Traitement endovasculaire des anévrysmes intracrâniens

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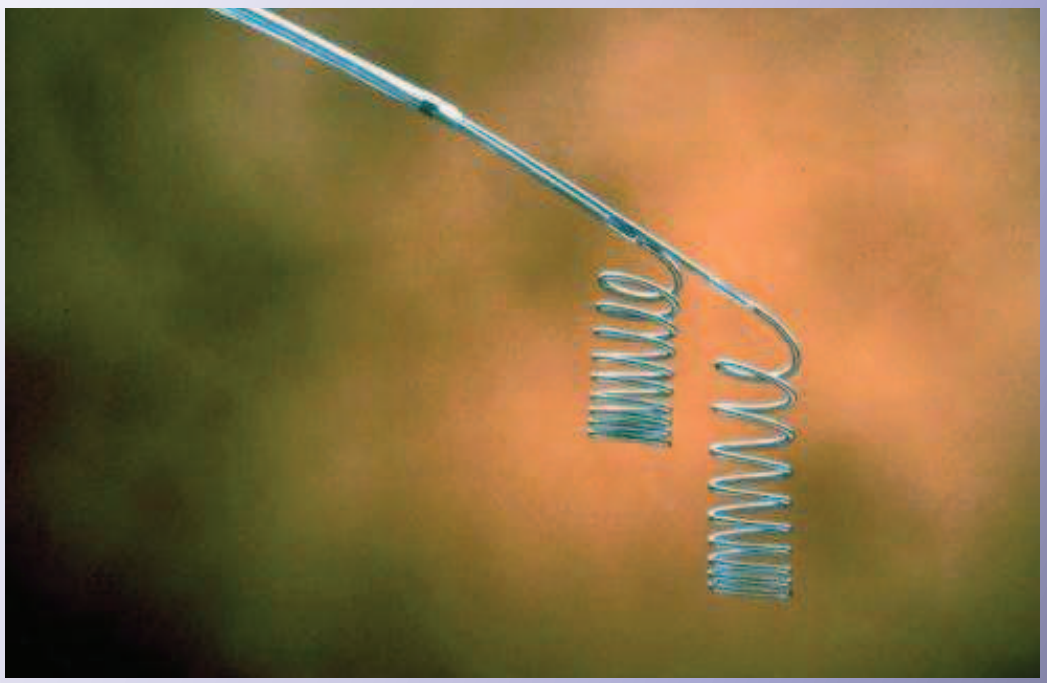
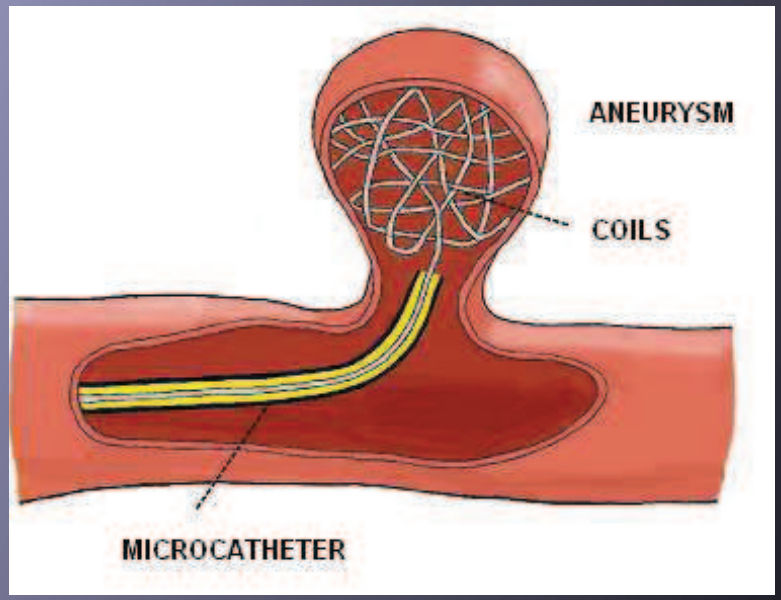
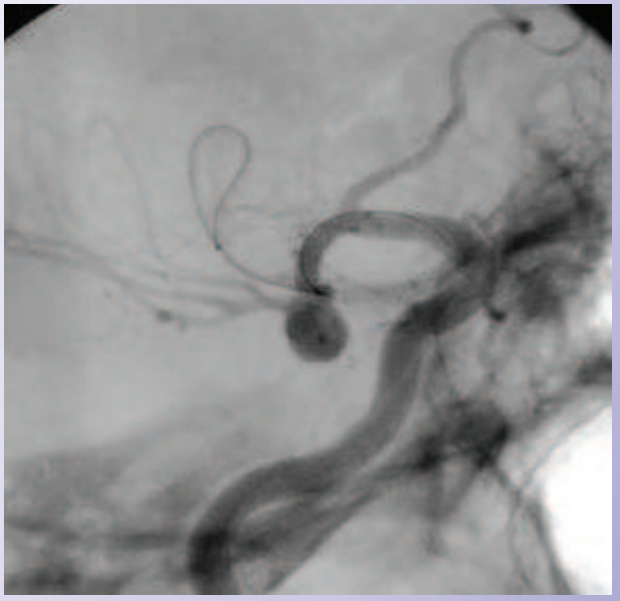
Europharmat 2011

