Stenosi carotidea e trattamento chirurgico: è tutto chiaro?

Gabriele Pagliariccio

UOC Chirurgia Vascolare

ASL TERAMO
www.aslteramo.it

Il trattamento della stenosi carotidea

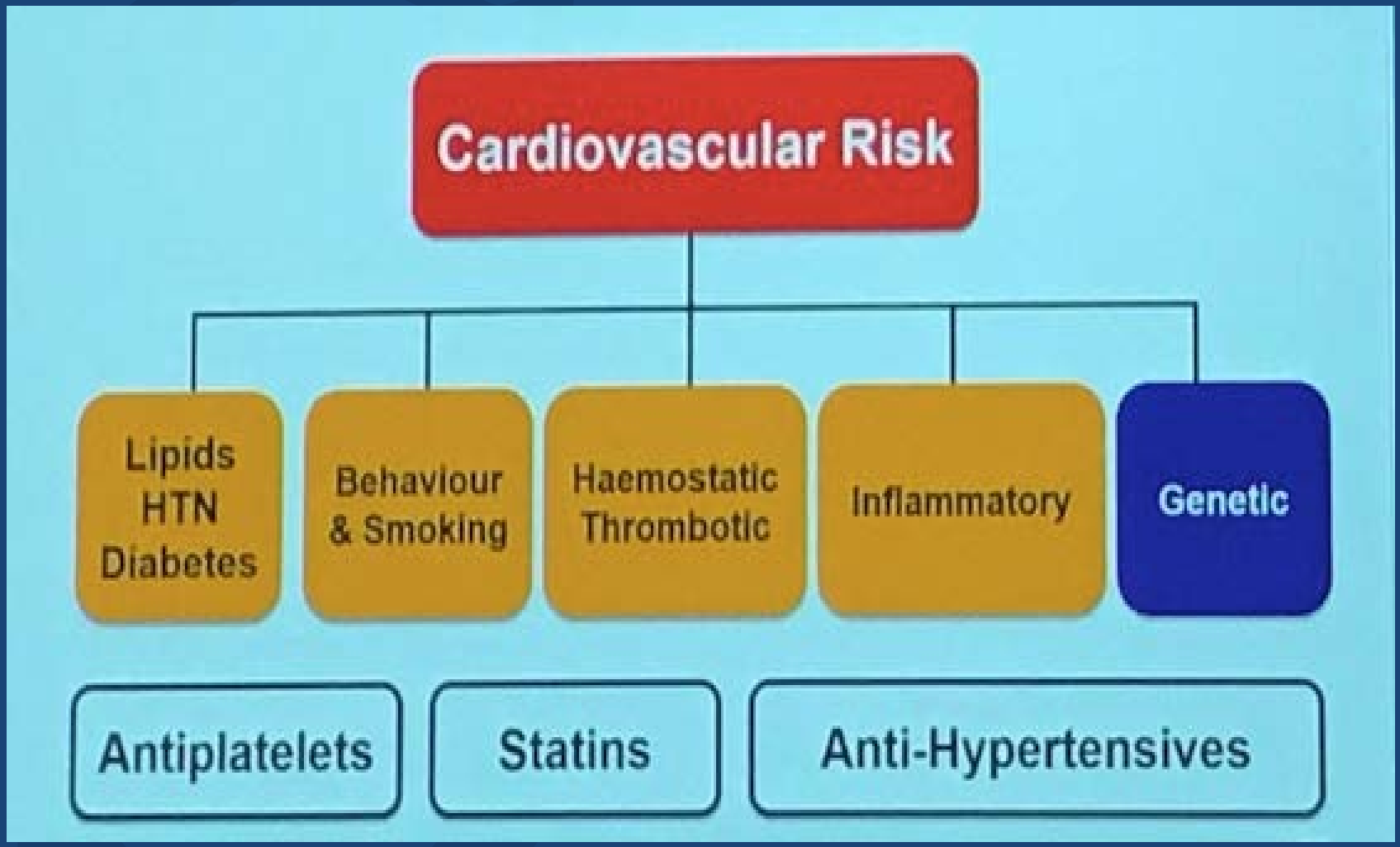
STENOSI CAROTIDEA SINTOMATICA

- **Lesione di una carotide interna che si esprime con meccanismo emodinamico e/o embolico con sintomi clinici di ischemia emisferica e/o retinica omolaterale. I sintomi devono essersi verificati da *non più di 6 mesi*.**

STENOSI CAROTIDEA ASINTOMATICA

- **Quando la lesione non rientra nella definizione di sintomatica.**
- **Qualora la lesione, *pur se asintomatica, presenti lesioni parenchimali* emisferiche omolaterali *alla TAC o RMN* è da ritenersi sintomatica.**

Il contesto aterosclerotico



Ian Loftus – Charing Cross 2017

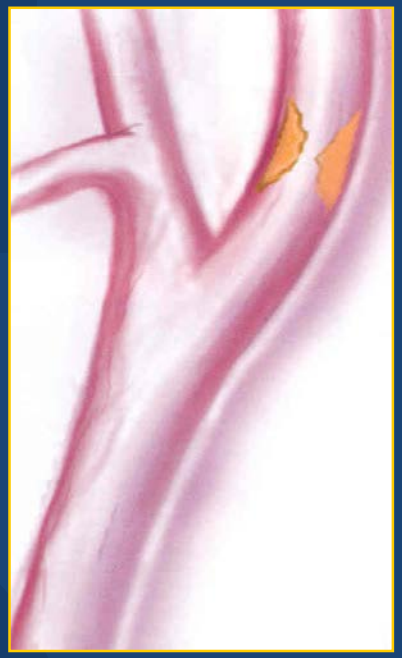
COME TRATTARLA?

Medica

Chirurgia (TEA)

Endovascolare (stenting)

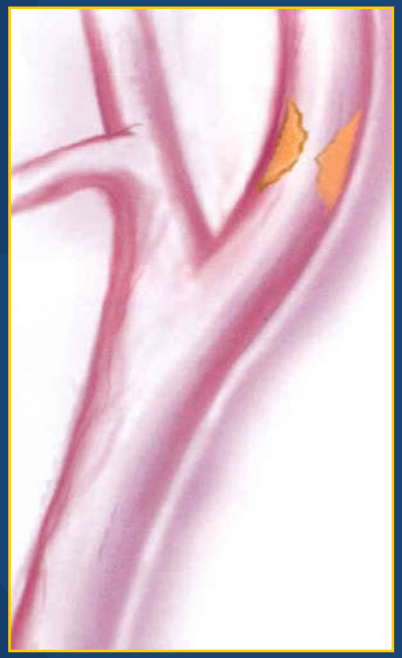
Vasculopatia carotidea



Chirurgia delle stenosi sintomatiche

Chirurgia delle stenosi asintomatiche

Vasculopatia carotidea



Chirurgia delle stenosi sintomatiche

Chirurgia delle stenosi asintomatiche

Il trattamento della stenosi carotidea sintomatica

Trials clinici

Trattamento chirurgico delle stenosi sintomatiche

(Trattamento chirurgico vs medico)

ECST, 1991

4000 pz in totale

NASCET, 1991

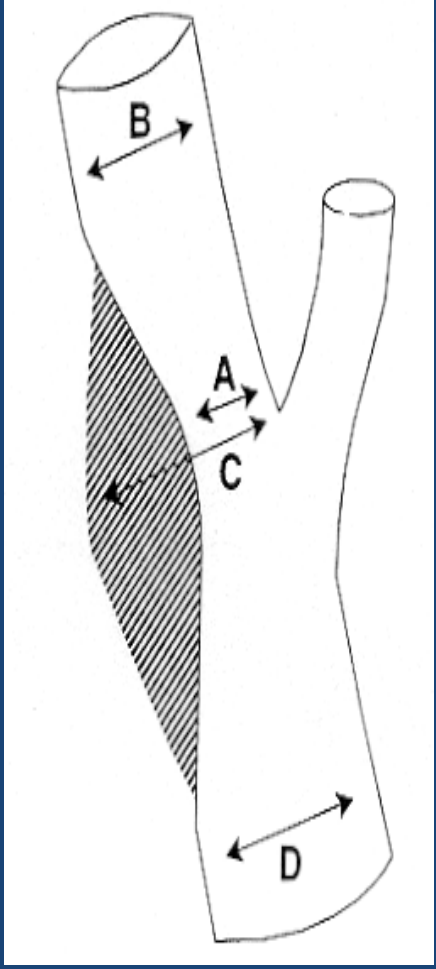
Stroke	T. med	Chir
Stenosi >70%	16.8%	6.7%
Stenosi 50-70%	14.5%	11%
Stenosi <50%	1.3%	3.3%

Il trattamento della stenosi carotidea

Stenosi in percentuale secondo il metodo:

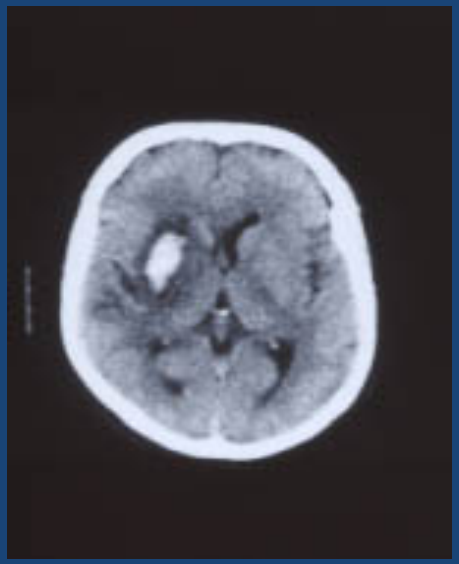
Metodo ECST $\frac{C - A}{C} \times 100\%$

Metodo NASCET $\frac{B - A}{B} \times 100\%$



Rischio di stroke dopo TIA

Dopo 48 ore	5.0 %
Dopo 7 giorni	10.0 %
Dopo 30 giorni	15.0 %
Dopo 60 giorni	15-20 %



Oxford Vascular Study - BMJ 2004

Rischio di stroke dopo TIA

17% dei TIA si verifica lo stesso giorno dello stroke.

