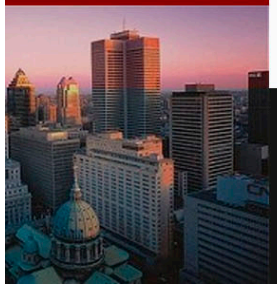
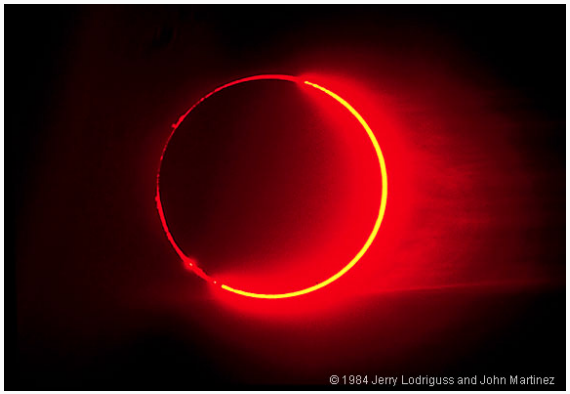
AVC Ischémique et Neuroradiologie Interventionnelle (NRI)

Alain Weill

CHUM



Conflits d'intérêts



- Rien de personnel
- Notre unité reçoit des fonds d'enseignement et de recherche des compagnies suivantes (vendent du matériel utilisé en NRI) :

  Stryker

  Covidien

  Codman

  Microvention

Plan

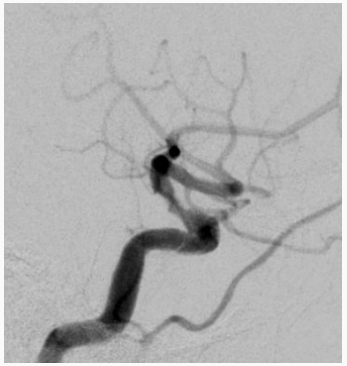
- NRI et prévention de l'AVC ischémique
- NRI et traitement de l' AVC ischémique aigu (stratégies, rôles, complications, limites….)

NRI et prévention de l'AVC ischémique

Rien de neuf mais « ca va pas bien pour la NRI » dans les dernières années

En NRI 2 niveaux où l'on intervient
Sténoses intracrâniennes
Sténoses extra crâniennes (carotidiennes)

Prévention des AVC chez les patients avec sténoses intracrâniennes



Stenting versus Aggressive Medical Therapy for Intracranial Arterial Stenosis

Marc I. Chimowitz, M.B., Ch.B.,…Harry J. Cloft, M.D., Ph.D., ***for the SAMMPRIS Trial Investigators***

Conclusions

…aggressive medical management was superior to PTAS, both because the risk of early stroke after PTAS was high and because the risk of stroke with aggressive medical therapy alone was lower than expected.

N Engl J Med Volume 365(11):993-1003 September 15, 2011

Reste éventuellement du cas par cas (ie: AVC récidivant sous traitement médical optimal dans le territoire de la sténose)

Prévention des AVC chez patients avec sténoses extra crâniennes

ICSS, SPACE, EVA3S, CREST: ont montré une incidence de stroke et de décès à 30j supérieur dans le groupe endovasculaire.

En pratique le stenting carotidien est désormais réservé à la sténose carotidienne symptomatique avec un risque chirurgical accru

- Accès difficile (bif haute)
- Post radique
- Resténose
- Condition clinique qui augmente le risque d'une anesthésie (si requise pour la chirurgie)

Stroke
JOURNAL OF THE AMERICAN HEART ASSOCIATION

American Heart Association | American Stroke Association

A Clinical Rule (Sex, Contralateral Occlusion, Age, and Restenosis) to Select Patients for Stenting Versus Carotid Endarterectomy: Systematic Review of Observational Studies With Validation in Randomized Trials

Emmanuel Touzé, Ludovic Trinquart, Rui Felgueiras, Kittipan Rerkasem, Leo H. Bonati, Gayané Meliksetyan, Peter A. Ringleb, Jean-Louis Mas, Martin M. Brown and Peter M. Rothwell
in collaboration with the Carotid Stenting Trialists Collaboration

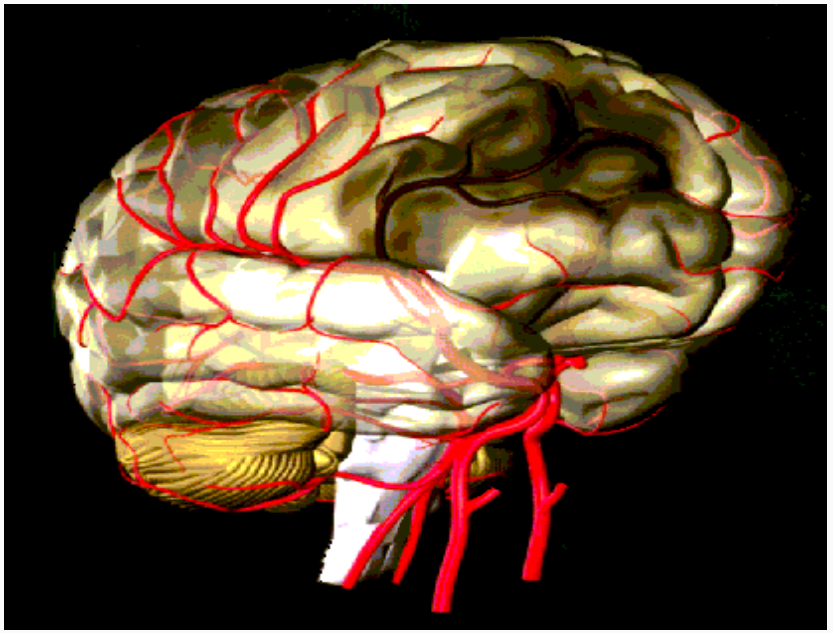
Stroke. 2013;44:3394-3400; originally published online October 17, 2013;
doi: 10.1161/STROKEAHA.113.002756
Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231

Print ISSN: 0039-2499. Online ISSN: 1524-4628

Patients with contralateral occlusion or restenosis and women<75 years were at relatively low risk for CAS (SCAR negative), with all others being high risk (SCAR positive).

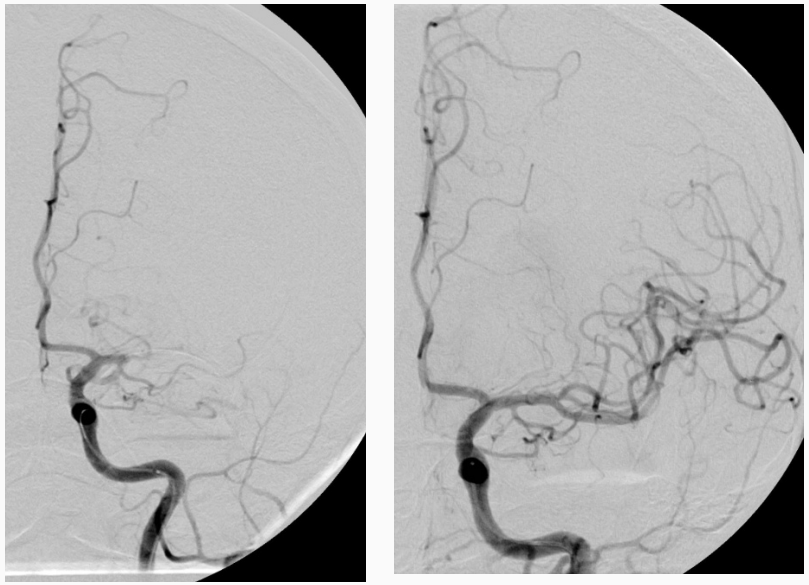
Conclusions—The SCAR rule is potentially useful to identify patients in whom CAS has a similar risk of perioperative stroke or death to CEA. (***Stroke*. 2013;44:3394-3400.**)

NRI et traitement de l' AVC ischémique aigu (stratégies, rôles, complications, limites….)



