SOCIETÀ MEDICA
DI SANTA MARIA NUOVA

X EDIZIONE

Giornate Mediche di
Santa Maria Nuova 2018

L'Ospedale dei Fiorentini

IL DANNO TISSUTALE ISCHEMICO:
sedi anatomiche,
strategie terapeutiche e
reti assistenziali

18-19 Ottobre 2018

Intervento di TEA in urgenza: indicazioni e modello organizzativo

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Ospedale San Giovanni di Dio Firenze

Azienda Sanitaria di Firenze

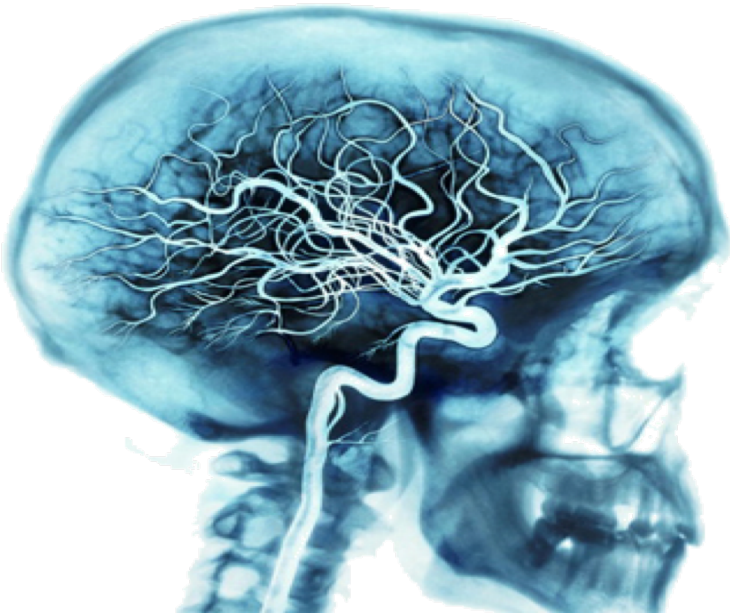
Regione Toscana

Presentazione clinica

ateromasia delle arterie cerebro-afferenti

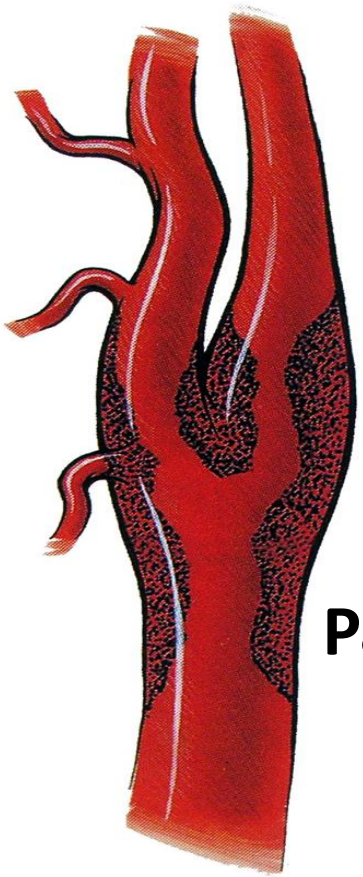
<u>tre entità cliniche</u>:

