

Proximal vs. distal protection for carotid artery stenting: a review of the data

Prof. Eugenio Stabile, MD, PhD, FESC

Division of Cardiology, Department of Advanced Biomedical Sciences, University of Napoli "Federico II"



L I N C

Disclosure

Speaker name:

Eugenio Stabile

I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

I do not have any potential conflict of interest



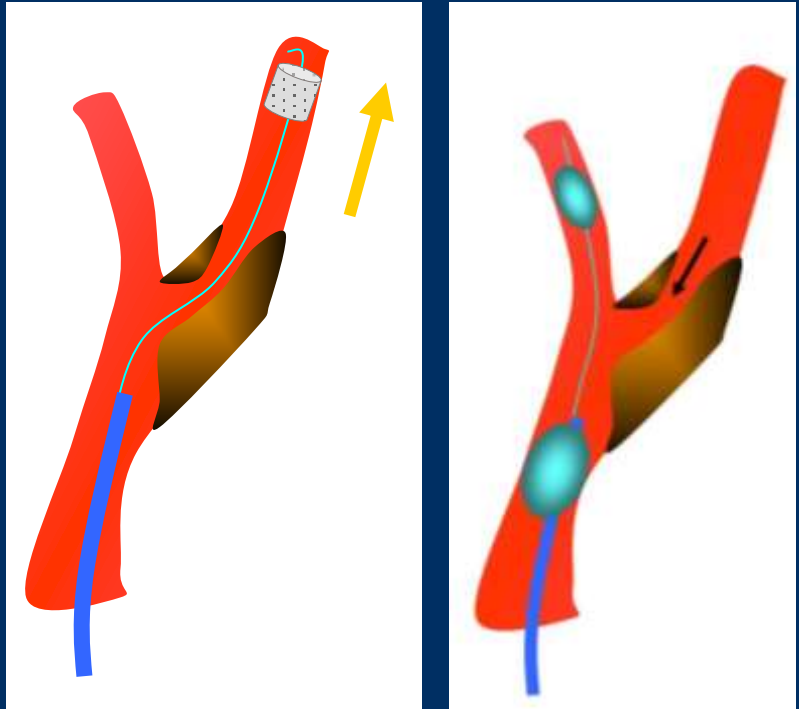
Prof. Eugenio Stabile, MD, PhD


ESC European Heart Journal (2017) 38, 1–40
 European Society of Cardiology doi:10.1093/eurheartj/ehx095
ESC GUIDELINES
2017 ESC Guidelines on the Diagnosis and Treatment of Peripheral Arterial Diseases, in collaboration with the European Society for Vascular Surgery (ESVS)

Recommendation	Class ^a	Level ^b
The use of embolic protection devices should be considered in patients undergoing carotid artery stenting.	IIa	C

Distal protection EPD (i.e. "filters")

Proximal protection EPD (proximal Balloon occlusion and flow reversal systems)



