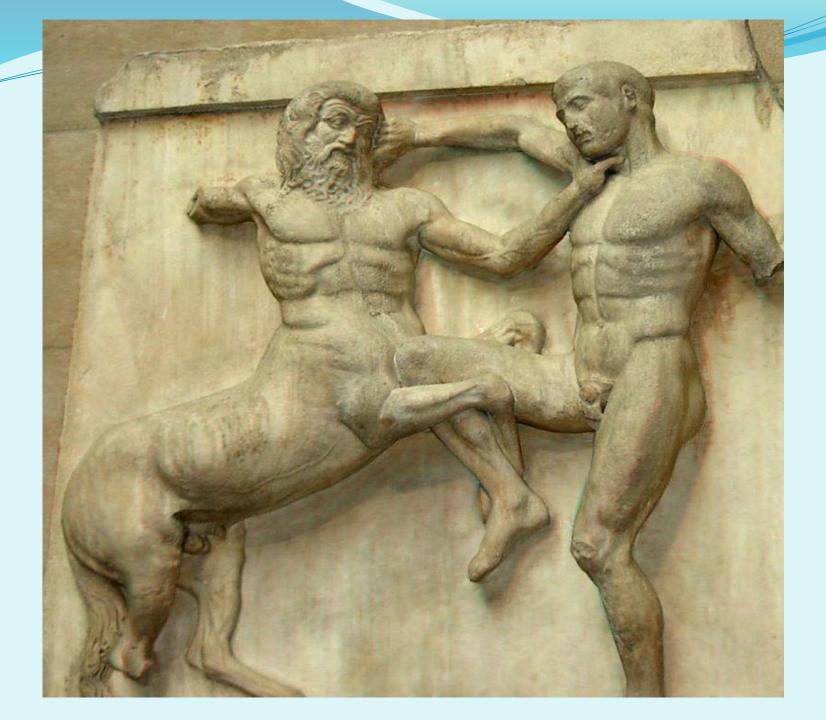
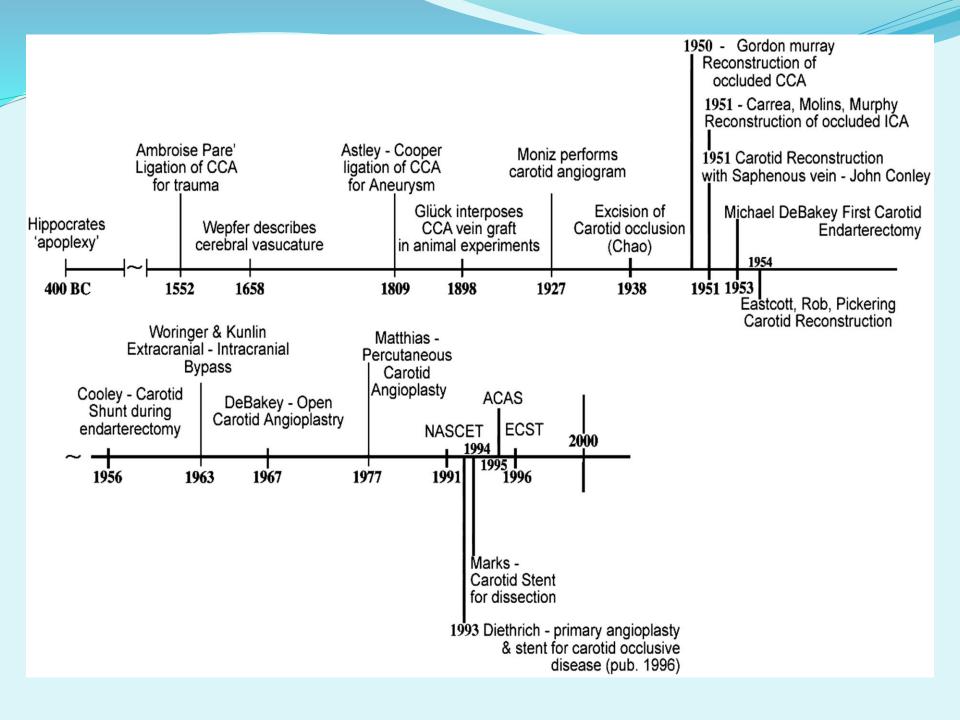
Στένωση καρωτίδων – Ποια η αντιμετώπιση.