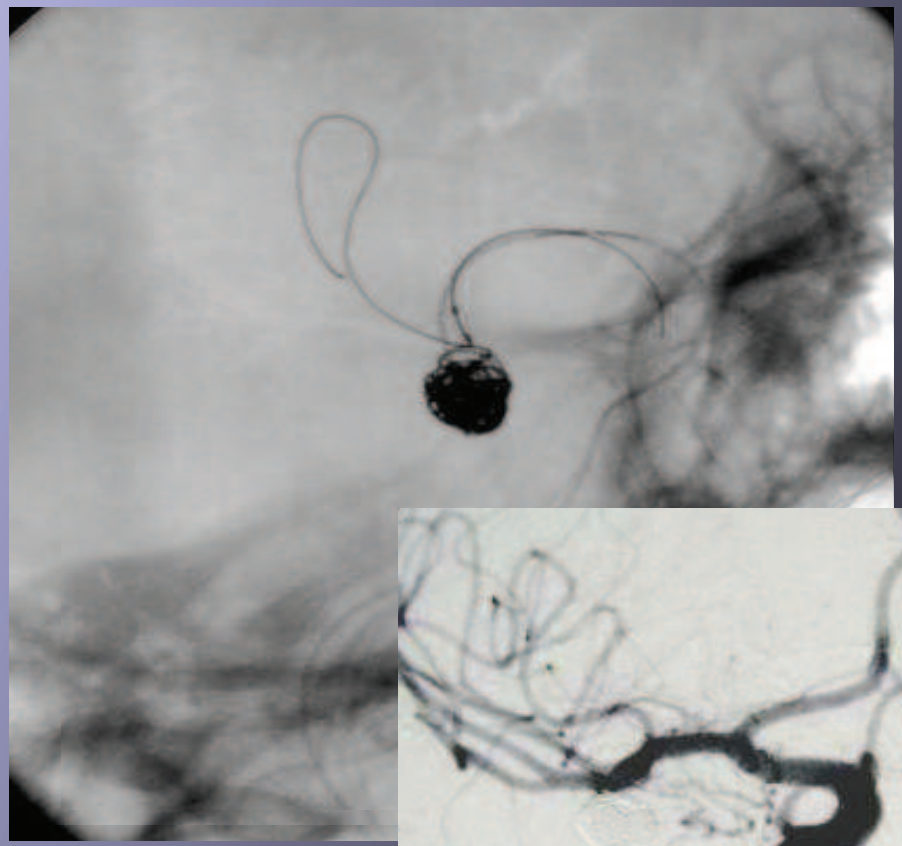
Spires métalliques, détachables

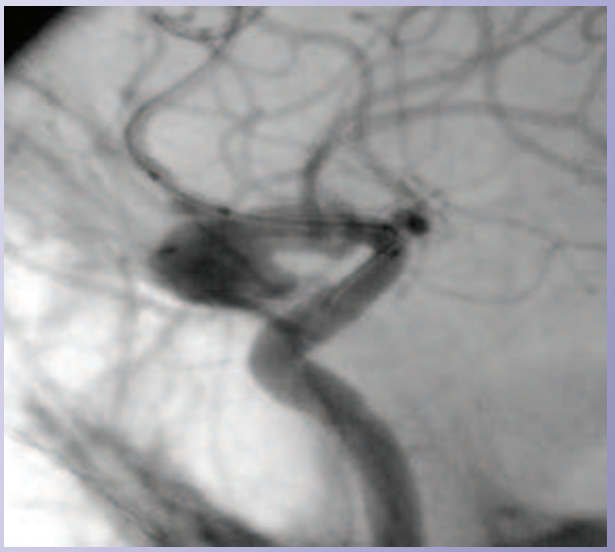


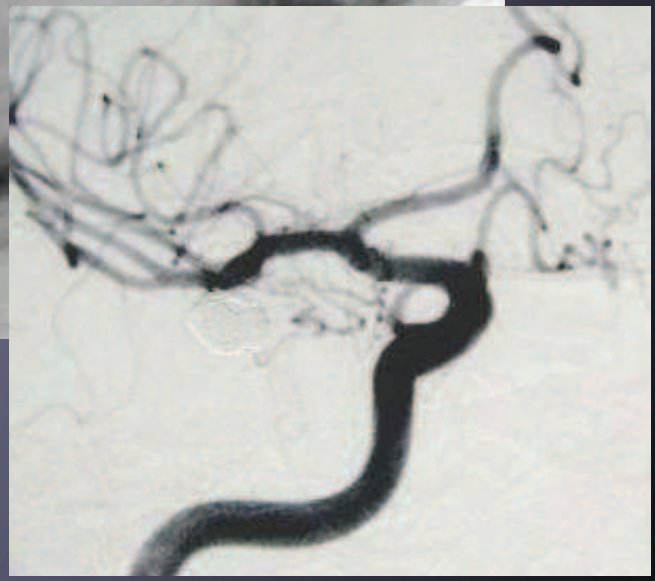


- Anesthésie générale
- Anticoagulation; Bolus d'héparine:80 UI/kg,
- Abord fémoral (complications possibles),
- Cathéter porteur:
  - 6F,
  - microcatheter 14/10/18.









Anévrysmes Rompus: indications

- IMPERATIF *
- EN URGENCE relative
  - Dans les 24 heures….
  - 1% de resaignement chaque jour
  - 66% de mortalité du 2ème épisode

Anévrysmes non Rompus: indications

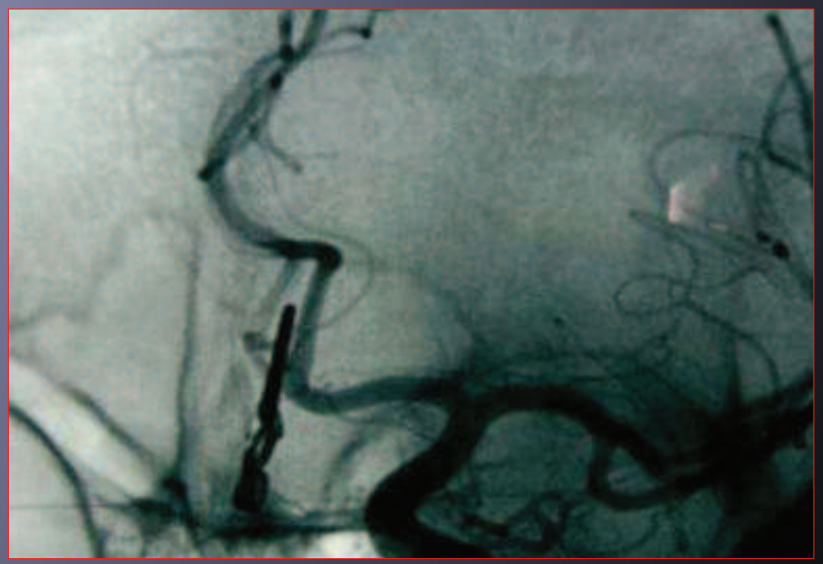
- Equilibre risque/Bénéfice,
- Histoire naturelle vs risque thérapeutique
  - Caractéristiques du patient,
  - Histoire clinique,
  - Caractéristiques de l'anévrysme.

Résultats

- Rompus : ISAT
- Non Rompus: ATENA

International Subarachnoid Aneurysm Trial (ISAT) of neurosurgical clipping versus endovascular coiling in 2143 patients with ruptured intracranial aneurysms: a randomised trial

?