Microembolic Signals During CAS

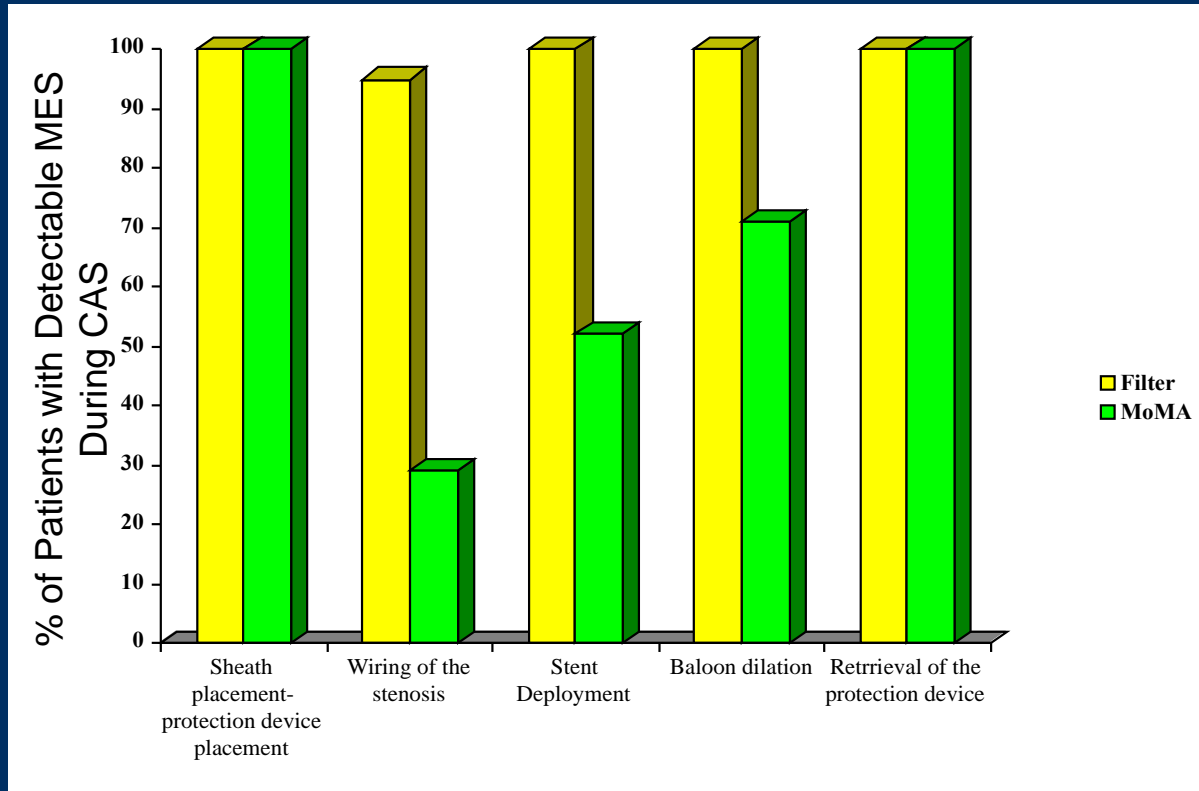
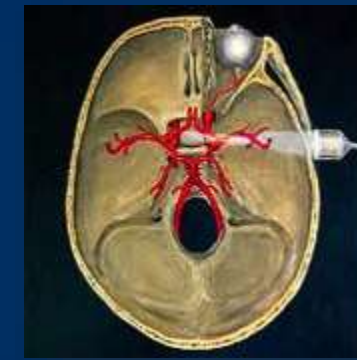


Table 3 Patients With Detectable MES During the Different Phases of CAS

Steps	FilterWire EZ (n = 27)	MO.MA (n = 26)	p Value
Lesion wiring	26 (96%)	19 (73%)	0.145
Pre-dilation*	6/7 (86%)	4/10 (40%)	0.578
Stent crossing of the lesion	27 (100%)	7 (27%)	<0.0001
Stent deployment	27 (100%)	7 (27%)	<0.0001
Stent post-dilation	26 (96%)	7 (27%)	<0.0001
Device retrieval/deflation	22 (81%)	25 (96%)	0.721

