

MA PERSPECTIVE DE PROTECTION PAR REVERSE FLOW LA PLUS PROMETTEUSE

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Conflits d'intérêt

- Aucun conflit d'intérêt pour cette présentation



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

Writing Group ^a, 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 ^b, P. Kolh, N. Chakfe, R.J. Hinchliffe, I. Koncar, J.S. Lindholt, M. Vega de Ceniga, F. Verzini, ESVS Guideline Reviewers ^c, J. Archie, S. Bellmunt, A. Chaudhuri, M. Koelemay, A.-K. Lindahl, F. Padberg, M. Venermo

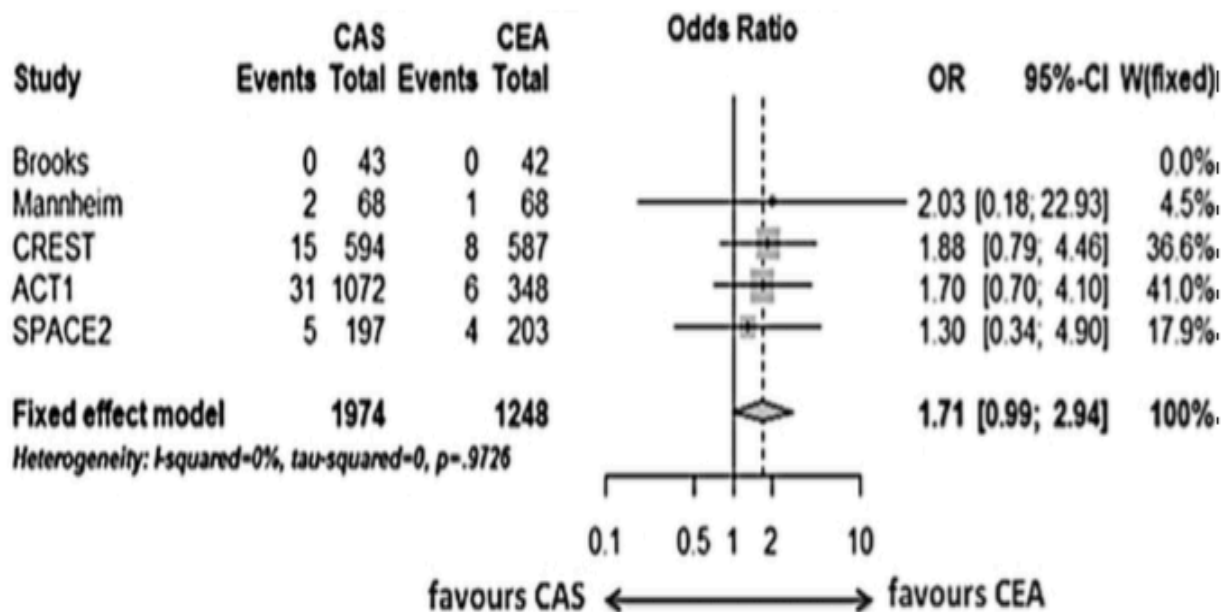


Figure 4. Forest Plot comparing 30-day death/stroke in four randomised trials comparing carotid endarterectomy and carotid artery stenting in asymptomatic patients.

RISQUE ANATOMIQUE: infarctus silencieux

ICSS sub study :

124 CAS Transfemorale+filtre distal

vs 107 CEA avec IRM pré/post

73% nouvelles lésions CAS vs 17% CEA
($P < 0001$)

Bonati LH Lancet Neuro 2010



DW MRI

Prospective Studies

<i>Study</i>	<i>Procedure</i>	<i>Embolic Protection</i>	<i># subjects</i>	<i>% w/ New DWI Lesions</i>
PROFI ¹	Transfemoral CAS	Distal filter (Emboshield)	31	87%
ICSS ²	Transfemoral CAS	Distal filter (various)	51	73%
PROFI ¹	Transfemoral CAS	Proximal occlusion (MO.MA)	31	45%
DESERVE ³	Transfemoral CAS	Proximal occlusion (MO.MA)	127	30%
PROOF	Transcervical CAS	Roadster	57	19%
ICSS ²	CEA	Clamp, backbleed	107	17%

RISQUE ANATOMIQUE

- Shaudigel S: Stroke 2008 : Rewiew
 - CAS 37% vs CEA 10% nouvelles lésions IRM (P<0,01)
 - 16% controlatérales CAS vs 0,01% CEA



Risque anatomique

Grossetti : acta chir belg 2011

50 CAS: pas de prédilatation ; filtre distal

- Minor stroke : 4%
- hits per op : 100%
- Nouvelles lésions ischémiques : 44%
- Diminution capacités cognitives : 36%



DW MRI

VIEWPOINT

The Problem With Asymptomatic Cerebral Embolic Complications in Vascular Procedures

What If They Are Not Asymptomatic?

Table 1 Estimated Annual U.S. Patients With New Brain Lesions

Procedures	No. of Annual U.S. Patients	Incidence of New Brain Lesions, %	No. of Annual U.S. Patients With New Brain Lesions
Coronary angiography	1,072,000	11–17	118,000–182,000
Percutaneous coronary intervention	596,000	11–17	66,000–101,000
Coronary artery bypass graft	242,000	16–51	39,000–123,000
Surgical aortic valve replacement	90,000	38–47	34,000–42,000

Although the fundamental issues of the nature of the embolic particles, precise mechanisms of cerebral injury, and effective prevention remain debated and unclear, recent reports have provided substantial evidence of memory loss, cognitive decline, and dementia related to these so-called silent infarcts.

STATE-OF-THE-ART PAPER

Silent Brain Injury After Cardiac Surgery: A Review

Cognitive Dysfunction and Magnetic Resonance Imaging
Diffusion-Weighted Imaging Findings

Xiumei Sun, MD, Joseph Lindsay, MD, Lee H. Monsein, MD, Peter C. Hill, MD, Paul J. Corso, MD
Washington, DC

The appearance of cognitive dysfunction after cardiac surgery in the absence of focal neurologic signs, a poorly

In population-based studies, a strong association has been found between MRI lesions and prevalent cognitive dysfunction and dementia.

that post-operative appearance of MRI lesions may serve as a more objective marker of brain injury in research efforts. If MRI examination can be used in this way, then 2 vitally important questions can be addressed.

The more extensive the MRI lesions, the more severe is the observed cognitive impairment.