Α. ΧρονόπουλοςΑγγειοχειρουργός





(The Lancet 1954; 2: 994–6)



Dr. Charles Rob

- Reconstruction of internal carotid artery in a patient with intermittent attacks of hemiplegia
- H.H. G. Eastcott M.S. Lond., F.R.C.S. Assistant Director of Surgical Unit, St. Mary's Hospital
- G.W. Pickering F.R.C.P., Hon. M.D. Ghent Professor of Medicine in the University of London
- C.G. Rob M.C., M.Chir.Camb., F.R.C.S. Professor of Surgery in the University of London From the Medical and Surgical Units, St. Mary's Hospital, London

Παράγοντες κινδύνου

- Ηλικία
 - Υψηλή αρτηριακή πίεση
 - Διαβήτης (x4)
 - Κάπνισμα
 - Υψηλή χοληστερίνη
 - Στεφανιαία νόσος (CAD)
 - Παχυσαρκία
 - Έλλειψη φυσικής δραστηριότητας
- Οικογενειακό ιστορικό αθηρωσκληρυνσης/ΑΕΕ

Τεκμηρίωση ενδείξεων ('90's)

- North American Symptomatic Carotid Endarterectomy Trial (NASCET)
- European Carotid Surgery Trial (ECST)
- Asymptomatic Carotid Atherosclerosis Study (ACAS)

Στένωση καρωτίδων - αντιμετώπιση

- Συμπτωματική
- > Χειρουργική
- ▶ Επεμβατική

- Ασυμπτωματικη
- > Χειρουργική
- Επεμβατική
- > Συντηρητική

Ενδείξεις ενδαρτηρεκτομης καρωτίδας

• Συμπτωματική

- Στένωση >70%
- Παροδικά ισχαιμικά επεισόδια
- ΑΕΕ με μικρή βλάβη
- Crescendo TIA's
- Εγκεφαλικό σε εξέλιξη
- Amaurosis fugax

Ενδείξεις ενδαρτηρεκτομης καρωτίδας

Ασυμπτωματική

ο Στένωση >70%

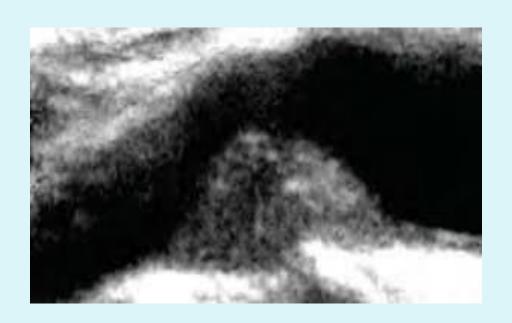
- Ο Χαρακτηριστικά πλάκας
- ο Καλή γενική κατάσταση
- ο Προσδόκιμο 5ετια