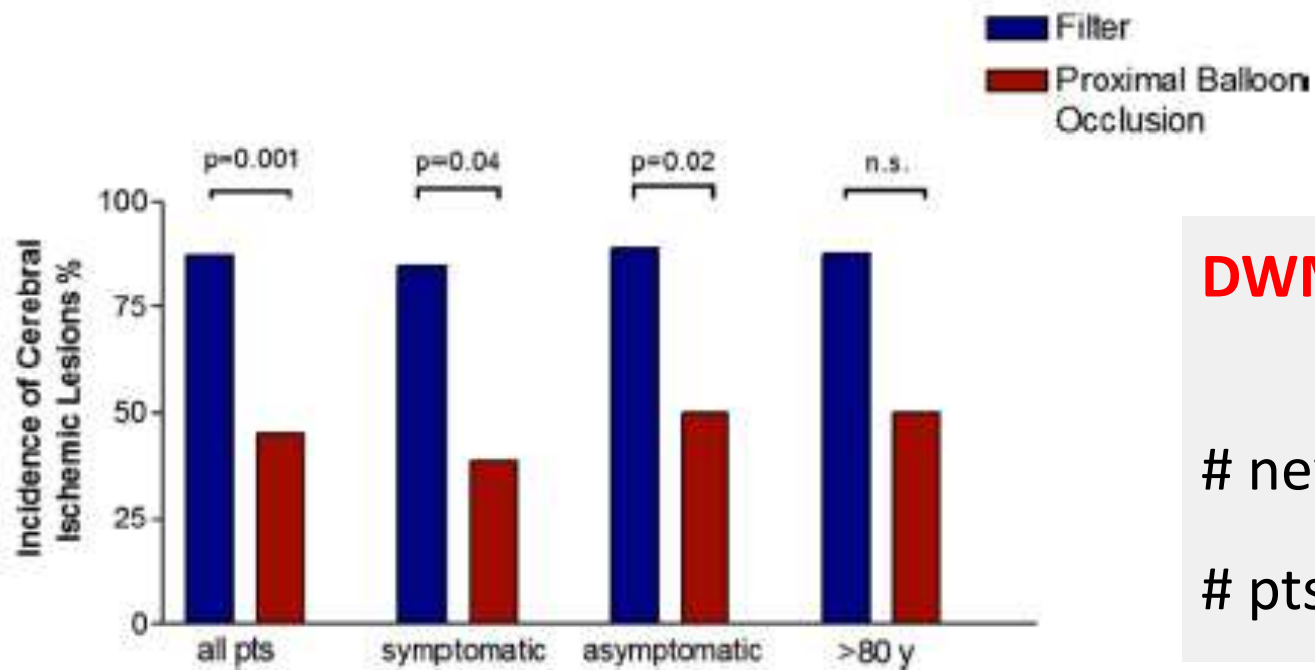
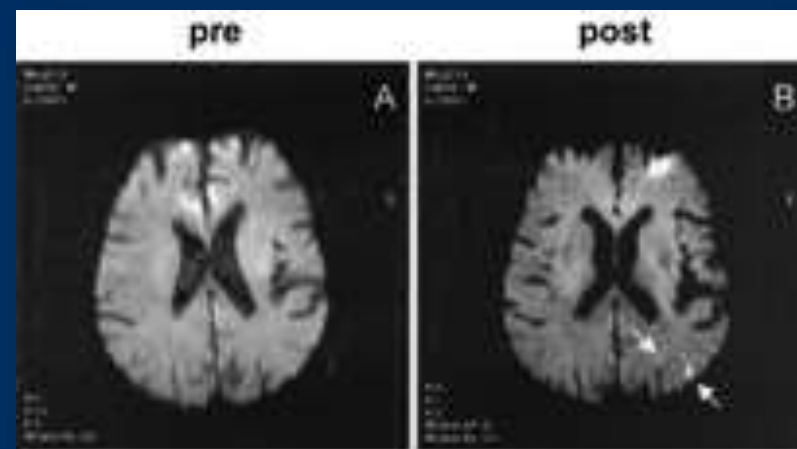
Montorsi et al. *JACC* 2011

Endovascular clamping led to a significant reduction of microscopic embolization, when compared with filter device, thus increasing safety of carotid intervention

The PROFI Study (Prevention of Cerebral Embolization by Proximal Balloon Occlusion Compared to Filter Protection During Carotid Artery Stenting)

A Prospective Randomized Trial

Klaudija Bijuklic, MD, Andreas Wandler, MD, Fadia Hazizi, MD, Joachim Schofer, MD, PhD
Hamburg, Germany



DWMRI Subgroup

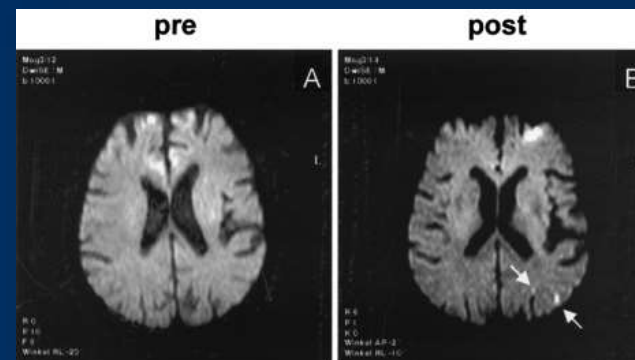
	Filter	MO.MA
# new lesions	38	7
# pts with new lesions	42.8%	14.2%

