STENTING WILL NOT EVENTUALLY REPLACE CEA

David Guzzardi

PGY3 – McMaster University

April 3, 2025

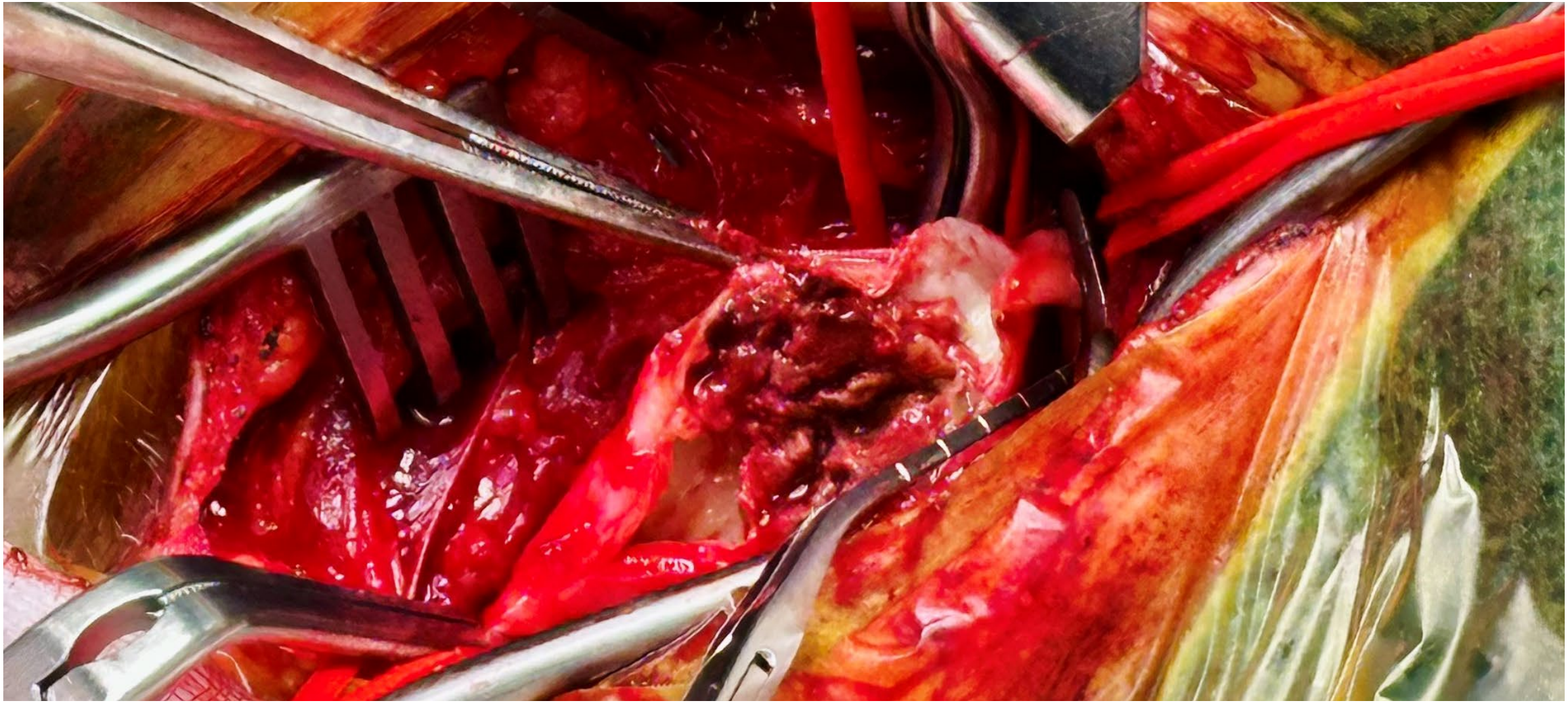
WVES Winnipeg Vascular & Endovascular Symposium

Presenter Disclosure

Presenter: David Guzzardi

- I have no current relationships with commercial entities

CEA or Stent?