THE LANCET • Vol 360 • October 26, 2002

ISAT

- 190 of 801 (***23·7%***) patients allocated ***endovascular*** treatment were dependent or dead at 1 year compared with 243 of 793 (***30·6%)*** allocated ***neurosurgical*** treatment (p=0·0019)
- *the outcome in terms of survival free of disability at 1 year is significantly better with endovascular coiling*

ATENA: Non rompus

- Étude Française, prospective, multicentrique, observationnelle.
- Morbidité: 1.7%; mortalité: 1.4%

LIMITES du traitement endovasculaire

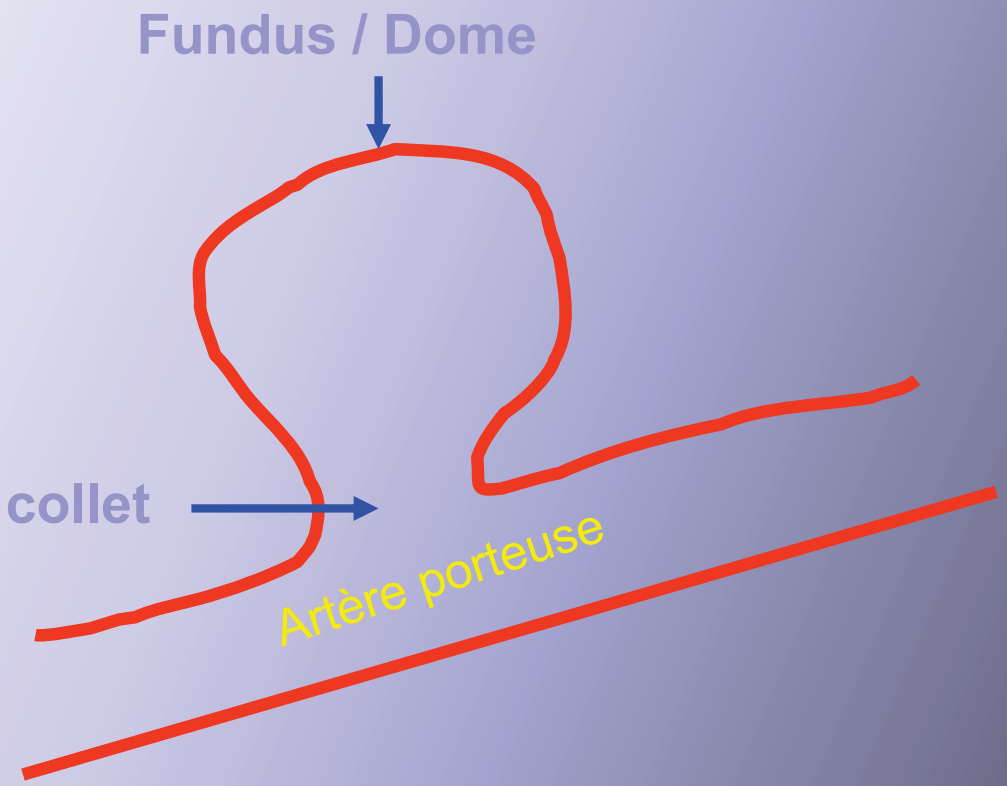
- Évenements thrombo emboliques
- Large collet
- Recanalisation

LIMITES du traitement endovasculaire

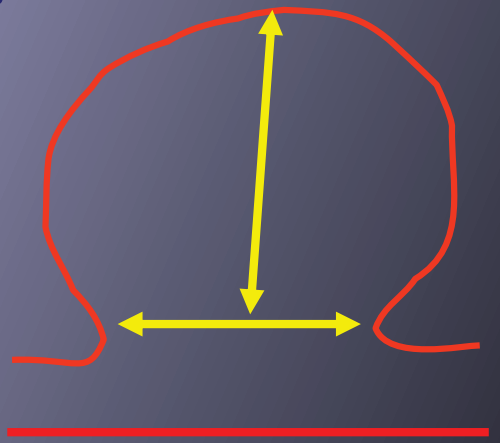
- Evenements thrombo emboliques (ETE)
  - ATENA: 7.1%
  - Avec ou sans manifestations cliniques
- A Lyon:
  - étude d'optimisation de doses:
    - 0, 100mg, 200mg, 500mg d'aspirine IV per procédure
    - 260 patients inclus, objectifs 280
- Projet Européen :
  - ESMINT: IA and antiplatelet therapy