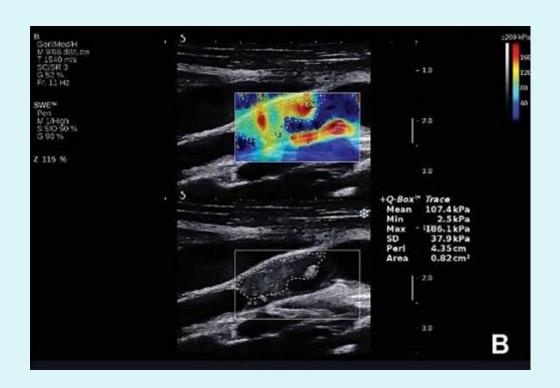
Ασυμπτωματική καρωτίδα

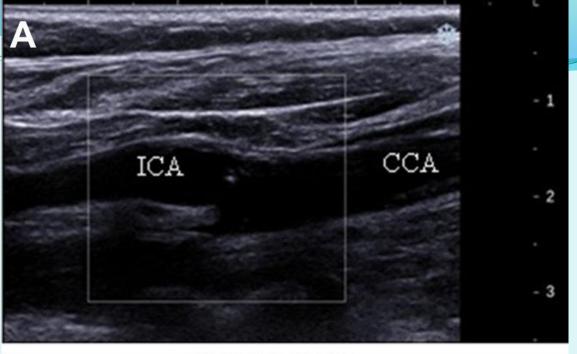
 Σε 20 επεμβάσεις/ ανά έτος πιθανόν αποτρέπουμε 1 ΑΕΕ ανά 5ετια

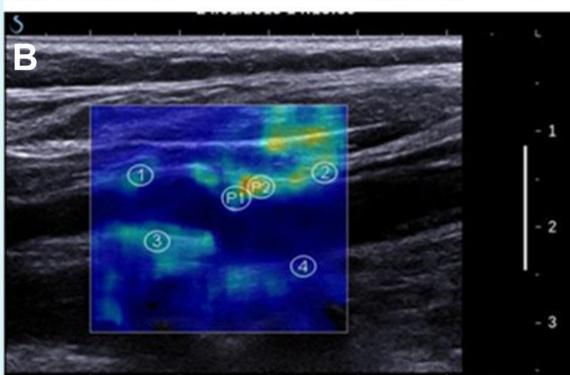
«Ύποπτη» στένωση καρωτίδας

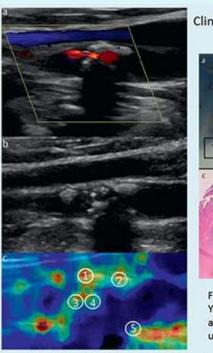
- Μαλακή σκληρή πλάκα
 (κατ. Ι ΙV σύμφωνα με υπερηχογραφικα κριτήρια)
- ο Ομαλή ανώμαλη επιφάνεια πλάκας
- ο Ενδοπλακικη αιμορραγία
- ο «Θερμή» πλάκα



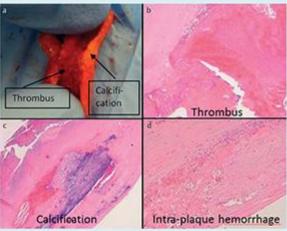








Clinical application of shear wave elastography (SWE) in carotid plaques: first clinical case report¹



First case study to suggest ultrasound SWE assessment of Young's Modulus of plaque may correlate with macroscopic and microscopic assessment as well as conventional ultrasound greyscale image appearance.

¹Garrard J and Ramnarine KV. Shear-wave <u>elastography</u> in carotid plaques: comparison with Greyscale Median and histological assessment in an interesting case. Ultraschall in der Medizin. European Journal of Ultrasound. 2014: 35 (01), 1-4.

Stenting καρωτίδας

- Την τελευταία 20ετια «είσοδος» των stents στην καρωτιδική νόσο.
- Πίεση των εταιρειών να επιβληθεί ως η καλύτερη θεραπευτική επιλογή.

FDA NEWS RELEASE FOR IMMEDIATE RELEASE P04-85 August 31, 2004

FDA Approves New Stent System to Help Prevent Stroke

The Food and Drug Administration (FDA) has approved a stent for use in opening blocked arteries in the neck

 The new system, manufactured by Guidant Corporation, of Santa Clara, Calif., FDA approved the system based on a review of clinical studies of safety and effectiveness conducted by Guidant.

SAPPHIRE trial

- CEA team
- ...low rate of major complications (stroke, death, or myocardial infarction [MI] < 1%).
- Intervention team
- ...low complication rates (< 2% for stroke and TIA).

FDA – CAROTID ARTERY STENTING

- Stenting and Angioplasty With Protection in Patients at High Risk for Endarterectomy (SAPPHIRE) trial
- Circulation October 2, 2007, Volume 116, Issue 14
- CONTROVERSIES IN CARDIOVASCULAR MEDICINE
- Carotid Stents: Unleashed, Unproven
- Frank W. LoGerfo
 - Six of the voting members were acknowledged to have current or past interests in firms at issue.
 - Others have posed this question: Who then is their client, the corporation or the public?