43% dei TIA si verifica si verifica 7 giorni prima dello stroke.

Transient ischaemic attacks: time to wake up !!! (Heart 2007)

Singolo TIA

Il paziente con stenosi carotidea sintomatica rappresenta un'urgenza!!!

Il trattamento della stenosi carotidea

Indicazioni al trattamento

ISA-AII - Italian Stroke Association – Associazione Italiana Ictus - ex ISO Italian Stroke Organization
GISE - Società Italiana di Cardiologia Interventistica
SIAARTI - Società Italiana di Anestesia, Analgesia, Rianimazione e Terapia Intensiva
SIAPAV - Società Italiana di Angiologia e Patologia Vascolare
SIICP – Società Italiana Interdisciplinare per le Cure Primarie
SIRM - Società Italiana di Radiologia Medica e Interventistica
SNAMI – Sindacato Nazionale Autonomo Medici Italiani
4S-SNAMI - Società Scientifica SNAMI per la Salute

Linee guida SICVE

J Cardiovasc Surg 2022;63(4):471-91.

2022

Linee guida SICVE

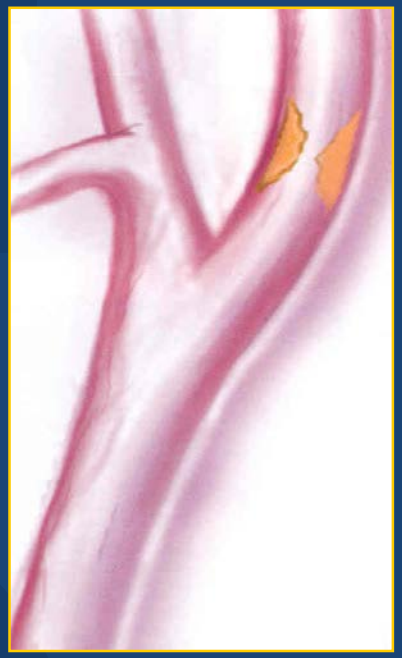
2022

Stenosi carotidea sintomatica

Nel paziente con stenosi carotidea sintomatica uguale o maggiore del 70% (criterio NASCET) **l'endoarterectomia é raccomandata** in quanto **rispetto alla sola terapia medica** migliora il decorso clinico, se il rischio perioperatorio di morte e ogni tipo di ictus é inferiore a 6% (*Raccomandazione forte a favore, livello di evidenza 1++*).

Nel paziente con stenosi carotidea sintomatica l'endoarterectomia, qualora indicata, **é raccomandata entro la prima settimana dall'evento** ischemico cerebrale o retinico congruo in quanto rispetto all'endoarterectomia effettuata dopo la prima settimana migliora il decorso clinico (*Raccomandazione forte a favore, livello di evidenza 1++*).

Vasculopatia carotidea



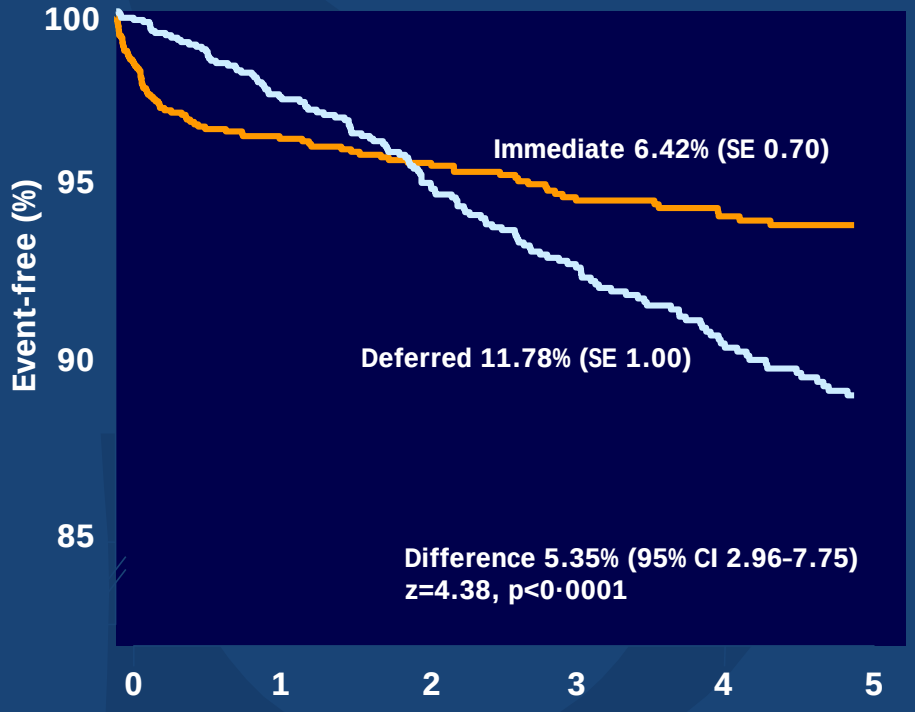
Chirurgia delle stenosi sintomatiche

Chirurgia delle stenosi asintomatiche

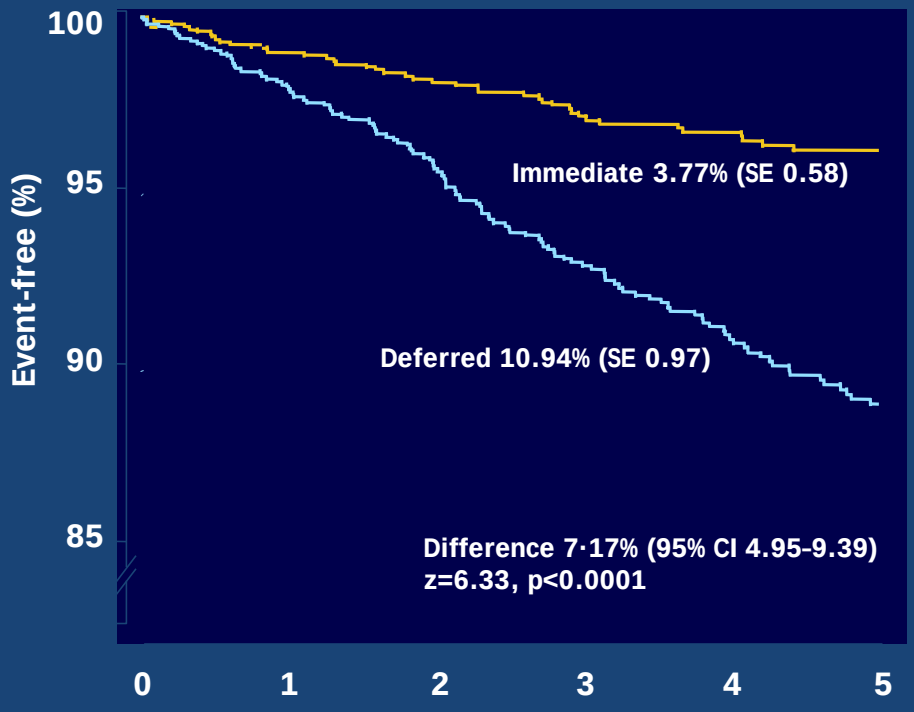
BMT vs Rivascolarizzazione della Stenosi Carotidea Asintomatica

ACST: 3.120 asymptomatic patients, younger than 75 years, with carotid stenosis (at least 60%) randomized to immediate vs deferred endarterectomy.

Any type of stroke or perioperative death



Any type of non-perioperative stroke



Lancet 2004; Vol 363:1491,1502

La stenosi carotidea asintomatica

Table 3 Temporal changes in the 5 year risk of 'any' stroke and 'ipsilateral' stroke in ACAS and ACST

Trial	Years	Year published	'Any' stroke (%)	'Ipsilateral' stroke (%)
ACAS	1–5	1995	17.5	11.0
ACST	1–5	2004	11.8	5.3[a]
ACST	6–10	2009	7.2[a]	3.6[a]

[a] = derived from oral presentations of the 10 year ACST data.

Storia naturale

Naylor A. R. – Eur J Vasc Surg 2009

Stroke
JOURNAL OF THE AMERICAN HEART ASSOCIATION

American Heart Association | American Stroke Association

Asymptomatic Carotid Artery Stenosis and the Risk of New Vascular Events in Patients With Manifest Arterial Disease : The SMART Study

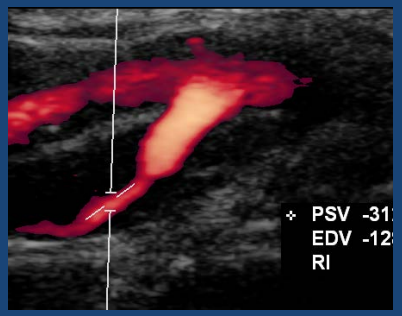
Bertine M.B. Goessens, Frank L.J. Visseren, L. Jaap Kappelle, Ale Algra and Yolanda van der Graaf

Lo stroke rate è all ‘1% nei pazienti con adeguata terapia medica

La stenosi carotidea asintomatica

"Asymptomatic carotid artery stenosis: state of the art management" ***Naylor A. R. - Leicester, UK***

The Journal of Cardiovascular Surgery 2013



We still cannot *identify the small proportion of "high risk for stroke"* patients in whom to target carotid endarterectomy or carotid artery stenting.