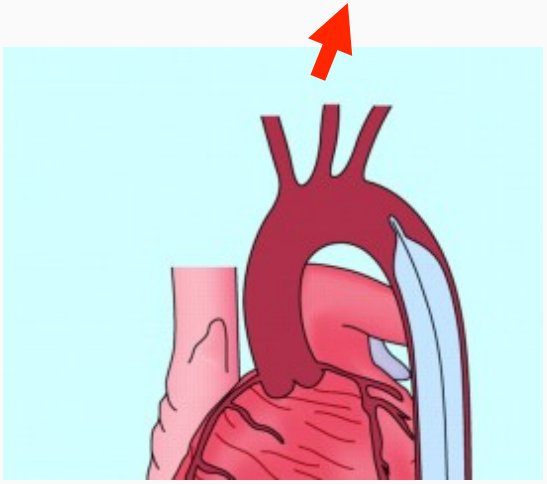
Paradigme

- La majorité des AVC ischémiques aigus sont dus à une occlusion artérielle.
- L'objectif du traitement endovasculaire est de ré ouvrir le vaisseau afin de rétablir un flux.



Autres stratégies anecdotiques

Reperfusion globale: ie ballon aortique



Inversion de flux: *Retrograde transvenous neuroperfusion: a back door treatment for stroke. Frazee JG et al. Stroke 1998;29:1912-16.*

Ré ouvrir les vaisseaux, ca marche!!

« Corrélation forte entre recanalisation et évolution clinique favorable »

The impact of recanalization on ischemic stroke outcome: a metaanalysis. Rha JH and al. Stroke 2007,38;967-973

Mais 3 conditions sont nécessaires

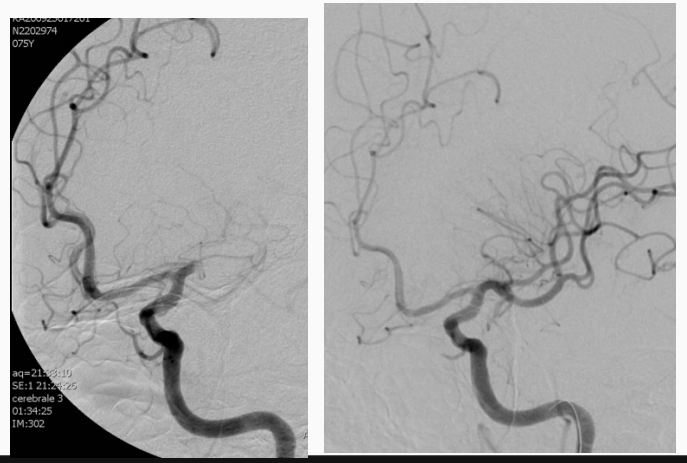
- Le faire vite
- Le faire sans « trop de complications »
- Le faire de manière consistante

Traitement endovasculaire

- Approche médicamenteuse (chimique): agent thrombolytique en Intra artériel

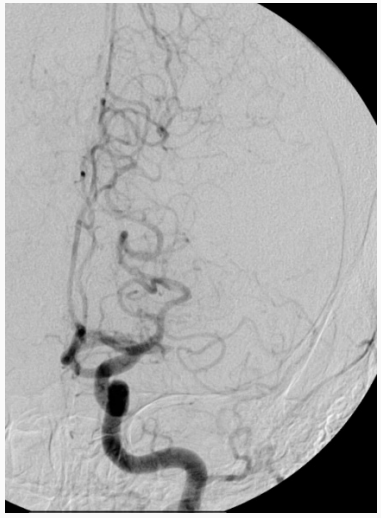
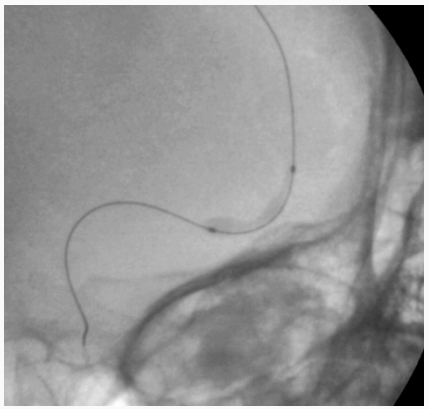
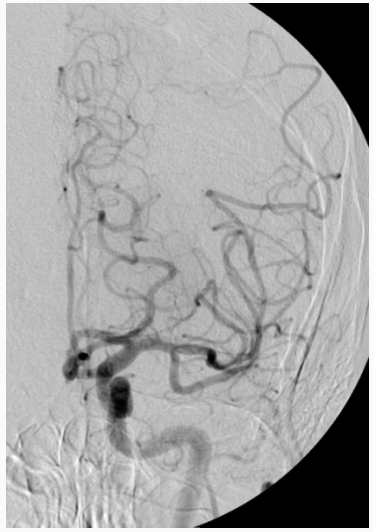
- Approche mécanique: naviguer un instrument jusqu'au caillot et: *le retirer, l'aspirer, le pulvériser, le fragmenter….*

~ Combinaison des deux



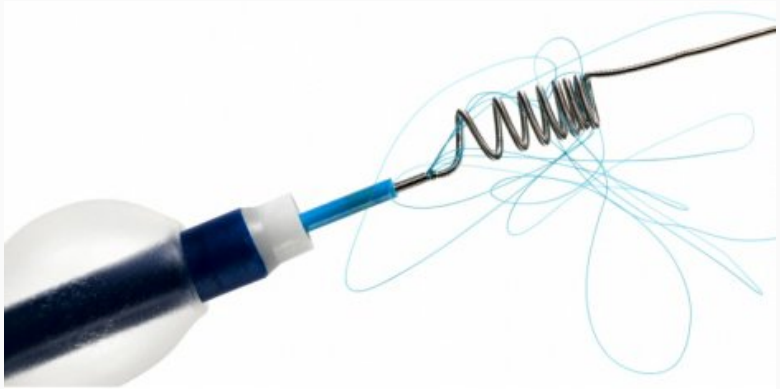
Histoire

- Années 80: Injection d'agents thrombolytiques (Urokinase….)
- Début 90: Approche mécanique avec des instruments non spécifiques et pas toujours adaptés (lasso, cardio stents, fragmentation au ballon d'angioplastie…)

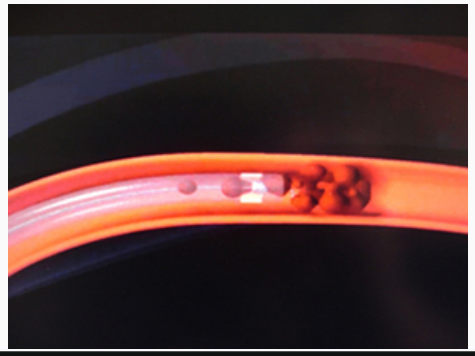




- *1995: NINDS trial (RTPA IV pour stroke de moins de 3h (étendu en 2008 à 4.5h ECASS III) définissant le traitement standard*