The Status and Future of Carotid Stenting: Who are the Players and What is at Stake?

 While the U.S. Food and Drug Administration (FDA) approved the first carotid stent system in the United States in 2004,¹ this decision served only to inflame this debate, rather than quench it.

Carotid Artery Stenting Coverage

 Please note: Effective December 9, 2009 Medicare clarified coverage for carotid artery stenting requiring the use of an FDA-approved or cleared embolic protection device. Medicare clarified if deployment of the embolic protection device is not technically possible, and not performed, then the procedure is not covered by Medicare.¹

Αποτελέσματα CREST

- Stenting versus Endarterectomy for Treatment of Carotid-Artery Stenosis
 - N Engl J Med 2010; 363:11-23 July 1, 2010

 »Stroke was more likely after carotid-artery stenting»







Based on the 2011 ASA/ACCF/AHA/AANN/AANS/ACR/ CNS/SAIP/SCAI/SIR/SNIS/SVM/SVS

Guideline on the Management of Patients With Extracranial Carotid and Vertebral Artery Disease

Developed in Collaboration With the American Academy of Neurology and Society of Cardiovascular Computed Tomography

January 2011

Class I

1. Patients at average or low surgical risk who experience nondisabling ischemic stroke2 or transient cerebral ischemic symptoms, including hemispheric events or amaurosis fugax, within 6 months (symptomatic patients) should undergo carotid endarterectomy (CEA) if the diameter of the lumen of the ipsilateral internal carotid artery is reduced more than 70%3 as documented by noninvasive imaging (Level of Evidence A) or more than 50% as documented by catheter angiography (Level of Evidence B) and the anticipated rate of perioperative stroke or mortality is less than 6%

2. Carotid artery stenting (CAS) is indicated as an alternative to CEA for symptomatic patients at average or low risk of complications associated with endovascular intervention when the diameter of the lumen of the internal carotid artery is reduced by more than 70% as documented by noninvasive imaging or more than 50% as documented by catheter angiography and the anticipated rate of periprocedural stroke or mortality is less than 6%. (Level of Evidence: B)

Class IIa

1. It is **reasonable** to perform CEA in **asymptomatic** patients who have more than 70% stenosis of the internal carotid artery if the risk of perioperative stroke, myocardial infarction, and death is low. (Level of Evidence: A)

FDA NEWS RELEASE

For Immediate Release: May 6, 2011

Media Inquiries: Karen Riley, 301-796-

4674, karen.riley@fda.hhs.gov

Consumer Inquiries: 888-INFO-FDA

FDA expands approved use for carotid stent

Today's action expands the indication for use of the stent to include all patients with clogged carotid arteries who are at risk for stroke, not just those who are not good candidates for surgery.

Jan. 12 in the journal JAMA Neurology.

- By Steven Reinberg
 HealthDay Reporter
- (HEALTHDAY)
- WEDNESDAY, Jan. 14, 2015 (HealthDay News) -- Placing stents in the neck arteries, to prop them open and help prevent strokes, may be too risky for older, sicker patients, a new study suggests.
- In fact, almost a third of Medicare patients who had stents placed in their neck (carotid) arteries died during an average of two years of follow-up.

Long-Term Results of Stenting versus Endarterectomy for Carotid-Artery Stenosis

Thomas G. Brott, M.D., George Howard, Dr.P.H., Gary S. Roubin, M.D., Ph.D., James F. Meschia, M.D., Ariane Mackey, M.D., William Brooks, M.D., Wesley S. Moore, M.D., Michael D. Hill, M.D., Vito A. Mantese, M.D., Wayne M. Clark, M.D., Carlos H. Timaran, M.D., Donald Heck, M.D., Pierre P. Leimgruber, M.D., Alice J. Sheffet, Ph.D., Virginia J. Howard, Ph.D., Seemant Chaturvedi, M.D., Brajesh K. Lal, M.D., Jenifer H. Voeks, Ph.D., and Robert W. Hobson, II, M.D., for the CREST Investigators.