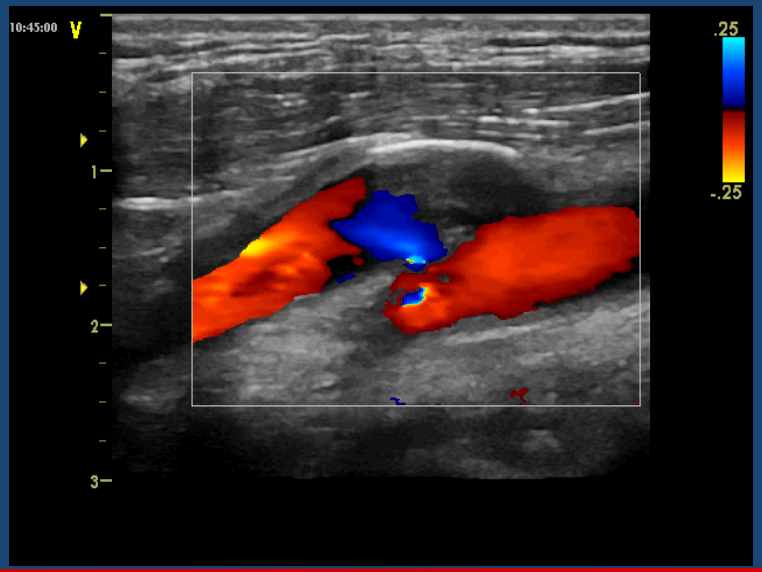
This is essential, as about 95% of patients undergoing either treatment strategy will ultimately undergo an unnecessary intervention.

La chirurgia negli asintomatici

Dal paziente ad alto rischio

alla placca ad alto rischio

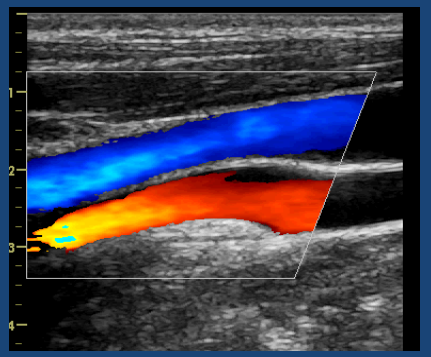
In Letteratura sono sempre più numerosi i report che indicano che è *la struttura della placca* a determinare il rischio di stroke.



Nicolaides – Int Ang 2005

La chirurgia negli asintomatici

Quali pazienti si giovano di più della TEA carotidea?

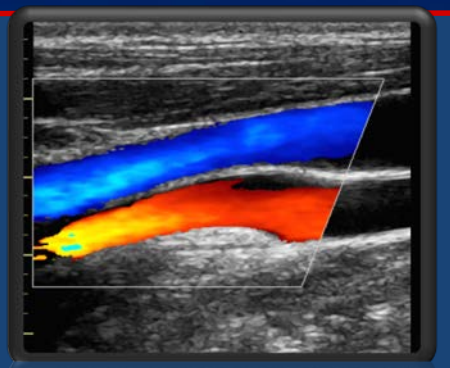


- Sesso maschile — Rotwell – Lancet 2004
- Giovane età — Cochrane Rev - 2005
- Placca a rischio — ACSRS – Int Ang 2005

La chirurgia negli asintomatici

Placca a rischio

I biomarkers??



Il volume della placca

Stenosi pre-occlusiva, stenosi tra 70-80% con occlusione della controlaterale

Reperto di microemboli al TCD

Morfologia della placca (ulcerazione, superficie irregolare)

Progressione veloce del grado di stenosi

Presenza di micro-infarti clinicamente silenti alla RM

Linee guida SICVE

2022

Stenosi carotidea asintomatica

Nel paziente con stenosi carotidea asintomatica uguale o superiore a 70% (criterio NASCET) **l'endoarterectomia associata** al trattamento medico ottimale **è indicata in caso di stenosi considerata ad elevato rischio** aterotromboembolico nonostante il trattamento farmacologico, dopo aver valutato accuratamente il rapporto rischio/beneficio, possibilmente in equipe multi-disciplinare

(*Raccomandazione debole a favore, livello di evidenza 1-*).

Arteriopatia carotidea

Chirurgia delle stenosi asintomatiche

Chirurgia delle stenosi sintomatiche

Lo stenting

Lo stenting carotideo

Angio pre stenting

Posizion. filtro

Dilatazione post stent

Risultato finale

I trials chirurgia vs stenting

Trials	Pazienti	Stroke/Death	Esito
LEICESTER, 1998	CEA	2.5%	Abbandonato per eccesso di rischio CAS
	CAS	7,5%	
WALLSTENT, 2001	CEA	4.1%	Abbandonato per eccesso di rischio CAS
	CAS	12.1%	
CAVATAS, 2001	CEA	9.9%	Completato: n.d.s.
	CAS	10	
LEXINGTON, 2001	CEA	1.9%	Completato: n.d.s.
	CAS	0	
SAPPHIRE, 2004	CEA	4.%	Favorevole per CAS in pz ad alto rischio
	CAS	6.6%	
EVA – 3S, 2006	CEA	3.9%	Abbandonato per eccesso di rischio CAS
	CAS	9.6%	
SPACE, 2006	CEA	6.5%	Completato: n.d.s.
	CAS	7.3%	
ICSS, 2010	CEA	5.1%	Favorevole a CEA
	CAS	8.5%	
CREST, 2010	CEA	6.8%	Risultati sovrapponibili fra CAS e CEA
	CAS	7.2%	

Pz asintomatici e sintomatici
Pz sintomatici

Il trattamento della stenosi carotidea

CAS e CEA

I risultati dello stenting migliorano con il crescere della tecnologia

Lo stenting si sta concentrando su pochi centri ad alto volume

E' sicuramente indicato nelle restenosi (a basso rischio di embolizzazione) e nei pazienti ad alto rischio

Le due tecniche tendono a completarsi a vicenda

Linee guida SICVE

2021

CAS e CEA
in pazienti a rischio lieve-moderato

Nel paziente con stenosi carotidea **asintomatica** tra 70% e 99% (criterio NASCET) e con rischio chirurgico lieve-moderato **è indicata l'endoarterectomia** come metodica di scelta in quanto **rispetto allo stenting** migliora il decorso clinico (*Raccomandazione debole a favore, livello di evidenza 1++).*

Nel paziente con stenosi carotidea **sintomatica** maggiore del 50% (criterio NASCET) con rischio chirurgico lieve-moderato **è raccomandata l'endoarterectomia** in quanto **rispetto allo stenting** si associa a minor rischio di eventi neurologici periprocedurali (TIA, ictus) e migliora il decorso clinico (*Raccomandazione forte a favore, livello di evidenza 1++*).

Linee guida SICVE

2021

CAS e CEA
in pazienti a rischio elevato

Nel paziente con stenosi carotidea **asintomatica** tra 70% e 99% (criterio NASCET) e con rischio chirurgico elevato **lo stenting** carotideo **è indicato in alternativa all'endoarterectomia** purché eseguito in centri con documentata esperienza e tasso di rischio periprocedurale non superiore a quello con l'endoarterectomia in pazienti asintomatici (*Raccomandazione debole a favore, livello di evidenza 1++).*

Nel paziente con stenosi carotidea **sintomatica** maggiore del 50% (criterio NASCET) con rischio chirurgico elevato **è indicato lo stenting** come **alternativa all'endoarterectomia** purché con tasso documentato di ictus/morte periprocedurale inferiore al 6% come per l'endoarteriectomia *(Raccomandazione debole a favore, livello di evidenza 1+)*

Stenosi carotidea e trattamento chirurgico: è tutto chiaro?

Stenosi carotidea e trattamento chirurgico: è tutto chiaro?

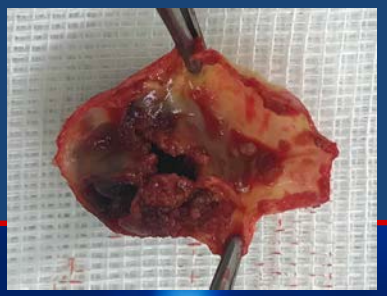
Disturbi cognitivi

Terapia medica

Grado di stenosi

CEA e CAS

Composizione di placca



Stenosi carotidea e trattamento chirurgico: è tutto chiaro?

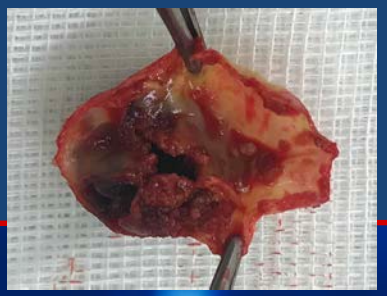
Disturbi cognitivi

Terapia medica

Grado di stenosi

CEA e CAS

Composizione di placca



Stenosi carotidea e trattamento chirurgico: è tutto chiaro?

Disturbi cognitivi

Balucani C, Viticchi G, Falsetti L, Silvestrini M. Cerebral hemodynamics and cognitive performance in bilateral asymptomatic carotid stenosis. Neurology 2012;79: 1788–1795.