(J Am Coll Cardiol 2012;60:791-7) © 2012 by the American College of Cardiology Foundation

Flow reverse est la solution

Par abord trans cervical tous les problèmes sont réglés:

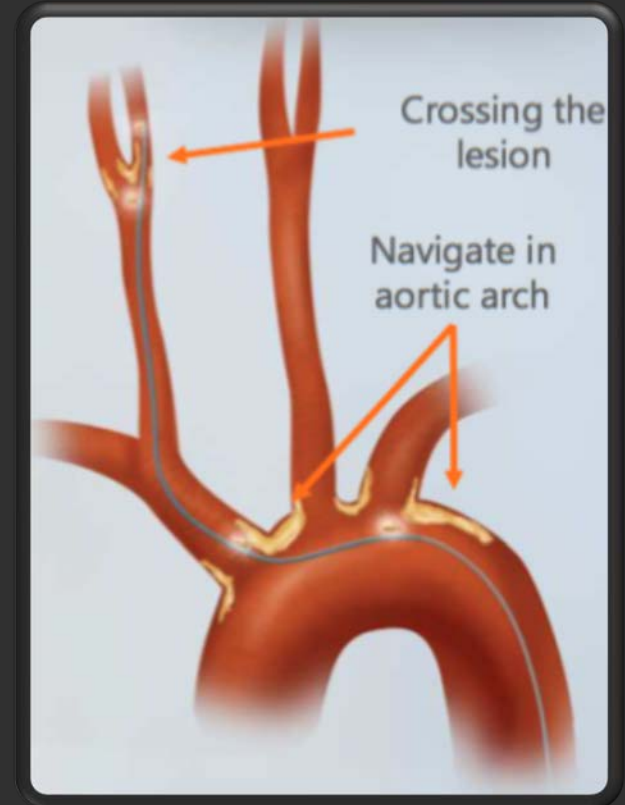
comme CAS : risque coronaire minimal

comme CEA: risque cérébral minimal



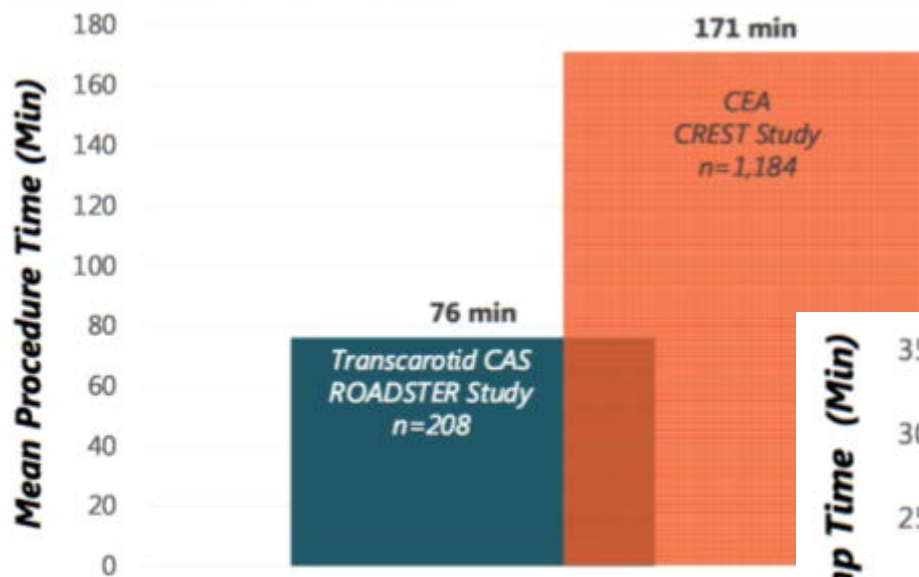
Accès cervical vs. voie fémorale

- ↘ risque embolique :
 - Pas de navigation dans la crosse aortique
 - Pas de passage de la lésion carotidienne avant mise en place du système de protection cérébrale



Avantages du reverse flow

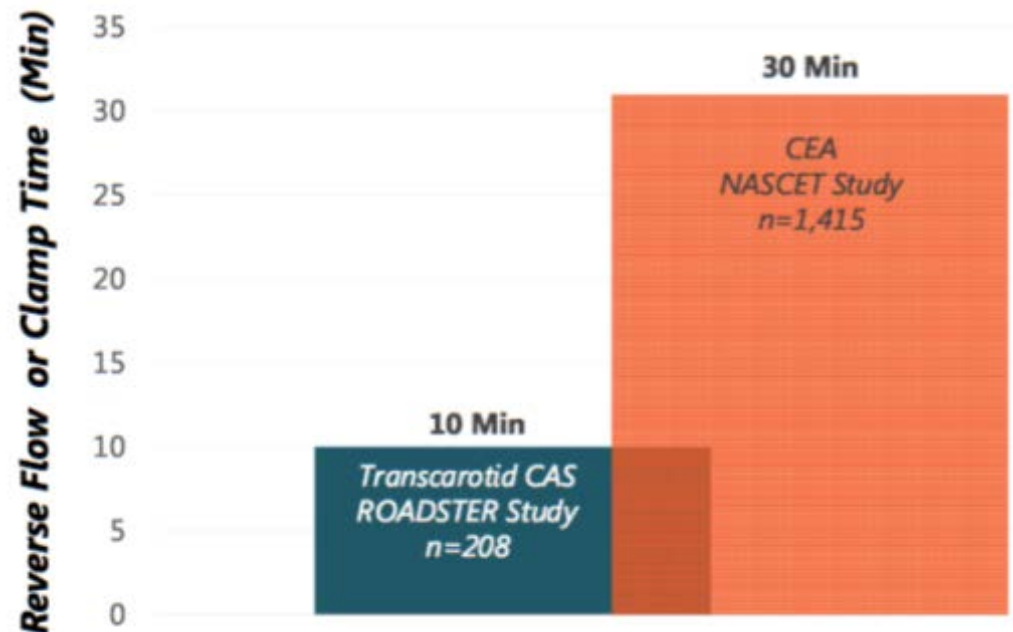
Durée de la procédure
< 1/2 de celle de CEA



1. ROADSTER Presentation – Late Breaking Trials, VIVA 2014, C. Kwolek, MD
2. Stroke. 2012;43:00-00.

■ Transcarotid CAS
■ CEA

Durée d'inversion de flux
= 1/3 de la durée de
clampage pour CEA



TRANSCERVICAL CAS

VS. TRANSFEMORAL CAS

A diffusion-weighted magnetic resonance imaging-based study of transcervical carotid stenting with flow reversal vs transfemoral filter protection

Ignacio Leal, MD,^a Antonio Orgaz, MD,^a Ángel Flores, MD,^a Jose Gil, MD,^a Rubén Rodríguez, MD,^a Javier Peinado, MD,^a Enrique Criado, MD,^b and Manuel Doblas, MD,^a Toledo, Spain; and Ann Arbor, Mich

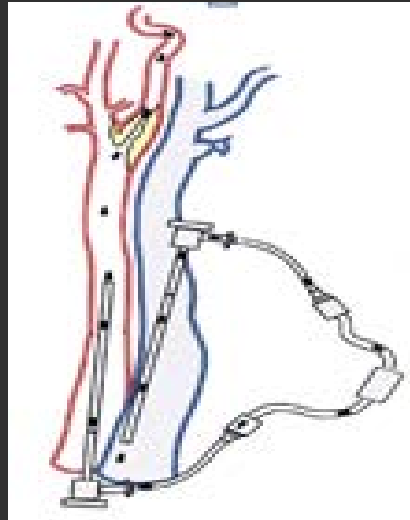
“The low 12.9% incidence in the transcervical group is comparable to the best series of CEA and a great improvement over the results of CAS with distal filters.”