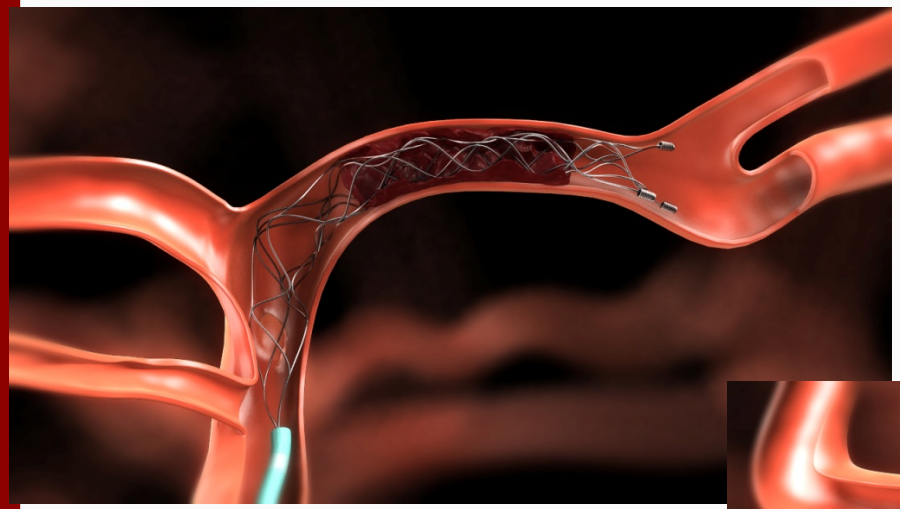
- Années 2000: développement d'instruments spécifiques (FDA approuve Merci en 2004)
  - Catch, Phenox Clot retriever, Neuronet…

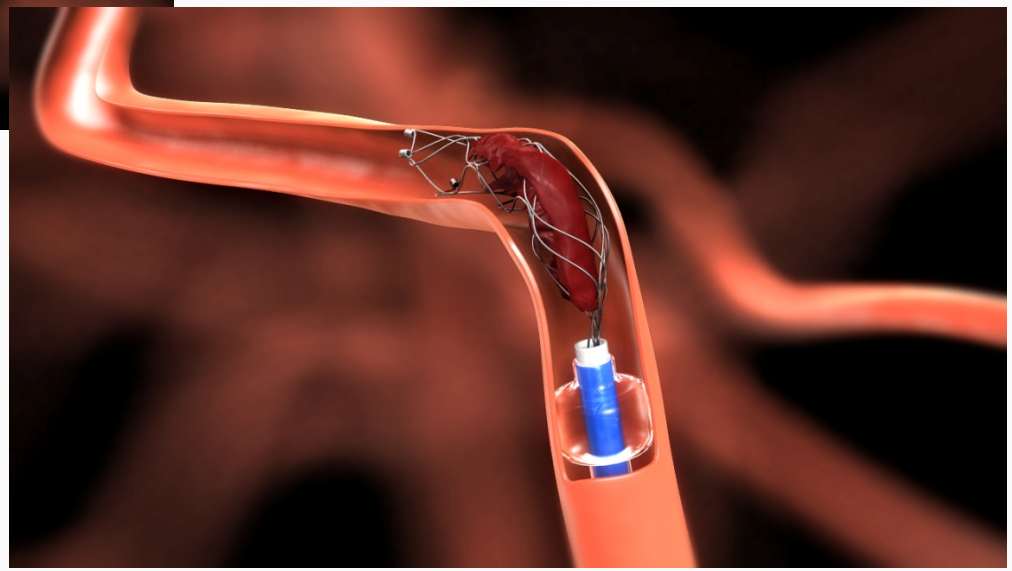


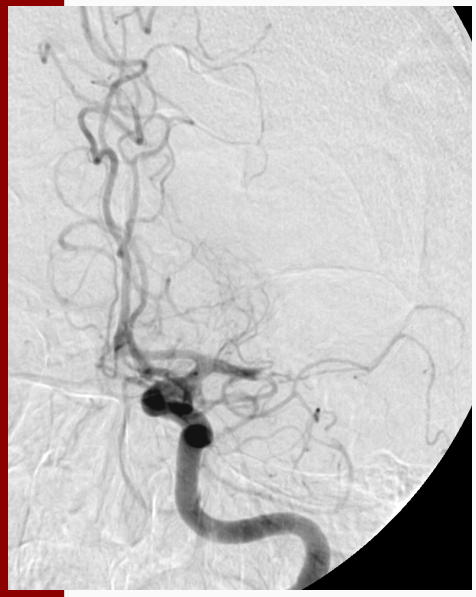
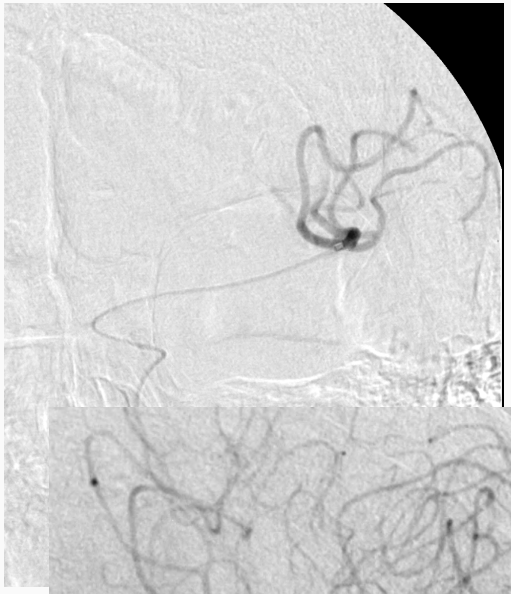
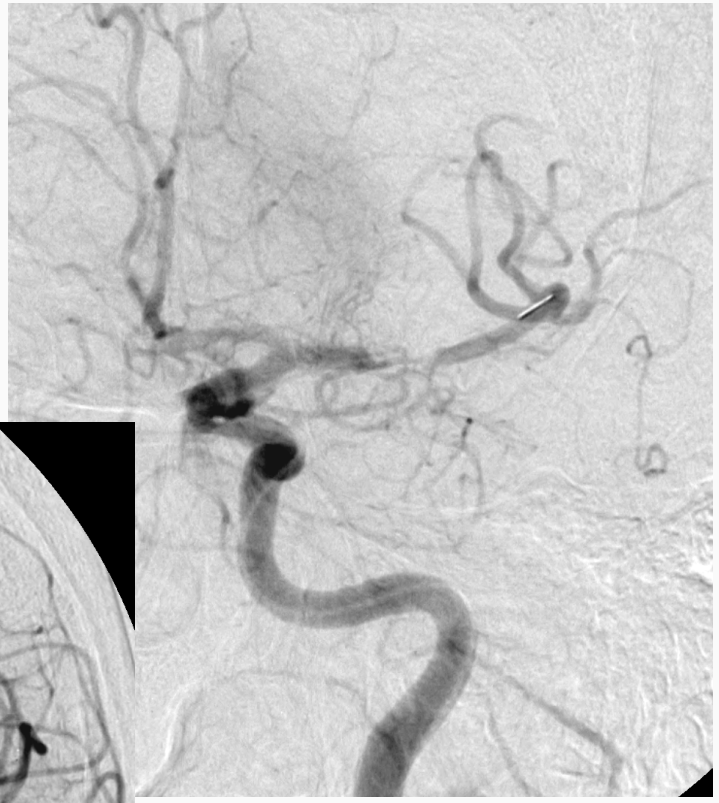
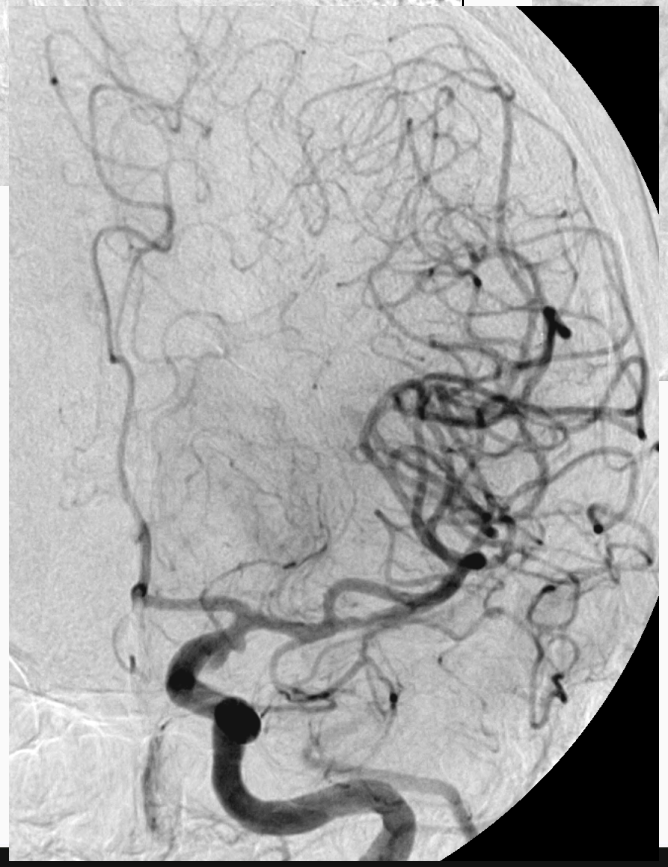
  - Penumbra *Penumbra Pivotal Stroke trial. Stroke 2009;40:2761-2768* (nonrandomized trial)