Marshall RS, Festa JR, Cheung YK, et al. Cerebral hemodynamics and cognitive impairment: baseline data from the RECON trial. Neurology 2012;78: 250–255.

Siddiqui AH, Hopkins LN. Asymptomatic carotid stenosis: the not-so-silent disease changing perspectives from thromboembolism to cognition. J Am Coll Cardiol 2013; 61:2510–2513.

Silvestrini M, Vernieri F, Pasqualetti P, et al. Impaired cerebral vasoreactivity and risk of stroke in patients with asymptomatic carotid artery stenosis. JAMA 2000;283: 2122–2127.

Dal rapporto fra emodinamica cerebrale e deficit cognitivo

La rivascolarizzazione cerebrale può migliorare i parametri cognitivi?

Stenosi carotidea e trattamento chirurgico: è tutto chiaro?

Disturbi cognitivi

Neurocognitive functioning and cerebrovascular reactivity after carotid endarterectomy

Simona Lattanzi, MD, Luciano Carbonari, MD, Gabriele Pagliariccio, MD, Marco Bartolini, MD, Claudia Cagnetti, MD, Giovanna Viticchi, MD, Laura Buratti, MD, Leandro Provinciali, MD, and Mauro Silvestrini, MD

Neurology 2018

Studio per valutare, in soggetti con stenosi carotidea sintomatica, le variazioni emodinamiche (BHI) e le performance cognitive (CPM, CFCT) dopo TEA carotidea.

	Before CEA	After CEA	p value*
Right ICA stenosis			
Phonemic Verbal Fluency	19.9 (3.04)	20.4 (2.92)	0.106
Category Verbal Fluency	22.0 (3.16)	22.4 (2.69)	0.109
Coloured Progressive Matrices	26.6 (3.53)	29.2 (2.82)	<0.001
Complex Figure Copy Test	27.2 (3.54)	29.9 (2.62)	<0.001
Ipsilateral BHI	0.54 (0.30)	1.00 (0.19)	<0.001
Contralateral BHI	1.04 (0.22)	1.07 (0.13)	0.074
Left ICA stenosis			
Phonemic Verbal Fluency	12.0 (4.80)	16.1 (3.70)	<0.001
Category Verbal Fluency	13.8 (4.34)	17.7 (3.51)	<0.001
Coloured Progressive Matrices	33.0 (2.77)	33.3 (1.97)	0.262
Complex Figure Copy Test	33.4 (3.42)	33.6 (2.24)	0.152
Ipsilateral BHI	0.52 (0.31)	1.03 (0.17)	<0.001
Contralateral BHI	1.05 (0.20)	1.08 (0.11)	0.124

Dopo 6 mesi dalla TEA la reattività cerebro-vascolare è risultata aumentata e di conseguenza le performance cognitive

Stenosi carotidea e trattamento chirurgico: è tutto chiaro?

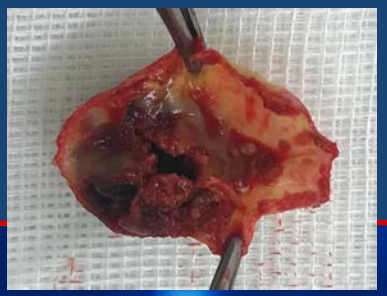
Disturbi cognitivi

Terapia medica

Grado di stenosi

CEA e CAS

Composizione di placca



BMT vs Rivascolarizzazione della Stenosi Carotidea Asintomatica

Temporal changes in the 5 year risk of 'any' stroke and 'ipsilateral' stroke in ACAS and ACST

Trial	Years	Year published	'Any' stroke (%)	'Ipsilateral' stroke (%)
ACAS	1–5	1995	17.5	11.0
ACST	1–5	2004	11.8	5.3[a]
ACST	6–10	2009	7.2[a]	3.6[a]

Naylor A. R. – Eur J Vasc Surg 2009

Eur J Vasc Endovasc Surg (2009) 37, 625–632

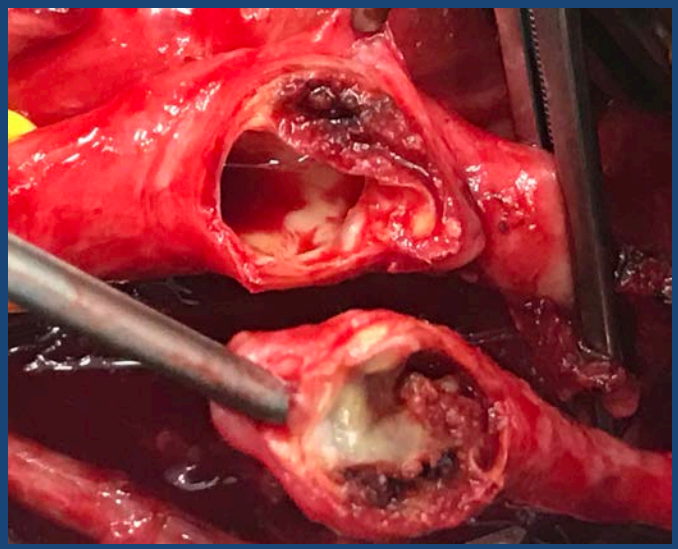
ELSEVIER

LEADING ARTICLE

Who Benefits Most from Intervention for Asymptomatic Carotid Stenosis: Patients or Professionals?

A.R. Naylor [a,*], P.A. Gaines [b], P.M. Rothwell [c]

[a] The Department of Vascular Surgery at Leicester Royal Infirmary, Leicester, UK
[b] The Sheffield Vascular Institute, Northern General Hospital, Sheffield, UK
[c] The Stroke Prevention Research Unit, University Department of Clinical Neurology, the John Radcliffe Hospital, Oxford, UK



BMT vs Rivascolarizzazione della Stenosi Carotidea Asintomatica

**Angioplasty in asymptomatic carotid artery stenosis vs. endarterectomy compared to best medical [illegible]
One-year interim results of SPACE-2**

T Reiff[1], HH Eckstein[2], U Mansmann[3], O Jansen[4], G Fraedrich[5], H Mudra[6], D Böckler[7], M Böhm[8], H Brückmann[9], ES Debus[10], J Fiehler[11], W Lang[12], K Mathias[13], EB Ringelstein[14], J Schmidli[15], R Stingele[16], R Zahn[17], T Zeller[18], A Hetzel[19], U Bodechtel[20], A Binder[21], J Glahn[22], W Hacke[1] and PA Ringleb[1]

Int J Stroke 2019

The low sample size of this prematurely stopped trial of 513 patients implies that its power is not sufficient to show that CEA or CAS is superior to a modern medical therapy (BMT) in the primary prevention of ischemic stroke in patients with an asymptomatic carotid stenosis up to one year after treatment.

BMT vs Rivascolarizzazione della Stenosi Carotidea Asintomatica

Sept 2020

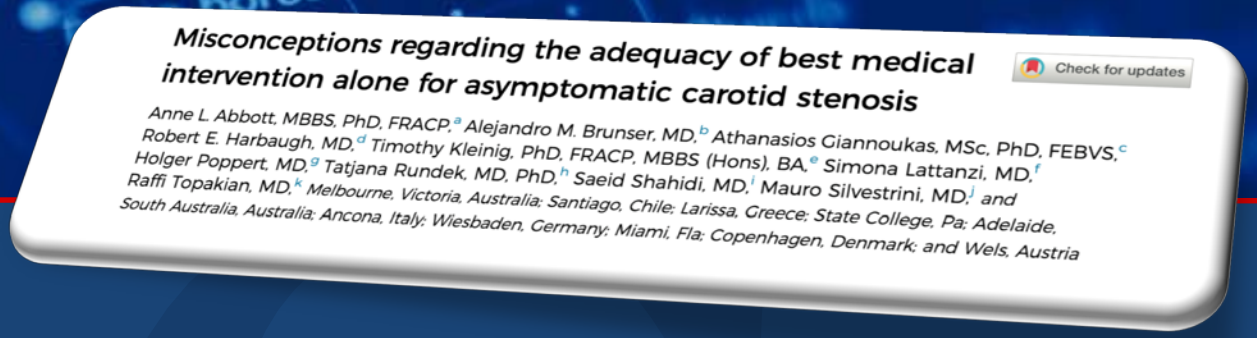
JAMA Neurology | Original Investigation

Comparative Effectiveness of Carotid Endarterectomy vs Initial Medical Therapy in Patients With Asymptomatic Carotid Stenosis

Salomeh Keyhani, MD, MPH; Eric M. Cheng, MD; Katherine J. Hoggatt, PhD; Peter C. Austin, PhD; Erin Madden, MPH; Paul L. Hebert, PhD; Ethan A. Halm, MD, MPH, MBA; Ayman Naseri, MD; Jason M. Johanning, MD; Danielle Mowery, PhD; Wendy W. Chapman, PhD; Dawn M. Bravata, MD

The 5-year risk of fatal and nonfatal strokes was **5.5%** among patients randomized to CEA and was **7.6%** among those randomized to initial medical therapy

Given the nonnegligible perioperative 30-day risks and the improvements in stroke prevention, **medical therapy may be an acceptable therapeutic strategy**.