Montorsi et al. *J Am Coll Cardiol Intv* 2011

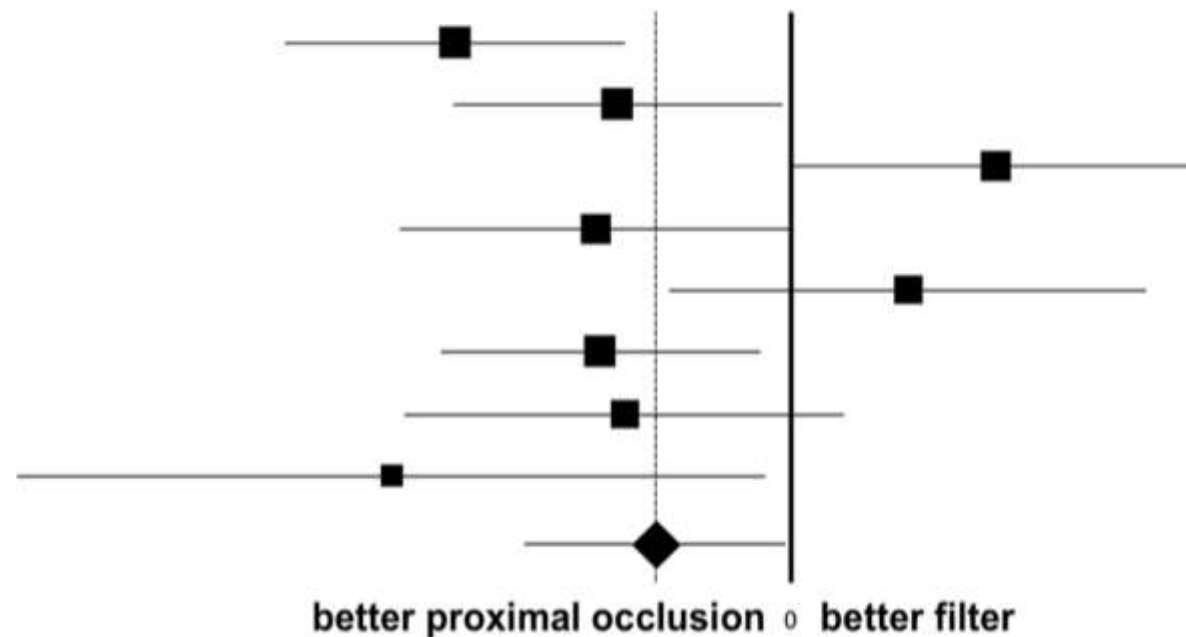
Bijuklic et al *J Am Coll Cardiol* 2012

Cerebral Embolic Lesions Detected With Diffusion-Weighted Magnetic Resonance Imaging Following Carotid Artery Stenting

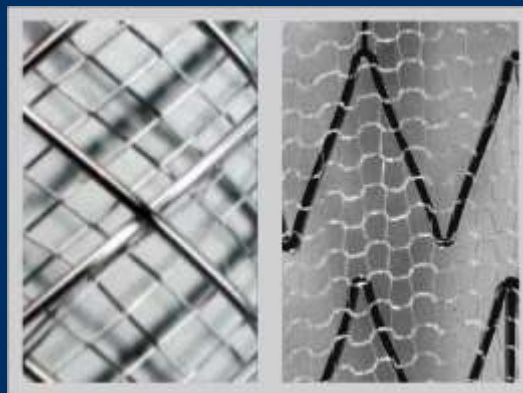
A Meta-Analysis of 8 Studies Comparing Filter Cerebral Protection and Proximal Balloon Occlusion




Study ID	ES	95% CI	N
Bjuklic K. et al. 2012	-1.05	-1.58 , -0.52	62
Cano N.M. et al. 2013	-0.54	-1.06 , -0.03	60
Castro-Afonso LH. et al. 2013	0.64	0.00 , 1.28	40
El-Koussy M. et al. 2007	-0.61	-1.22 , -0.00	44
Flach Z.H. et al. 2007	0.37	-0.38 , 1.11	33
Leal I. et al. 2012	-0.60	-1.10 , -0.10	64
Montorsi P. et al. 2011	-0.52	-1.21 , 0.17	35
Taha M.M. et al. 2009	-1.25	-2.42 , -0.08	19
Overall (random-effects model)	-0.43	-0.84 , -0.02	357