- Années 2010 stent retrievers





Stent retrievers = progrès?

1) Ré ouvrir de manière consistante

60 à 80% de recanalisation (TICI 2B- TICI 3) contre 30 à 50% auparavant

2 petites études randomisées publiées dans Lancet en août 2012: ***TREVO II*** *(patient ineligible to IV TPA treated with TREVO vs MERCI),* ***SWIFT Trial*** *(solitaire vs MERCI)*

Solitaire flow restoration device versus the Merci Retriever in patients with acute ischaemic stroke (SWIFT): a randomised, parallel-group, non-inferiority trial

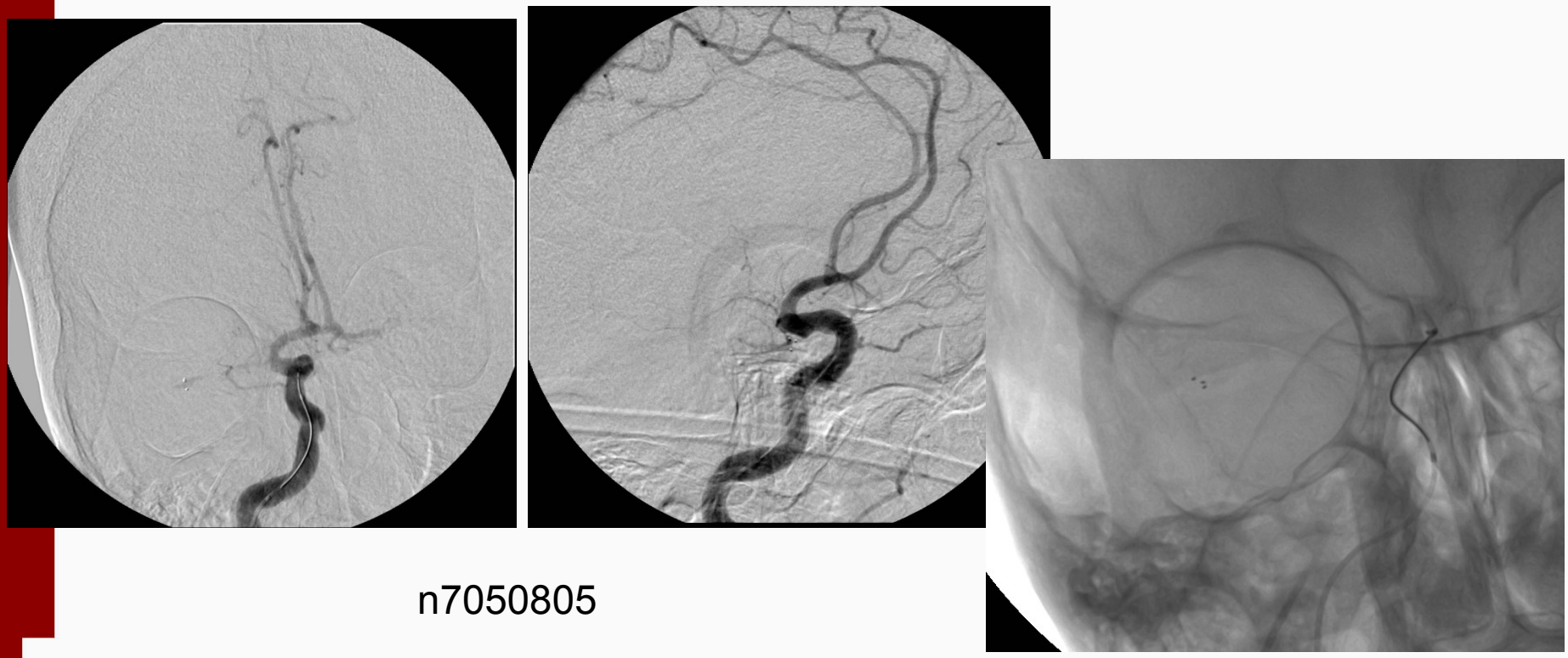
Jeffrey L. Saver, Reza Jahan, Elad I Levy, Tudor G Jovin, Blaise Baxter, Raul G Nogueira, Wayne Clark, Ronald Budzik, Osama O Zaidat, for the SWIFT Trialists

Trevo versus Merci retrievers for thrombectomy revascularisation of large vessel occlusions in acute ischaemic stroke (TREVO 2): a randomised trial

Raul G Nogueira, Helmi L Lutsep, Rishi Gupta, Tudor G Jovin, Gregory W Albers, Gary A Walker, David S Liebeskind, Wade S Smith, for the TREVO 2 Trialists

