



# My latest take on RCT data: When is CEA or CAS the best option? Surgical point of view

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## Disclosure

**Marc RHM van Sambeek**

I have the following potential conflicts of interest to report:

Consulting and speakersfee

**WL Gore & Associates**

**Medtronic**

Unrestricted research grants

**Medtronic**

**Abbott Vascular**

**Philips Medical Systems**



versus

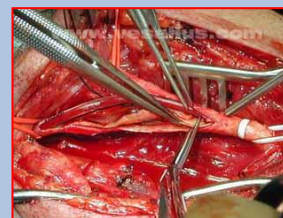


TABLE 2: COMBINED ENDARTERECTOMY TRIALISTS COLLABORATION (CETC) OVERVIEW OF DATA FROM ECST, NASCET AND THE VA STUDY (\*)

Any stroke at five years (including operative stroke/death)

Trial	Stenosis	Op risk	five-year risk		ARR	RRR	NNT	CVA prevented per 1000 CEAs
			Surgery	Medical				
CETC	< 30%		18.36%	15.71%	-2.6%	n/b	n/b	none at 5 years
CETC	30-49%	6.7%	22.80%	25.45%	+2.6%	10%	38	26 at 5 years
CETC	50-69%	8.4%	20.00%	27.77%	+7.8%	28%	13	78 at 5 years
CETC	70-99%	6.2%	17.13%	32.71%	+15.6%	48%	6	156 at 5 years
CETC	string	5.4%	22.40%	22.30%	-0.1%	n/b	n/b	none at 5 years

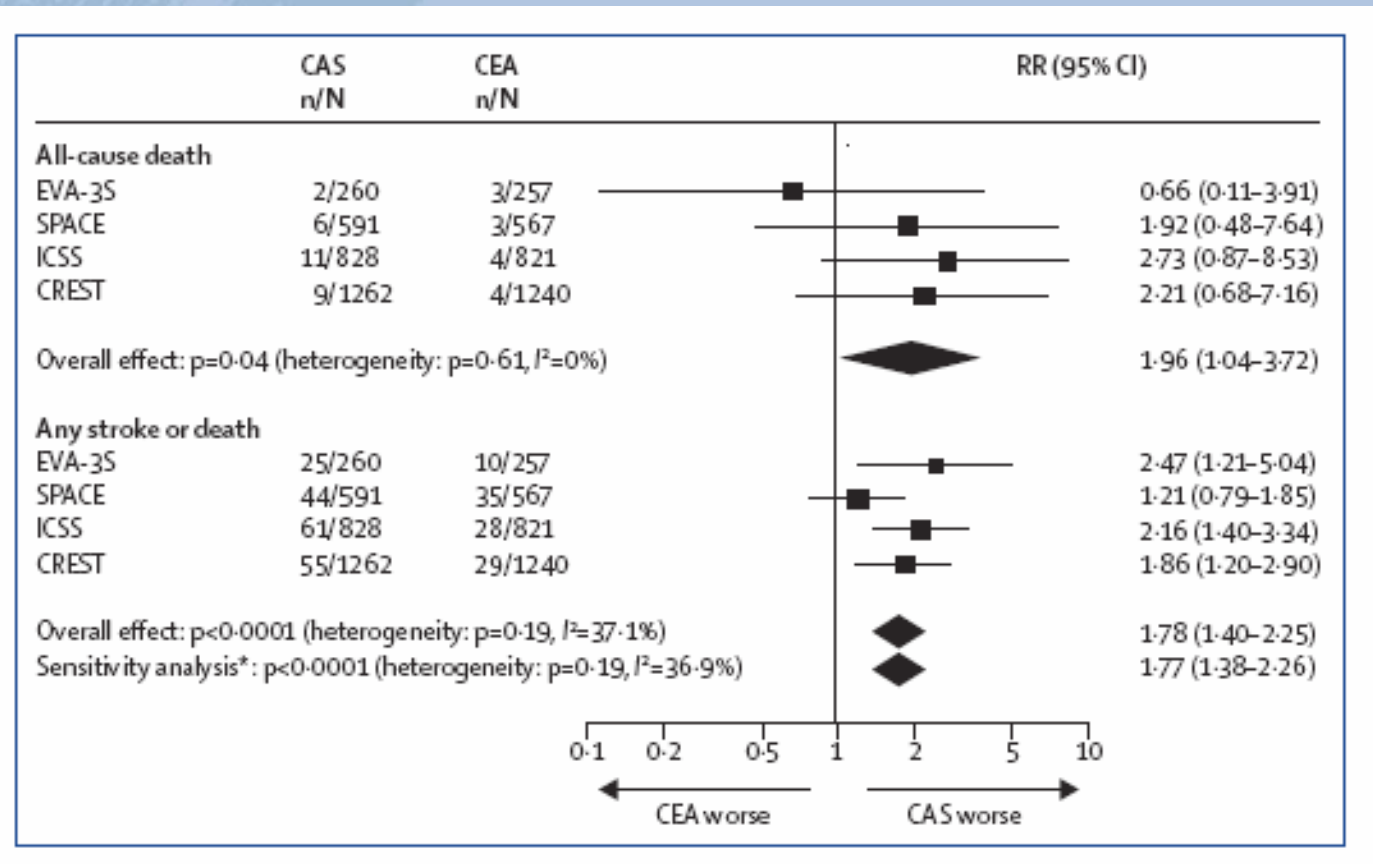
(\*) recalculated from data from CETC8-10