Misconceptions regarding the adequacy of best medical intervention alone for asymptomatic carotid stenosis

Check for updates

Anne L. Abbott, MBBS, PhD, FRACP,[a] Alejandro M. Brunser, MD,[b] Athanasios Giannoukas, MSc, PhD, FEBVS,[c] Robert E. Harbaugh, MD,[d] Timothy Kleinig, PhD, FRACP, MBBS (Hons), BA,[e] Simona Lattanzi, MD,[f] Holger Poppert, MD,[g] Tatjana Rundek, MD, PhD,[h] Saeid Shahidi, MD,[i] Mauro Silvestrini, MD,[j] and Raffi Topakian, MD,[k] Melbourne, Victoria, Australia; Santiago, Chile; Larissa, Greece; State College, Pa; Adelaide, South Australia, Australia; Ancona, Italy; Wiesbaden, Germany; Miami, Fla; Copenhagen, Denmark; and Wels, Austria

Anne Abbott
J Vasc Surg 2020

Both ACAS and ACST were outdated from the time they were published owing to improving standards of medical intervention.

In studies where > 25% took statins, ipsilateral stroke was 1.2/100 person years vs. 2.3/100 person years where < 25% took statins (p = .009)

Hadar N, *Asymptomatic Carotid Artery Stenosis Treated with Medical Therapy Alone: Temporal Trends and Implications for Risk Assessment and the Design of Future Studies*. Cerebrovasc Dis 2014.

Table I. Twelve systematically identified quality and comparable measurements of the average annual ipsilateral stroke rate associated with advanced asymptomatic carotid stenosis (ACS) treated with medical intervention alone[a]

Study	Sample Size	Percent stenosis	Mean baseline age, years	Average annual all-cause mortality	Mean/ median follow-up, years	No. of first ipsilateral strokes	Average annual ipsilateral stroke rate	% CEA while asymptomatic
Johnson, 1985[7]	121	>75 by US	–	1.7	3.0	12	3.3	NP
Toronto, 1986[8]	113	75-100 by US + angiographic validation	67	9.3	1.9[b]	0	0	<17
VACS, 1993[9]	233	>50 by angiography/ NASCET	65	8.4	4.0[b]	22	2.4	NP
ACAS, 1995[10]	834	60-99 by US or angiography/+ angiographic validation/NASCET	67[b]	4.0	2.7[b]	52	2.3	5.4
ECST, 1995[11]	127	70-99 by angiography/ECST	64	–	4.5[b]	13	2.3	≤11
ACBS, 1997[12]	357	50-100 by US + angiographic validation/NASCET	65[b]	–	3.1	13	1.2	≤3
CHS, 1998[13]	185	>50 by US + angiographic validation/NASCET[b]	73[b]	–	4.3[b,c]	10[c]	1.3	≤30
Gronholdt, 2001[14]	111	50-100 by ultrasound + angiographic validation/NASCET	64	5.1	4.4[b]	15[d]	3.1	<15
ASED, 2005[15,16]	202	60-99 by US + angiographic validation/NASCET	74	6.2	2.8	7	1.2	5
ACSRS, 2010[17]	923	50-99 by US/NASCET	70[b]	4.8	4.0[b]	54	1.5	11.5
Oxford, 2010[18]	101	50-99 by US or MRI angiography/NASCET	75	–	3.0	1[d,e]	0.3	1.0
SMART, 2013[19]	293	50-99 by US	65	–	6.2	5[d]	0.3	NP

ACAS, Asymptomatic Carotid Atherosclerosis Study; *ACBS*, Asymptomatic Cervical Bruit Study; *ACSRS*, Asymptomatic Carotid Stenosis and Risk of Stroke; *ASED*, Asymptomatic Stenosis Embolus Detection Study; *CEA*, carotid endarterectomy; *CHS*, Cardiovascular Health Study; *ECST*, European Carotid Surgery Trial; *MRI*, magnetic resonance imaging; *NASCET*, North American Symptomatic Carotid Endarterectomy Trial; *NP*, not published; *SMART*, Second Manifestations of Arterial Disease Study; *US*, ultrasound examination; *VACS*, Veterans Affairs Cooperative Study.

[a]Angiography refers to conventional angiography unless otherwise indicated. NASCET indicates stipulation that NASCET methods were used to measure stenosis severity directly or in calibration.

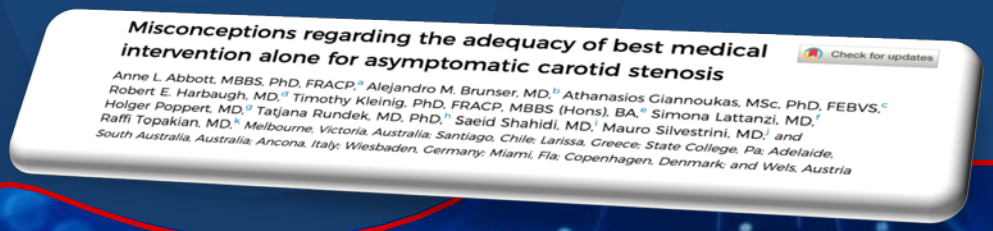
[b]This result applies to a larger sample which included persons with advanced ACS assigned medical intervention alone.

[c]Information obtained by personal communication with a study author or a study author's colleague.

[d]Some patients may have had a prior ipsilateral TIA during follow-up.

[e]Includes any strokes that occurred with CEA while still asymptomatic or CEA for a contralateral carotid stenosis.

Anne Abbott
J Vasc Surg 2020



Misconceptions regarding the adequacy of best medical intervention alone for asymptomatic carotid stenosis

Check for updates

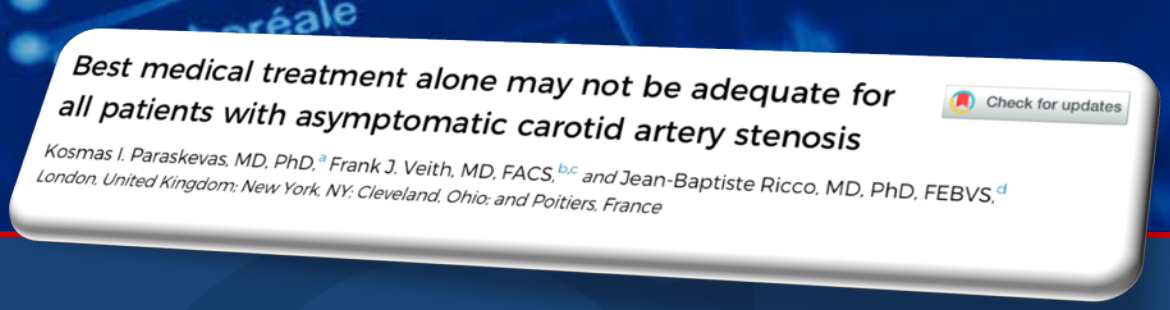
Anne L. Abbott, MBBS, PhD, FRACP,[a] Alejandro M. Brunser, MD,[b] Athanasios Giannoukas, MSc, PhD, FEBVS,[c] Robert E. Harbaugh, MD,[d] Timothy Kleinig, PhD, FRACP, MBBS (Hons), BA,[e] Simona Lattanzi, MD,[f] Holger Poppert, MD,[g] Tatjana Rundek, MD, PhD,[h] Saeid Shahidi, MD,[i] Mauro Silvestrini, MD,[j] and Raffi Topakian, MD,[k] Melbourne, Victoria, Australia; Santiago, Chile; Larissa, Greece; State College, Pa; Adelaide, South Australia, Australia; Ancona, Italy; Wiesbaden, Germany; Miami, Fla; Copenhagen, Denmark; and Wels, Austria

Anne Abbott
J Vasc Surg 2020

The most recent measurements of **stroke rate** with asyntomatic carotid stenosis using **medical intervention alone are overall lower than for those who had CEA or CAS** in randomized trials.

There are **no randomized trial** results related to comparing current optimal medical intervention with CEA or CAS.

Commonly cited markers of high stroke risk in relation to asyntomatic carotid stenosis lack specificity, have not been assessed in conjunction with current optimal medical intervention, and **have not been shown in randomized trials** to identify those who benefit from a carotid procedure in addition to current optimal medical intervention.



Best medical treatment alone may not be adequate for all patients with asymptomatic carotid artery stenosis

Check for updates

Kosmas I. Paraskevas, MD, PhD,[a] Frank J. Veith, MD, FACS,[b,c] and Jean-Baptiste Ricco, MD, PhD, FEBVS,[d]
London, United Kingdom; New York, NY; Cleveland, Ohio; and Poitiers, France

Kosmas Paraskevas
J Vasc Surg 2018

IS MEDICAL TREATMENT ADEQUATE FOR STROKE PREVENTION IN ALL ACS PATIENTS?

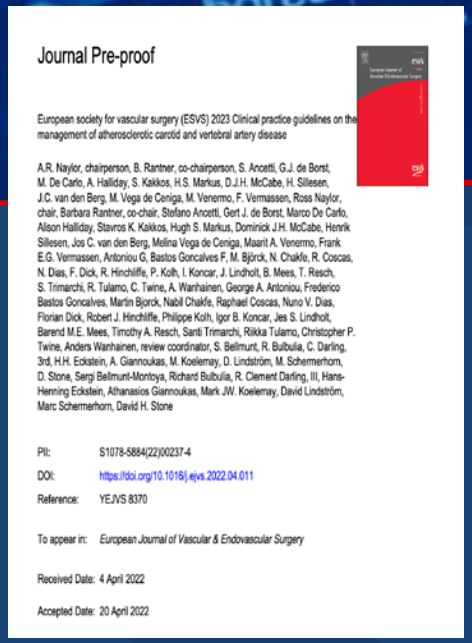
For younger patients, however, with a longer life expectancy and a high-risk plaque, it is logical to take a small operative risk and permanently remove the source of emboli than to recommend medical treatment alone and subject the patients to a small (but real) annual stroke risk for the rest of their lives.