Source: https://x.com/RKTvascular/status/1886969879972208701/photo/1

CEA IS PROVEN, SAFE, AND EFFECTIVE - SYMPTOMATICS

The New England
Journal of Medicine

Volume 325 AUGUST 15, 1991 Number 7

BENEFICIAL EFFECT OF CAROTID ENDARTERECTOMY IN SYMPTOMATIC PATIENTS WITH HIGH-GRADE CAROTID STENOSIS

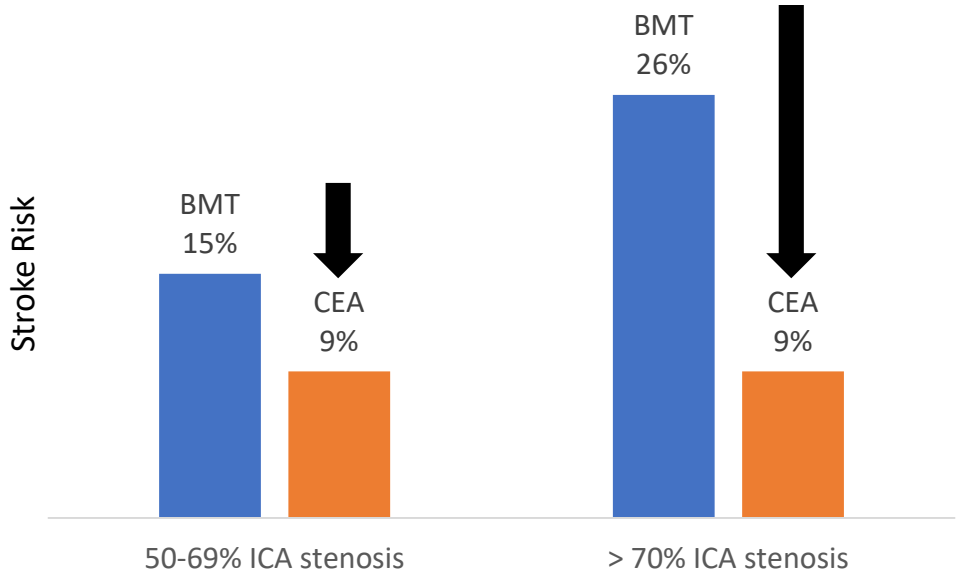
NORTH AMERICAN SYMPTOMATIC CAROTID ENDARTERECTOMY TRIAL COLLABORATORS*

Articles

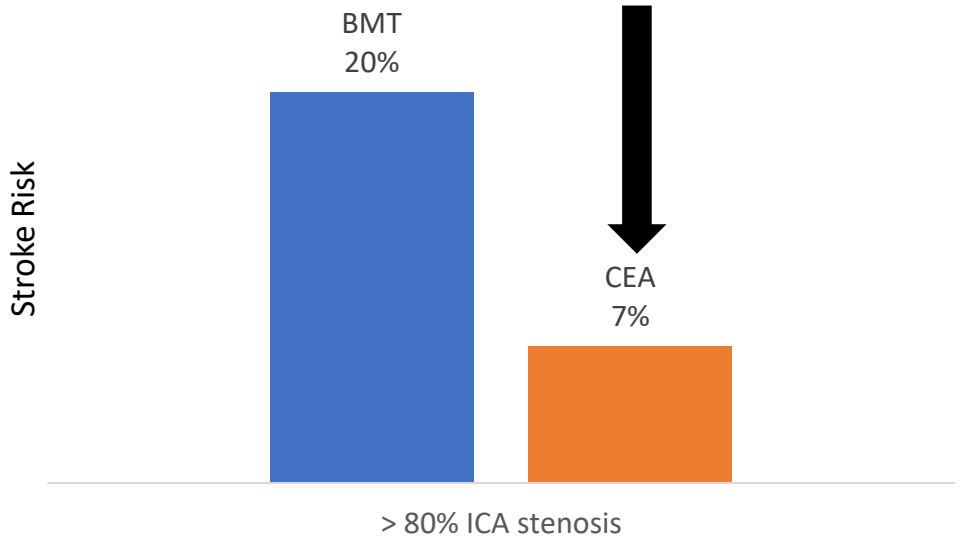
Randomised trial of endarterectomy for recently symptomatic carotid stenosis: final results of the MRC European Carotid Surgery Trial (ECST)

*European Carotid Surgery Trialists' Collaborative Group**

NASCET (2 years)



ECST (3 years)



CEA IS PROVEN, SAFE, AND EFFECTIVE - SYMPTOMATICS

2023 ESVS Carotid Guidelines ➡ Endorse CEA

Naylor et al

Especially…

- Older patients
- Revasc <14-days

50-69%

Recommendation 41			Unchanged
For patients reporting carotid territory symptoms within the preceding six months and who have a 50–69% carotid stenosis, carotid endarterectomy should be considered provided the documented 30 day risk of death/stroke rate is <6%.			
Class	**Level**	**References**	**ToE**
IIa	A	Rothwell *et al.* (2003)[357], Rothwell *et al.* (2004)[358], Rothwell *et al.* (2004)[359]	