LIMITES
du traitement endovasculaire

Petit collet



LARGE collet

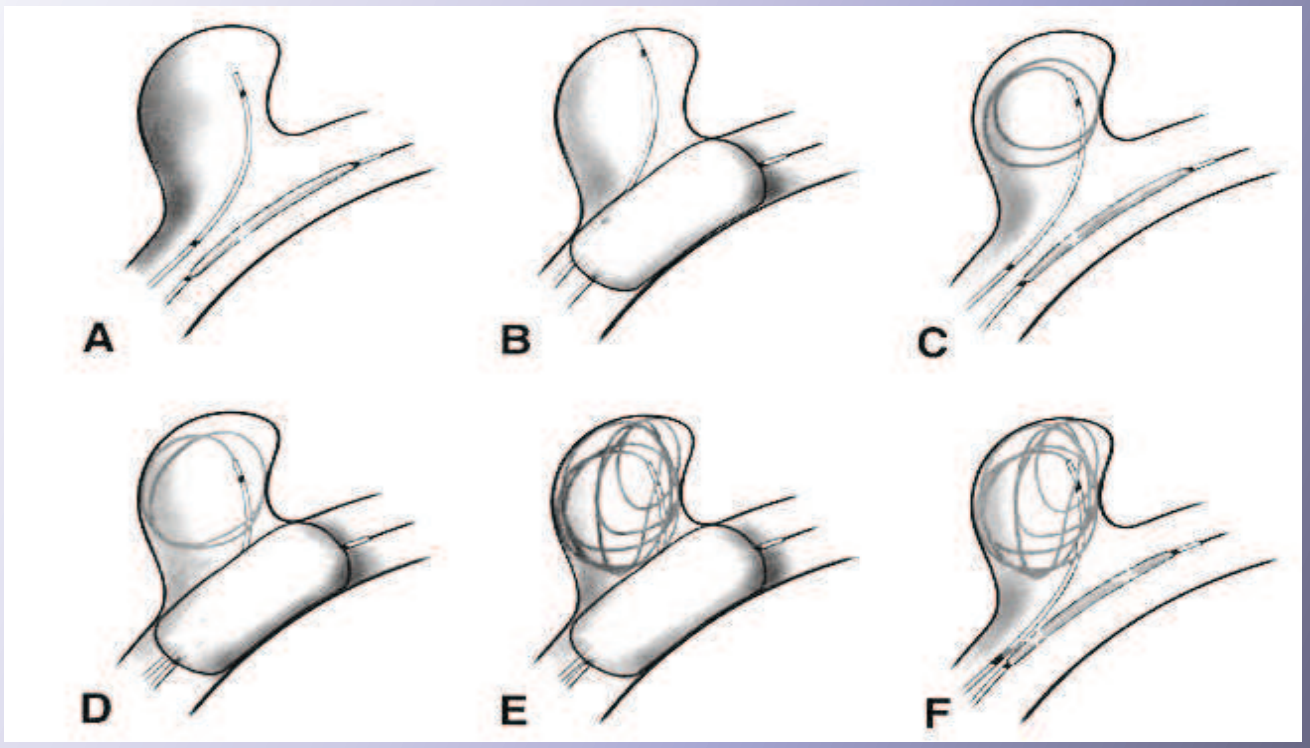


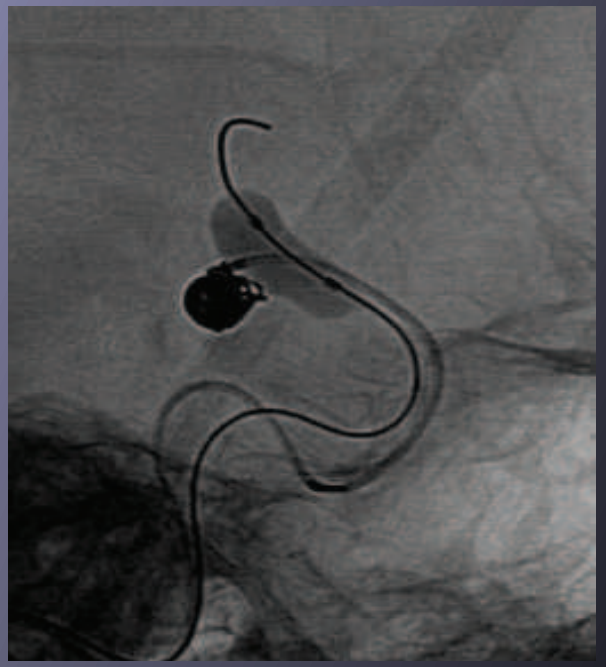
collet ≥ 4mm
collet/dome ≥ 0.7
2/3 mm
7/ 10 mm …

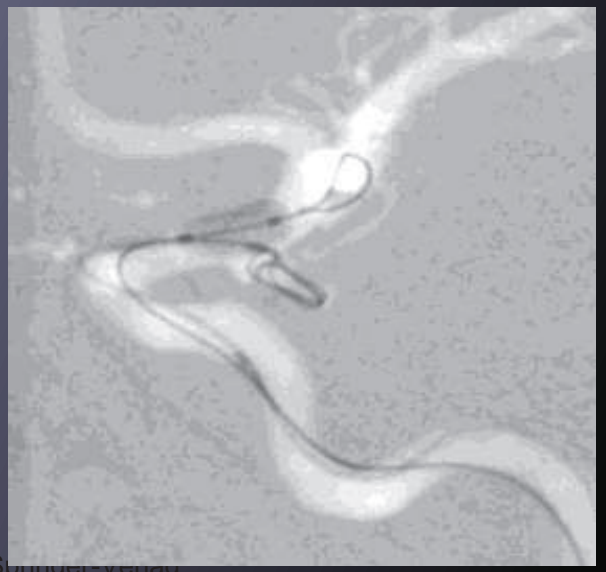
Caractéristiques

- Techniquement difficile voire impossible
  - Protection de l'artère porteuse
    - Ballon
    - Stent
- Taux élevé de recanalisation

Coiling Assisté par Ballon (Remodeling)