- TIA
- Ictus ischemico
- Demenza vascolare



Classification of Cerebral Vascular Disease III, 1990

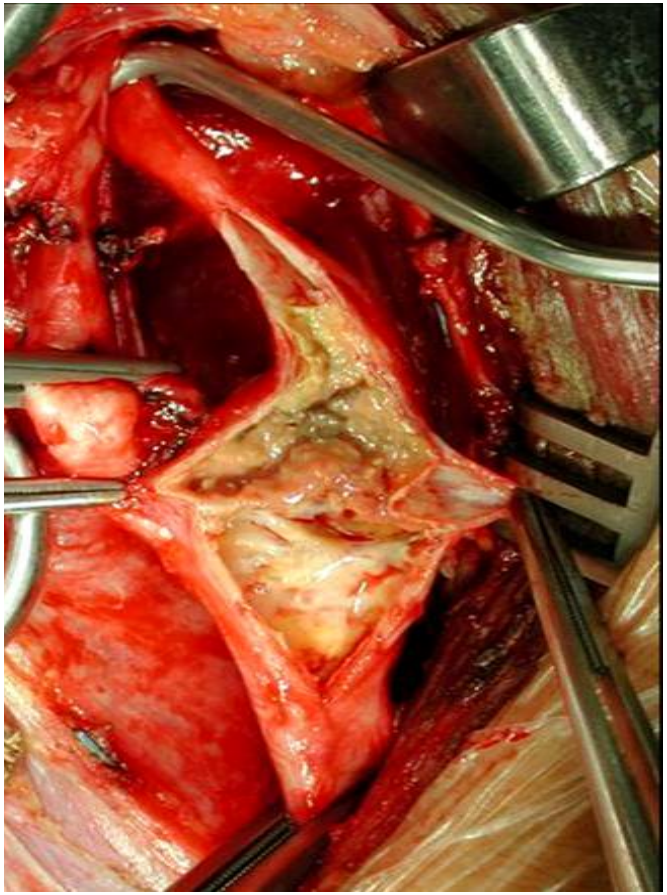
Etiopatogenesi



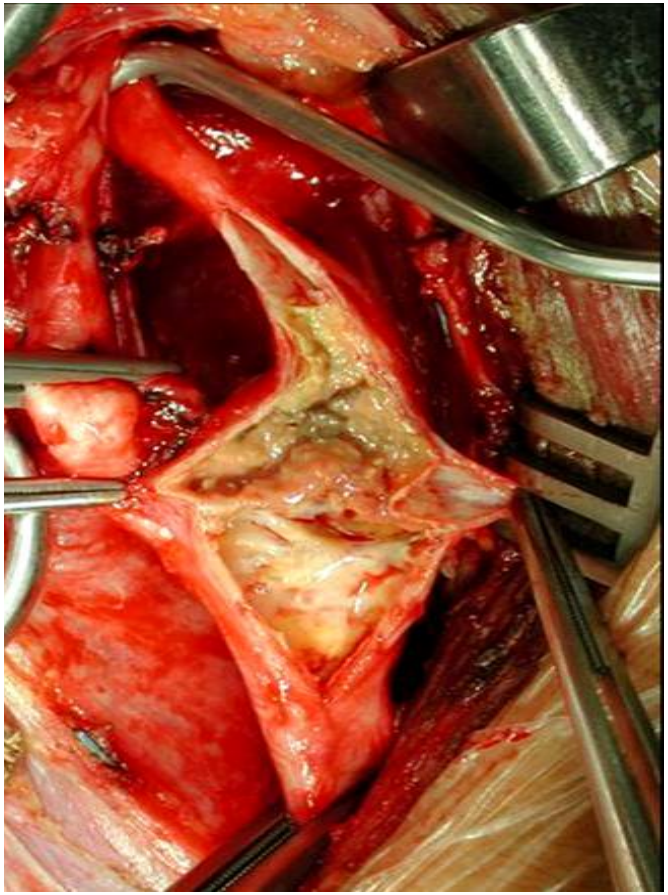
ICTUS

15%

Patologia ostruttiva carotidea

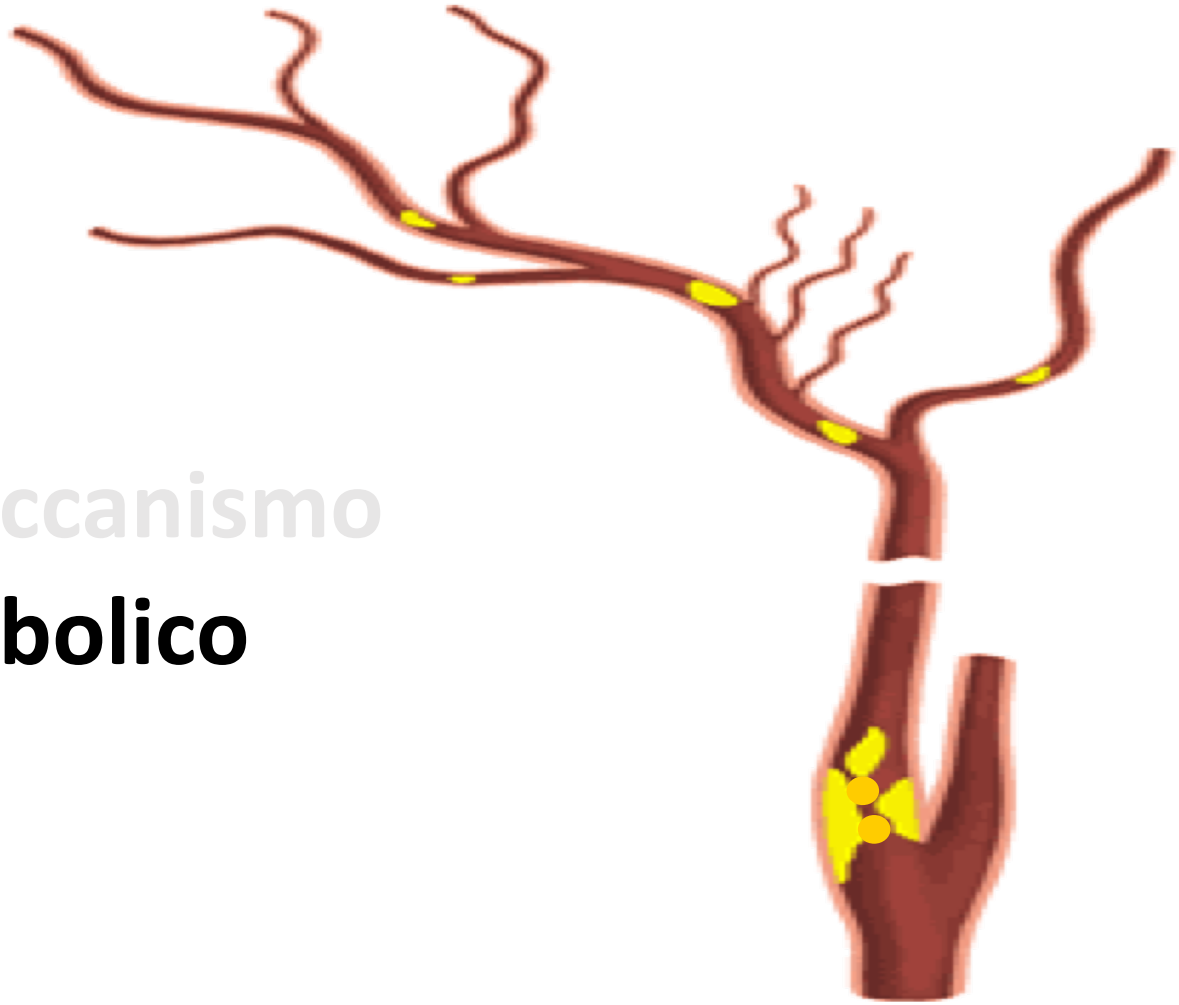


Etiopatogenesi

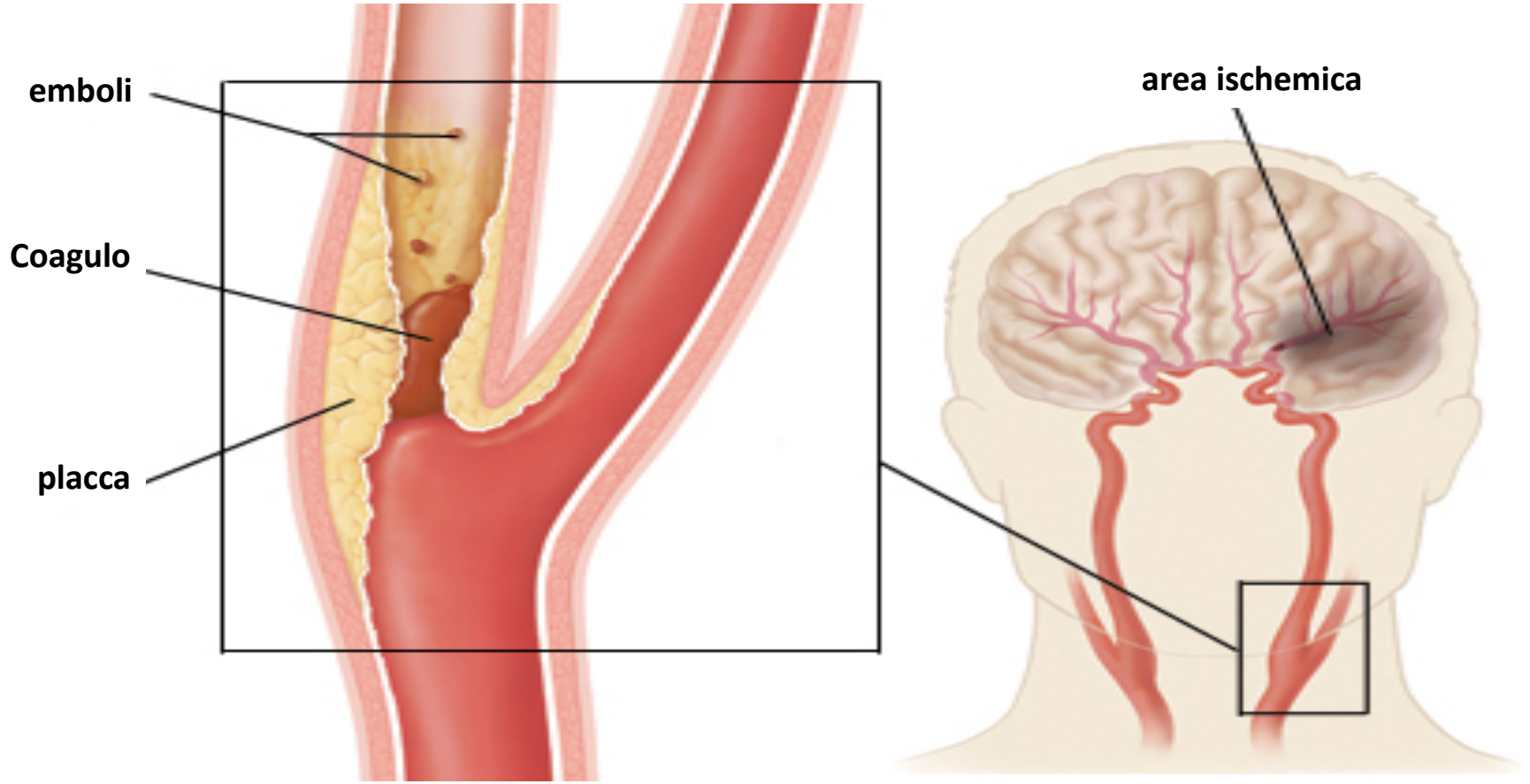


meccanismo

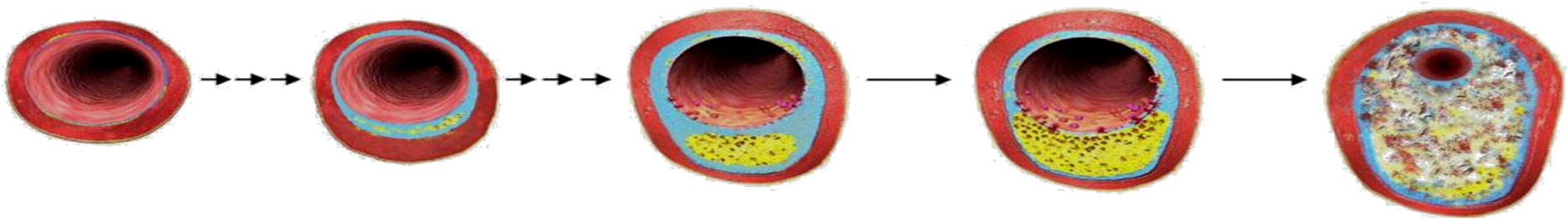
embolico

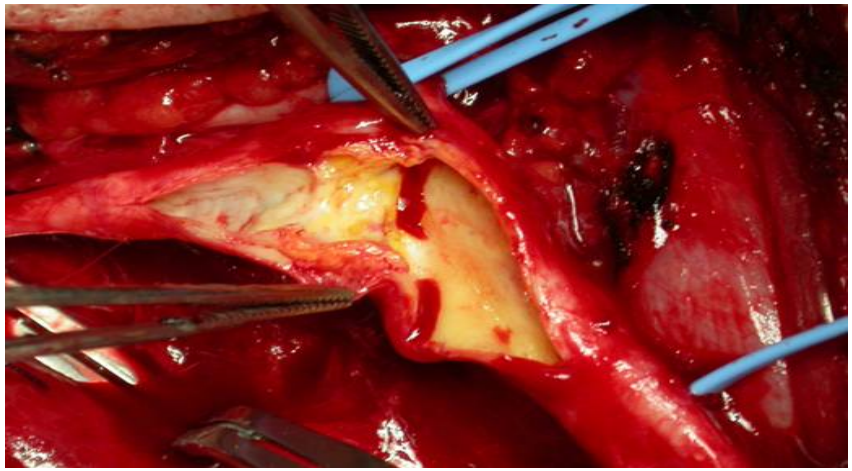


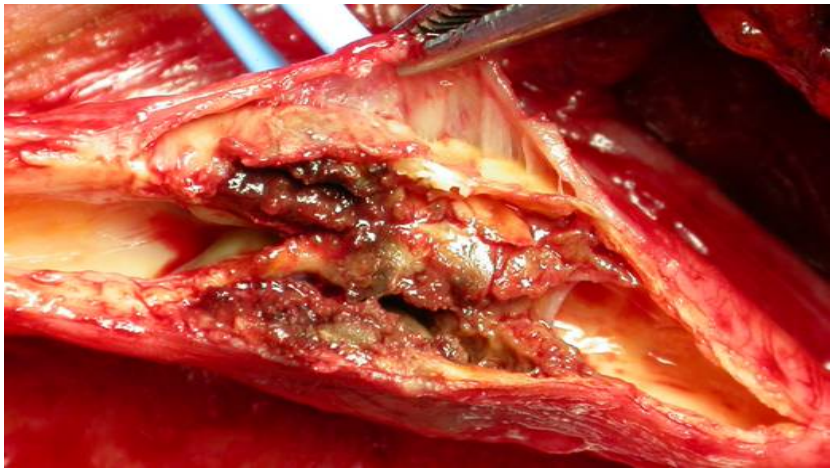
Etiopatogenesi



Placca vulnerabile







Stabile: Basso rischio **Instabile: Alto rischio**

complicanze emboliche e/o trombotiche

Diagnostica

NASCET [1] (1991 – 1998)

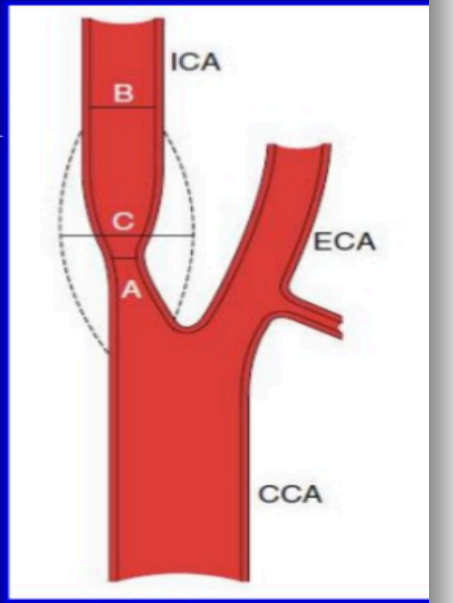
North American Symptomatic Carotid Endartectomy Trial

(B – A / B) x 100

ECST [2] (1998)

European Carotid Surgery Trial

(C – A / C) x 100



[1] NASCET. N Engl J Med 1991 ; 325 : 445 – 453.

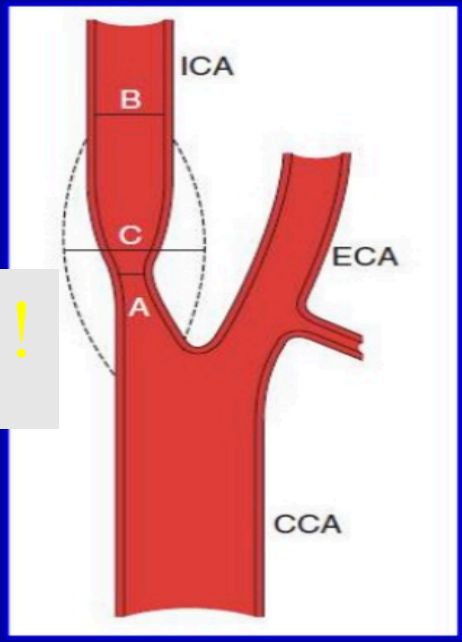
Diagnostica

Diameter reduction

* NASCET (B – A / B) x 100	** ECST (C – A / C) x 100
30%	65%
40%	70%
50%	
60%	
70%	85%
80%	91%
90%	97%

STOP USE ECST !!!!

ANY GUIDELINE RECCOMEND IT

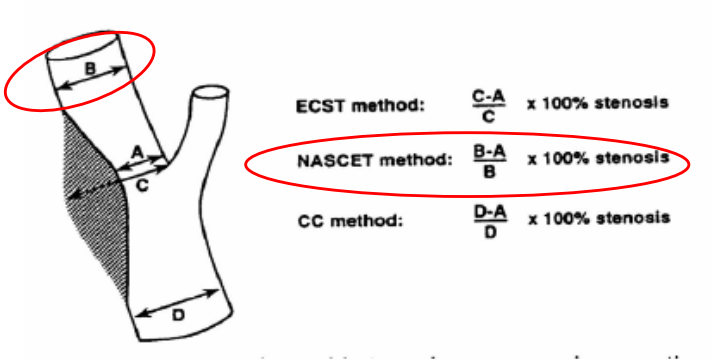


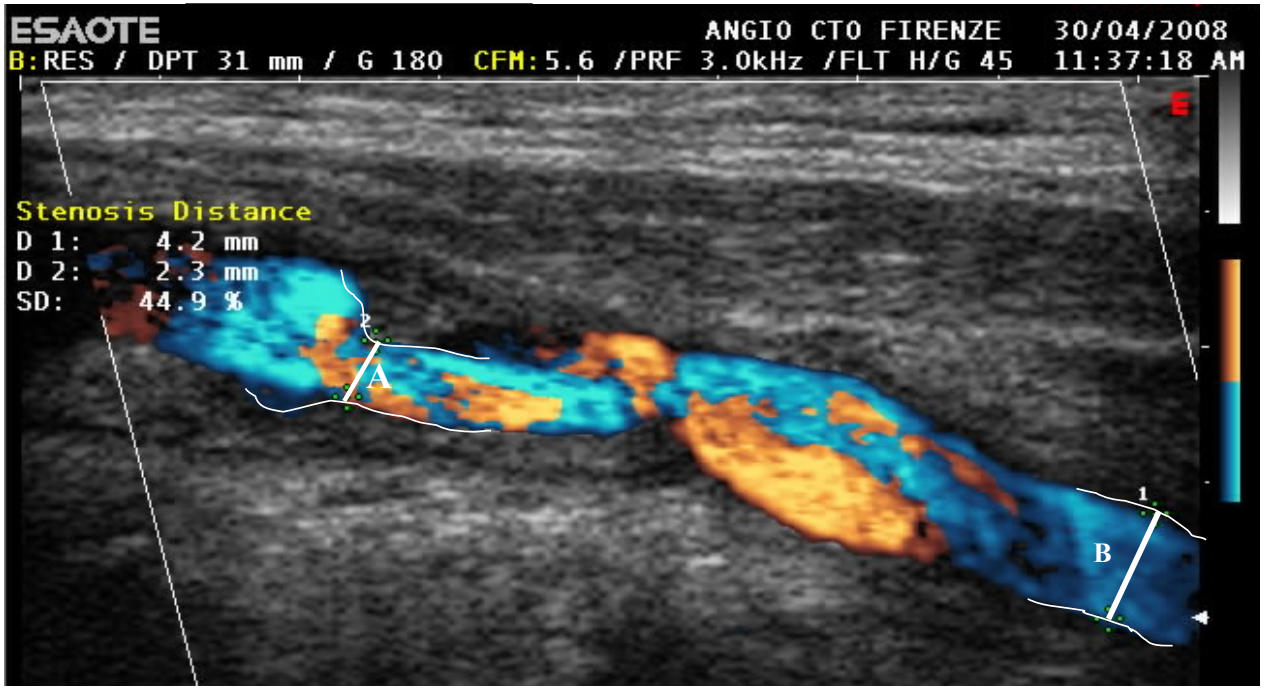
* NASCET: North American Symptomatic Carotid Endartectomy Trial