> 70%

Recommendation 40			Unchanged
For patients reporting carotid territory symptoms within the preceding six months and who have a 70–99% carotid stenosis, carotid endarterectomy is recommended provided the 30 day risk of death/stroke rate is <6%.			
Class	**Level**	**References**	**ToE**
I	A	Rothwell *et al.* (2003)[357], Rothwell *et al.* (2004)[358], Rothwell *et al.* (2004)[359]	

Recommendation 42			Unchanged
For patients aged ≥70 years who have experienced a carotid territory transient ischaemic attack or ischaemic stroke within the preceding 6 months in association with a 50–99% carotid stenosis, it is recommended that they should be treated by carotid endarterectomy, rather than carotid stenting.			
Class	**Level**	**References**	**ToE**
I	A	Howard *et al.* (2016)[169]	

Recommendation 45			Unchanged
For patients who are undergoing revascularisation within the first 14 days after onset of symptoms, it is recommended that they should undergo carotid endarterectomy, rather than carotid stenting.			
Class	**Level**	**References**	**ToE**
I	A	Rantner *et al.* (2017)[170], Rantner *et al.* (2013)[384]	

CEA IS PROVEN, SAFE, AND EFFECTIVE - ASYMPTOMATICS

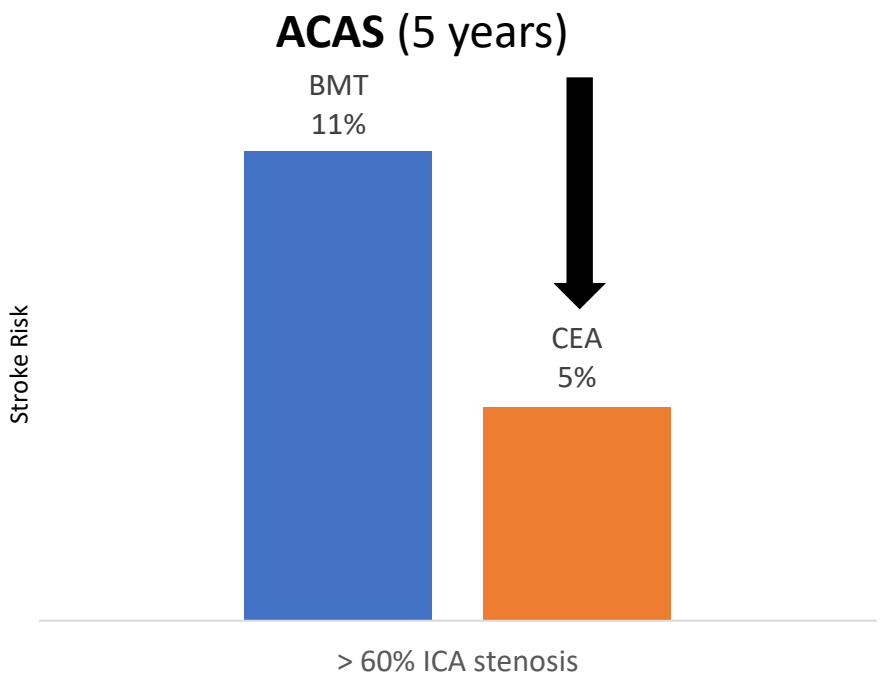
Article

May 10, 1995

Endarterectomy for Asymptomatic Carotid Artery Stenosis

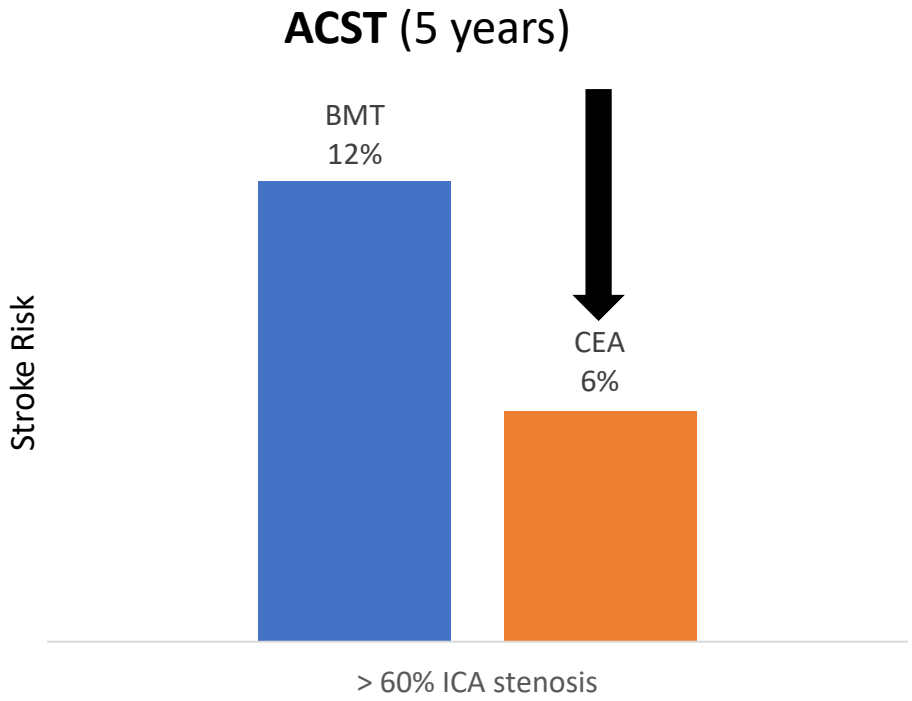
Michael D. Walker, MD; John R. Marler, MD; Murray Goldstein, DO; et al

JAMA. 1995;273(18):1421-1428. doi:10.1001/jama.1995.03520420037035



10-year stroke prevention after successful carotid endarterectomy for asymptomatic stenosis (ACST-1): a multicentre randomised trial

*Alison Halliday, Michael Harrison, Elizabeth Hayter, Xiangling Kong, Averil Mansfield, Joanna Marro, Hongchao Pan, Richard Peto, John Potter, Kazem Rahimi, Angela Rau, Steven Robertson, Jonathan Streifler, Dafydd Thomas, on behalf of the Asymptomatic Carotid Surgery Trial (ACST) Collaborative Group**