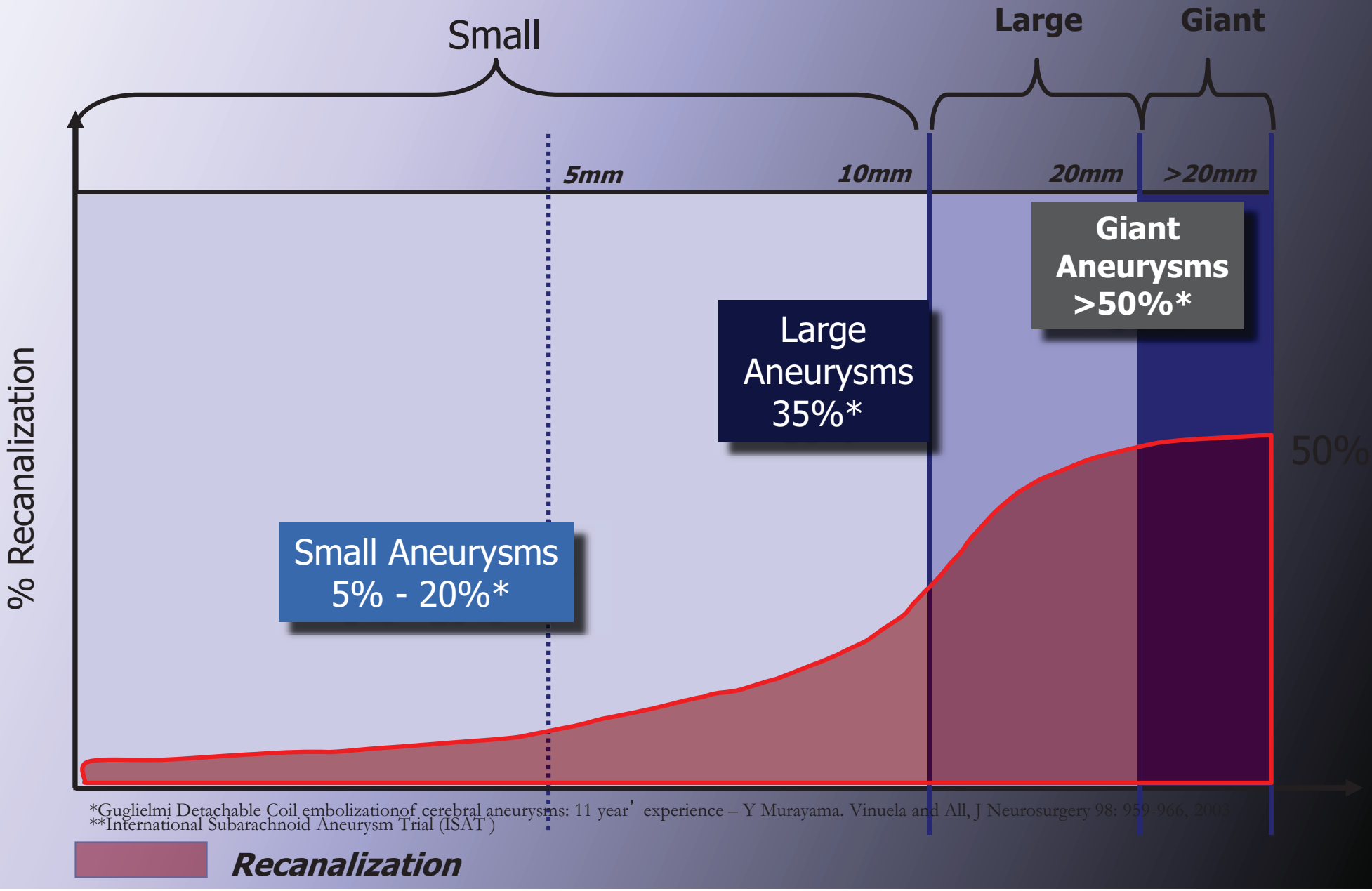






* Source: Morris, P. Interventional and Endovascular Therapy of the nervous System. Springer-Verlag Press, New York, 2002.

Limites - Recanalisation



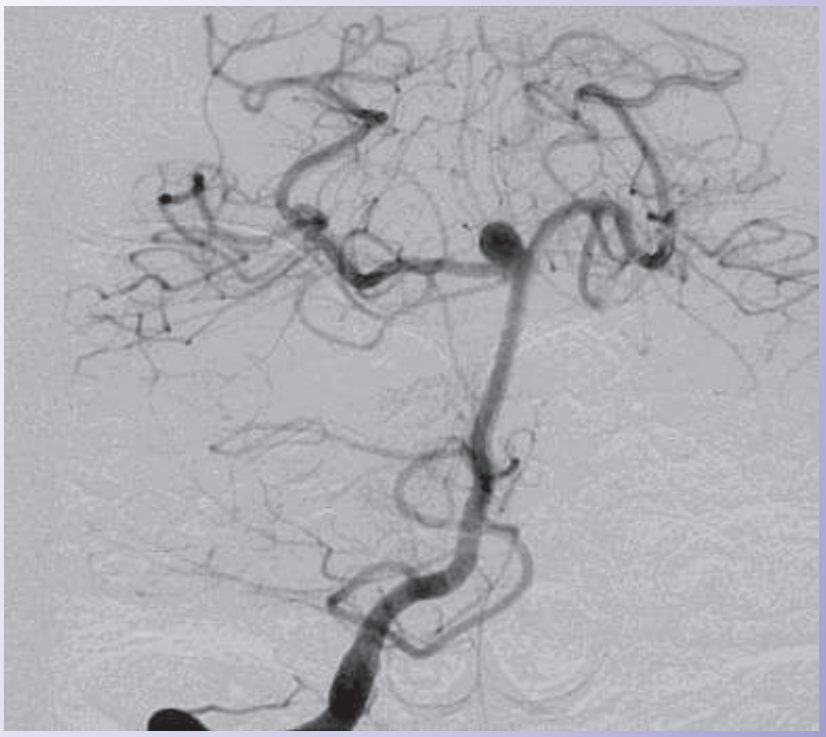
*Guglielmi Detachable Coil embolizationof cerebral aneurysms: 11 year' experience – Y Murayama. Vinuela and All, J Neurosurgery 98: 959-966, 2003
**International Subarachnoid Aneurysm Trial (ISAT)

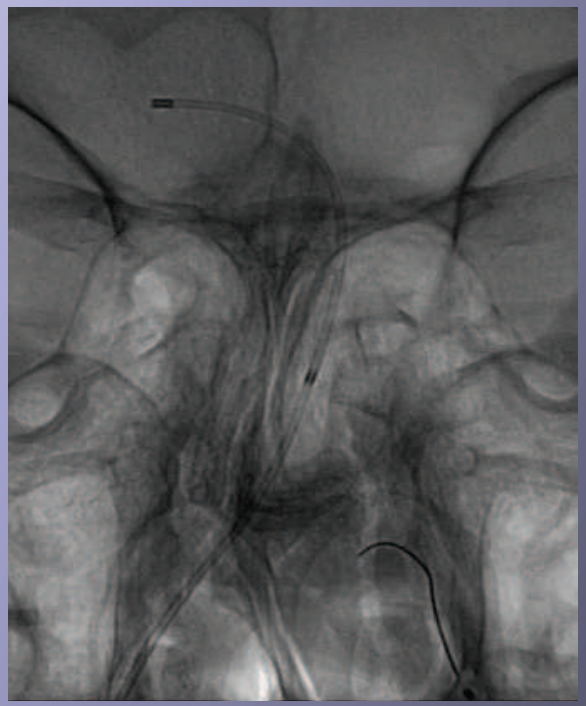
Coiling assisté par stent:

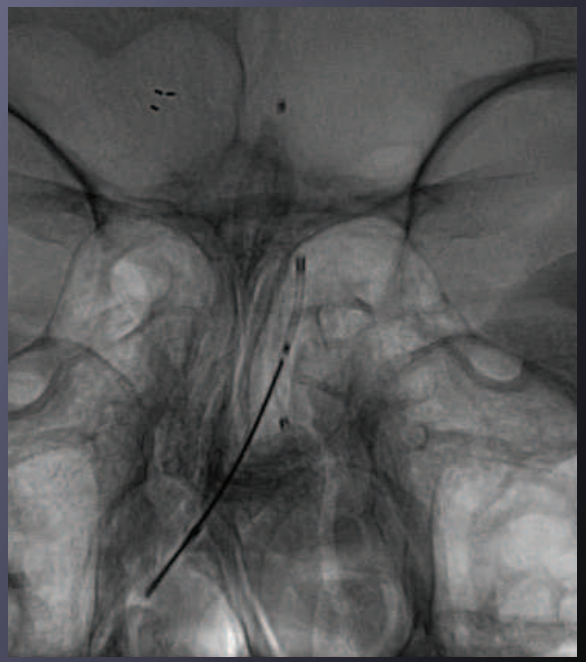
Double anti agrégation requise

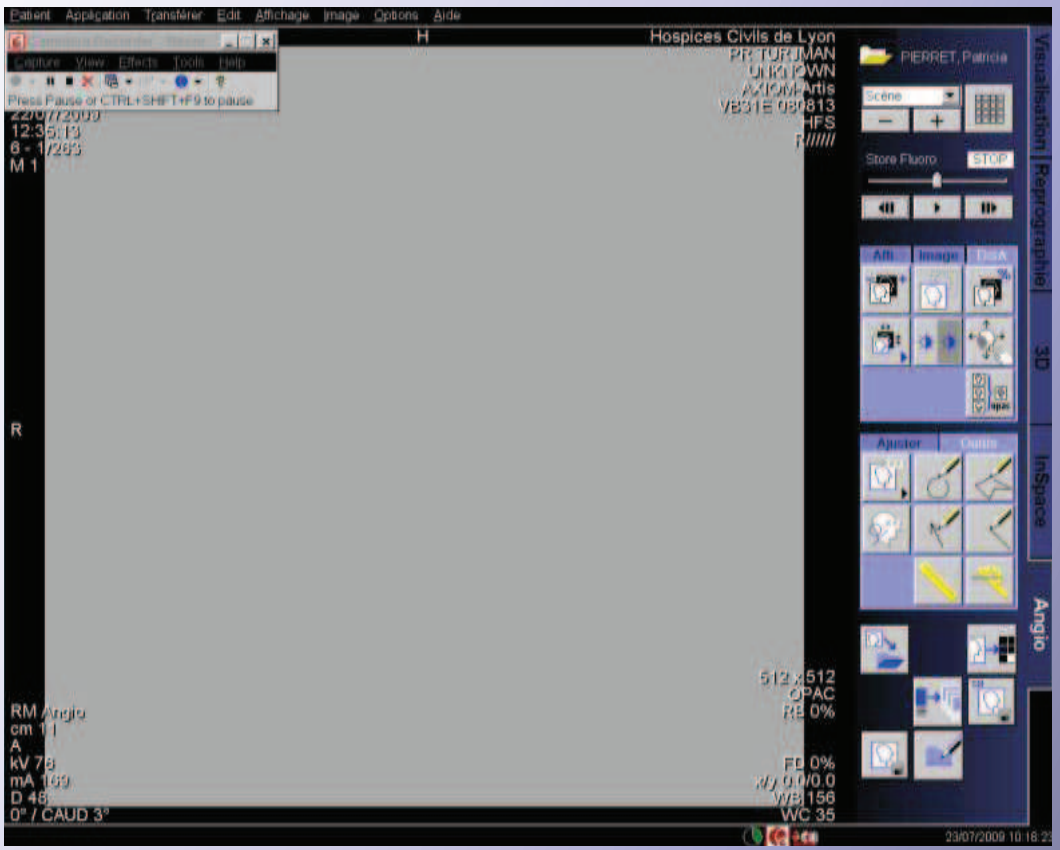
- Protection de l'artère porteuse ?
- Diversion du flux ?
- Diminution de la recanalisation ?
- Limites: Hémorragie méningée (antiagrégation)

Protection de l'artère porteuse ?