** ECST: European Carotid Surgery Trial

Diagnostica

NASCET

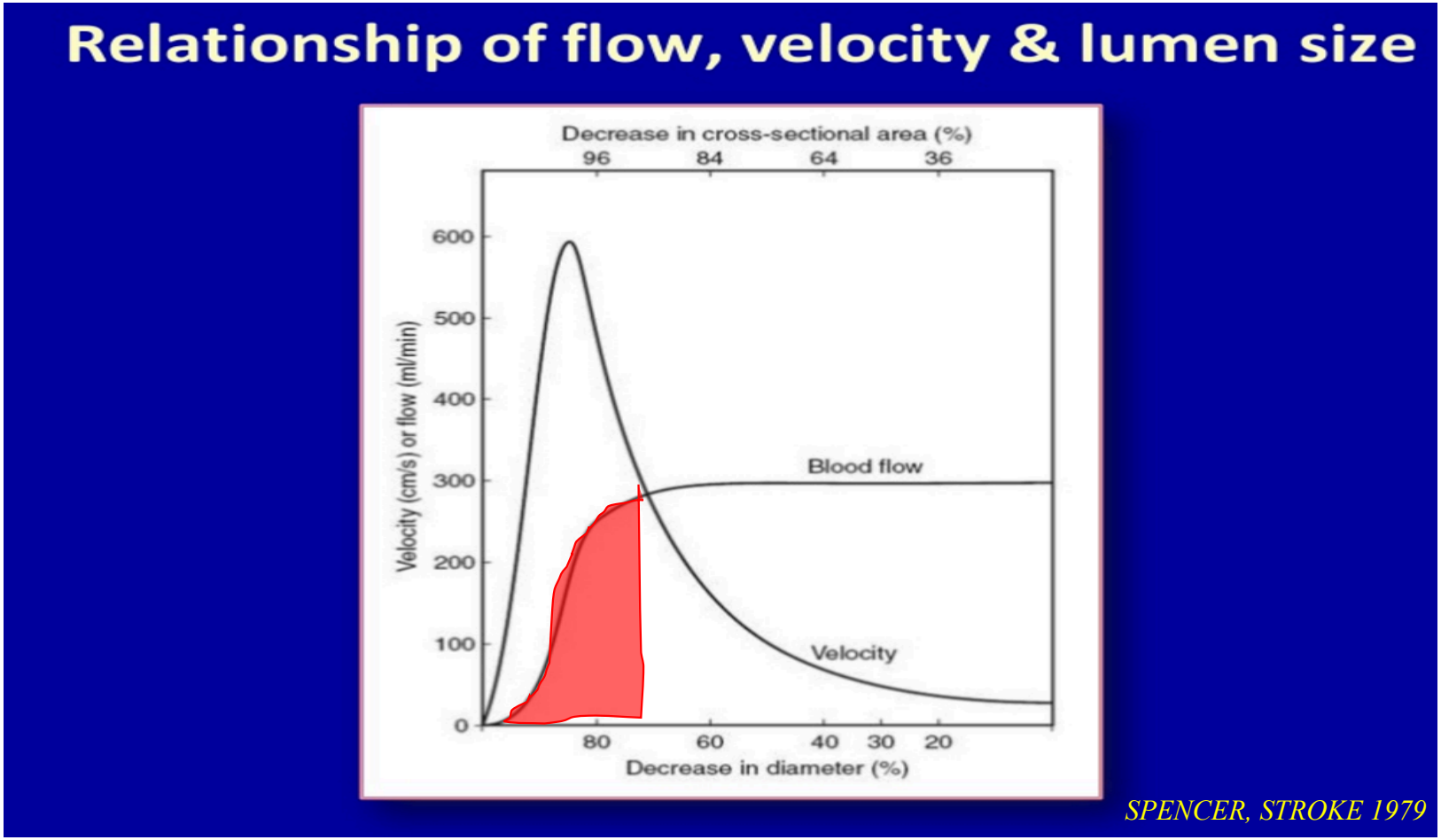




Diagnostica

Cardinal Doppler parameter to grade stenosis
Peak Systolic Velocity (PSV)
Best documented Doppler parameter for carotid stenosis
End Diastolic Velocity (EDV)
Quite valuable for detecting high-grade carotid stenosis
PSV ratio
Avoid errors of collateralization Avoid errors of physiological factors: BP – Pulse rate – Cardiac output – Peripheral resistance

Diagnostica



Diagnostica

Degree of ICA Stenosis in Doppler US*

Consensus Criteria – NASCET criteria

ICA stenosis (%)	ICA PSV cm/sec	ICA EDV cm/sec	PSV ratio ICA/CCA
Normal	< 125	< 40	< 2.0
< 50%	< 125	< 40	< 2.0
50 – 69%	125 – 230	40 – 100	2.0 – 4.0
> 70%	> 230	> 100	> 4.0
Near occlusion	variable	variable	variable
Total occlusion	undetectable	undetectable	not applicable

2003 Carotid Consensus Panel Criteria

* Diameter reduction

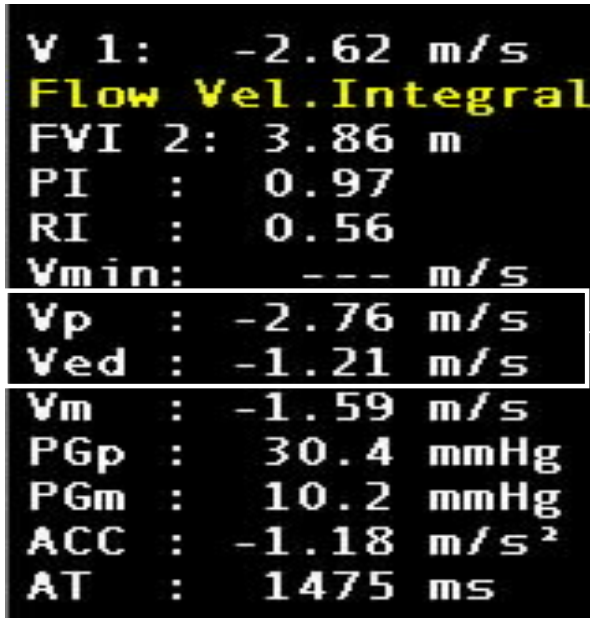
Grant EG et al. Radiology 2003 ; 229 : 340 – 346.