N Engl J Med 2016; 374:1021-1031 March 17, 2016 DOI: 10.1056/NEJMoa1505215

CREST did not show significant differences between carotid-artery stenting and carotid endarterectomy with respect to the primary composite end point of periprocedural stroke, myocardial infarction, or death and postprocedural ipsilateral stroke over a time period that was appropriate for elderly asymptomatic patients and symptomatic patients with severe carotid artery disease.

Secondary Analyses

Stroke or Death

The risk of periprocedural stroke or death and subsequent ipsilateral stroke was **37% higher in the stenting group** than in the endarterectomy group (hazard ratio, 1.37; 95% CI, 1.01 to 1.86; P=0.04)

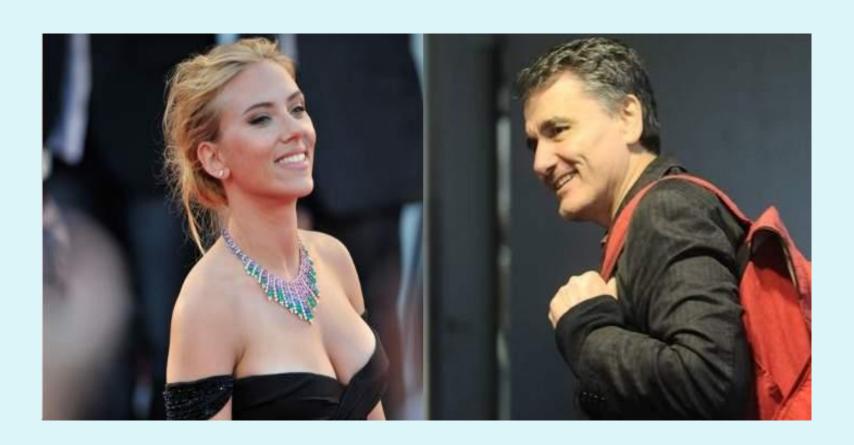
Table 12Summary of statistically significant findings in the peri-operative period from meta-analyses of RCTs comparing CEA with CAS.a

	Symptomatic patients
30-day outcomes	hazard ratio (95% CI)
Any stroke	1.81 (1.40–2.34) favouring CEA ¹⁹⁵
Death/stroke	1.72 (1.29–2.31) favouring CEA ¹⁹⁵
Death/stroke (males)	1.86 (1.19–2.91) favouring CEA ¹⁹⁵
Death/stroke (females)	1.53 (1.02–2.29) favouring CEA ¹⁹⁵
Death/stroke/MI	1.44 (1.15–1.80) favouring CEA ¹⁹⁵
Cranial nerve palsy	0.08 (0.04–0.14) favouring CAS ¹⁹⁵
Myocardial infarction	0.44 (0.23–0.87) favouring CAS ¹⁹⁵
Severe haematoma	0.37 (0.18–0.77) favouring CAS ¹⁹⁵

- 10-15% of all ischemic strokes originate from a stenosis inside the carotid artery⁶
- The majority of strokes occurs post-procedure (+/- 67%)⁷
- 66% of strokes occur after removal of the cerebral protection device because of plaque prolapse through stent struts⁸
- Double-mesh scaffolding avoids protrusion of plaque through the struts⁴

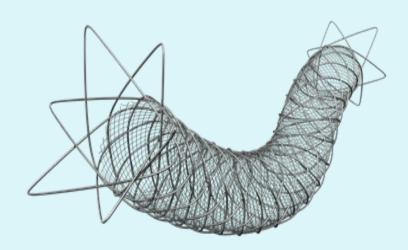
Το ιδανικό stent

- Provides good wall apposition⁴
- Good in-vessel flexibility³
- Allows for side branch patency⁵
- Conforms to tortuous anatomies⁴