<i>Variable</i>	<i>Transcervical (n = 31) No. (%)</i>	<i>Transfemoral (n = 33) No. (%)</i>	<i>P</i>
Patients with new lesions	4 (12.90)	11 (33.33)	.03
No. of new lesions	4	13	.02
Localization of new lesions			
Ipsilateral	4	11	.03
Contralateral	0	2	.16

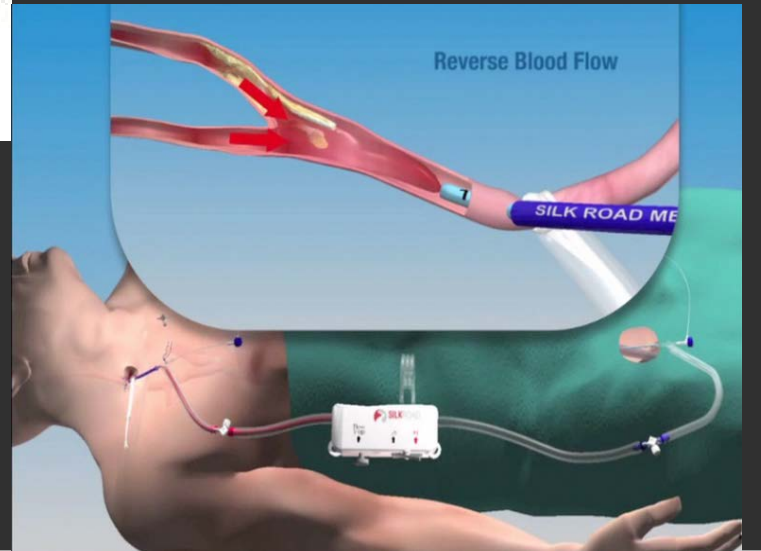
“The results of CAS are clearly influenced by the access route and cerebral protection methods.....The risk of embolic complications with transfemoral carotid stenting is related to instrumentation of the arch and proximal supra-aortic trunks, crossing of the carotid lesion without protection, and use of distal filter protection devices of questionable benefit.”

2 techniques de reverse flow

- Home made



- ENROUTE(silk road)