2) Ré ouvrir sans trop de complications

Il n'y a pas que les complications hémorragiques de recanalisation



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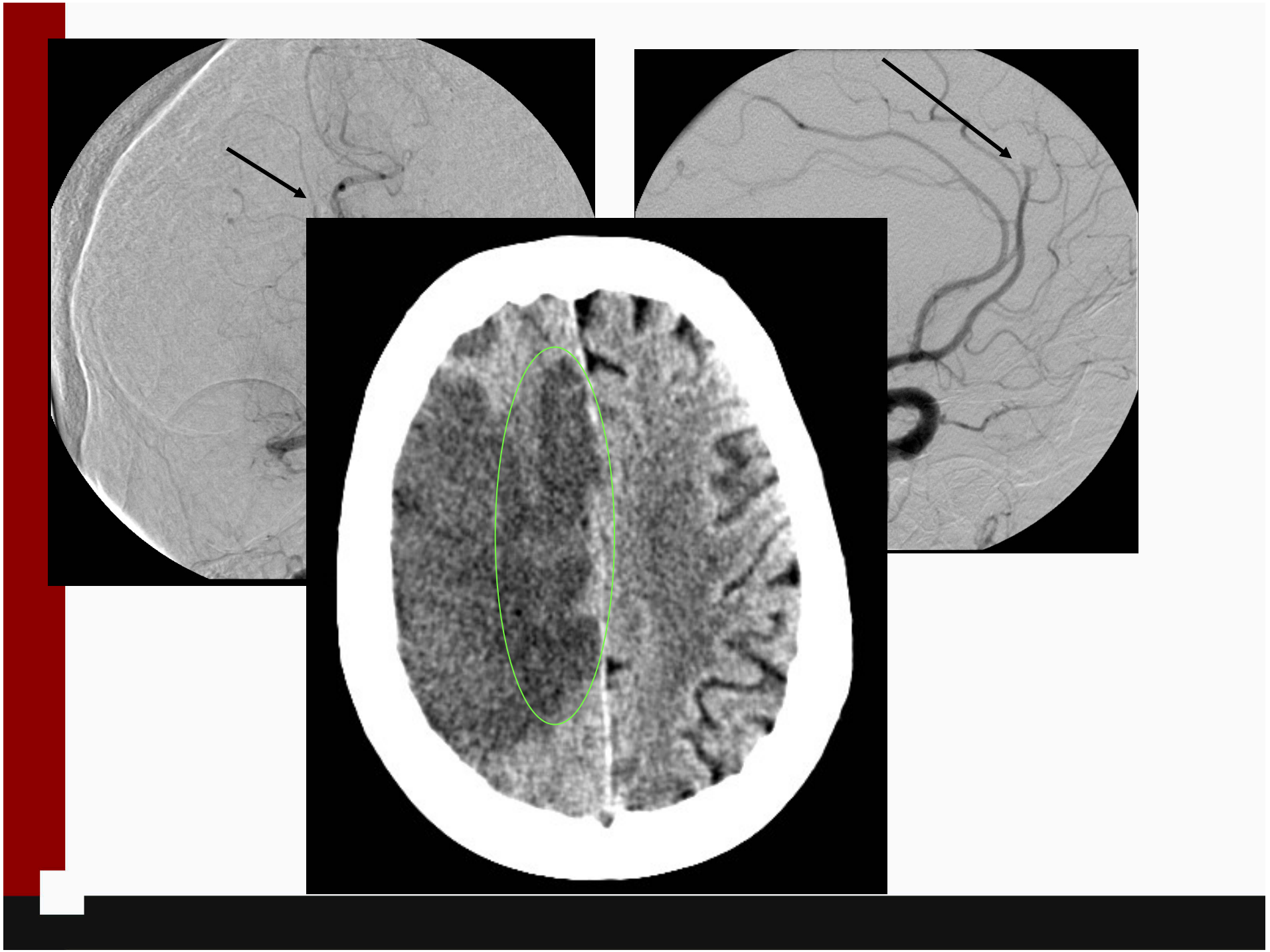


2) Ré ouvrir sans trop de complications

- Bottom line: *Taux de complication acceptable et comparable ou inférieur selon les études lorsque l'on compare les nouveaux instruments de recanalisation aux anciens:*

Ie: Complications of Endovascular Treatment for Acute Stroke in the SWIFT Trial with Solitaire and Merci Devices

P.T. Akins, A.P. Amar, R.S. Pakbaz, and J.D. Fields, on behalf of the SWIFT Investigators

Major peri-procedural complications occurred in 18 of 144 patients (12.5%) : symptomatic intracranial hemorrhage 4.9%; air emboli, 1.4%; vessel dissection, 4.2%; major groin complications, 2.8%; and emboli to new vascular territories, 0.7%.

« Less complications with Solitaire vs Merci »

AJNR Am J Neuroradiol. 2014 Mar;35(3):524-8.

3) Ré ouvrir vite

- Certes les stents retrievers sont peut-être un peu plus facile à manipuler ou à naviguer mais mobiliser une équipe de neuro intervention et accèder mécaniquement au caillot prend du temps

YD

NNT augmente de 1 patient toutes les 20 mns

	Modified Rankin score 0–1 at 90 days,* n/N (%)		Odds ratio (95% CI)	p value	Estimated number needed to treat† for modified Rankin score 0–1	Composite endpoint at 90 days; odds ratio (95% CI)‡	p value
	Alteplase	Placebo					
0–90 min	67/161 (41·6%)	44/151 (29·1%)	2·55 (1·44–4·52)	0·0013	4·5	2·84 (1·75–4·60)§	<0·0001
91–180 min	127/303 (41·9%)	91/315 (28·9%)	1·64 (1·12–2·40)	0·0116	9·0	1·52 (1·10–2·11)§	0·0119
181–270 min	361/809 (44·6%)	306/811 (37·7%)	1·34 (1·06–1·68)	0·0135	14·1	1·32 (1·09–1·61)	0·0054
181–270 min (excluding EPITHET[7] data)	358/795 (45·0%)	303/794 (38·2%)	1·32 (1·04–1·66)	0·0202	14·9	1·31 (1·08–1·60)	0·0074
271–360 min	215/575 (37·4%)	193/542 (35·6%)	1·22 (0·92–1·61)	0·1628	21·4	1·22 (0·96–1·54)	0·1057
271–360 min (excluding EPITHET[7] data)	200/539 (37·1%)	184/512 (35·9%)	1·16 (0·87–1·54)	0·3063	28·7	1·16 (0·91–1·48)	0·2394
0–360 min	770/1849 (41·6%)	634/1820 (34·8%)	1·40 (1·20–1·63)	<0·0001	12·6	1·36 (1·22–1·58)	<0·0001
0–360 min (excluding EPITHET[7] data)	752/1798 (41·8%)	622/1772 (35·1%)	1·38 (1·18–1·60)	<0·0001	13·1	1·36 (1·20–1·56)	<0·0001

Data adjusted for stroke onset to start of treatment (OTT), National Institutes of Health Stroke Scale (NIHSS) score at baseline, age, diastolic blood pressure (<70, 71–90, >90 mm Hg), previous hypertension, previous stroke, and interaction of age and NIHSS score. *For the modified Rankin score (0–1) as an independent outcome we used the likelihood ratio test in a logistic regression model for binary outcomes to test for the OTT by treatment interaction and for calculation of odds ratios and 95% CI. †Number needed to treat with alteplase to achieve one additional favourable outcome. ‡For the composite endpoint, we used generalised estimating equations to estimate the odds ratio, 95% CIs, and p values calculated from correlated binary outcomes in a logistic regression model. §Minor differences between the estimated odds ratios for the composite endpoint within 0–90 min and 91–180 min compared with those previously published (2·81 and 1·55 respectively)[8] are caused by changes in availability of prognostic data across trials.

Table 2: **Modified Rankin scores and composite endpoint (modified Rankin score, Barthel Index score, and NIHSS score), by OTT interval**

Merci Dr Y Deschaintre

Lees et al. Lancet 2010; 375(9727): 1695-1703

Stroke
Journal of the American Heart Association

American Heart Association | American Stroke Association

Optimal Workflow and Process-Based Performance Measures for Endovascular Therapy in Acute Ischemic Stroke: Analysis of the Solitaire FR Thrombectomy for Acute Revascularization Study

Bijoy K. Menon, Mohammed A. Almekhlafi, Vitor Mendes Pereira, Jan Gralla, Alain Bonafe, Antoni Davalos, Rene Chapot and Mayank Goyal
on behalf of the STAR Study Investigators

Stroke. 2014;45:2024-2029; originally published online May 15, 2014;
doi: 10.1161/STROKEAHA.114.005050
Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231

Print ISSN: 0039-2499. Online ISSN: 1524-4628

« For each 1hour increase in stroke onset to final digital substraction angiography for TICI 2b/3, odds of good clinical outcome decreased by 38%

Ceci nous amène à nous poser la question de base: même si nous avons des instruments de plus en plus performants, aidons nous réellement les patients?