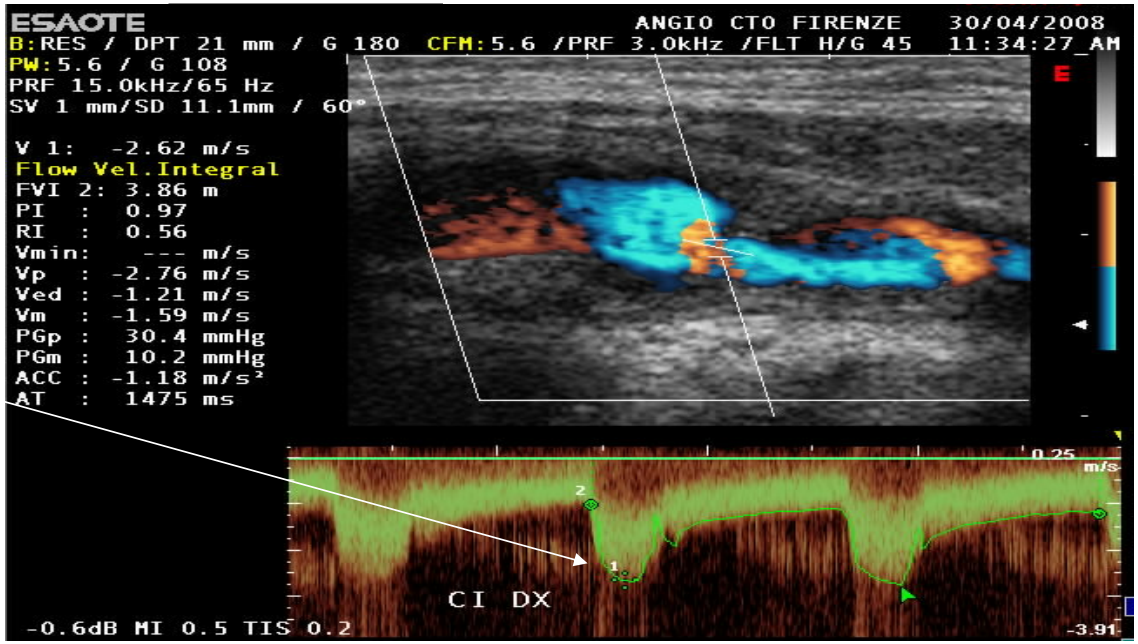
RECCOMENDED BY SVS

Diagnostica

STENOSIS>70%

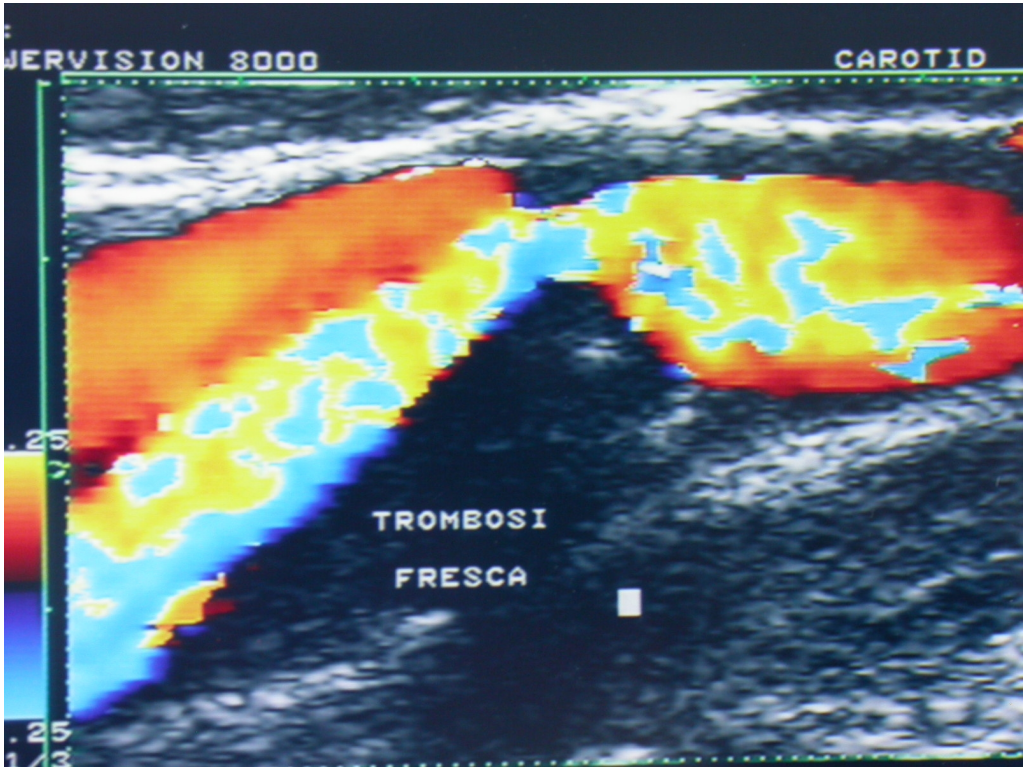
PSV	EDV
276 cm/sec	140 cm/sec

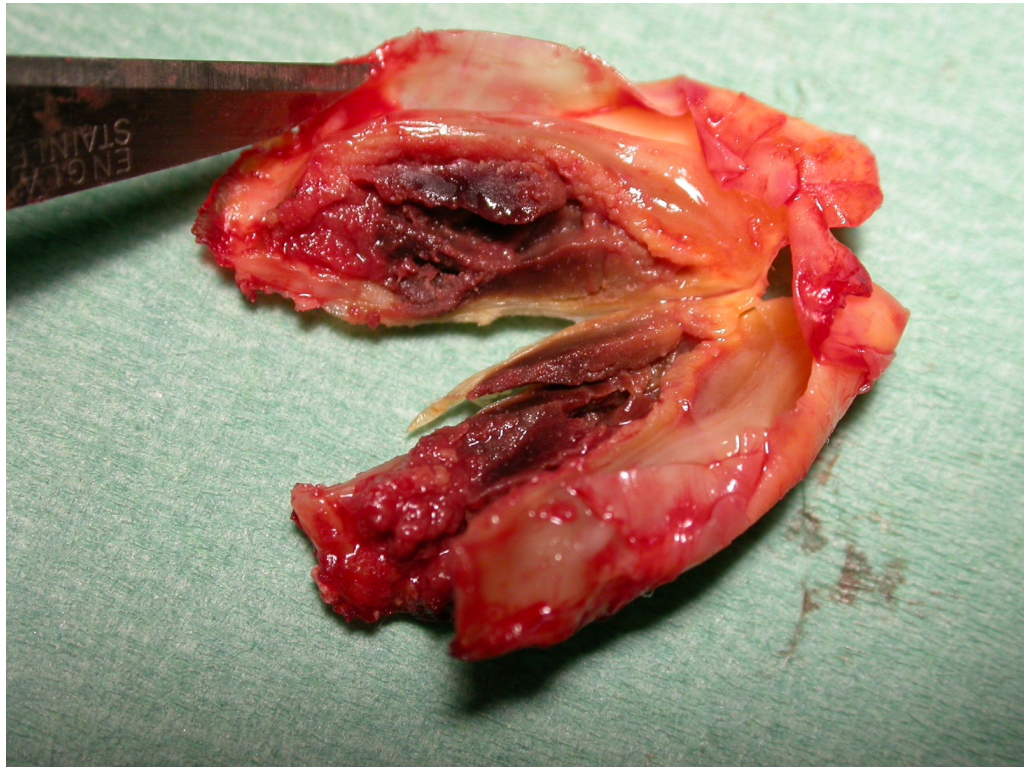




Diagnostica

PLACCA INSTABILE





Diagnostica

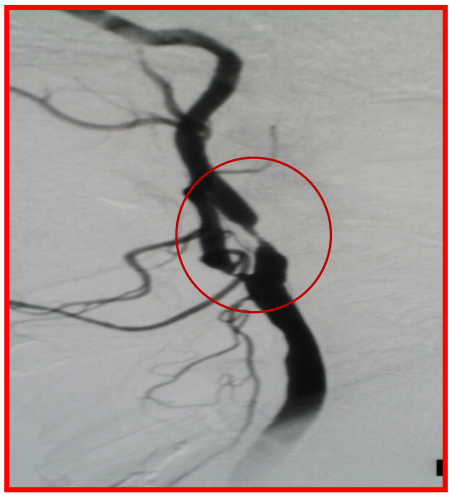
2° livello

SOLO IN CASI SELEZIONATI

Angio-TC

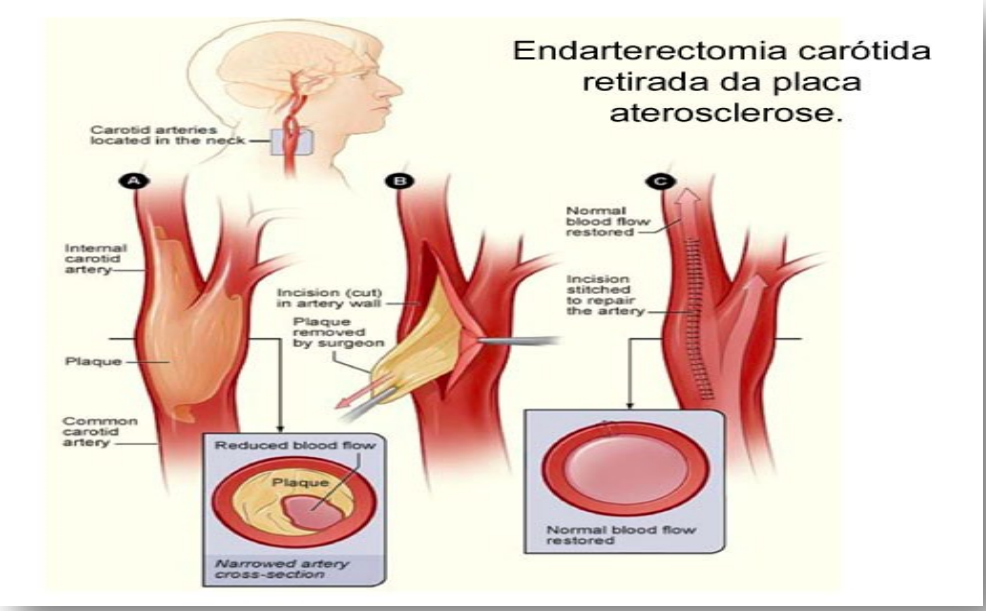
Angio-RM

Angiografia



Indicazioni

Tre studi eseguiti nel 1991(ECST, NASCET, SVACS), hanno dimostrato come in presenza di stenosi carotidea ≥ 70% congrua con la sede della sintomatologia, la procedura di tromboendoarterectomia carotidea (TEA) è in grado di ridurre il rischio di ictus ipsilaterale o morte del 30%.



Percentuale di riduzione del rischio di Ictus dopo TEA in urgenza in pazienti con stenosi carotidea sintomatica	
Intervento entro 2 settimane	30%
Intervento tra 2-4 settimane	18%
Intervento tra 4-12 settimane	11%

Secondo le recenti linee guida SPREAD 2016 e ESVS 2017, per avere risultati migliori l'intervento debba essere eseguito entro 14 giorni.

Editor's Choice – Management of Atherosclerotic Carotid and Vertebral Artery Disease: 2017 Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS)

Writing Group, A.R. Naylor, J.-B. Ricco, G.J. de Borst, S. Debus, J. de Haro, A. Halliday, G. Hamilton, J. Kakisis, S. Kakkos, S. Lepidi, H.S. Markus, D.J. McCabe, J. Roy, H. Sillesen, J.C. van den Berg, F. Vermassen, ESVS Guidelines Committee, P. Kolh, N. Chakfe, R.J. Hinchliffe, I. Koncar, J.S. Lindholt, M. Vega de Ceniga, F. Verzini, ESVS Guideline Reviewers, J. Archie, S. Bellmunt, A. Chaudhuri, M. Koelemay, A.-K. Lindahl, F. Padberg, M. Venermo

European Journal of Vascular and Endovascular Surgery
Volume 55, Issue 1, Pages 3-81 (January 2018)
DOI: 10.1016/j.ejvs.2017.06.021

Indicazioni

Terapia chirurgica SINTOMATICI

- Stenosi sintomatica ≥ 70%, solo se il rischio perioperatorio di morte e ictus disabilitante è inferiore al 6% - sintomi fino a 6 mesi prima
- Stenosi sintomatica compresa fra il 50% ed il 69% (classe IIa)
- *CEA se età >70 anni (giovani CAS)*

ESVS guidelines - European Journal of Vascular and Endovascular Surgery 2018 55, 3-81DOI: (10.1016/j.ejvs.2017.06.021)

Indicazioni

Recommendation 35	Class	Level	References
Carotid endarterectomy is recommended in patients reporting carotid territory symptoms within the preceding 6 months and who have a 70—99% carotid stenosis, provided the documented procedural death/stroke rate is <6%	I	A	172—174,205
Recommendation 36			
Carotid endarterectomy should be considered in patients reporting carotid territory symptoms within the preceding 6 months and who have a 50—69% carotid stenosis, provided the documented procedural death/stroke rate is <6%	IIa	A	172—174,205
Recommendation 37			
It is recommended that most patients who have suffered carotid territory symptoms within the preceding 6 months and who are aged >70 years and who have 50—99% stenoses should be treated by carotid endarterectomy, rather than carotid stenting	I	A	196
Recommendation 38			
When revascularisation is indicated in patients who have suffered carotid territory symptoms within the preceding 6 months and who are aged <70 years, carotid stenting may be considered an alternative to endarterectomy, provided the documented procedural death/stroke rate is <6%	IIb	A	196
Recommendation 39			
Carotid endarterectomy or carotid stenting are not recommended in symptomatic patients with a chronic internal carotid near-occlusion, unless associated with recurrent ipsilateral symptoms (despite optimal medical therapy) and following multidisciplinary team review	III	C	172

Indicazioni

TIMING: Strokes Prevented

<14 giorni

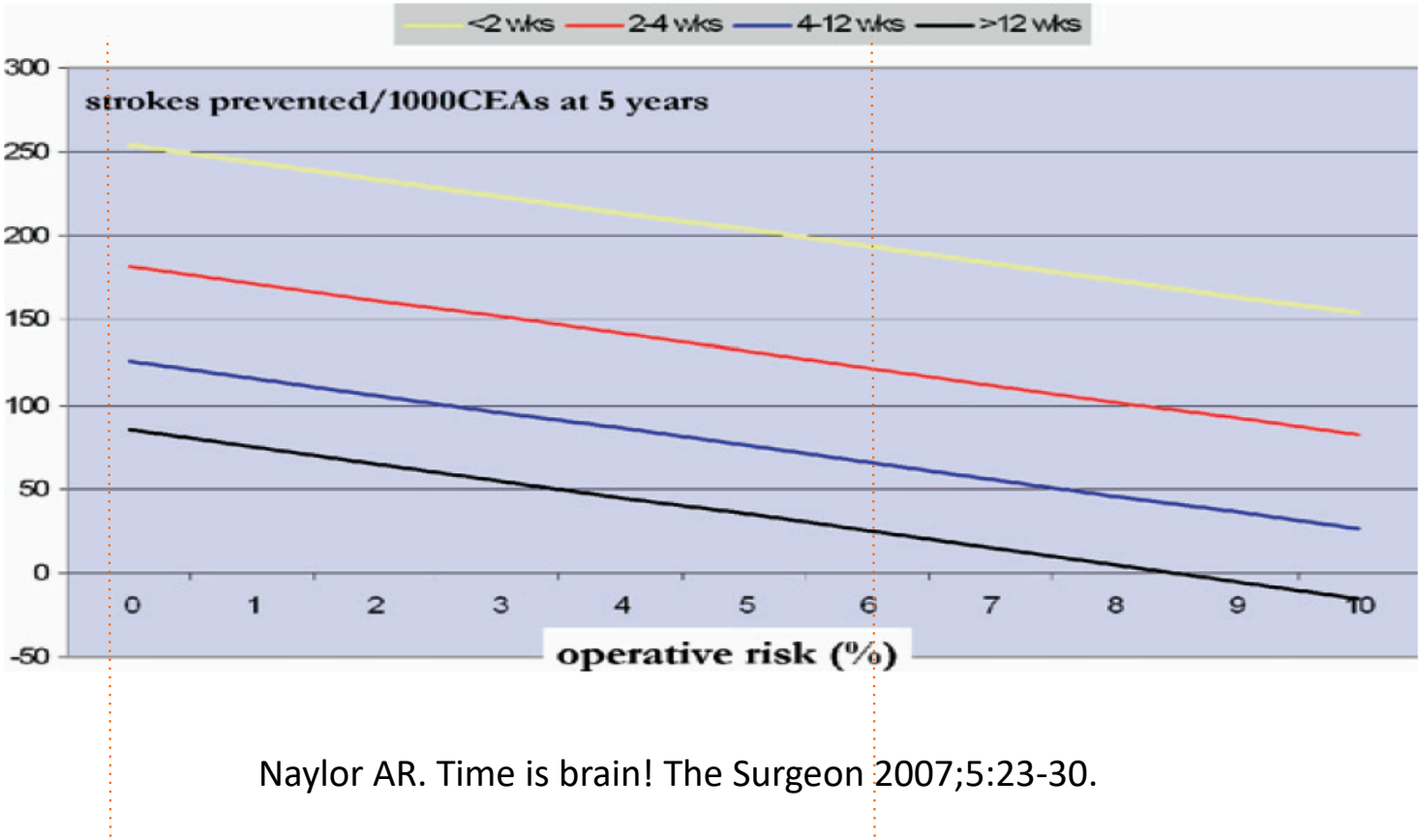
CEA

Rankin score <3

Recommendation 40	Class	Level	References
When revascularisation is considered appropriate in symptomatic patients with 50—99% stenoses, it is recommended that this be performed as soon as possible, preferably within 14 days of symptom onset	I	A	172,173
Recommendation 41			
Patients who are to undergo revascularisation within the first 14 days after onset of symptoms should undergo carotid endarterectomy, rather than carotid stenting	I	A	223,224

Indicazioni

TIMING: Strokes Prevented



Naylor AR. Time is brain! The Surgeon 2007;5:23-30.