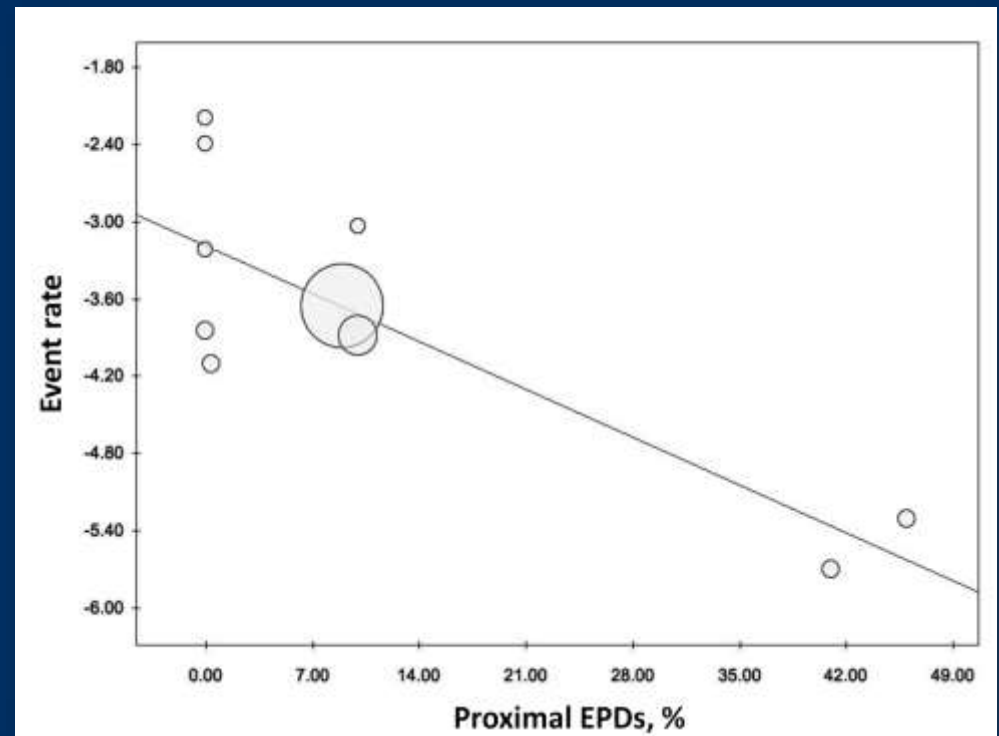
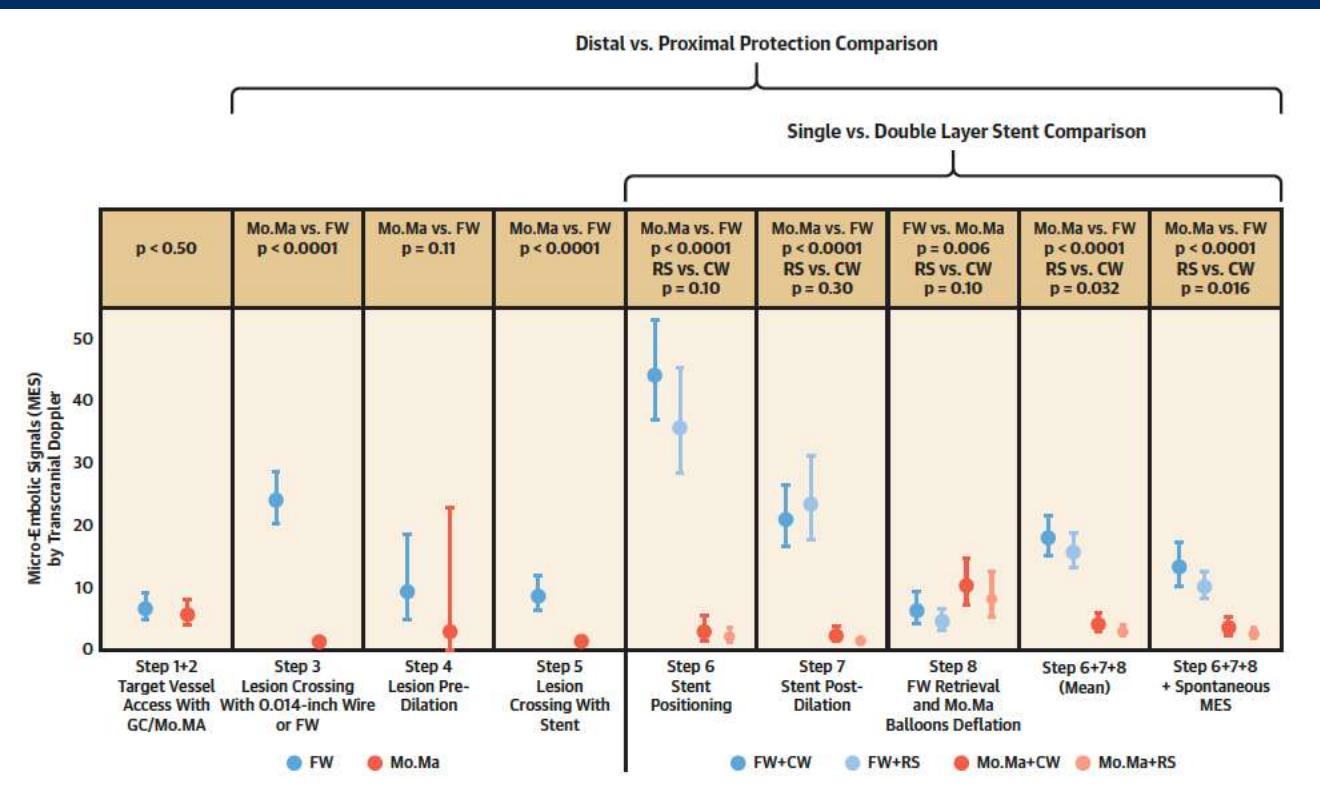