ARR = absolute risk reduction, RRR = relative risk reduction, NNT = number needed to treat to prevent one stroke, CVA/1000 = number of strokes prevented at five years by performing 1000 CEAs

CETC summarises the results from a database comprising >6000 patients



# Meta-analysis CEA versus CAS



*Lancet 2010;376:1028-31*

# Based on “level I” evidence CEA seems to be superior

*Das Messer ist immer besser?*





« previous author                      next author »

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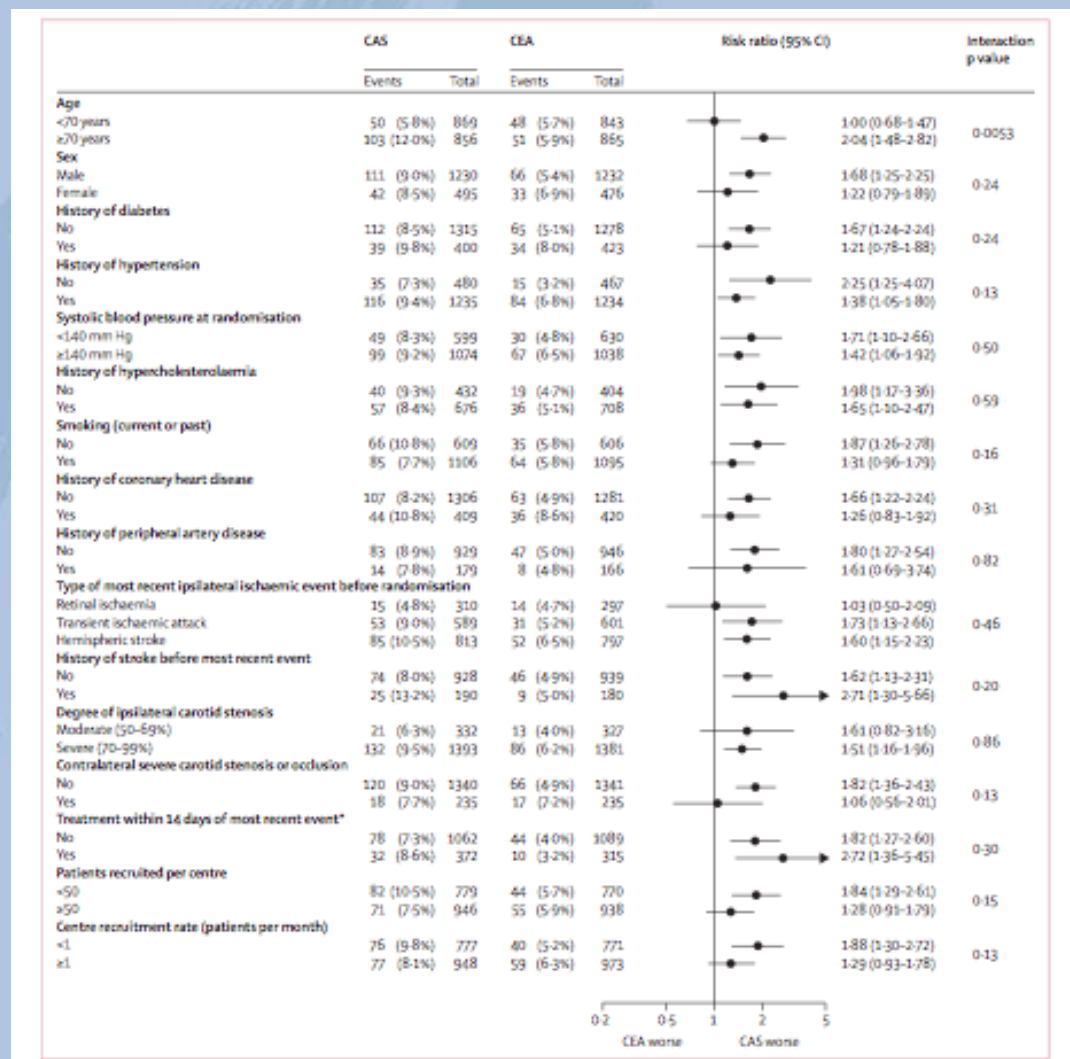
## Carotid artery stenting versus surgery: adequate comparisons?