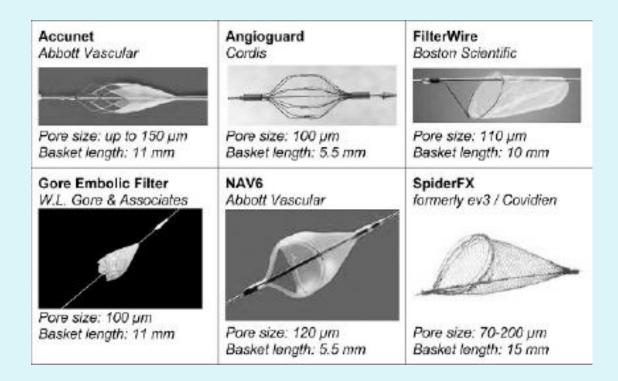


- Open-Cell Stents
- Closed-Cell Stents
- Hybrid Technology
- Dual-Layer Micromesh Technology

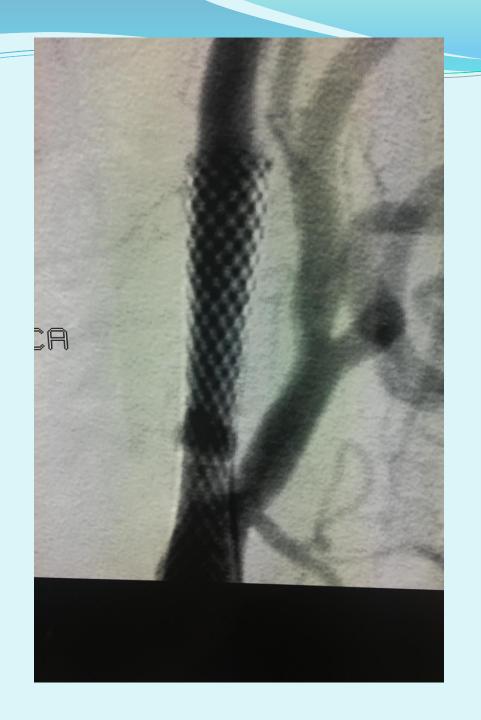
Roadsaver® - Carotid artery stent system

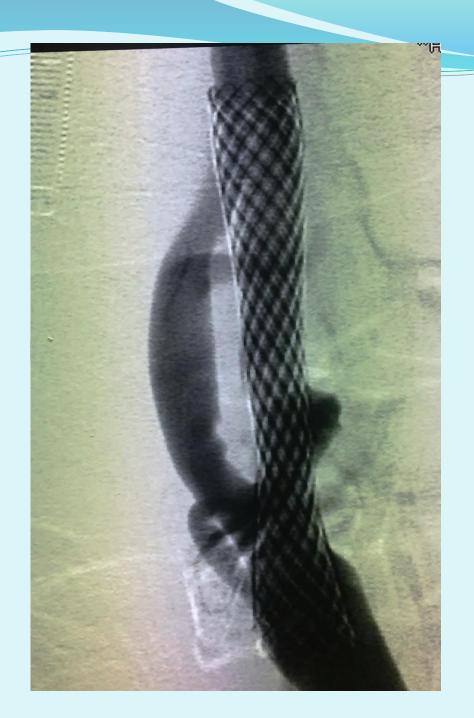


Συστήματα εγκεφαλικής προστασίας









Charing Cross international symposium 4/2016

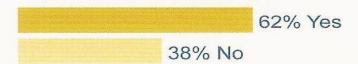
Will carotid artery stenting one day become the preferred treatment for all carotid stenosis patients?

22% Yes

78% No

Not at CX 2016!

For carotid endarterectomy, many of the more subtle complications are not recognised in the randomised controlled trials:



Agreed!

I am comfortable performing carotid endarterectomy in a patient on dual antiplatelet therapy:



Yes.