CEA = Gold Standard

STENTING

- Transfemoral carotid artery stenting (TF-CAS)
  - For “high risk” CEA:

CHF class III or IV
LVEF < 30%
Unstable angina
Contralateral carotid occlusion
Recent MI
Recurrent stenosis of a prior CEA
Prior neck radiation

  - Compared to CEA:

MI rates ↓

30-day stroke ↑

STENTING = "NON-INFERIOR"

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 JULY 1, 2010 VOL. 363 NO. 1

Stenting versus Endarterectomy for Treatment of Carotid-Artery Stenosis

Thomas G. Brott, M.D., Robert W. Hobson, II, M.D.,* George Howard, Dr.P.H., Gary S. Roubin, M.D., Ph.D., Wayne M. Clark, M.D., William Brooks, M.D., Ariane Mackey, M.D., Michael D. Hill, M.D., Pierre P. Leimgruber, M.D., Alice J. Sheffet, Ph.D., Virginia J. Howard, Ph.D., Wesley S. Moore, M.D., Jenifer H. Voeks, Ph.D., L. Nelson Hopkins, M.D., Donald E. Cutlip, M.D., David J. Cohen, M.D., Jeffrey J. Popma, M.D., Robert D. Ferguson, M.D., Stanley N. Cohen, M.D., Joseph L. Blackshear, M.D., Frank L. Silver, M.D., J.P. Mohr, M.D., Brajesh K. Lal, M.D., and James F. Meschia, M.D., for the CREST Investigators†

CREST

- No difference in 30d *composite* outcomes (death-MI-stroke) @ 4y
- CAS: Increased stroke (4.1 vs 2.3%), worse with age

Recommendation 42			Unchanged
For patients aged ≥70 years who have experienced a carotid territory transient ischaemic attack or ischaemic stroke within the preceding 6 months in association with a 50–99% carotid stenosis, it is recommended that they should be treated by carotid endarterectomy, rather than carotid stenting.			
Class	**Level**	**References**	**ToE**
I	A	Howard *et al.* (2016)[169]	

STENTING = "NON-INFERIOR"

New ischaemic brain lesions on MRI after stenting or endarterectomy for symptomatic carotid stenosis: a substudy of the International Carotid Stenting Study (ICSS)