Indicazioni

Recommendation 42	Class	Level	References
Revascularisation should be deferred in patients with 50—99% stenoses who suffer a disabling stroke (modified Rankin score ≥3), whose area of infarction exceeds one-third of the ipsilateral middle cerebral artery territory, or who have altered consciousness/ drowsiness, to minimise the risks of postoperative parenchymal haemorrhage	I CEA DIFFERITA: in	C major stroke	230,231
Recommendation 43			
Patients with 50—99% stenoses who present with stroke-in-evolution or crescendo transient ischaemic attacks should be considered for urgent carotid endarterectomy, preferably <24 hours	IIa CEA <24h in	C crescendo TIA o stroke in evoluzione	232—236

Indicazioni

CEA post Thrombolysis

Recommendation 44	Class	Level	References
Early carotid endarterectomy (within 14 days) should be considered after intravenous thrombolysis in symptomatic patients if they make a rapid neurological recovery (Rankin 0—2), the area of infarction is less than one-third of the ipsilateral middle cerebral artery territory, a previously occluded middle cerebral artery mainstem has recanalised, there is a 50—99% carotid stenosis and no evidence of parenchymal haemorrhage or significant brain oedema	IIa	C	243—245
Recommendation 45			
It is recommended that intravenous heparin and antiplatelet therapy be withheld for 24 hours after completion of intravenous thrombolysis, but antiplatelet therapy should then be commenced before any carotid intervention is undertaken	I	C	246
Recommendation 46			
It is recommended that patients undergoing early carotid interventions after thrombolysis should have post-interventional hypertension actively treated to reduce the risks of parenchymal haemorrhage	I	C	243

Indicazioni

Recommendation 47	Class	Level	References
Carotid endarterectomy or carotid stenting may be considered in recently symptomatic patients with <50% stenoses if they suffer recurrent symptoms despite best medical therapy and following multidisciplinary team review	IIb	C	

CEA&CAS <50% recurr. Sym in bmt

Recommendation 48	Class	Level	References
In recently symptomatic patients with 50—99% stenoses and anatomical and/or medical comorbidities that are considered by the multidisciplinary team to make them "higher-risk for carotid endarterectomy," carotid stenting should be considered as an alternative to endarterectomy, provided the documented procedural death/stroke rate is <6%	IIa	B	104,105,189,198

CAS for very High risk for surgery

Indicazioni

Recommendation 49	Class	Level	References
It is recommended that choice of anaesthesia for carotid endarterectomy (general versus locoregional) be left to the surgeons discretion	I	A	263—265

Anaesthesia =

Recommendation 50	Class	Level	References
The choice of carotid exposure (antegrade/retrojugular) should be left to the discretion of the operating surgeon	I	B	278

Exposure =

Recommendation 51	Class	Level	References
Routine carotid sinus nerve blockade is not recommended as there is no evidence it reduces the prevalence of perioperative hypotension, hypertension, and arrhythmias	III	A	279

Sinus nerve blockade

Indicazioni

Eversione > sutura diretta

Eversione = patch

Recommendation 55	Class	Level	References
Eversion endarterectomy is recommended over routine primary arteriotomy closure	I	A	292
Recommendation 56			
The choice between eversion or patched endarterectomy should be left to the discretion of the operating surgeon	I	A	292

Patch > sutura diretta

Recommendation 54	Class	Level	References
Routine patching is recommended, rather than routine primary closure. There is no evidence that patch type influences outcome	I	A	287,288

Indicazioni

Shunting =

Recommendation 53	Class	Level	References
It is recommended that the choice of shunting (routine, selective, never) be left to the discretion of the operating surgeon	I	C	285

Protamina si se sanguinamento

Recommendation 52	Class	Level	References
Protamine reversal of heparin should be considered to prevent neck haematomas requiring re-exploration	IIa	B	282—284

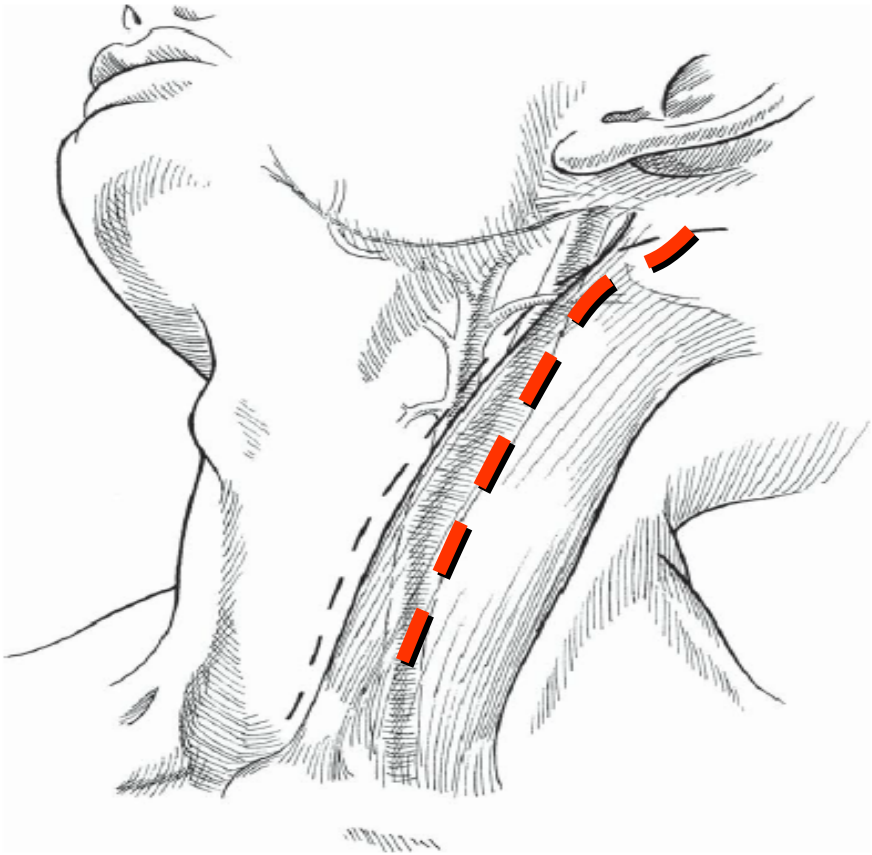
Indicazioni

Coils or kinks

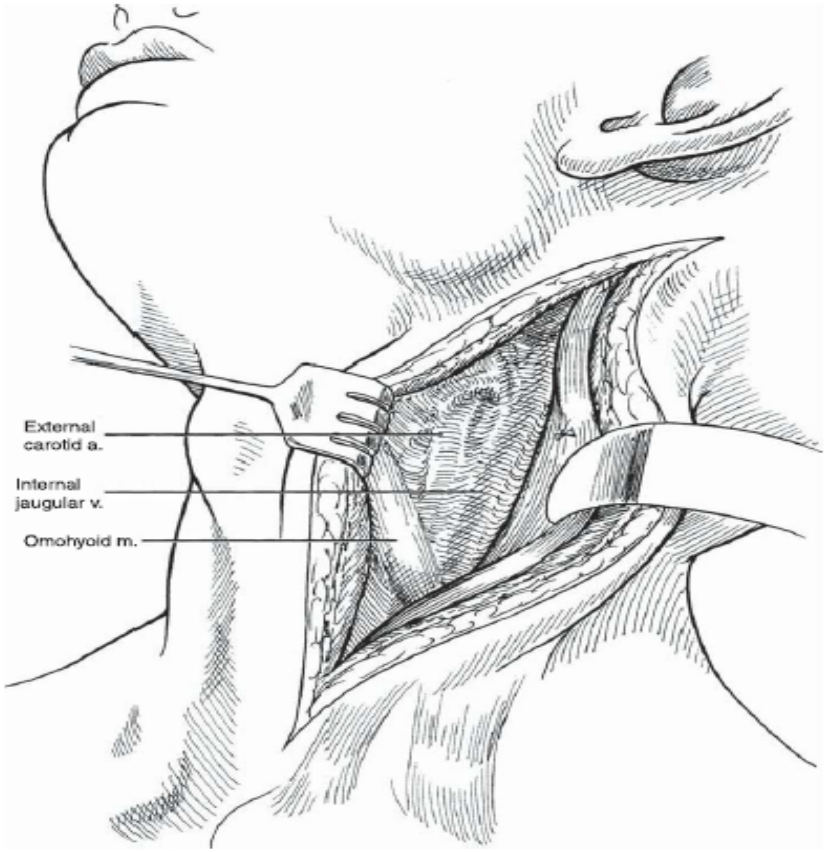
Recommendation 57	Class	Level	References
Surgical intervention for asymptomatic isolated coils/kinks of the internal carotid artery is not recommended	III	C	
Recommendation 58			
Symptomatic patients with isolated coils/kinks may be considered for surgical correction, but only following multidisciplinary team review and provided no other cause for transient ischaemic attack or stroke symptoms can be identified	IIb	B	293