Home made

- Avantages

Pas de navigation

Pas de franchissement de la lésion sans protection

couts

disponible

- Inconvénients

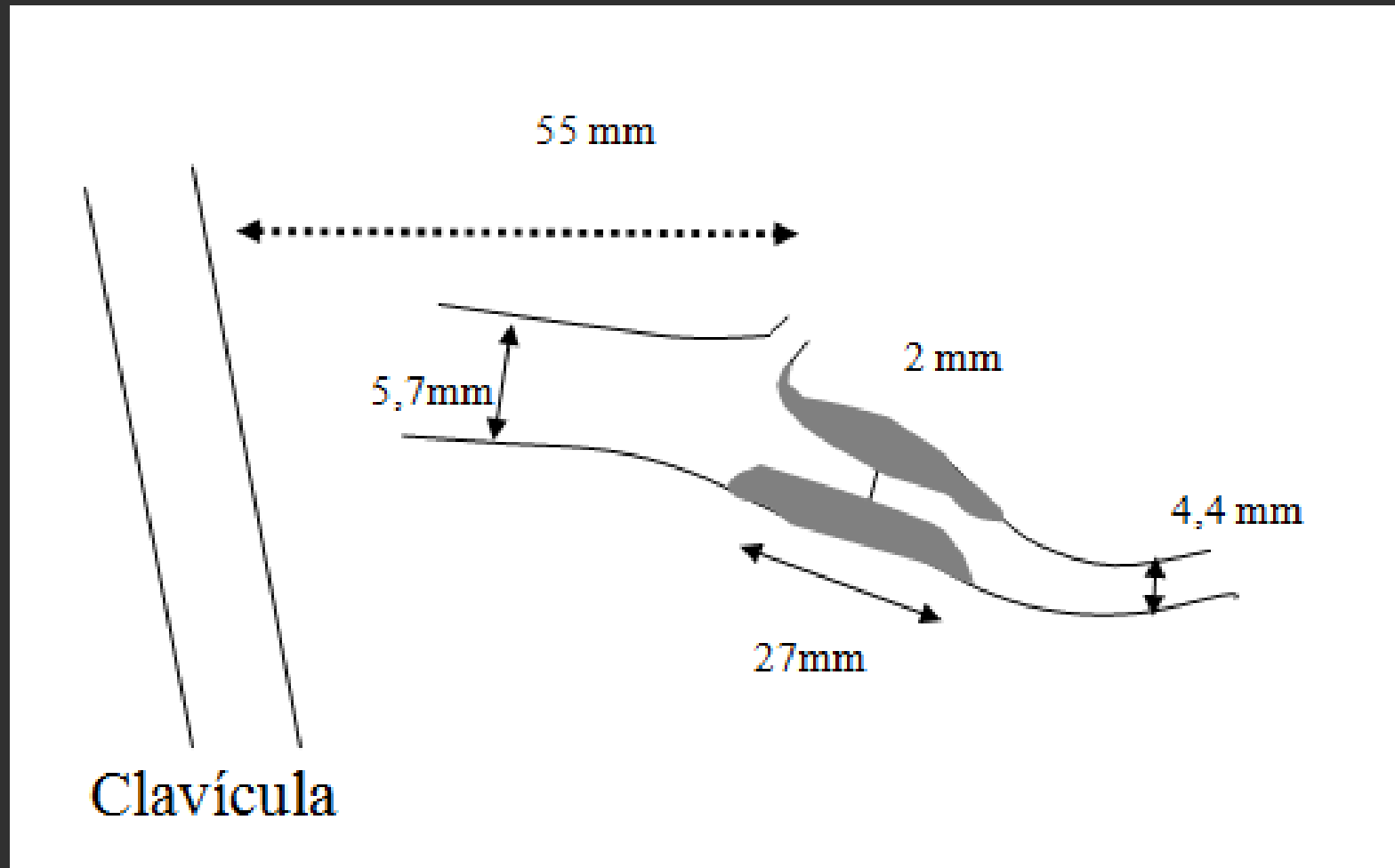
Hémodétournement
cérébral

CI si calcification CP

Exposition des mains

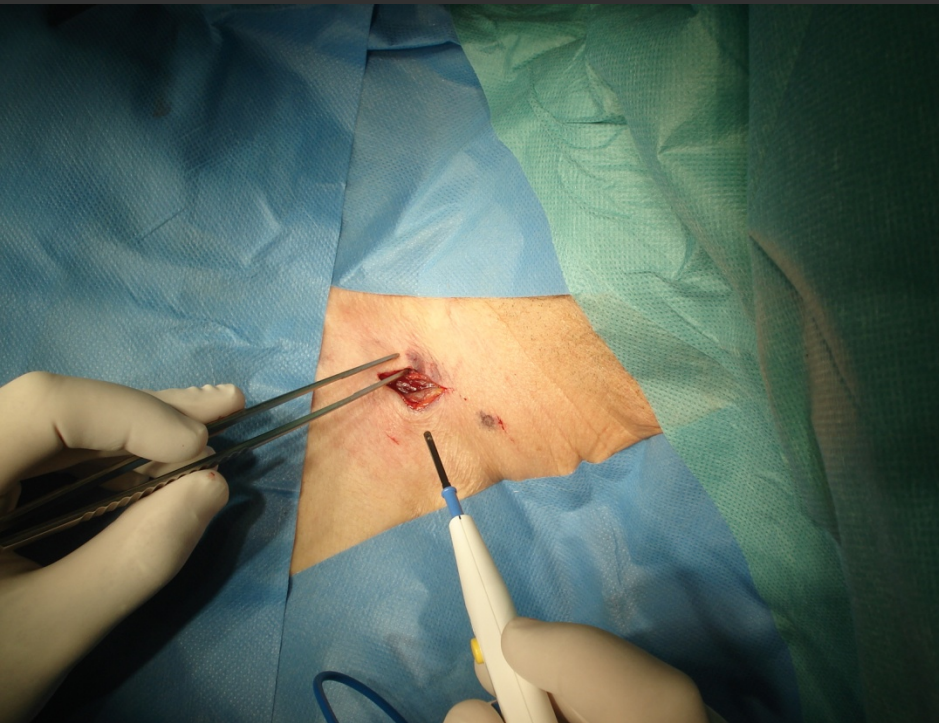
TECHNIQUE

ECHOGRAPHIE PRÉOPÉRATOIRE:



TECHNIQUE

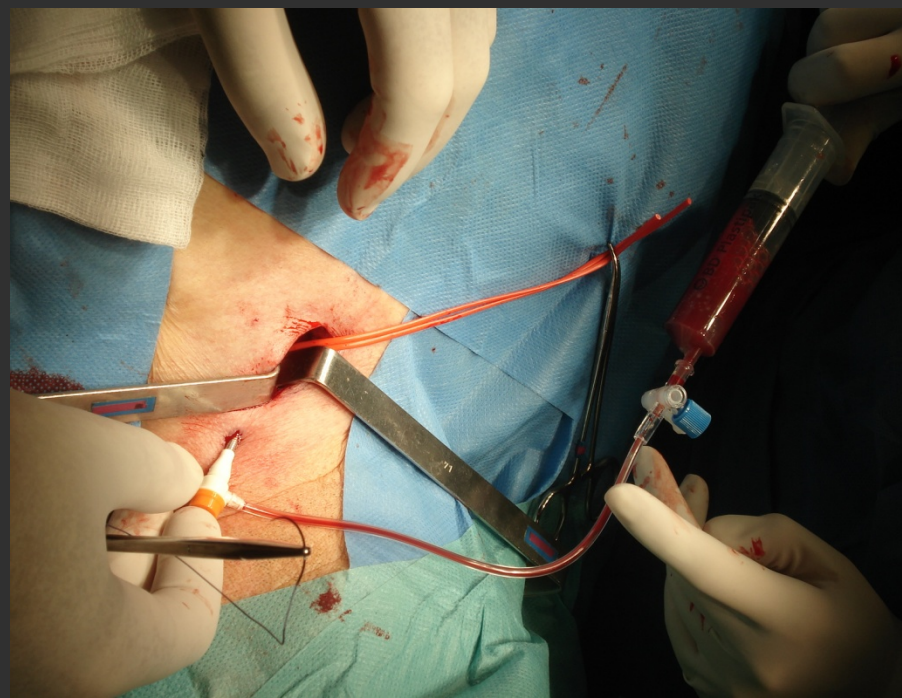
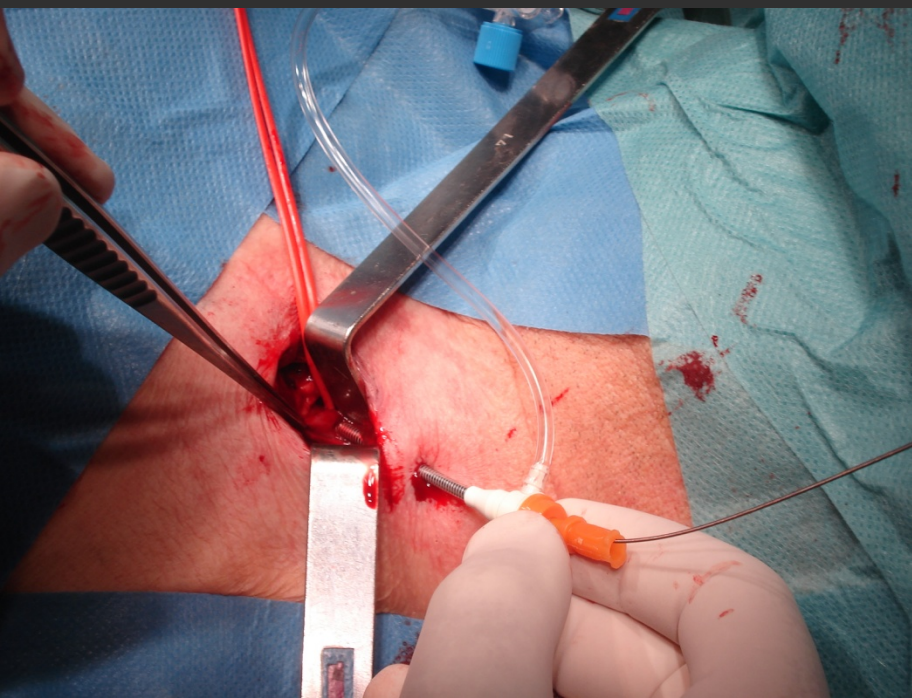
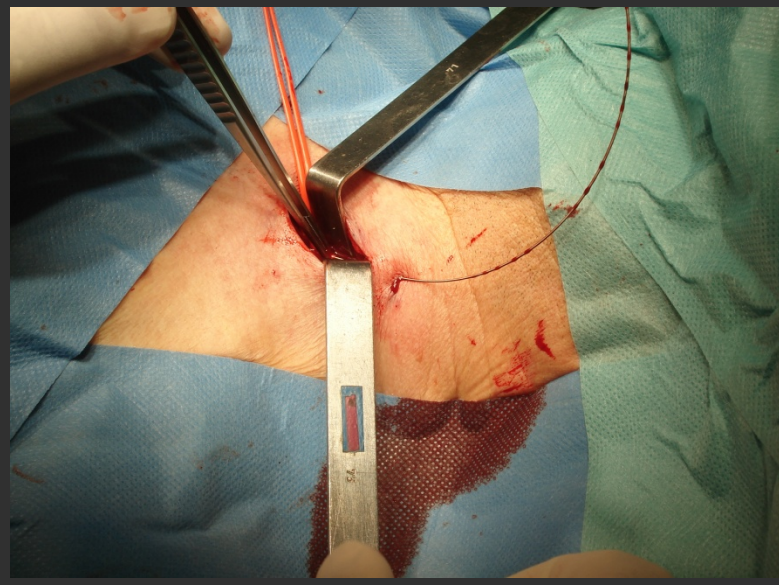
DISSECTION VEINEUSE ET ARTÉRIELLE:



TECHNIQUE

PONCTION VEINEUSE:

homo ou controlatérale



TECHNIQUE

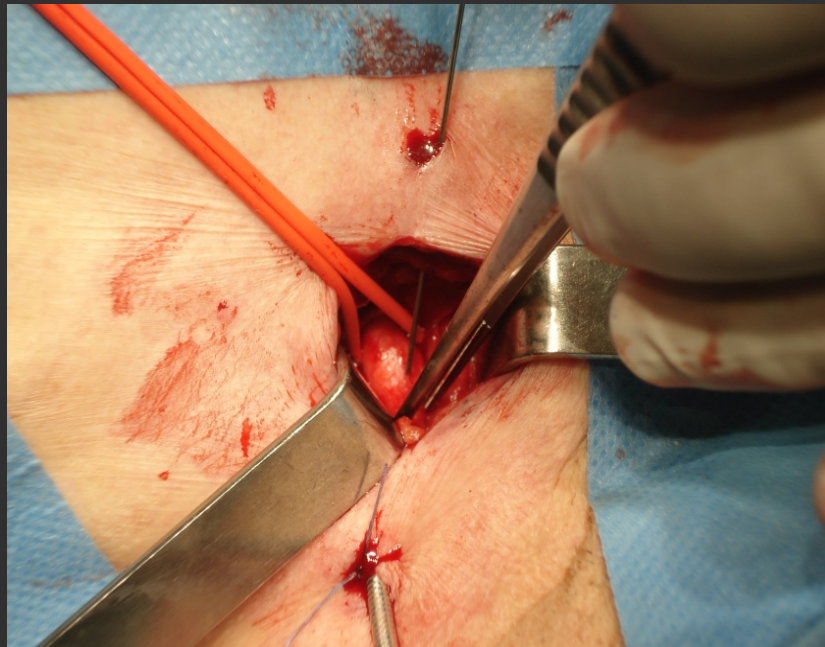
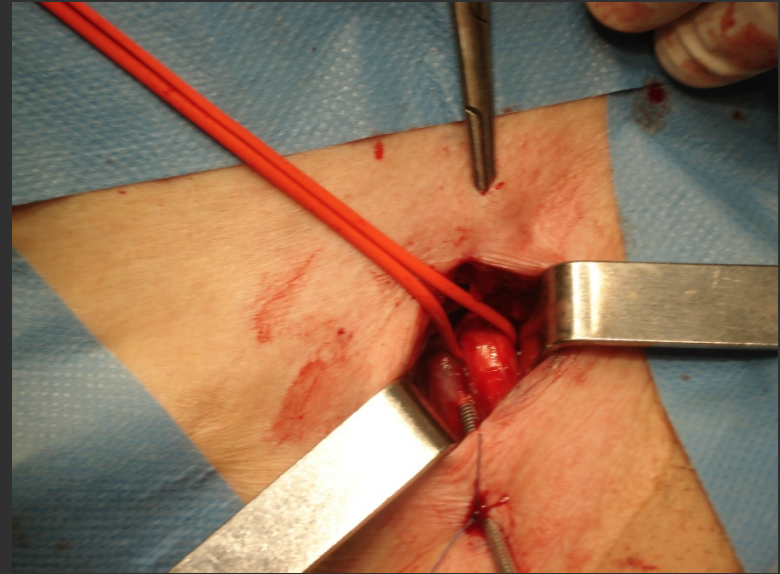
Bourse artérielle

Kite de ponction radial

Guide carotide externe

Attention à la dissection

Clampage par loop ou clamp



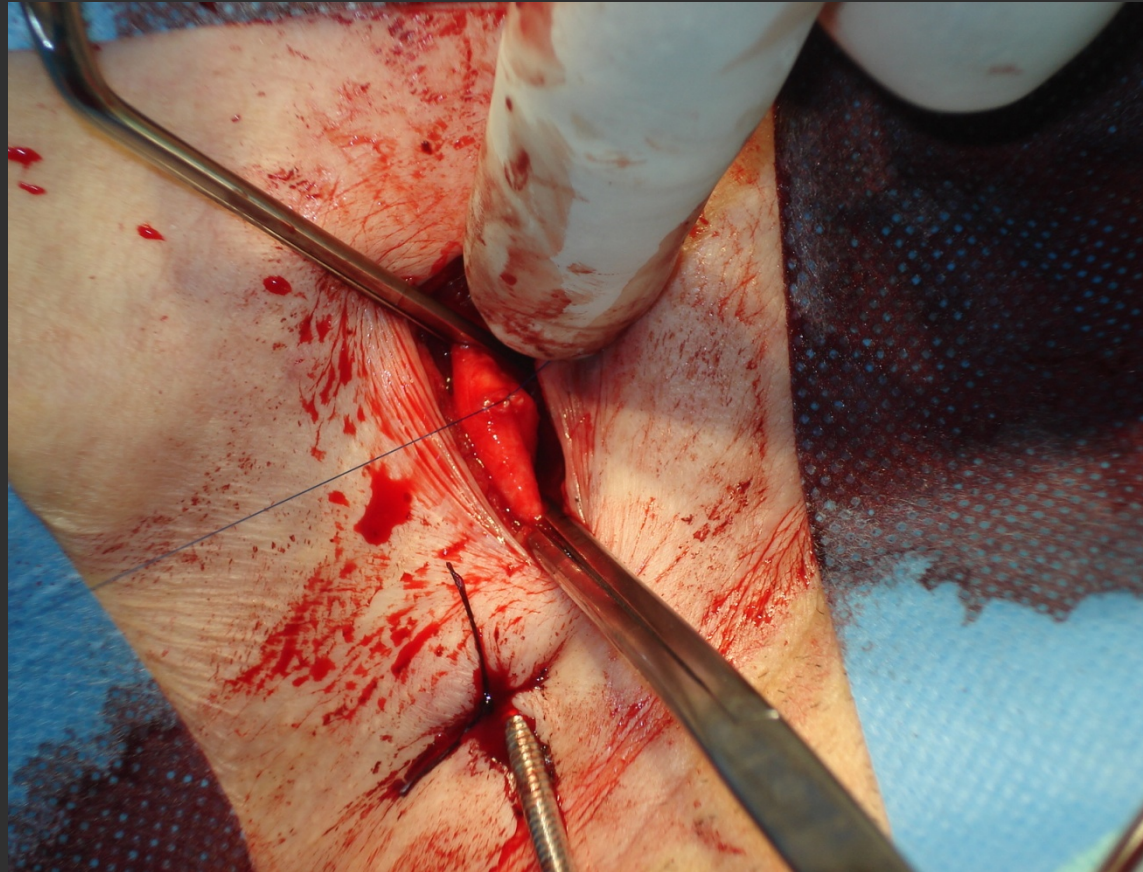
TECHNIQUE

CONNEXION:



TECHNIQUE

SUTURE DE L'ARTÉRIOTOMIE APRES PURGE :

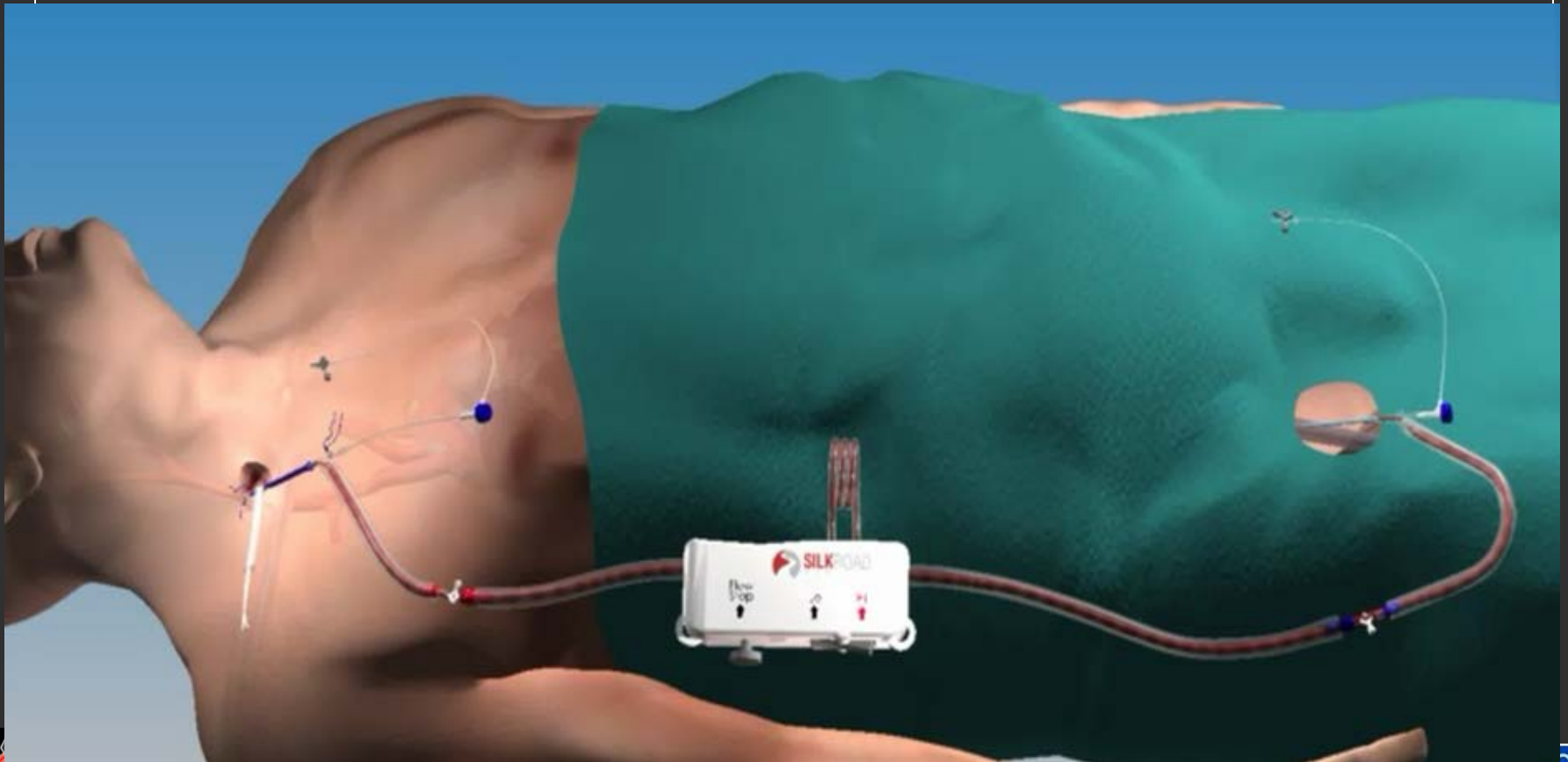


Résultats home made

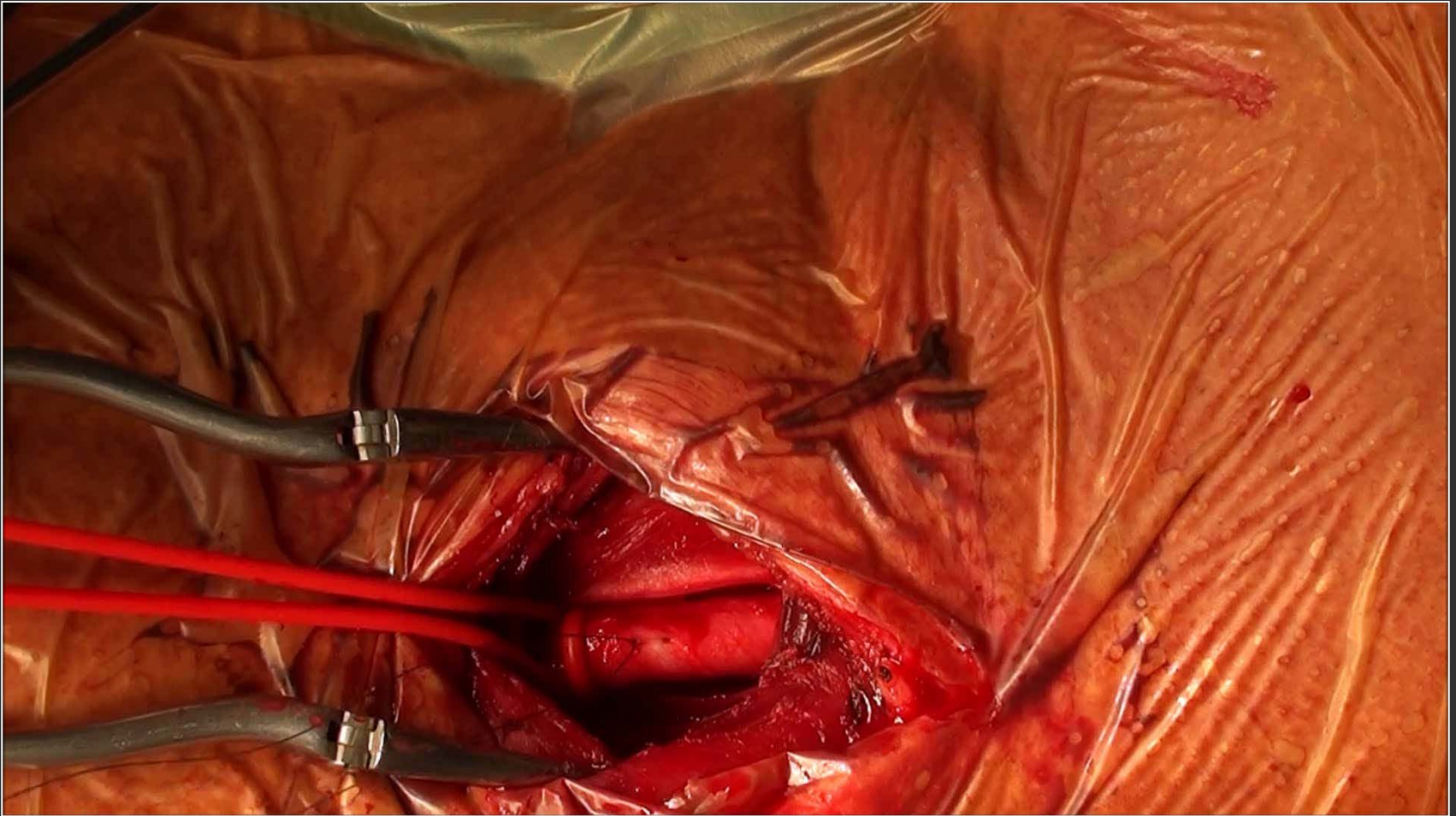
- *Pipinos I I: Vascular 2006*
- 38 patients :
 - dc avc =0
 - Temps reverse flow : 26 mm
 - Intolerance : 3%