*Leo H Bonati, Lisa M Jongen, Sven Haller, H Zwenneke Flach, Joanna Dobson, Paul J Nederkoorn, Sumaira Macdonald, Peter A Gaines, Annet Waaijer, Peter Stierli, H Rolf Jäger, Philippe A Lyrer, L Jaap Kappelle, Stephan G Wetzel, Aad van der Lugt, Willem P Mali, Martin M Brown, H Bart van der Worp, Stefan T Engelter, for the ICSS-MRI study group**

CAS with embolic protection device (EPD):

- 3x strokes post CAS
  - 1/3 being *multiple* lesions
  - ~ ½ contralateral lesions

Desai et al 2018, *JACC*

CEA = Gold Standard

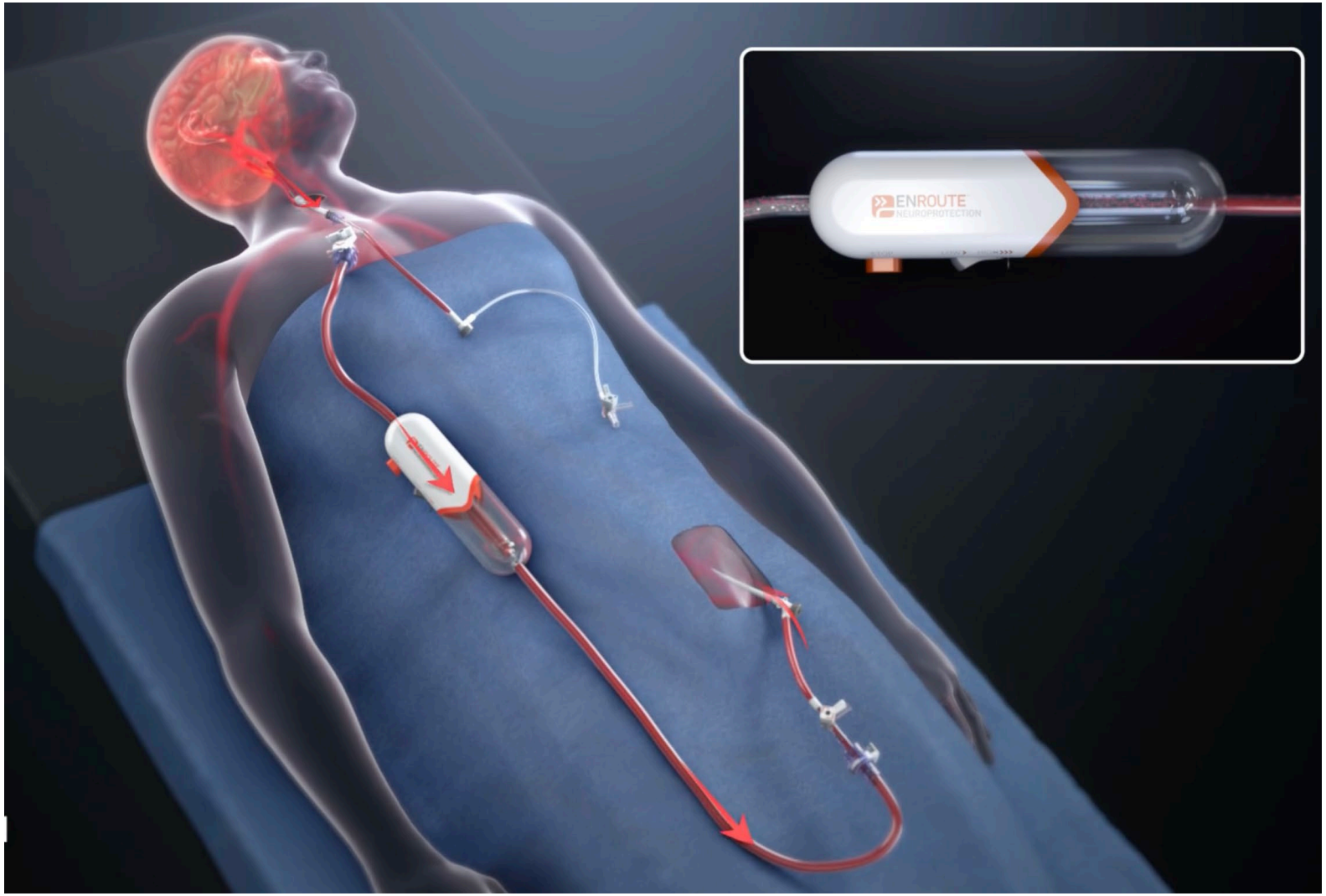
CEA

>

CAS

SUPPLEMENTAL SLIDES

TRANSCAROTID ARTERY REVASCULARIZATION (TCAR)