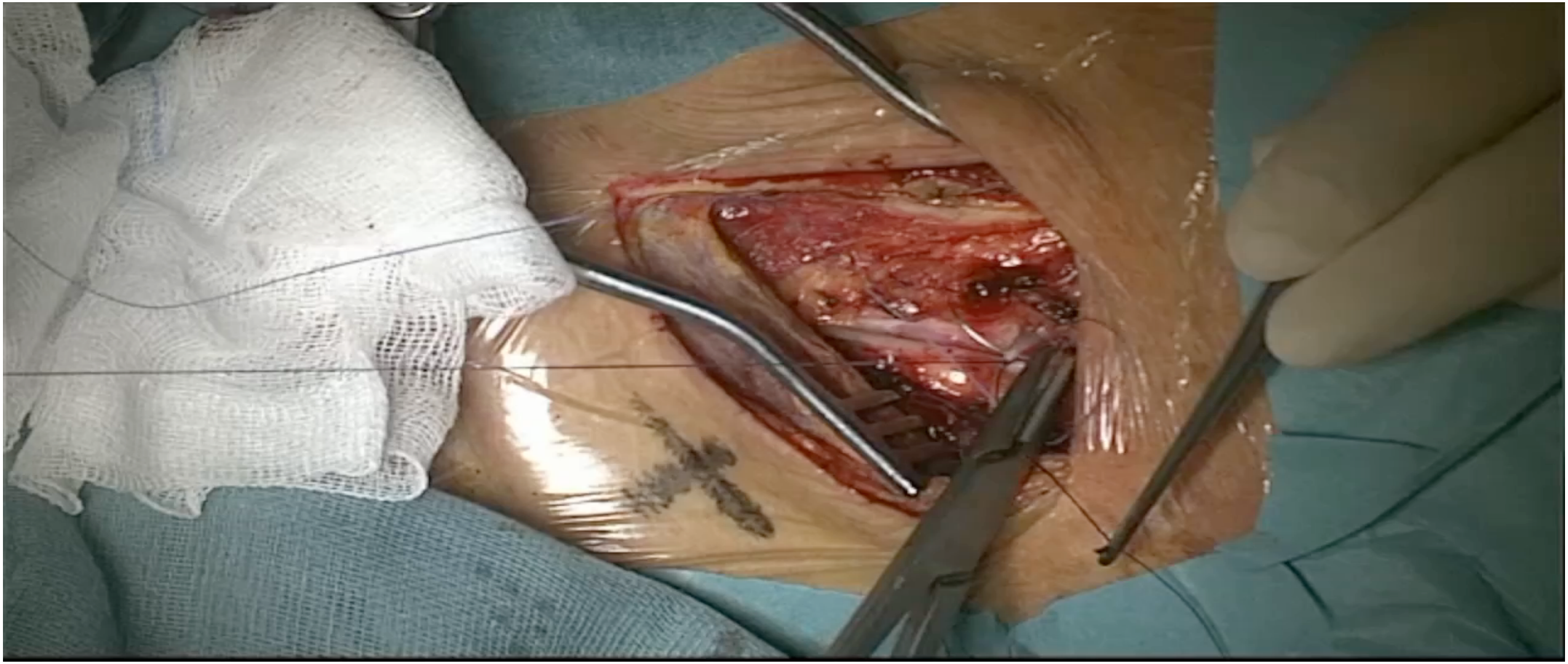
Intervento chirurgico

Intervento chirurgico

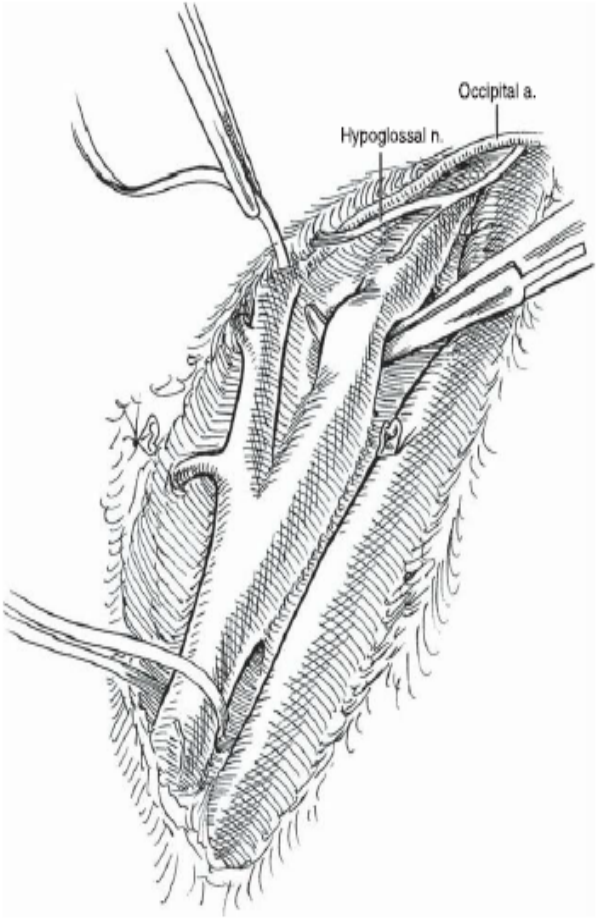


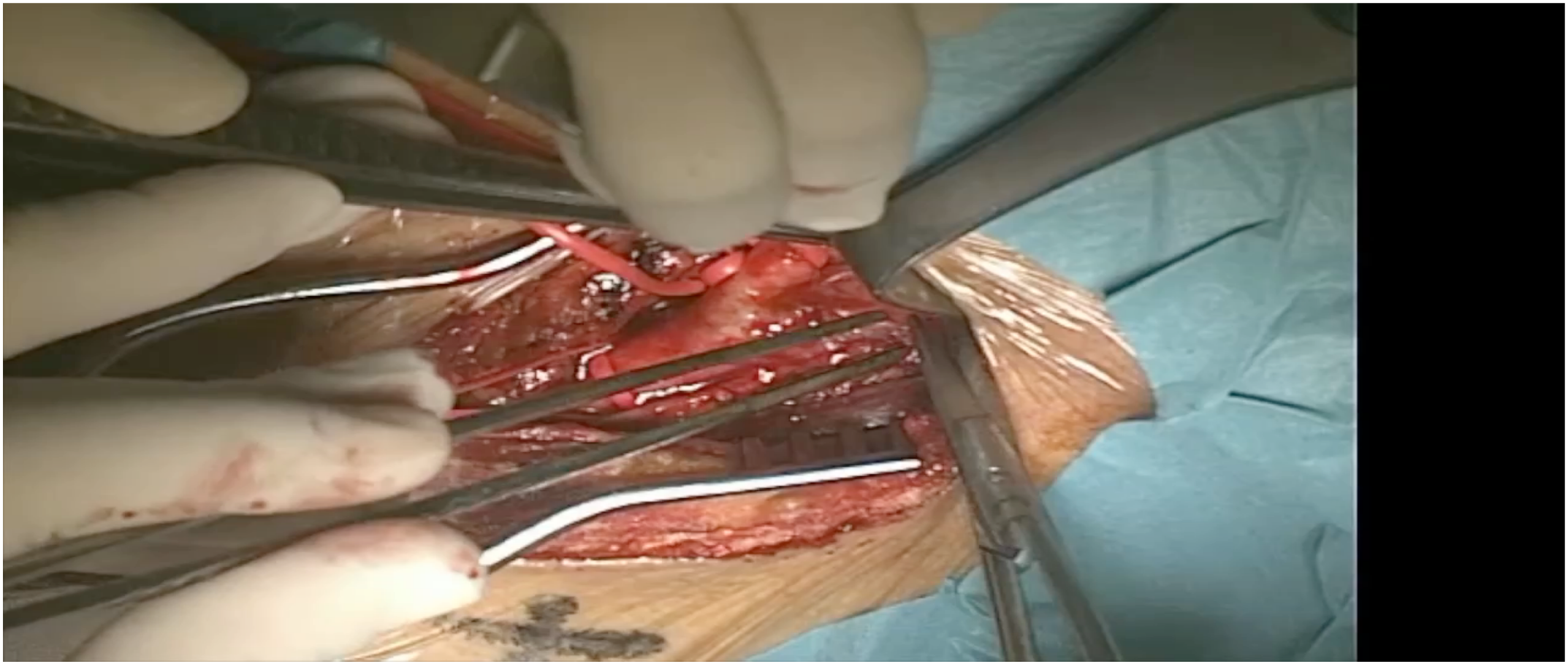
Intervento chirurgico





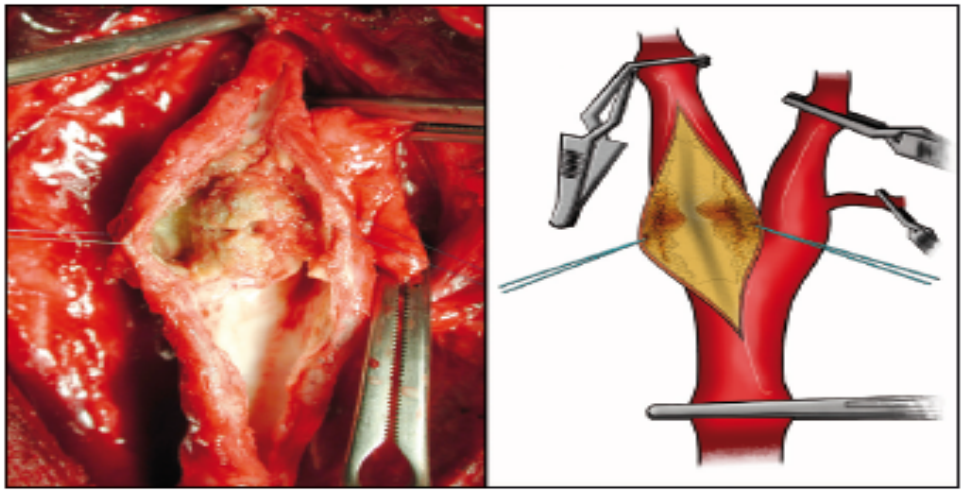
Intervento chirurgico

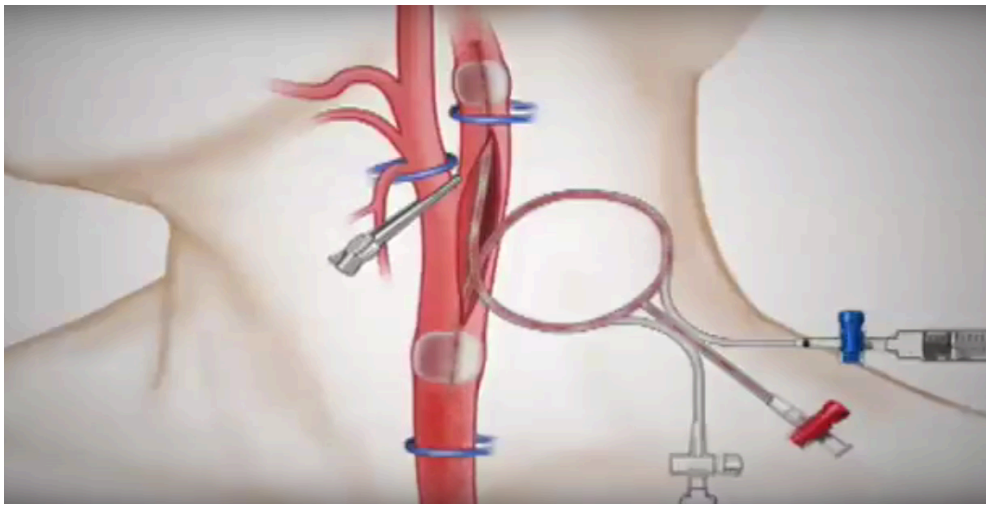




Intervento chirurgico

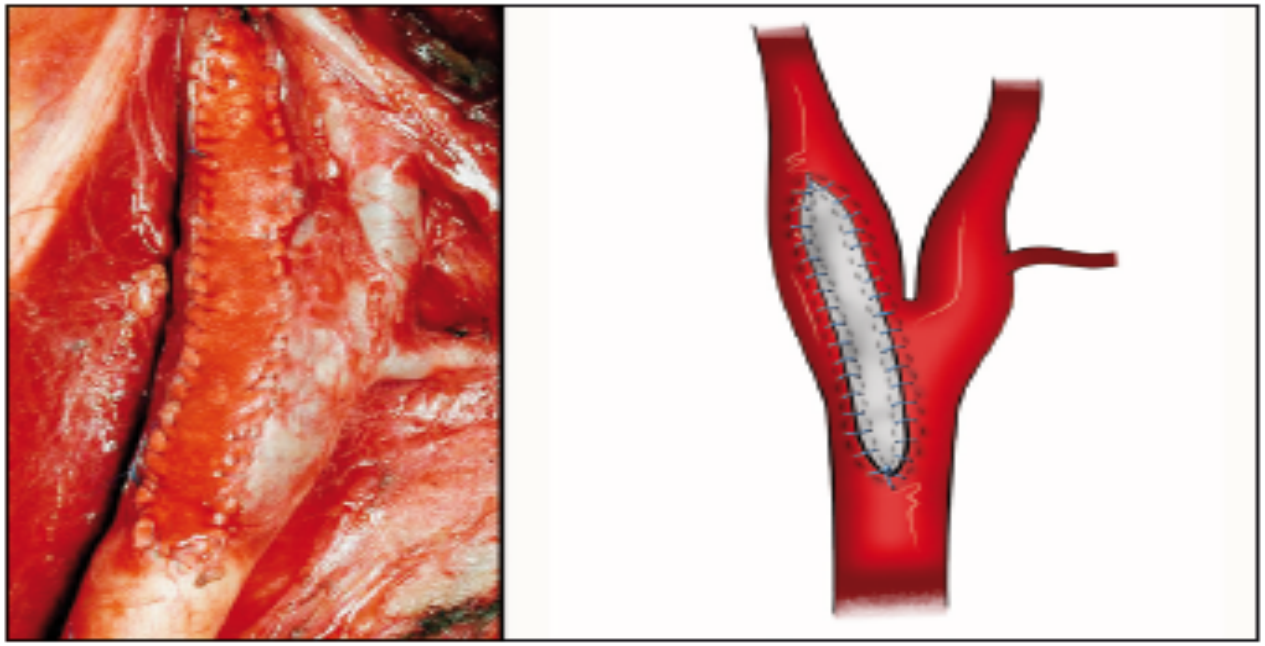
CEA – STANDARD TECHNIQUE