Ενδείξεις stent καρωτίδας

- Ψηλή βλάβη (μη προσπελάσιμη χειρουργικά)
- Τραχειοτομία
- Προηγηθείσα ακτινοβολία
- Επαναστενωση μετά ενδαρτηρεκτομη
- Τραυματισμός νεύρων ετεροπλευρα

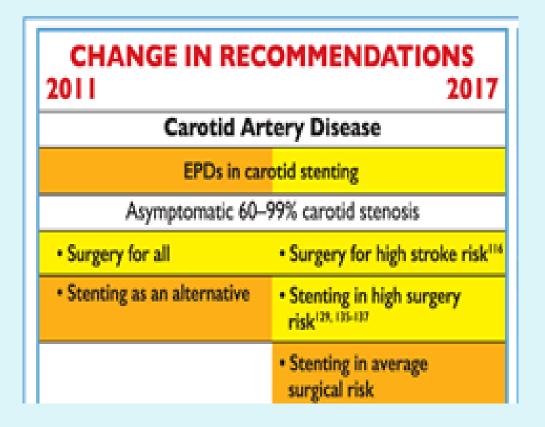
The Wall Street Journal

- Are Stroke Drugs Better Than Stents?
- Medical Device Makers Lobby Medicare to Widen Coverage but Some Doctors Oppose More Surgeries
- By THOMAS M. BURTON
- Sept. 18, 2012 7:01 p.m. ET
- Research that suggests prescription drugs are as good or better at preventing strokes than interventional procedures is prompting a range of leading doctors to recommend against carotid surgery and carotid stent implants in most patients who haven't had stroke symptoms.

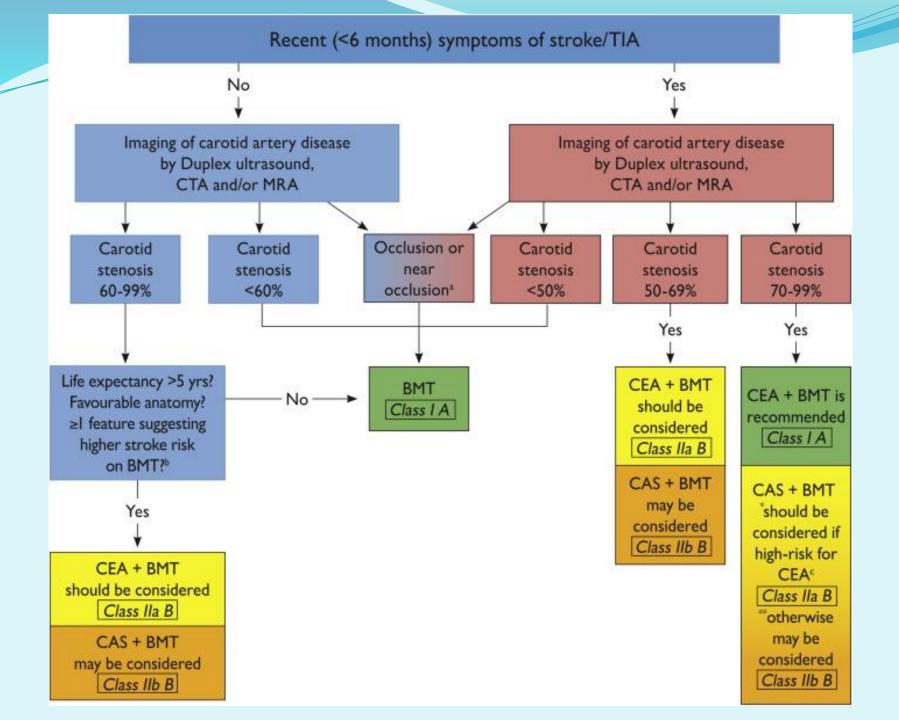
Ασυμπτωματική καρωτίδα – βέλτιστη ιατρική αγωγή

- Αντιαιμοπεταλιακη αγωγή.
 - Στατινες
 - Τρόπος ζωής
- Αποτελέσματα εφάμιλλα της χειρουργικής
 θεραπείας (κίνδυνος εγκεφαλικού < 1%)

ESC 2017









 Μια καλή ομιλία πρέπει να εξαντλεί το θέμα. Όχι όμως και το ακροατήριο.

Winston Churchill