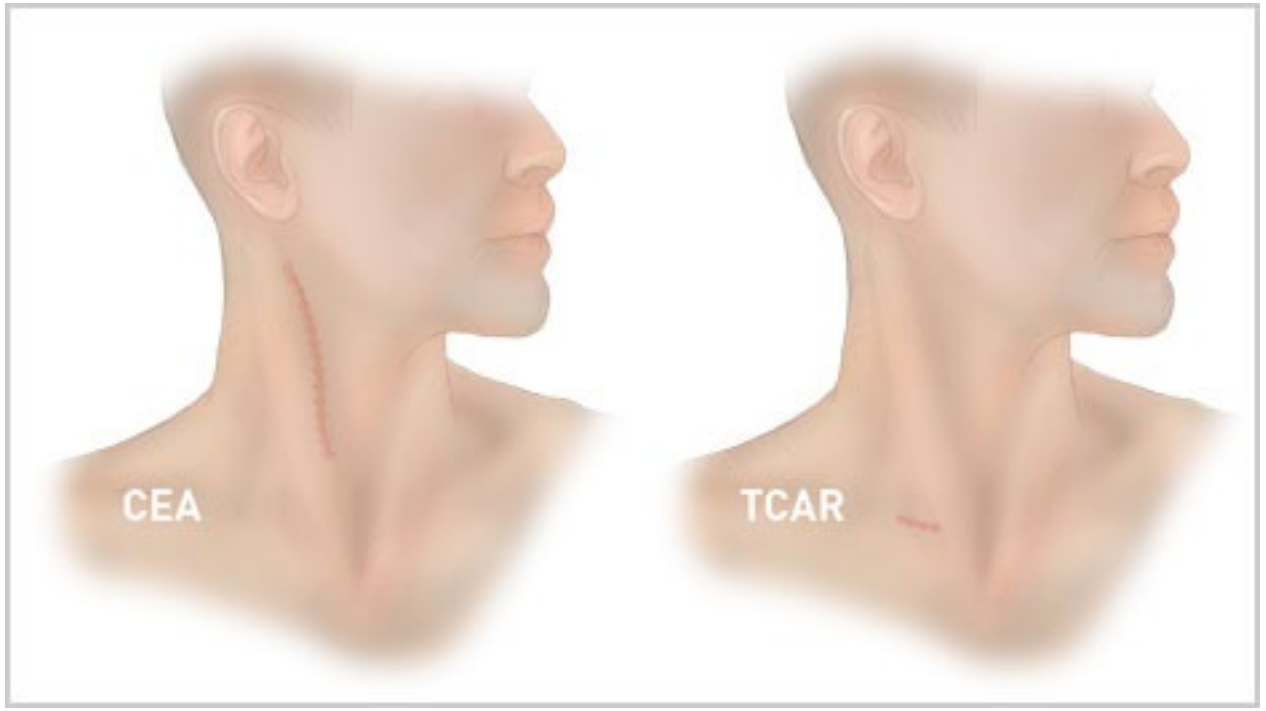


Silk Road Medical

TCAR

- High risk surgical patients

CHF class III or IV
LVEF < 30%
Unstable angina
Contralateral carotid occlusion
Recent MI
Recurrent stenosis of a prior CEA
Prior neck radiation



- No RCTs…yet (registries only)
- Risk reduction compared to BMT?

Anatomical concerns:

- Low bifurcation
- CCA disease
- ++ calcium
- Acute/mobile thrombus
- ICA diameter, tortuosity