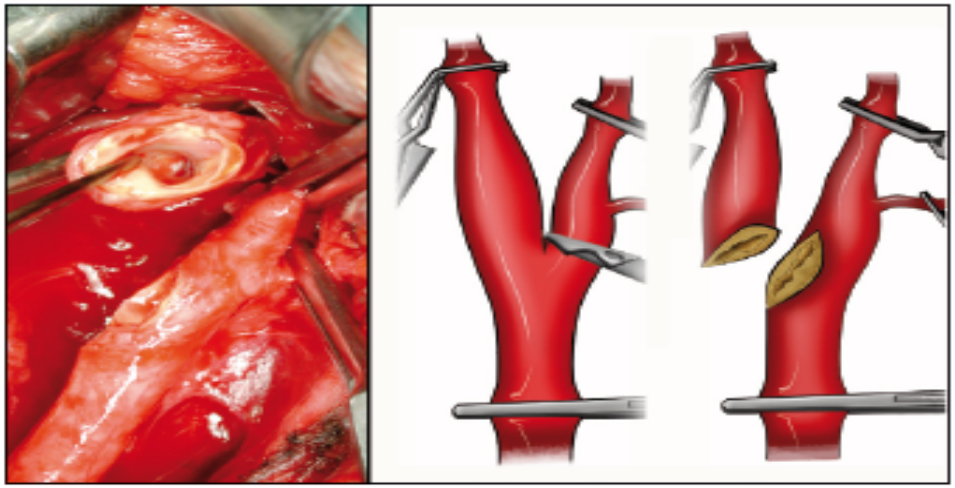
Intervento chirurgico

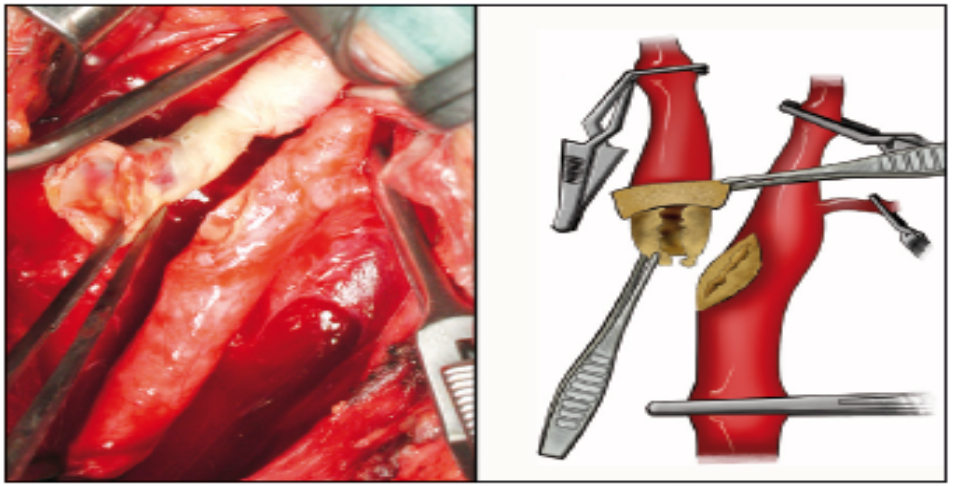
CEA – STANDARD TECHNIQUE

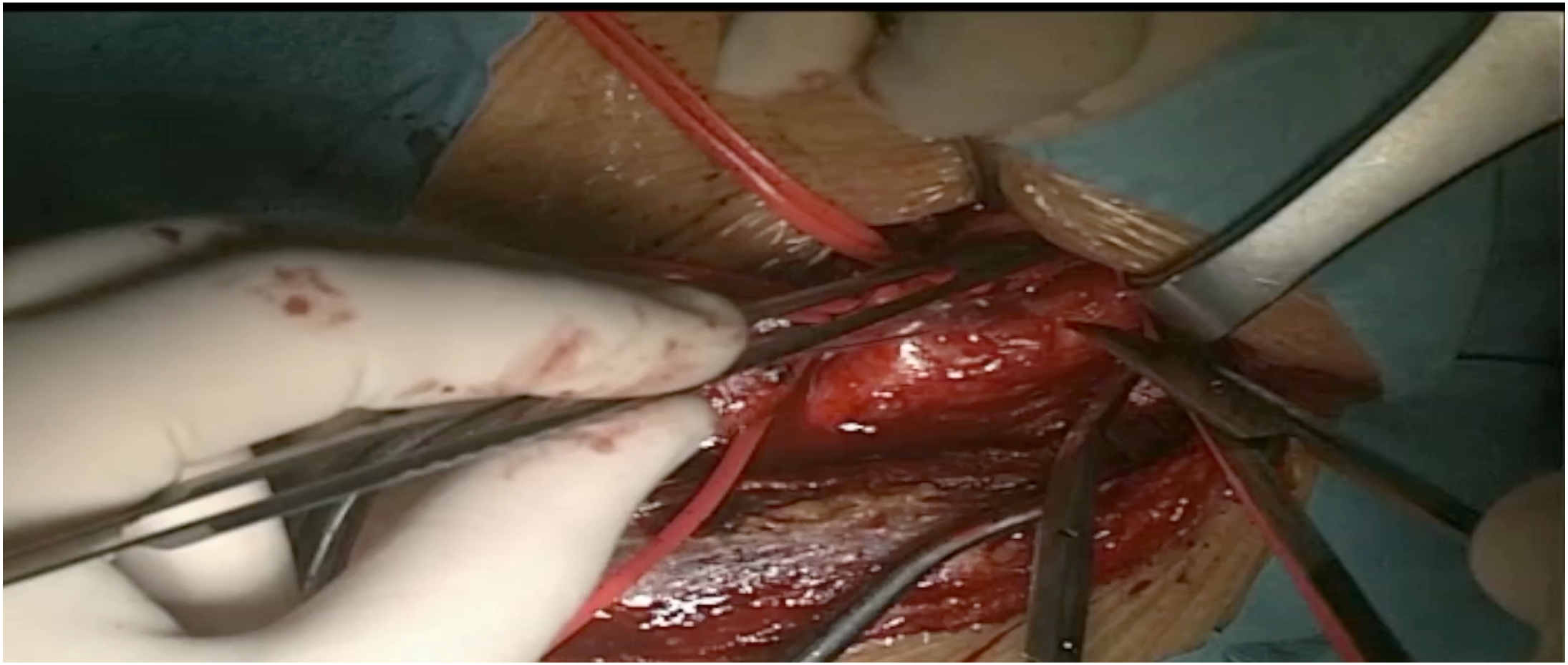


Intervento chirurgico

CEA – EVERSION TECHNIQUE







Intervento chirurgico

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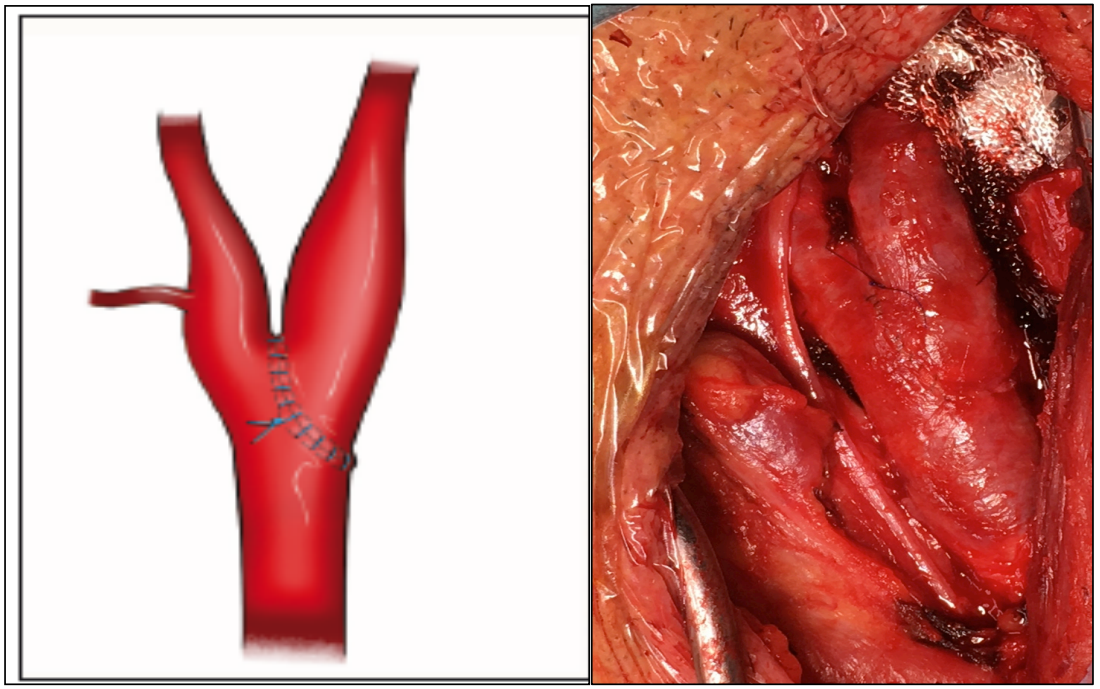
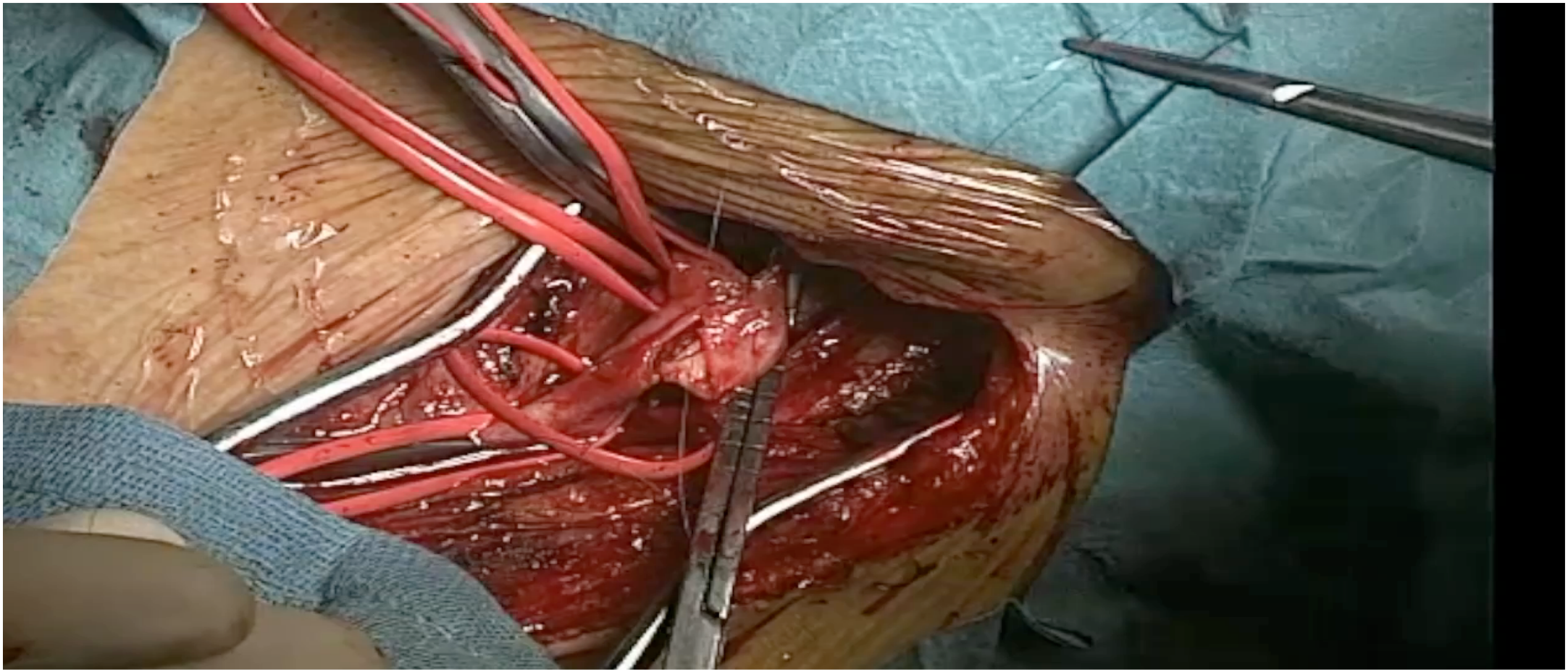