Silk road

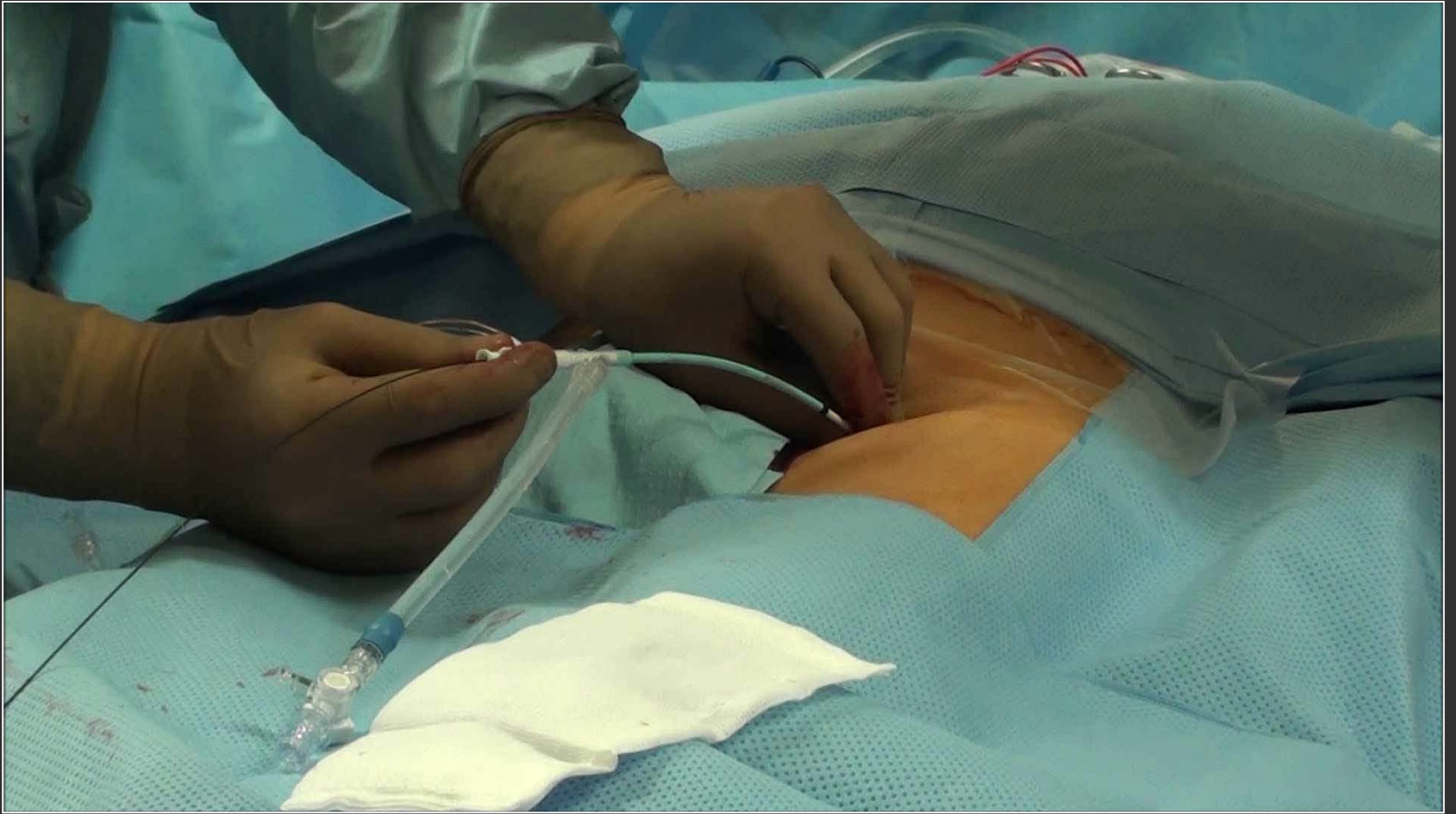
- 8F Transcervical Arterial Sheath
- 8F Venous Return Sheath
- Large bore flow reversal circuit
- Flow controller with stop, HI and LO flow



TECHNIQUE (Pr E. Ducasse)