En d'autres termes est ce que les victimes de stroke ont un meilleur devenir lorsque le traitement endovasculaire est fait en plus du traitement médical standard? (incluant aujourd'hui le Rtpa IV et la prise en charge dans un stroke center)

Stroke
Journal of the American Heart Association
2012 Sep;43(9):2350-5

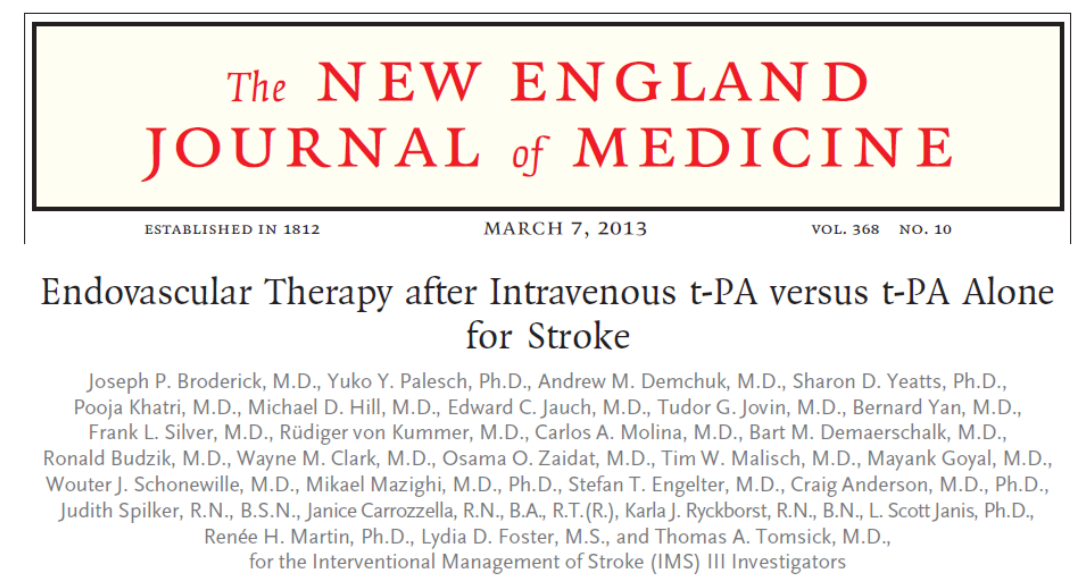
Systematic review of outcome after ischemic stroke due to anterior circulation occlusion treated with intravenous, intra-arterial, or combined intravenous+intra-arterial thrombolysis.

Mullen MT, Pisapia JM, Tilwa S, Messé SR, Stein SC.

CONCLUSIONS:

This study found no evidence that one reperfusion strategy is superior with respect to efficacy or safety, supporting clinical equipoise between reperfusion strategies. Intravenous tissue-type plasminogen activator remains the standard of care for acute ischemic stroke. Randomized clinical trials are necessary to determine the efficacy of alternative reperfusion strategies. Participation in such trials is strongly recommended.

Résultats de 3 études randomisées publiées dans le même NEJM



The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MARCH 7, 2013 VOL. 368 NO. 10

Endovascular Therapy after Intravenous t-PA versus t-PA Alone for Stroke

Joseph P. Broderick, M.D., Yuko Y. Palesch, Ph.D., Andrew M. Demchuk, M.D., Sharon D. Yeatts, Ph.D., Pooja Khatri, M.D., Michael D. Hill, M.D., Edward C. Jauch, M.D., Tudor G. Jovin, M.D., Bernard Yan, M.D., Frank L. Silver, M.D., Rüdiger von Kummer, M.D., Carlos A. Molina, M.D., Bart M. Demaerschalk, M.D., Ronald Budzik, M.D., Wayne M. Clark, M.D., Osama O. Zaidat, M.D., Tim W. Malisch, M.D., Mayank Goyal, M.D., Wouter J. Schonewille, M.D., Mikael Mazighi, M.D., Ph.D., Stefan T. Engelter, M.D., Craig Anderson, M.D., Ph.D., Judith Spilker, R.N., B.S.N., Janice Carrozzella, R.N., B.A., R.T.(R.), Karla J. Ryckborst, R.N., B.N., L. Scott Janis, Ph.D., Renée H. Martin, Ph.D., Lydia D. Foster, M.S., and Thomas A. Tomsick, M.D., for the Interventional Management of Stroke (IMS) III Investigators

- IMS III
- Synthesis
- MR Rescue

Aucune n'a montré de supériorité

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MARCH 7, 2013 VOL. 368 NO. 10

Negative Evidence Journal of Mechanical Thrombectomy

The NEW ENGLAND JOURNAL of MEDICINE

EDITORIAL

Endovascular Treatment for Acute Ischemic Stroke — Still Unproven

Marc I. Chimowitz, M.B., Ch.B.

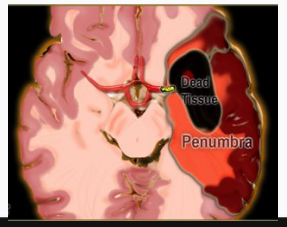
Devons nous donc arrêter le traitement endovasculaire des strokes ?

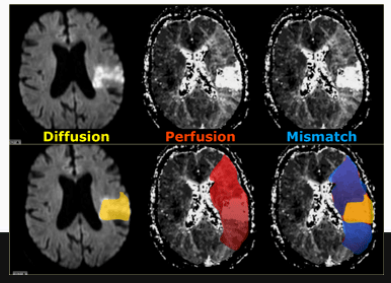
- Le bénéfice du traitement endovasculaire n'est certes pas prouvé, mais :

  ~ On ne nuit pas au patient

  ~ Il y a un « trend » pour les strokes sévères

  ~ L'amélioration en terme d'efficacité et de sécurité de nos instruments récents pourrait faire la différence *(ils sont trop récents pour avoir été inclus dans les études antérieures)*





Endovascular treatment of stroke: will the light come from stentrievers ?

Jacquin G_1, Poppe AY_1, Deschaintre Y_1, Lanthier S_1, Odier C_1, Guilbert F_2, Raymond J_2, Roy D_2, Weill A_2

1 Service de neurologie vasculaire
2 Service de neuroradiologie interventionnelle

CHUM

But

- Comparer les “outcomes cliniques” et les scores de recanalisation des patients traités par voie endovasculaire avant et après l’apparition des “stents retrievers”

Méthode

- Analyse retrospective des cas d'AVC de la circulation antérieure (base de données prospective) traités par voie IA d'août 2006 à décembre 2012

Méthode

- Patients divisés en 2 groupes
  - Groupe 1 Août 2006 – Juillet 2011
  - Groupe 2 Juillet 2011 – Dec 2012

  (stent retrieversutilisés en 1ère intention)