Carotid Wallstent Versus Roadsaver Stent and Distal Versus Proximal Protection on Cerebral Microembolization During Carotid Artery Stenting



Double layered stents for carotid angioplasty: A meta-analysis of available clinical data

Anna Sannino, MD^{1,2*} | Giuseppe Giugliano, MD, PhD^{1,2*} | Evelina Toscano, MD^{1,2} | Gabriele G. Schiattarella, MD^{1,2} | Anna Franzone, MD, PhD^{1,2} | Tullio Tesorio, MD³ | Bruno Trimarco, MD^{1,2} | Giovanni Esposito, MD, PhD^{1,2} | Eugenio Stabile, MD, PhD^{1,2} 

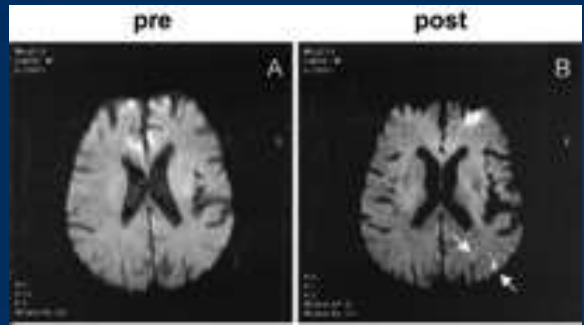
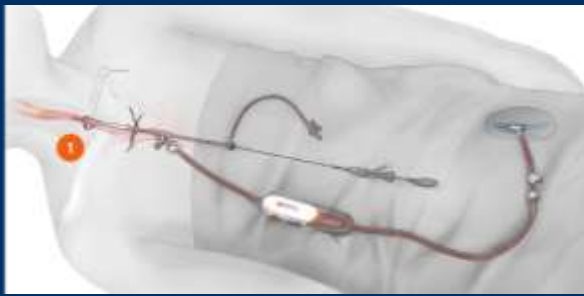


