloons re-positioned
- Both occlusion balloons inflated

➢ Complete protection

What if a side branch could not be occluded?

Apply continous sucction
during the entire procedure

Proximal protection …

- Can be used in all-comers
- Contralateral occlusion and isolated hemishere is not a contraindication
- It results in a very low complication rate
- Can and may be should be used as first choice during carotid stenting

Thank you for your time!

HorstSievertMD@aol.com