- Definitions:
  - Outcome favorable: MRS≤2
  - Bonne recanalisation: TICI 2b-3

Résultats

- 117 patients dans groupe 1
- 61 patients dans groupe 2

Résultats

Table 1. Baseline Characteristics

Variable	Group 1 (N=117)	Group 2 (N=61)	p-value
Age	62	63	0.63
Males	50 (57%)	39 (64%)	0.42
Hypertension	59 (50%)	33 (54%)	0.75
Hyperlipidemia	55 (47%)	27 (44%)	0.75
Diabetes mellitus	11 (9%)	10 (16%)	0.22
Previous stroke	20 (17%)	5 (8%)	0.12
Atrial Fibrillation	11 (9%)	8 (13%)	0.45
Coronary heart disease	30 (26%)	9 (15%)	0.13
Peripheral Vascular Disease	8 (7%)	3 (5%)	0.75
Tobacco use	43 (37%)	15 (25%)	0.13
Glucose value (mmol/L)	7.3	8.2	0.04

Résultats

Table 2. Stroke Characteristics

Variable		Group 1 (N=117)	Group 2 (N=61)	p-value
Mean NIHSS		18.6	18.4	0.88
Stroke side :				
	Left	62 (53%)	30 (49%)	0.64
	Right	55 (47%)	31 (51%)	
Carotid occlusion		25 (21%)	18 (30%)	0.27

Résultats

Table 3. Treatment

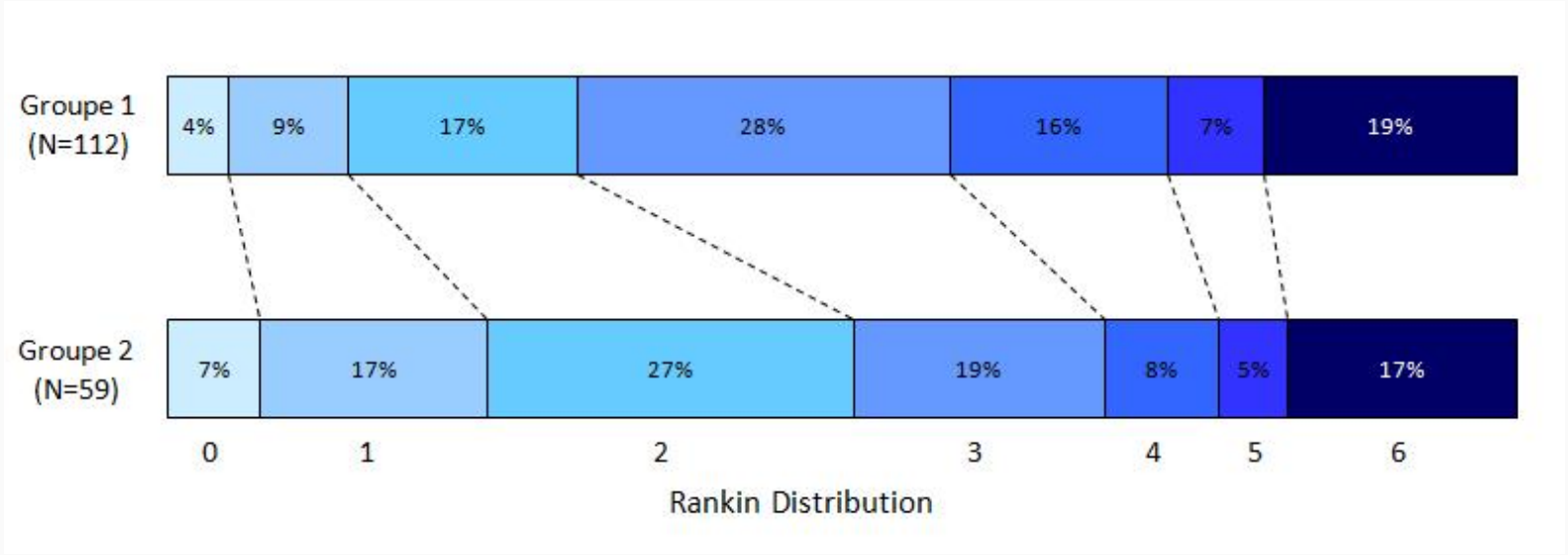
Variable	Group 1 (N=117)	Group 2 (N=61)	p-value
Mean time from onset to tPA delivery (minutes)	177	166	0.28
Mean time from onset to angiography (minutes)	203	206	0.75
Treatment modalities :			
IV t-PA (complete or partial)	60 (51%)	31 (51%)	1.00
IA t-PA	58 (50%)	7 (11%)	<0.001
General anesthesia	39 (33%)	16 (26%)	0.39

Résultats

Table 4. Outcomes

Variable	Group 1 (N=117)	Group 2 (N=61)	p-value
TICI recanalisation score :			
0-2a	75 (65%)	23 (38%)	<0.001
2b-3	42 (36%)	38 (62%)	
Intracranial Hemorrhage :			
Symptomatic	10 (9%)	5 (8%)	1.00
Asymptomatic	19 (16%)	11 (18%)	0.83
Length of stay (days)	17.0	14.4	0.45
3-6 months mRS [1] :			
0 - 2	34 (30%)	30 (51%)	<0.01
≥3	78 (70%)	29 (49%)	

[1] Not available in 7 patients, 5 in Group 1 and 2 in Group 2


Groupe 1
(N=112)
4%
9%
17%
28%
16%
7%
19%
Groupe 2
(N=59)
7%
17%
27%
19%
8%
5%
17%
0
1
2
3
4
5
6
Rankin Distribution

Bien évidemment…

- Ce n'est pas tiré au sort et on compare 2 séries historiques

Mais au moins ca nous permet de répondre à notre question de base:

- Oui nous devrions continuer à traiter les strokes par voie endovasculaire mais nous devons le faire de manière utile et responsable
  - En incluant les patients dans des études randomisées comparant traitement endovasculaire + traitement médical optimal vs traitement médical optimal seul.

Très nombreuses études en cours

Mister clean
Thrace
Escape
Easi
Swift prime Trial
Therapy trial……

2 études randomisées au Canada

Endovascular treatment for **S**mall **C**ore and **A**nterior circulation **P**roximal occlusion with **E**mphasis on minimizing CT to recanalization times (ESCAPE) trial

Protocol synopsis

Objectives	The primary objectives of this study are to show that rapid endovascular revascularization amongst radiologically selected (small core/proximal occlusion) patients with ischemic stroke results in improved outcome compared to patients treated in clinical routine. The secondary objectives of this study are to demonstrate the safety and feasibility of achieving rapid endovascular revascularization in this population of patients (<60 min CTA-groin puncture; <90 min CTA-recanalization; <120 min ESCAPE centre door to recanalization).
Experimental Design	A Phase 3, randomized, open-label with blinded outcome evaluation, controlled, parallel group design.
Population	Up to 250 male and female patients; additional subjects may be recruited until 125 subjects randomized to endovascular arm achieve CTA-to-recanalization <90 minutes. Inclusion Criteria 1. **Acute ischemic stroke** 2. **Age 18 or greater** 3. Onset (last-seen-well) time to randomization time **< 12 hours**. 4. Disabling stroke defined as a baseline **NIHSS > 5** at the time of randomization. 5. **Pre-stroke (24 hours prior to stroke onset)** independent functional status in activities of daily living with **modified Barthel Index of 90 or greater**. Patients must not be living in a nursing home and must be living fully independently. 6. Non-contrast CT performed or repeated at ESCAPE site 7. **CTA reveals a large artery proximal intracranial occlusion of the ICA (T or L occlusion), M1-MCA or horizontal segment of MCA or M1-MCA equivalent (both or all three M2-MCAs occluded; the occluded vessels are judged to be the dominant arterial supply**