COMPARISON OF RECENT STROKE RATES WITH MEDICAL TREATMENT TO THOSE OF OPERATED ON PATIENTS IN RCTs DOES NOT CONSIDER IMPROVEMENTS IN SURGICAL OUTCOMES

NOT ALL PATIENTS WITH ASYNTOMATIC CAROTID STENOSIS CARRY THE SAME RISK OF STROKE

ARE "ASYMPTOMATIC" PATIENTS TRULY ASYMPTOMATIC?

ESVS Guidelines 2023



Journal Pre-proof

European society for vascular surgery (ESVS) 2023 Clinical practice guidelines on the management of atherosclerotic carotid and vertebral artery disease

A.R. Naylor, chairperson, B. Rantner, co-chairperson, S. Ancetti, G.J. de Borst, M. De Carlo, A. Halliday, S. Kakkos, H.S. Markus, D.J.H. McCabe, H. Sillesen, J.C. van den Berg, M. Vega de Ceniga, M. Venermo, F. Vermassen, Ross Naylor, chair, Barbara Rantner, co-chair, Stefano Ancetti, Gert J. de Borst, Marco De Carlo, Alison Halliday, Stavros K. Kakkos, Hugh S. Markus, Dominick J.H. McCabe, Henrik Sillesen, Jos C. van den Berg, Melina Vega de Ceniga, Maarit A. Venermo, Frank E.G. Vermassen, Antoniou G, Bastos Goncalves F, M. Björck, N. Chakfe, R. Coscas, N. Dias, F. Dick, R. Hinchliffe, P. Kolh, I. Koncar, J. Lindholt, B. Mees, T. Resch, S. Trimarchi, R. Tulamo, C. Twine, A. Wanhainen, George A. Antoniou, Frederico Bastos Goncalves, Martin Bjorck, Nabil Chakfe, Raphael Coscas, Nuno V. Dias, Florian Dick, Robert J. Hinchliffe, Philippe Kolh, Igor B. Koncar, Jes S. Lindholt, Barend M.E. Mees, Timothy A. Resch, Santi Trimarchi, Riikka Tulamo, Christopher P. Twine, Anders Wanhainen, review coordinator, S. Bellmunt, R. Bulbulia, C. Darling, 3rd, H.H. Eckstein, A. Giannoukas, M. Koelemay, D. Lindström, M. Schermerhorn, D. Stone, Sergi Bellmunt-Montoya, Richard Bulbulia, R. Clement Darling, III, Hans-Henning Eckstein, Athanasios Giannoukas, Mark JW. Koelemay, David Lindström, Marc Schermerhorn, David H. Stone

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Reference: YEJVS 8370

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Clinical/Imaging features associated with an increased risk of late stroke in patients with asymptomatic 50 - 99% stenoses treated medically

- Infarto silente alla TC
- TIA o stroke controlaterale
- Progressione della stenosi > 20%
- Area della placca >20 mm^2
- Juxtaluminal black area > 2 mm^2
- Ecolucenza della placca
- Emorragia intraplacca
- Presenza di MES spontanei durante un'ora di registrazione al TCD
- Diminuzione del cerebral vascular reserve

Stenosi carotidea e trattamento chirurgico: è tutto chiaro?

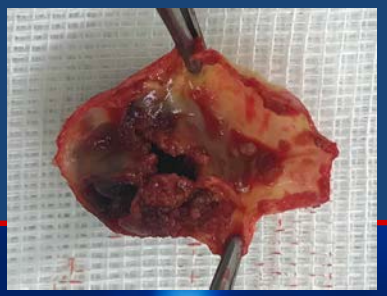
Disturbi cognitivi

Terapia medica

Grado di stenosi

CEA e CAS

Composizione di placca

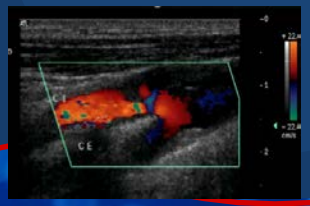


Stenosi carotidea e trattamento chirurgico: è tutto chiaro?

The Tromso Study

Gray Weale	Eventi CV a 3 anni
Tipo I: echolucent	29.6%
Tipo II: predominantly echolucent	21.4%
Tipo III: predominantly echogenic	9.7%
Tipo IV: echogenic	9.5%

EB Mathiesen, Circulation 2001



ACSRS

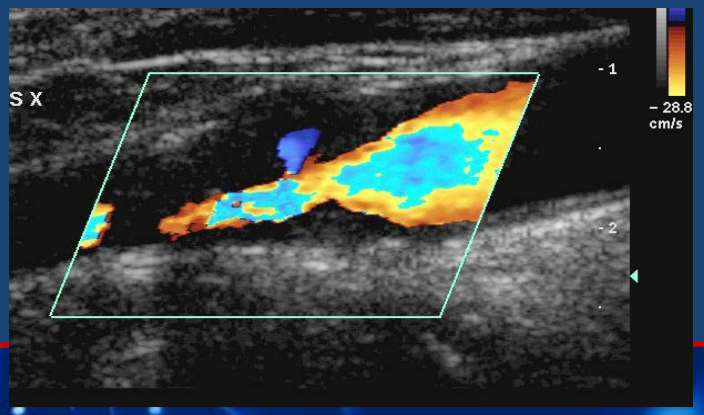
(*Asymptomatic Carotid Stenosis and Risk of Stroke*)

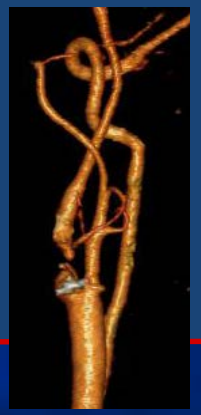
Stroke rate

- ✓ 2% all' anno per i pazienti con placca di tipo 1-3
- ✓ 0,14% all' anno per quelli con placca di tipo 4-5

(indipendentemente dal grado di stenosi)

Nicolaides – Int Ang 2005





Stenosi carotidea e trattamento chirurgico: è tutto chiaro?

In "average surgical risk" patients with an asymptomatic 60—99% stenosis, carotid endarterectomy should be considered in the presence of one or more imaging characteristics that may be associated with an increased risk of late ipsilateral stroke,[a] provided documented perioperative stroke/death rates are <3% and the patient's life expectancy exceeds 5 years	IIa	B

ESVS Guidelines 2018

Imaging/clinical criteria that might confer an increased risk of stroke on BMT:

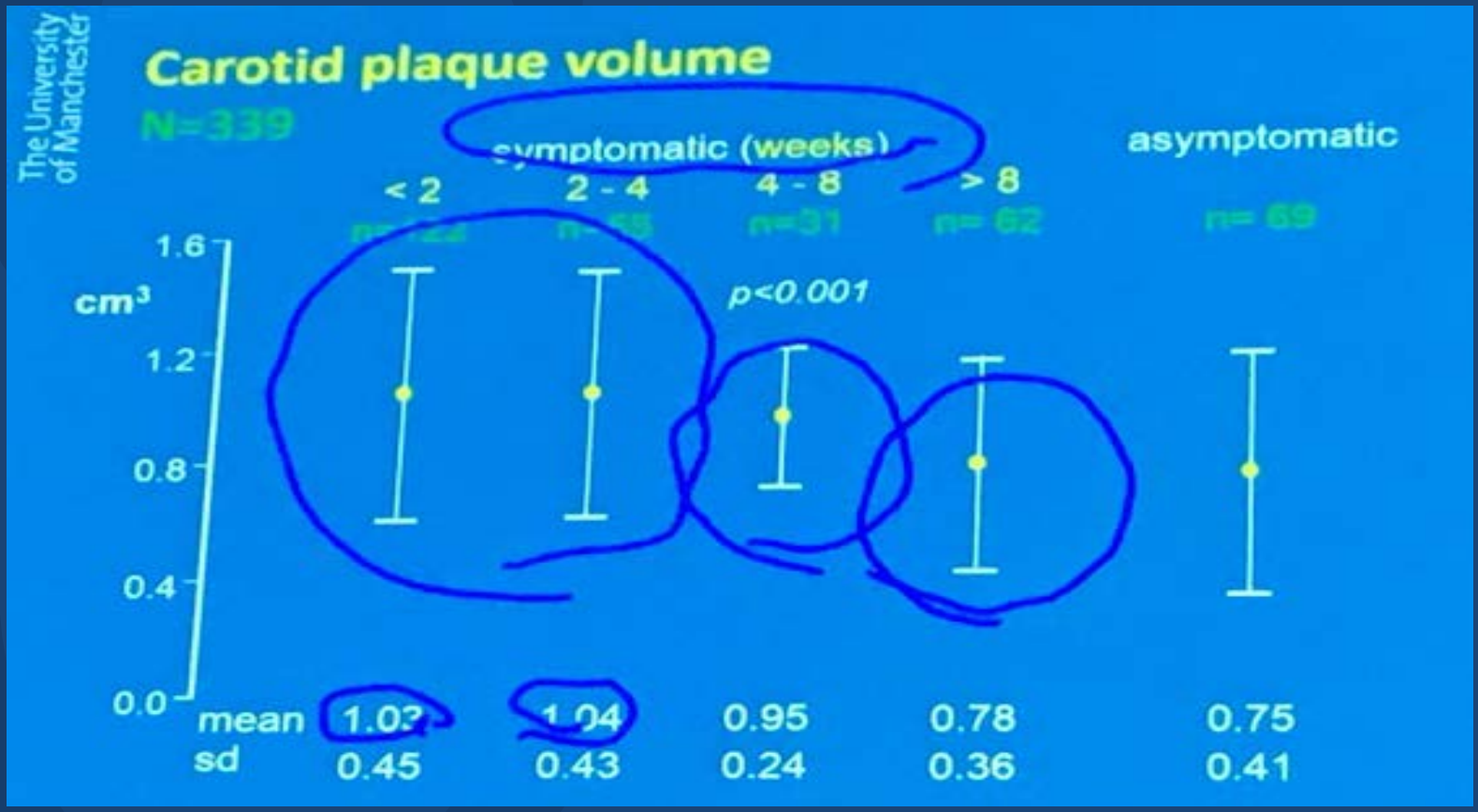
.. large plaque area, plaque echolucency, intra-plaque haemorrhage on MRI

SPREAD
Stroke Prevention And Educational Awareness Diffusion
2016

In caso di stenosi carotidea asintomatica l'endoarteriectomia, comportando un beneficio modesto rispetto alla miglior terapia medica, è indicata nel paziente che è considerato "a rischio" con una di queste condizioni: ….., placca vulnerabile o ulcerata o a rapida crescita,…….