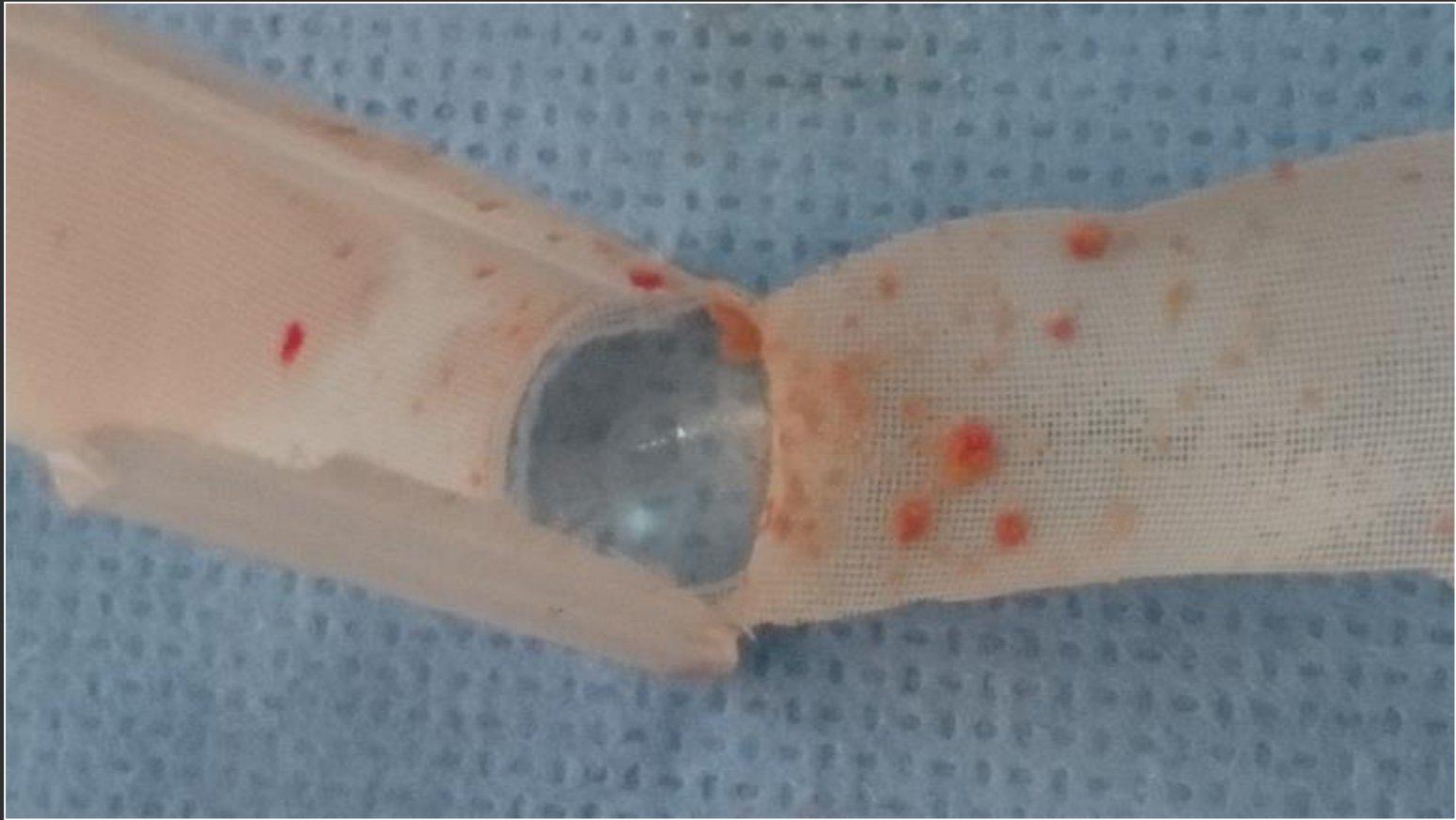








Les preuves sont dans le filtre



Intolerance Management

- In the PROOF study, 5 of 65 (7.7%)
- In the ROASTER study 1 (0,7%)
- All patients successfully received a stent and intolerance resolved without clinical sequelae.
- Intolerance was not associated with post-procedure DWI lesions

- Intolerance can be managed. There are many options:
 1. Supplemental O₂
 2. Increase blood pressure
 3. Manage flow: intermittently switch to lo flow or stop flow

proof study :

Pinter 1 ; JVS 2011

Safety Results ^{1,2}	
Primary Endpoint: Major stroke, MI, and death through 30 days	0/71 (0%)
Minor stroke Minor contralateral stroke adjudicated as not device or procedure-related	1/71 (1.3%)

Mesure des micro-embolies PAR DW-MRI: 19%



Tesla study

TESLA - DEMOGRAPHICS & RESULTS	Value (n=58)
Neurological Status	
Symptomatic	38 (65.5%)
Asymptomatic	20 (34.5%)
Outcomes	
Procedural Success	57 (98.3%)
Major Adverse Event Rate – Day 0 (Stroke, Death and Myocardial Infarction)	0 (0%)
Cranial Nerve Injury	0 (0%)

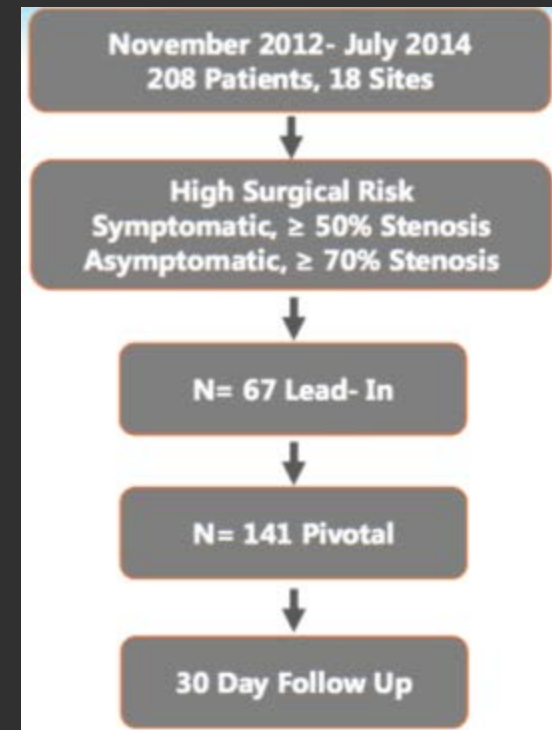


Roadster study

kwolek JVS 2012

- Objectif primaire : critère composite AVC/décès/IDM à 30-jours
- Objectifs secondaires : atteinte des nerfs craniens, AVC, décès, succès technique

High Surgical Risk	Pivotal Group (N=141)
Age	72.9 ±9 (40,90)
Age ≥75	47%
Age ≥ 80	28%
Female	35%
Symptomatic	26%
Physiologic Risk Factors	56%
Anatomic Risk Factors	
Hostile Neck	16%
Restenosis post CEA	21%
Physiologic & Anatomic Risk Factors	40%



Roadster study

High Surgical Risk	Pivotal Group, ITT (N=141)		Pivotal Group, PP (N=136)	
S/D/MI*	5	3.5%	4	2.9%
Major Stroke	0	0%	0	0%
Minor Stroke	2	1.4%	1	0.7%
Death	2	1.4%	2	1.5%
MI	1	0.7%	1	0.7%
Stroke & Death	4	2.8%	3	2.2%
Cranial Nerve Injury (CNI)	1	0.7%	1	0.7%
CNI Unresolved at 6 Mo	0	0%	0	0%



Roadster study

High Surgical Risk Pivotal Intention to Treat	Age ≥ 75	Symptomatic
N	N=66 (47%)	N=36 (26%)
S/D/MI	3 (4.5%)	1 (2.8%)
Major Stroke	0%	0%
Minor Stroke	0%	0%
Death	3.0%	2.8%
MI	1.5%	0%
Stroke & Death	3.0%	2.8%



Conclusion

- Utile si indication CAS
 - en cas d'anatomie défavorable de la crosse ou des accès iliaques
 - Patients symptomatiques
Ou a risque embolique++



CONCLUSION

- IL EXISTE UN RISQUE CLINIQUE ET ANATOMIQUE AU CAS F > CEA
- MEME SI PAS D'AVC :DIMINUTION DES FONCTIONS COGNITIVES PAR AUGMENTATION DES ZONES ISCHEMIQUES A L'IRM
- REVERSE FLOW: RISQUE NEURO EQUIVALENT CEA SANS RISQUE CORONARIEN SANS RISQUE NEURO PERIPHERIQUE