Marco Roffi<sup>a</sup>, Horst Sievert<sup>b</sup>, William A Gray<sup>c</sup>, Christopher J White<sup>d</sup>, Giovanni Torsello<sup>e</sup>, Piergiorgio Cao<sup>f</sup>, Bernhard Reimers<sup>g</sup>, Klaus Mathias<sup>h</sup>, Carlo Setacci<sup>i</sup>, Claudio Schönholz<sup>j</sup>, Daniel G Clair<sup>k</sup>, Martin Schillinger<sup>l</sup>, Iris Grunwald<sup>m</sup>, Marc Bosiers<sup>n</sup>, Alex Abou-Chebl<sup>o</sup>, Issam D Moussa<sup>p</sup>, Harald Mudra<sup>q</sup>, Sriram S Iyer<sup>r</sup>, Dierk Scheinert<sup>s</sup>, Jay S Yacav<sup>t</sup>, Marc R van Sambeek<sup>u</sup>, David R Holmes<sup>v</sup>, Alberto Cremonesi<sup>w</sup>

In conclusion, as angiologists, cardiologists, neurologists, radiologists, and vascular surgeons involved in the endovascular treatment of carotid disease, we believe that the EVA-3S, SPACE, and ICSS trials provide an inadequate comparison between CAS and CEA. Their findings run counter to **our experience and the outcomes of thousands of patients observed in independently monitored and adjudicated CAS registries closely overseen by the US Food and Drug Administration.**



# Subgroup analysis EVA-3S, SPACE and ICSS



Lancet 2010; 376: 1062-73





# ESC Guidelines on the diagnosis and treatment of peripheral artery diseases

Recommendations	Class	Level
All patients with asymptomatic carotid artery stenosis should be treated with long-term antiplatelet therapy.	I	B
All patients with asymptomatic carotid artery stenosis should be treated with long-term statin therapy.	I	C
In asymptomatic patients with carotid artery stenosis $\geq 60\%$ , CEA should be considered as long as the perioperative stroke and death rate for procedures performed by the surgical team is $<3\%$ and the patient's life expectancy exceeds 5 years.	IIa	A
In asymptomatic patients with an indication for carotid revascularization, CAS may be considered as an alternative to CEA in high-volume centres with documented death or stroke rate $<3\%$	IIb	B