Stenosi carotidea e trattamento chirurgico: è tutto chiaro?

Il volume della placca

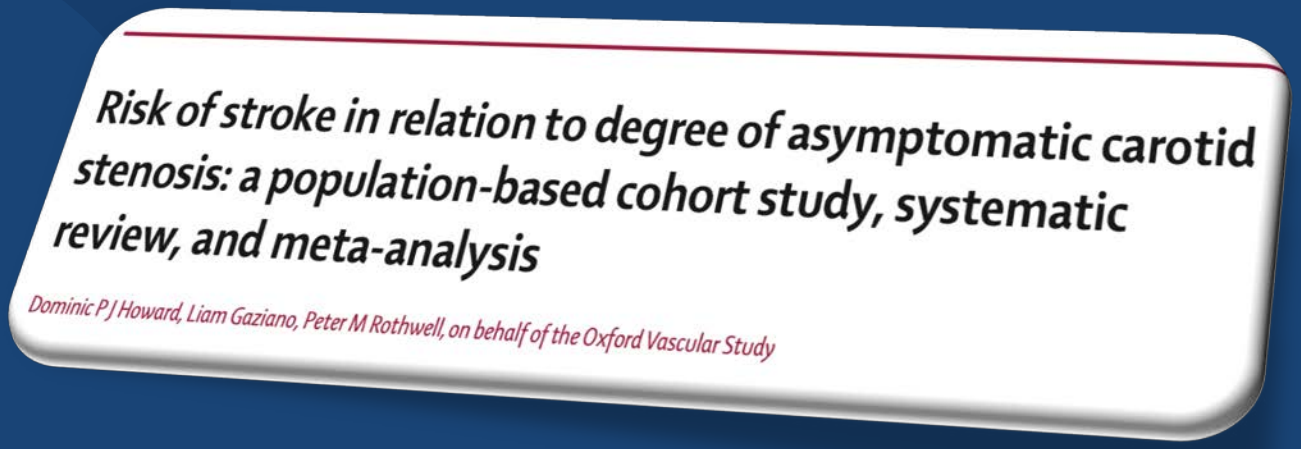


Charles McCollum – BMJ 2018

Stenosi carotidea e trattamento chirurgico: è tutto chiaro?

THE LANCET Neurology

March 2021

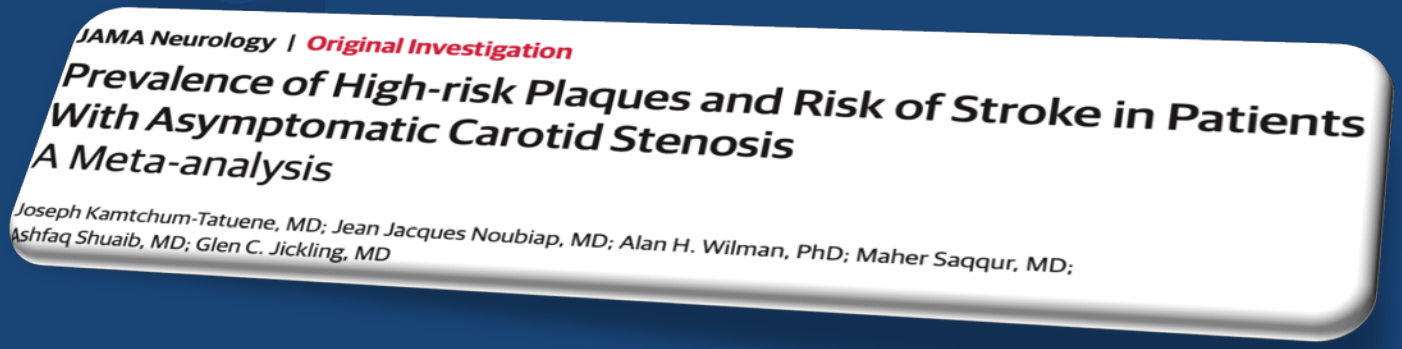


The 5-year ipsilateral stroke risk increased with the degree of stenosis; patients with 70–99% stenosis had a significantly greater 5-year ipsilateral stroke risk than did those with 50–69% stenosis

The stroke risk reported in cohort studies was highly dependent on the degree of asymptomatic carotid stenosis, suggesting that the benefit of endarterectomy might be underestimated in patients with severe stenosis.

Stenosi carotidea e trattamento chirurgico: è tutto chiaro?

December 2020


JAMA Neurology | Original Investigation

Prevalence of High-risk Plaques and Risk of Stroke in Patients With Asymptomatic Carotid Stenosis
A Meta-analysis

Joseph Kamtchum-Tatuene, MD; Jean Jacques Noubiap, MD; Alan H. Wilman, PhD; Maher Saqqur, MD; Ashfaq Shuaib, MD; Glen C. Jickling, MD

The overall incidence of ipsilateral ischemic cerebrovascular events was 3.2 events per 100 person-years.

The incidence of ipsilateral ischemic cerebrovascular events was higher in patients with high-risk plaques (4.3 events per 100 person-years) than in those without high-risk plaques (1.2 events per 100 person-years).

In studies focusing on severe stenosis the incidence of ipsilateral ischemic cerebrovascular events was 3.7 events per 100 person-years. The incidence of ipsilateral ischemic cerebrovascular events was also higher in patients with high-risk plaques than in those without high-risk plaques (1.7 events per 100 person-years).

Stenosi carotidea e trattamento chirurgico: è tutto chiaro?

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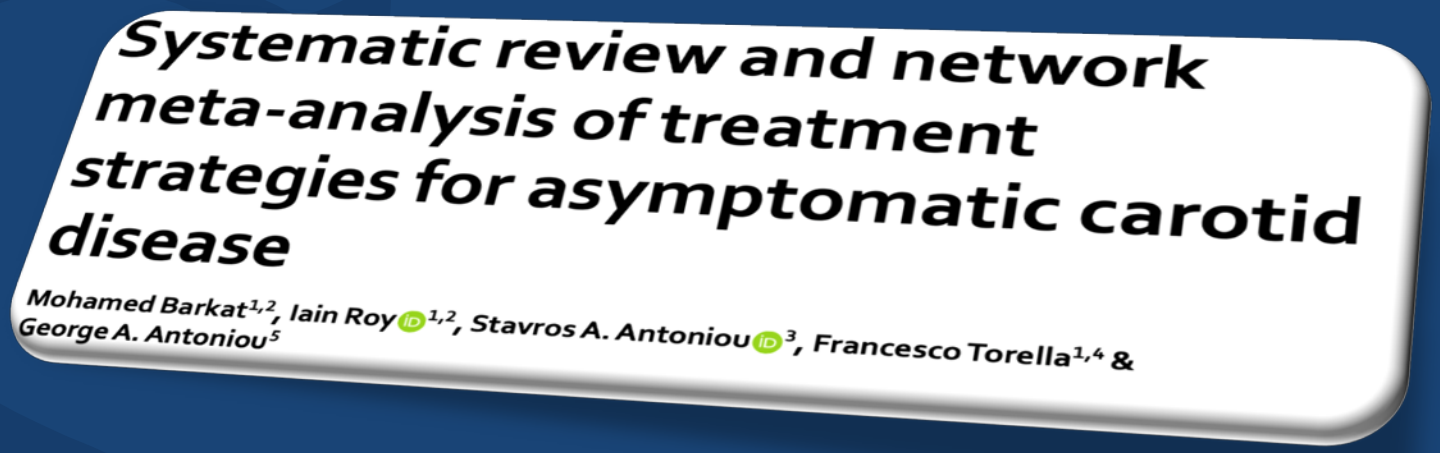
Stenosi carotidea e trattamento chirurgico: è tutto chiaro?