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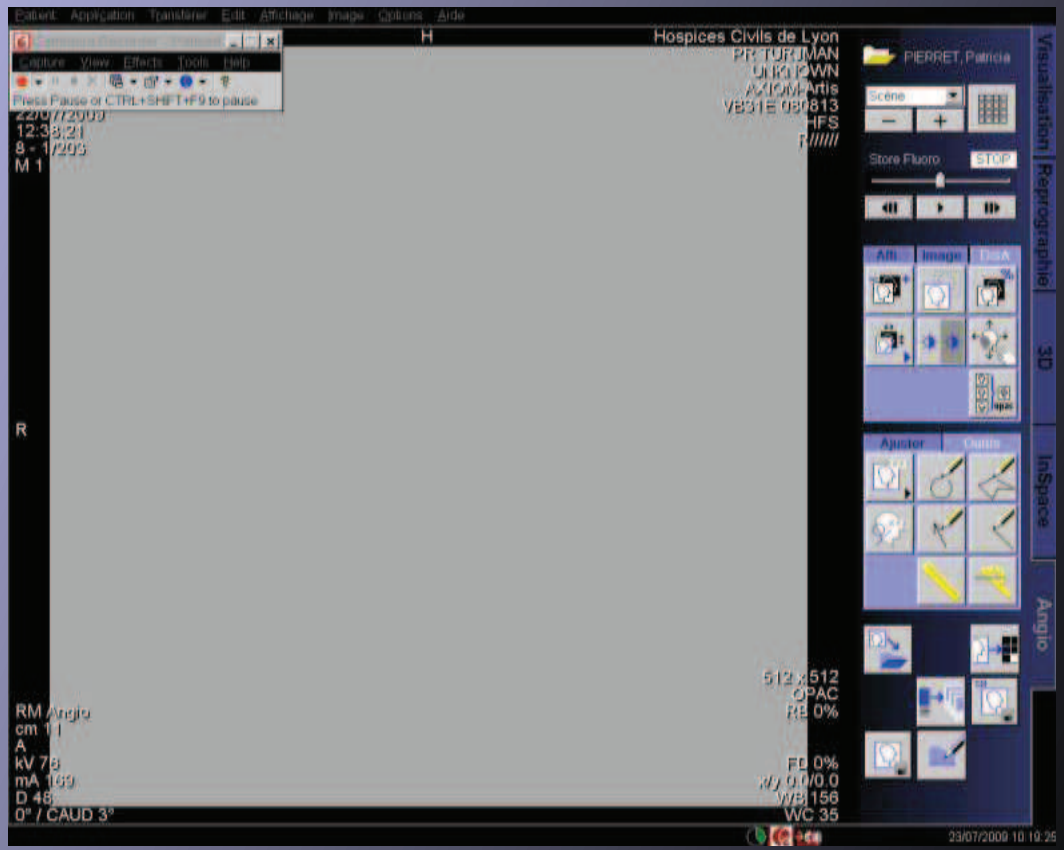
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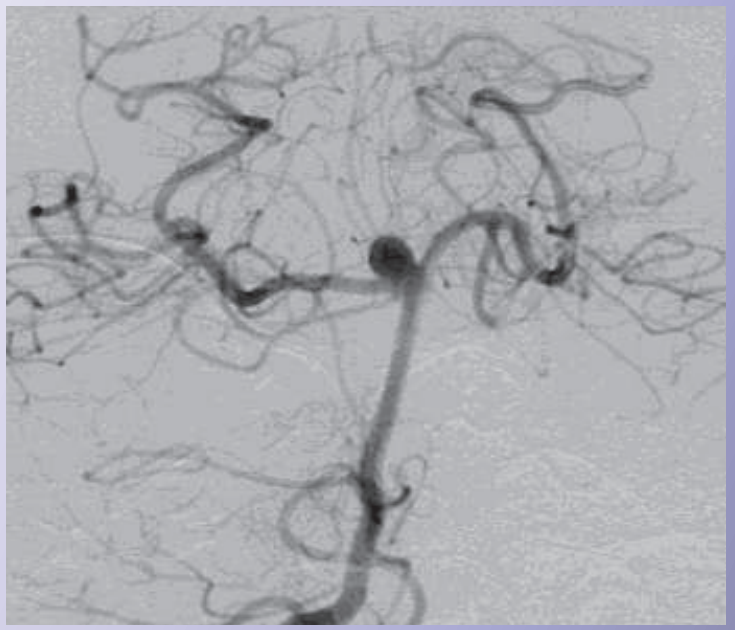
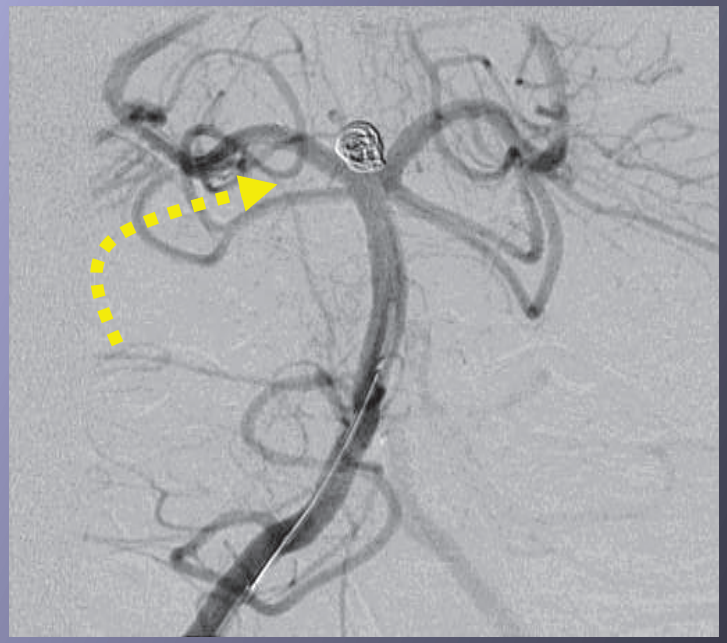
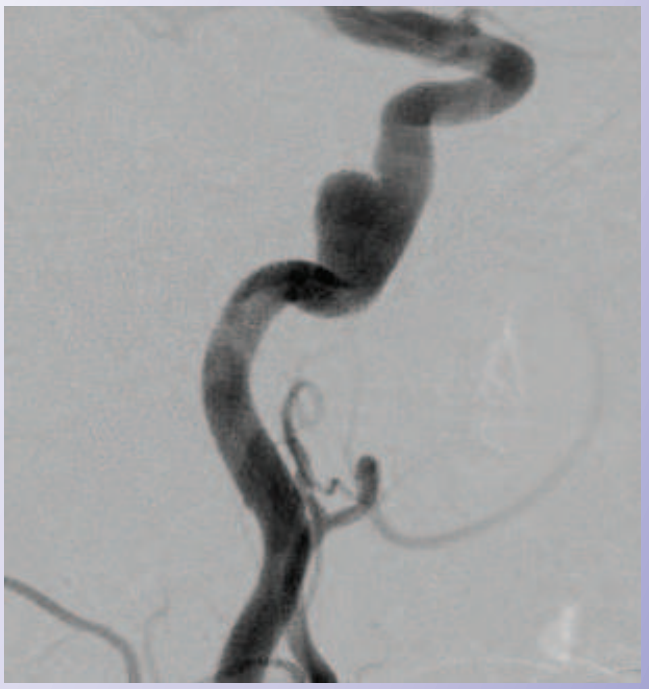
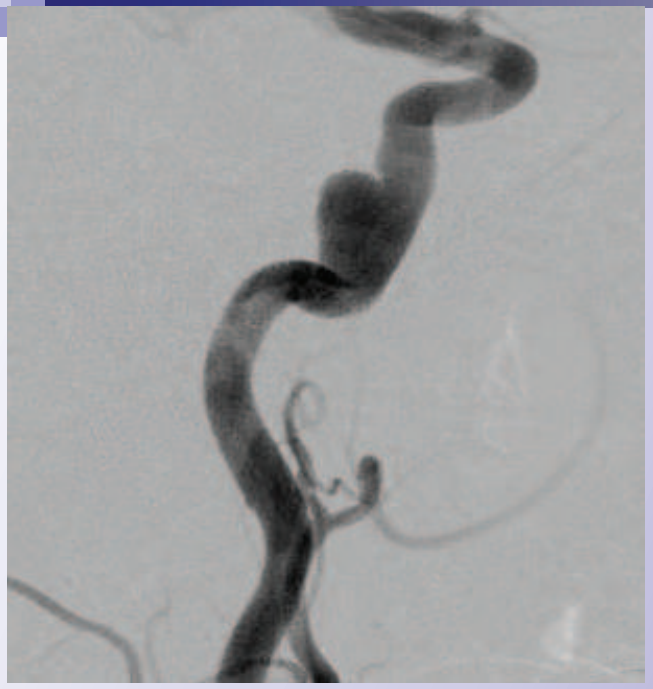