Modello organizzativo

Procedura per TEA in urgenza USL Toscana Centro

> 1 °Maggio 2016

Azienda Sanitaria di Firenze	Codice	Revisione	Pagina
Percorso rapido per la rivascolarizzazione chirurgica dei pazienti con TIA o minor stroke e stenosi carotidea significativa		n.	1 di 4

Presidio:			
Struttura organizzativa:			
Data	Responsabile Redazione	Responsabile Convalida	Persona o Organismo che approva
	Dott. Alberto Fortini Dott.ssa Cristina Baruffi Dott. Emiliano Chisci	Dott. Giancarlo Landini Dott. Stefano Michelagnoli	Dott. A. Appicciafuoco Dott. Emanuele Gori
Sintesi delle modifiche apportate:			
I Responsabili delle strutture organizzative sono responsabili operativi dell'applicazione della procedura.			

Rivascolarizzazione nei pazienti con TIA o minor stroke con associata stenosi carotidea congrua e emodinamicamente significativa.

Modello organizzativo

USL Toscana Centro

Modello organizzativo

USL Toscana Centro

Pronto Soccorso – degenze
TIA o minor stroke con rilievo di stenosi carotidea significativa e congrua

Stroke Unit SGD:
Entro 24 ore valutazione internistica, neurologica, di chirurgia vascolare, radiologica e anestesiologica

Intervento di TEA
Successiva dimissione o trasferimento nell'Ospedale di provenienza

Nostra esperienza

USL Toscana Centro

Studio retrospettivo che confronta due gruppi di pazienti sottoposti a TEA carotidea sintomatica per TIA o Minor stroke.

Gruppo A (2014-2016): 32 pz
sottoposti a TEA carotidea dopo ricovero in area chirurgica.

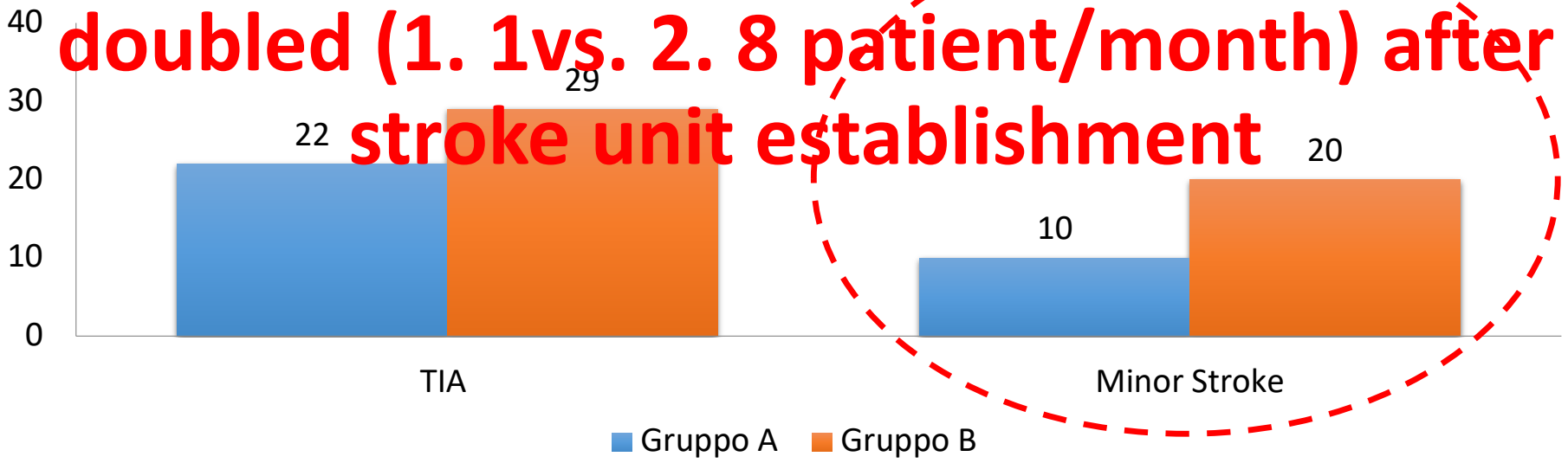
Gruppo B (5/2016-2017) : 49 pz
sottoposti a TEA carotidea dopo ricovero in Stroke Unit.

Nostra esperienza

USL Toscana Centro

(P=. 014)

Recruitment patient rate per month doubled (1. 1vs. 2. 8 patient/month) after stroke unit establishment



Nostra esperienza

Caratteristiche del campione

CARATTERISTICHE GENERALI	GRUPPO A	GRUPPO B
N° di pazienti nello studio	32	49
Età media (anni)	68	74
Maschi	20 (62%)	35 (71%)
Età media maschi (anni)	68	74
Femmine	12 (38%)	14 (29%)
Età media femmine (anni)	61	74

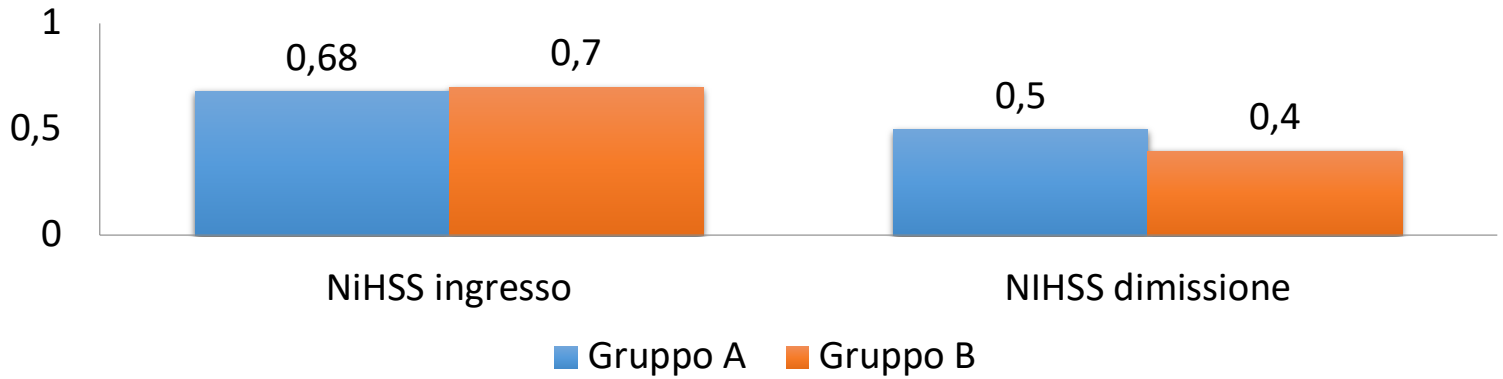
FATTORI DI RISCHIO CARDIOVASCOLARI	GRUPPO A	GRUPPO B
Dislipidemia	12(37%)	16(33%)
Fumatore, ex fumatore	11(34%)	26(53%)
Non fumatore	21(66%)	23(47%)
Ipertensione arteriosa	25(78%)	37(76%)
Diabete	10(31%)	15(31%)

Nostra esperienza

Outcomes

VALORI NIHSS				
	GRUPPO A		GRUPPO B	
	MEDIA	RANGE	MEDIA	RANGE
NIHSS all'ingresso	0,68	(0-4)	0,7	(0-4)
NIHSS alla dimissione	0,5	(0-4)	0,4	(0-4)

Miglioramento clinico alla dimissione



Nostra esperienza

Outcomes

- **Degenza media**
- **Timing**
- **Tipo di intervento**

Dati all'intervento chirurgico	Gruppo A (n%)	Gruppo B (n%)	P value (n%)
Durata media del ricovero (min-max)	4.5(2-23)	4.98(2-11)	.003
Timing to CEA (min-max) gg.	2.3(1-11)	2.5(0-7)	.076
Trombolisi	1(3.1)	3(6.1)	.543
CEA con Eversione	31(97)	44(90)	.254
Shunt	1(3.1	3(6.1)	.543

Nostra esperienza

Outcomes @30 giorni

Complicanze postoperatorie	Gruppo A (n%)	Gruppo B (n%)	P value (n%)
Ictus	0	2	.247
Minor Stroke	0	2	.247
Infarto del Miocardio	2	0	.076
Ematoma laterocervicale	2	0	.076

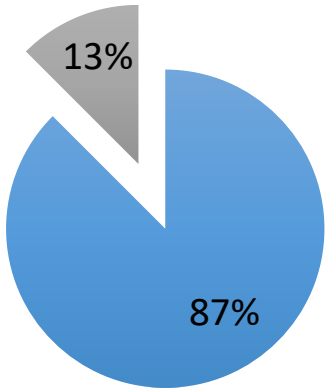
Assenza di differenze statisticamente significative

Nostra esperienza

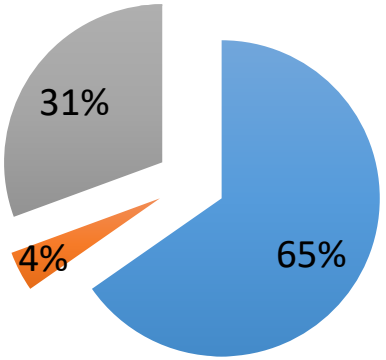
Outcomes @30 giorni

Dati a 30 gg dall' intervento	Gruppo A (n%)	Gruppo B (n%)	P value (n%)
Riammissione in ospedale a 30 gg	1(3.1)	1(2)	.943
Peggioramento status neurologico a 30 gg	0	2(4.1)	.247
Stato Neurologico Invariato a 30 gg	28(87.5)	32(65.3)	.026
Miglioramento dello stato neurologico a 30 gg	4(12.5)	15(30.6)	0.6

Gruppo A



Gruppo B



Nostra esperienza

Predictors for improvement in neurological status

- centralization in a stroke unit

(OR 10.99, 95% CI 5. 3-22. 9, P=. 004),

- minor stroke as symptom onset (OR 0.22,95% CI 0. 15-0. 34, P<.001),
- timing to CEA between 2 and 7 days (OR 1. 89,95% CI 1. 5-2. 3, P<. 001).
- Timing to CEA <2 increased the risk of impairment in neurological status at univariate (P=. 037) but not at multivariate analysis

Conclusioni

- L’intervento chirurgico di TEA carotidea in urgenza è una procedura fattibile con rischi perioperatori contenuti.
- Un modello organizzativo nel quale è integrata un Stroke Unit incrementa il numero di casi trattati per anno e riduce i tempi tra diagnosi e trattamento.
- Il ricovero in Stroke unit ed il protocollo di centralizzazione hanno prodotto un miglioramento dello stato neurologico a 30 giorni.
- Saranno necessari ulteriori dati clinici per rendere più solidi questi risultati e per far emergere ulteriori vantaggi clinici.