# ESC Guidelines on the diagnosis and treatment of peripheral artery diseases

Recommendations	Class	Level
All patients with symptomatic carotid stenosis should receive long-term antiplatelet therapy.	I	A
All patients with symptomatic carotid stenosis should receive long-term statin therapy.	I	B
In patients with symptomatic 70–99% stenosis of the internal carotid artery, CEA is recommended for the prevention of recurrent stroke.	I	A
In patients with symptomatic 50–69% stenosis of the internal carotid artery, CEA should be considered for recurrent stroke prevention, depending on patient-specific factors.	IIa	A
In symptomatic patients with indications for revascularization, the procedure should be performed as soon as possible, optimally within two weeks of the onset of symptoms.	I	B
In symptomatic patients at high surgical risk requiring revascularization, CAS should be considered as an alternative to CEA.	IIa	B
In symptomatic patients requiring carotid revascularization, CAS may be considered as an alternative to CEA in high-volume centres with documented death or stroke rate <6%.	IIb	B



## **ACT-1**

5 year follow-up: CAS non inferior to CEA

## **ICSS**

4 year follow-up: no differences in cognitive functions  
CAS versus CEA



## CREST

CEA better than CAS in:

- \* age > 70 years
- \* women

## CREST

CEA versus CAS

Long lesions > 12 mm: 1.9% versus 6.1%

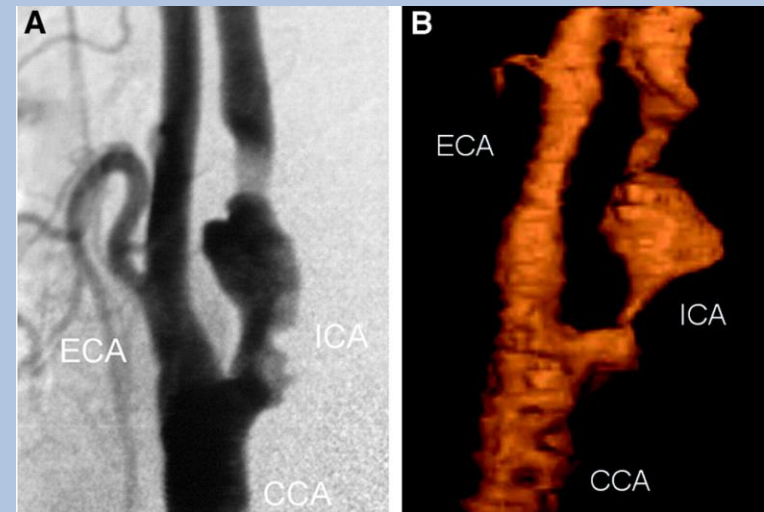
Sequential lesions and lesions distal to the carotid



0.7% versus 5.6% *Wesley Moore CACVS 2016*

## Risk factors for CAS

- Long lesions
- Sequential lesions
- Lesions distal to carotid bulb
- Ulcerative lesions
- Type 3 arch
- Atherosclerotic arch
- Tortuosity of carotid tract
- Severe calcification





# Carotid Artery Stenting

## Advantages

- Less invasive
- Less traumatic
- Faster and painless
- Avoids dissection of neck
- Avoids nerve damage
- Avoids anesthetic risks

## Strong indications

- High cardio-pulmonary risk
- Irradiation arteritis
- High cervical lesions
- Radical neck dissection
- Tracheostomy

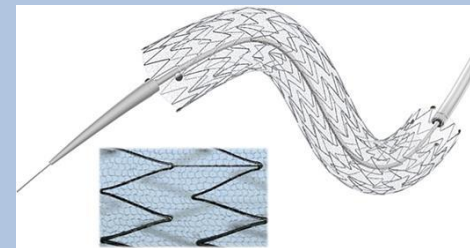
# CAS is still improving

## EPD

DW-MRI lesions decrease with cervical approach procedures

## Stent design

With mesh covered stents less DW-MRI lesions

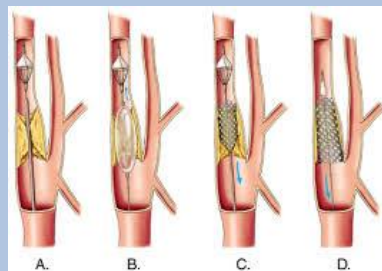


# Conclusions

The is no univocal conclusion on the superiority of either CEA or CAS

In high volume centers (with proper patient selection) results of CAS is excellent

Do what you do best, and tailor the treatment of carotid artery disease patient specific







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