Montorsi P. et al. *J Am Coll Cardiol Interv* 2020

Sannino A et al. *Cath Cardiovasc Int* 2018



Transcarotid revascularization (T-CAR)¹

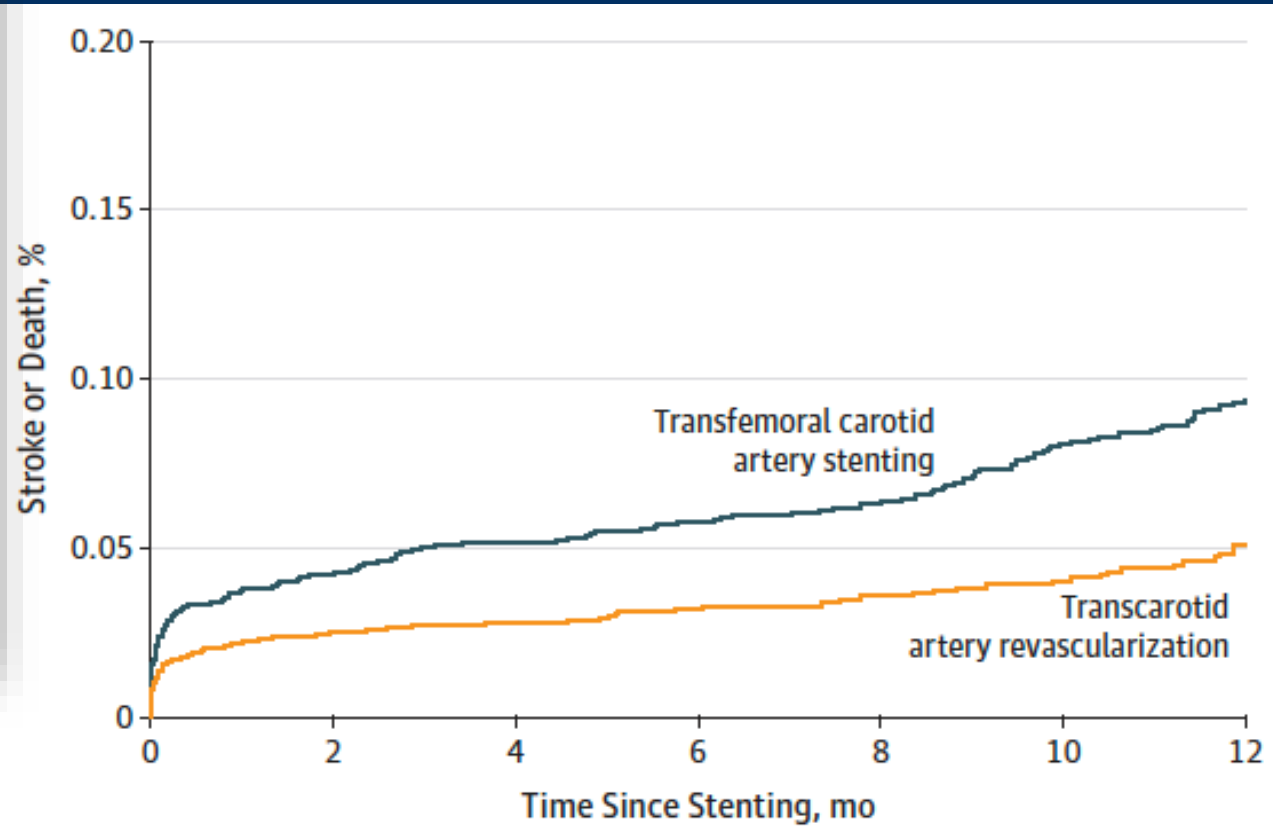
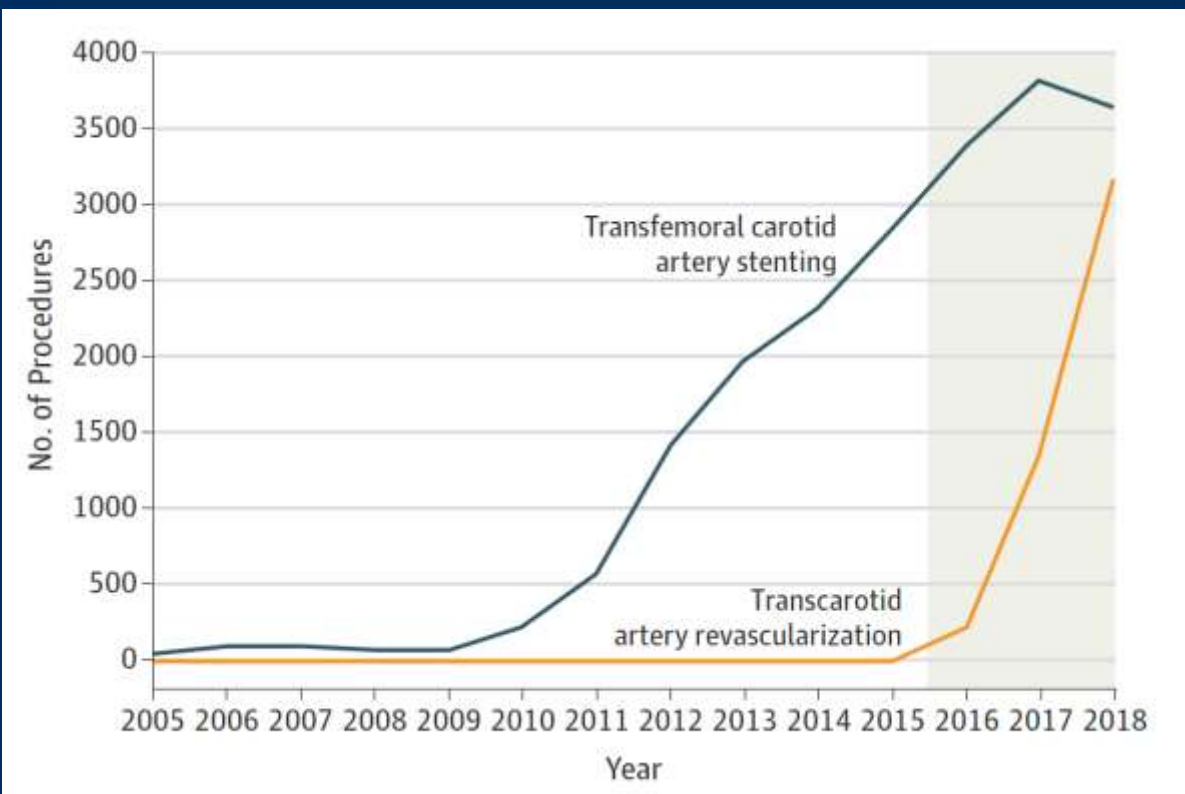


<i>DW-MRI parameters</i>	<i>All (n = 31)^a</i>
Number of subjects with DW-MRI lesion(s) pre- and postprocedure	1 (3.2%)
Number of subjects with new DW-MRI lesion(s) postprocedure	5 (16.1%)
Total number of new DW-MRI lesion(s) postprocedure	18
Number of new DW-MRI lesion(s) per subject postprocedure (min, max)	3.6 (2, 9)