March 2018

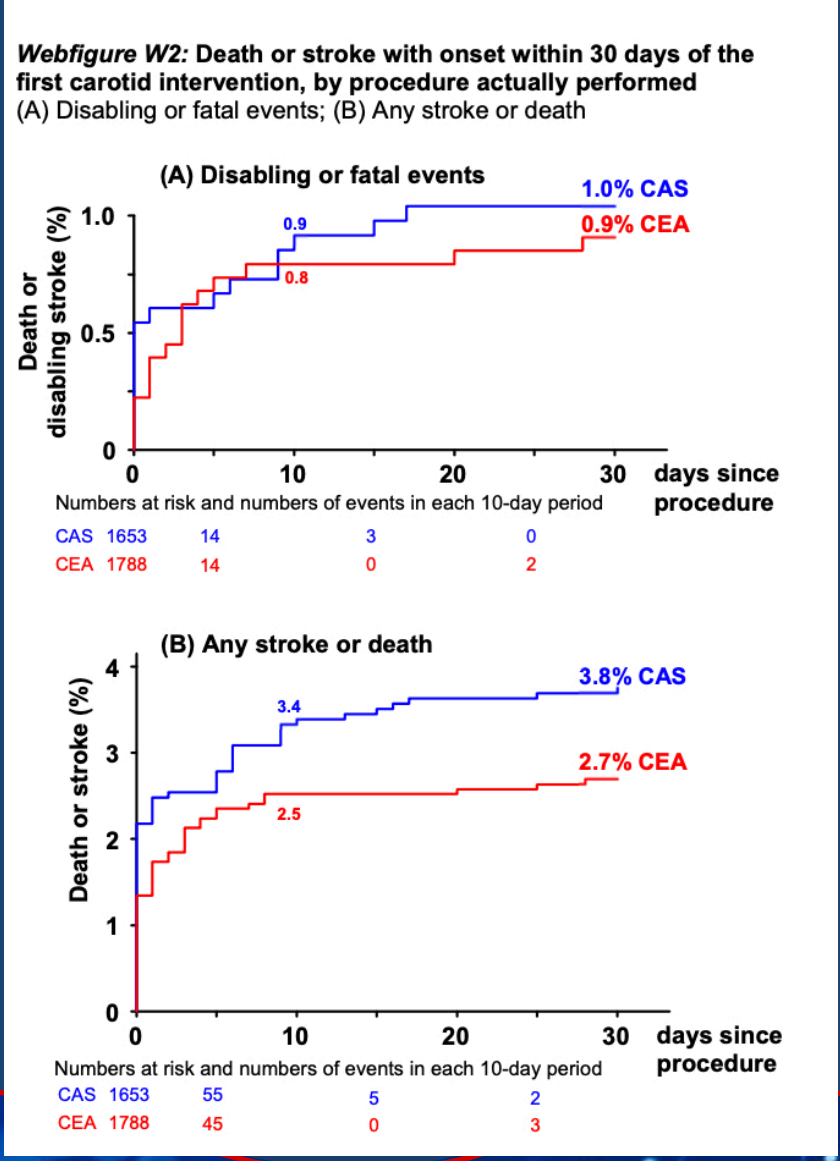


Network meta-analyses league table demonstrated that BMT could be superior to CEA and CAS in terms of perioperative stroke risk and mortality.

CEA is the preferred method to reduce the long-term risk of ipsilateral stroke and mortality for patients with asymptomatic carotid disease.

www.nature.com/scientificreports

CEA e CAS a confronto



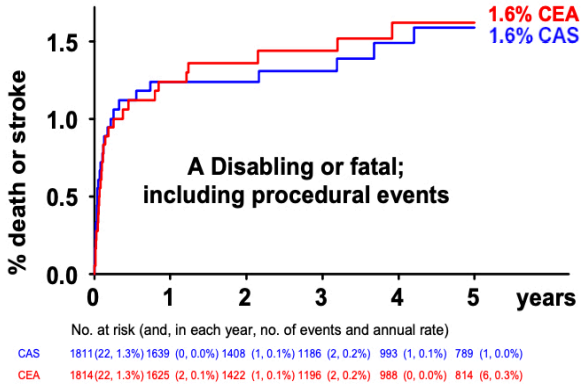
«Second asymptomatic carotid surgery trial (ACST-2): a randomised comparison of carotid artery stenting versus carotid endarterectomy» *Lancet 2021*

ACST 2

Lancet 2021

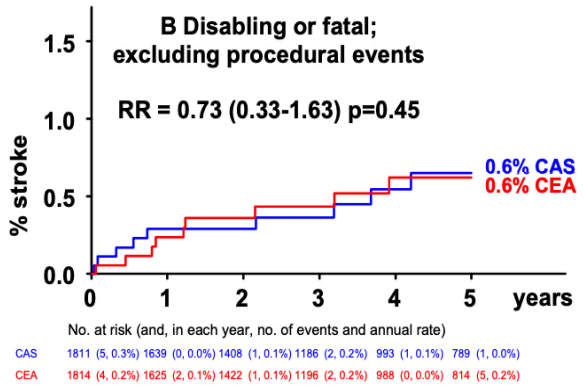
CEA e CAS a confronto

Webfigure W4: **Ipsilateral non-procedural strokes, either including or excluding procedural events**
(A) Procedural death or disability, or non-procedural ipsilateral fatal or disabling stroke; (B) Non-procedural ipsilateral fatal or disabling stroke; (C) Procedural death or stroke, or non-procedural ipsilateral stroke; (D) Non-procedural ipsilateral stroke



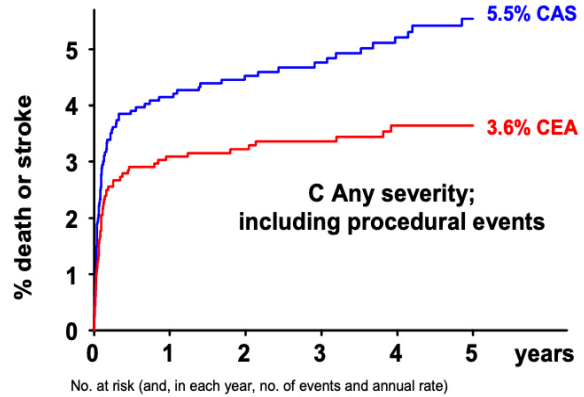
No. at risk (and, in each year, no. of events and annual rate)

CAS	1811 (22, 1.3%)	1639	(0, 0.0%)	1408	(1, 0.1%)	1186	(2, 0.2%)	993	(1, 0.1%)	789	(1, 0.0%)
CEA	1814 (22, 1.3%)	1625	(2, 0.1%)	1422	(1, 0.1%)	1196	(2, 0.2%)	988	(0, 0.0%)	814	(6, 0.3%)



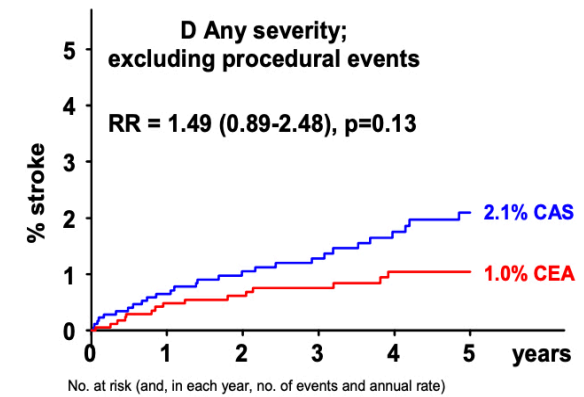
No. at risk (and, in each year, no. of events and annual rate)

CAS	1811 (5, 0.3%)	1639	(0, 0.0%)	1408	(1, 0.1%)	1186	(2, 0.2%)	993	(1, 0.1%)	789	(1, 0.0%)
CEA	1814 (4, 0.2%)	1625	(2, 0.1%)	1422	(1, 0.1%)	1196	(2, 0.2%)	988	(0, 0.0%)	814	(5, 0.2%)



No. at risk (and, in each year, no. of events and annual rate)

CAS	1811 (74, 4.5%)	1594	(6, 0.4%)	1366	(3, 0.2%)	1150	(5, 0.5%)	960	(3, 0.3%)	765	(8, 0.4%)
CEA	1814 (55, 3.3%)	1596	(2, 0.1%)	1398	(2, 0.2%)	1176	(3, 0.3%)	967	(0, 0.0%)	796	(11, 0.5%)



No. at risk (and, in each year, no. of events and annual rate)

CAS	1811 (11, 0.7%)	1594	(6, 0.4%)	1366	(3, 0.2%)	1150	(5, 0.5%)	960	(3, 0.3%)	765	(7, 0.3%)
CEA	1814 (8, 0.5%)	1596	(2, 0.1%)	1398	(2, 0.2%)	1176	(3, 0.3%)	967	(0, 0.0%)	796	(9, 0.4%)

ACST 2
Lancet 2021

ACST 2

Lancet 2021

Second asymptomatic carotid surgery trial (ACST-2): a randomised comparison of carotid artery stenting versus carotid endarterectomy

Alison Halliday, Richard Bulbulia*, Leo H Bonati, Johanna Chester, Andrea Cradduck-Bamford, Richard Peto†, Hongchao Pan†, for the ACST-2 Collaborative Group‡*

Kaplan-Meier estimates of 5-year non-procedural stroke were 2·5% in each group for fatal or disabling stroke, and 5·3% with CAS versus 4·5% with CEA for any stroke (rate ratio [RR] 1·16, 95% CI 0·86–1·57; p=0·33).

Serious complications are similarly uncommon after competent CAS and CEA, and the long-term effects of these two carotid artery procedures on fatal or disabling stroke are comparable.

Conclusioni

La TEA carotidea è la metodica di scelta nel trattamento della stenosi carotidea sintomatica > 50% e nella stenosi asintomatica > 70%.

Attualmente dobbiamo ritenere la chirurgia dei sintomatici un'urgenza e la chirurgia degli asintomatici un investimento sul futuro.

I progressi della terapia medica, gli studi sui deficit cognitivi e la composizione della placca *potranno chiarirci ulteriormente le idee.*

Grazie per l’ attenzione