	to the hemisphere) 8. **Endovascular treatment intended to be initiated (groin puncture) within 60 minutes** of CT/CTA with target CTA to first recanalization of 90 minutes. Exclusion Criteria 9. Baseline ESCAPE site NCCT reveals **moderate to large core of early ischemic changes** (subtle or obvious) in the territory of the symptomatic intracranial occlusion by ASPECTS certified physician interpretation: ASPECTS < 6 in symptomatic MCA territory 10. Clinical history, past imaging and clinical judgment suggest that intracranial occlusion is chronic. 11. Baseline ESCAPE site venous weighted CTA reveals **insufficient collaterals in the symptomatic MCA territory** as determined by a collateral certified physician interpretation using MIP images and compared to the contralateral side. 12. **In the judgment of the randomizing physician, based upon the baseline CTA and clinical examination, there is inadequate endovascular access defined by:** a. No femoral pulses b. Severe tortuosity defined as a 360 loop in the ipsilateral relevant 360 cervical carotid c. Severe unfolding of the Ao arch making access to L common carotid artery impossible for L hemisphere stroke d. Severe Ao arch atheroma 13. **Suspected intracranial dissection** as a cause of stroke. 14. **Pregnancy** 15. Subject has a **severe or fatal comorbid illness** that will prevent improvement or follow-up or such that the procedure would not likely benefit the subject. 16. **Subject cannot complete follow-up** due to co-morbid non-fatal illness or is not able to return for follow-up visit at an ESCAPE site or follow-up cannot be achieved by telephone or by a visit by study personnel.

Endovascular Acute Stroke Intervention trial

A Clinical Care Trial

8. Inclusion criteria: (*All answers **MUST be **Yes***)**

Age ≥ 18	Yes	☐	No	☐
NIHSS Score ≥ 8	Yes	☐	No	☐
Onset of symptoms ≤ 5 hours or symptoms-imaging mismatch (If unknown)	Yes	☐	No	☐
Suspected M1 or M2 segment of MCA, ICA or basilar trunk occlusion	Yes	☐	No	☐

9. Exclusion criteria: (*All answer **MUST be **No***)**

Established infarction of symptomatic territory	No	☐	Yes	☐
Hemorrhagic transformation of infarct or hematoma	No	☐	Yes	☐
Poor 3 months prognosis from comorbidities	No	☐	Yes	☐
Consent cannot be obtained	No	☐	Yes	☐

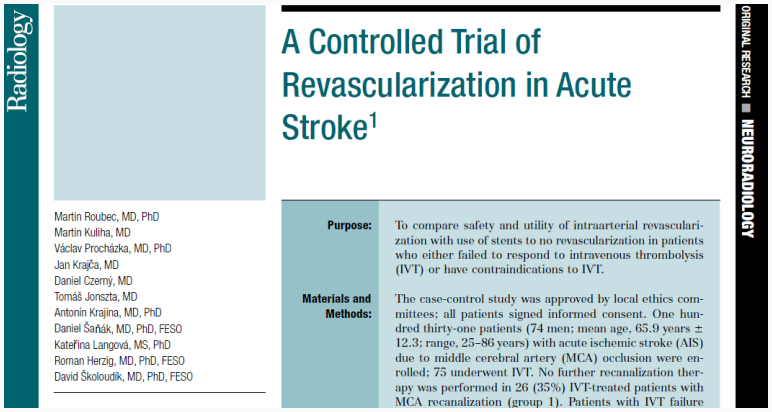
- Escape est plutôt une étude explicative (explanatory)
- Easi est plutôt une étude pragmatique

RCTs can be classified as "explanatory" or "pragmatic." Explanatory RCTs test efficacy in a research setting with highly selected participants and under highly controlled conditions.In contrast, pragmatic RCTs test effectiveness in everyday practice with relatively unselected participants and under flexible conditions.

From: BMJ. 2008 Nov 11;337:a2390. doi: 10.1136/bmj.a2390.
Improving the reporting of pragmatic trials: an extension of the CONSORT statement.
Zwarenstein M, Treweek S, Gagnier JJ, Altman DG, Tunis S, Haynes B, Oxman AD, Moher D; CONSORT group; Pragmatic Trials in Healthcare (Practihc) group.

Tous les patients du Chum sont randomisés dans Escape ou à défaut dans Easi

- Question que l'on peut débattre: patient inéligible au TPA IV surtout lorsqu'il est vu précocement:



Radiology

ORIGINAL RESEARCH ■ NEURORADIOLOGY

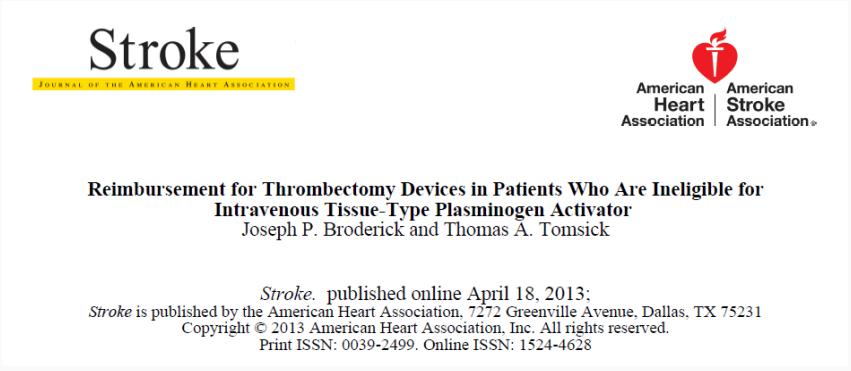
A Controlled Trial of Revascularization in Acute Stroke[1]

Martin Roubec, MD, PhD
Martin Kuliha, MD
Václav Procházka, MD, PhD
Jan Krajča, MD
Daniel Czerný, MD
Tomáš Jonszta, MD
Antonín Krajina, MD, PhD
Daniel Šaňák, MD, PhD, FESO
Kateřina Langová, MS, PhD
Roman Herzig, MD, PhD, FESO
David Školoudík, MD, PhD, FESO

Purpose: To compare safety and utility of intraarterial revascularization with use of stents to no revascularization in patients who either failed to respond to intravenous thrombolysis (IVT) or have contraindications to IVT.

Materials and Methods: The case-control study was approved by local ethics committees; all patients signed informed consent. One hundred thirty-one patients (74 men; mean age, 65.9 years ± 12.3; range, 25–86 years) with acute ischemic stroke (AIS) due to middle cerebral artery (MCA) occlusion were enrolled; 75 underwent IVT. No further recanalization therapy was performed in 26 (35%) IVT-treated patients with MCA recanalization (group 1). Patients with IVT failure

In this controlled trial, intraarterial revascularization with stents was an effective and safe-effective treatment option in patients with acute MCA occlusion with contraindication to IVT or after IVT failure.



Stroke
Journal of the American Heart Association

American Heart Association | American Stroke Association

Reimbursement for Thrombectomy Devices in Patients Who Are Ineligible for Intravenous Tissue-Type Plasminogen Activator

Joseph P. Broderick and Thomas A. Tomsick

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Print ISSN: 0039-2499. Online ISSN: 1524-4628

we strongly recommend that insurance companies continue to reimburse hospitals for t-PA–ineligible patients treated with an endovascular reperfusion therapy within the 4.5-hour time window from stroke onset, whether or not they are part of a randomized treatment trial.

"Es ist nicht das Ziel der Wissenschaft der unendlichen Weisheit
eine Tür zu öffnen, sondern eine Grenze zu setzen dem unendlichen Irrtum".

"The aim of science is not to open the door to infinite wisdom, but to set a limit to infinite error"

- Bertolt Brecht
  - (Galileo)