TCAR

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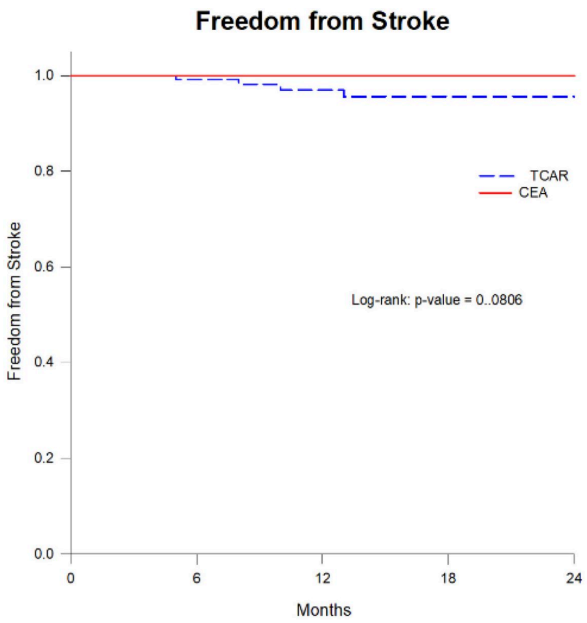
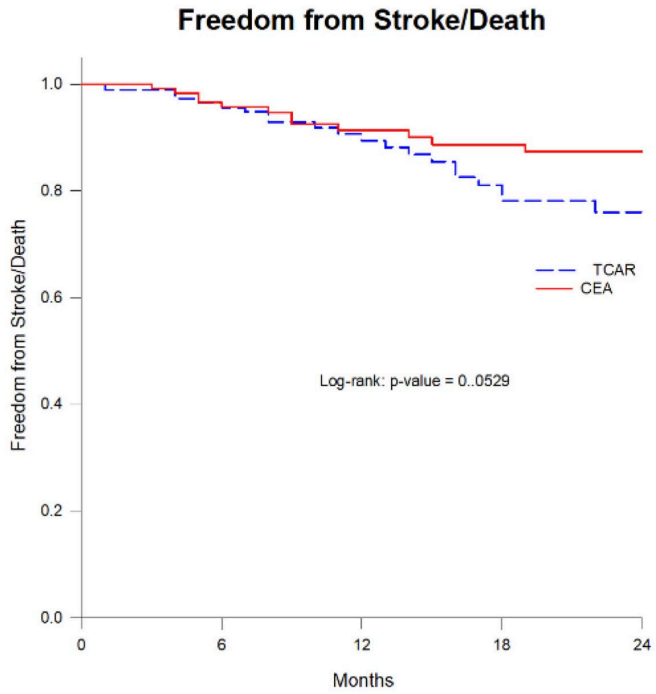
CLINICAL RESEARCH STUDY | CAROTID ARTERY DISEASE · Volume 79, Issue 6, P1402-1411.E3, June 2024

Clinical outcomes of transcarotid artery revascularization vs carotid endarterectomy from a large single-center experience

Ali F. AbuRahma, MD [a] · Adrian Santini, MD [a] · Zachary T. AbuRahma, DO [a] · ... · Robert Cragon, MD [a] · Scott Dean, PhD, MBA [b] · Elaine Mattox, RN, EdD [b] ... Show more





TCAR

JVS Journal of Vascular Surgery | SVS Society for Vascular Surgery

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FULL LENGTH ARTICLE · Articles in Press, March 24, 2025 · *Open Access*

Carotid Endarterectomy is Less Expensive than Transcarotid Artery Revascularization

Valerie Collins [a] · Lily S.F. Adler, MD [b] · Jennifer E. Geller, MD [c] · ... · Jennit
William Beckerman, MD [d] ... Show more

Table V: Results of Cost Analysis – Entire Cohort

	Total (n=187)	CEA (n=136)	TCAR (n=51)	*P*-Value
Length of Stay, days (±SD)				
Hospital	2.02 (2.18)	1.96 (1.87)	2.18 (2.85)	0.4
ICU*	2.42 (1.78)	2.88 (2.03)	1.50 (0.58)	0.2
Estimated Stay Cost, dollars (±SD)				
Regular Bed	$4,487 ($4,839)	$4,324 ($4,214)	$4,920 ($6,237)	0.082
ICU Bed	$786 ($3,725)	$854 ($4,155)	$605 ($2,226)	0.7
Total Stay Cost (±SD)	$5,273 ($7,204)	$5,178 ($7,178)	$5,525 ($7,340)	0.06
Estimated Procedure Cost, dollars (±SD)	$3,509 ($3,530)	$1,412 ($160)	$9,100 ($1,567)	**<0.001**
Estimated Net Cost of Hospitalization (±SD)	$8,782 ($8,086)	$6,591 ($7,206)	$14,625 ($7,426)	**<0.001**

**** n= 12 patients had ICU stays***

CEA = Gold Standard

CEA

TCAR

TF-CAS