DESERVE Study: 26% of subjects with new DW-MRI lesion (s) post procedure ²

¹ Pinter et al. *J Vasc Surg* 2011

² Stabile et al. *Int J Cardiol* 2013



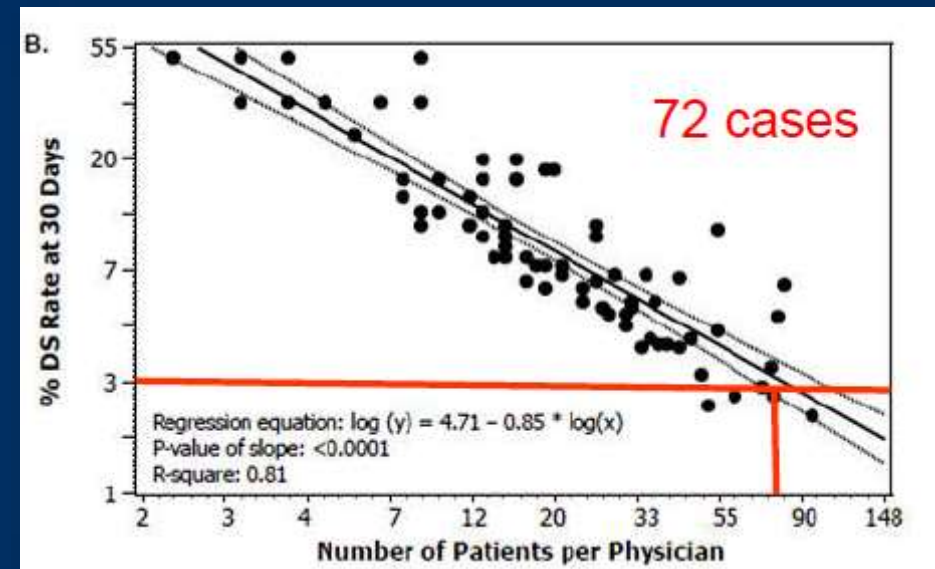
No. at risk

Transfemoral procedure	3285	2023	1825	1681	1493	1224	899
Transcarotid procedure	3285	1890	1707	1551	1350	1088	757

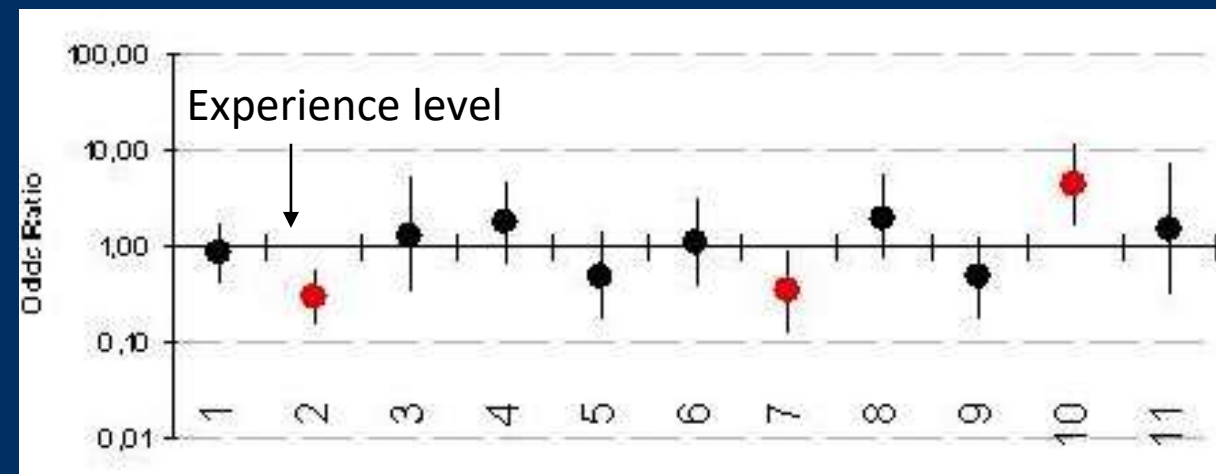
The use of proximal protection for CAS is increasing, also thanks to the use of TCAR

Nevertheless we need to keep in mind that experience plays a crucial role in determining the outcomes

This is true for TF distal and Proximal protection, data on TCAR are still needed



Gray W et al *J Am Coll Cardiol Interv* 2011



Stabile et al. *J Am Coll Cardiol* 2010