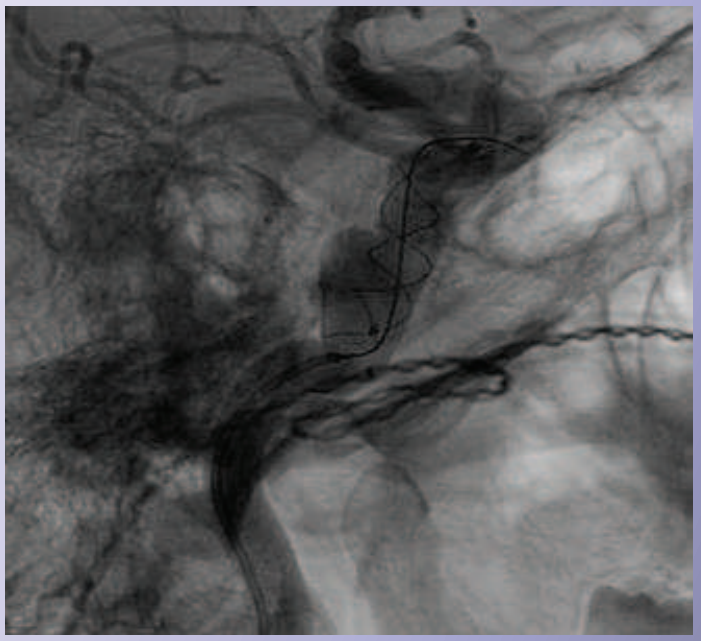
Diversion du flux ?

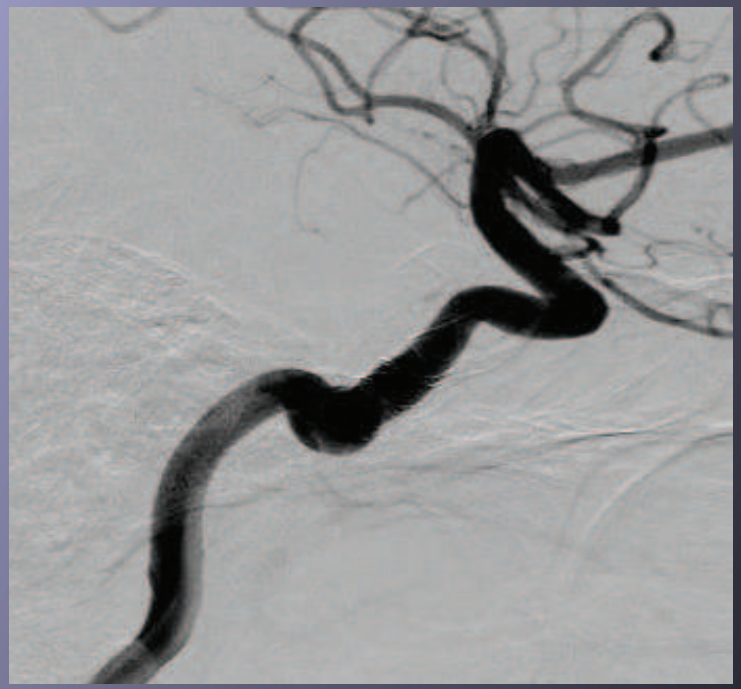


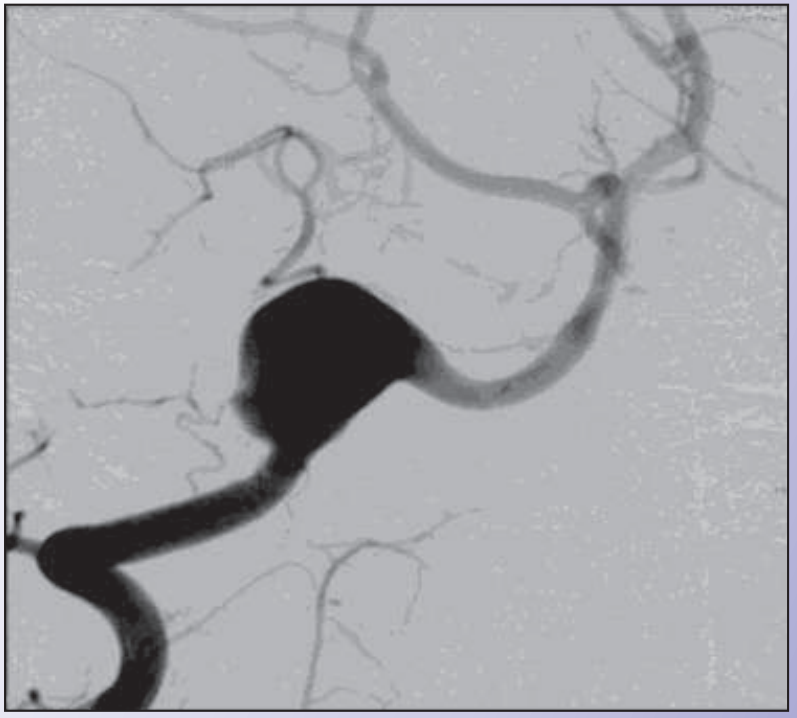
- Anévrysme disséquant de l'ACI
- Vision double

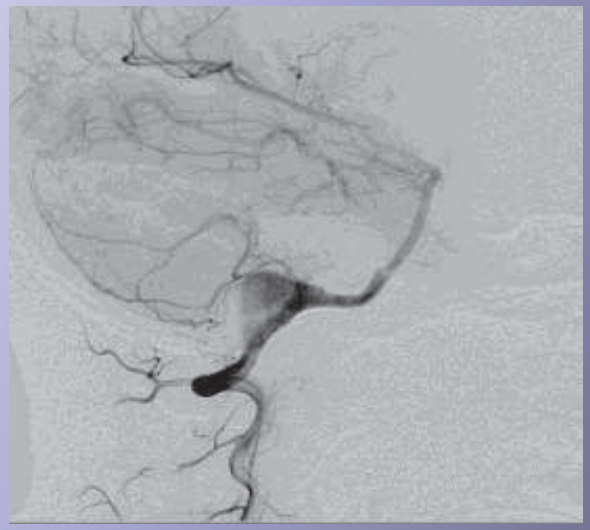


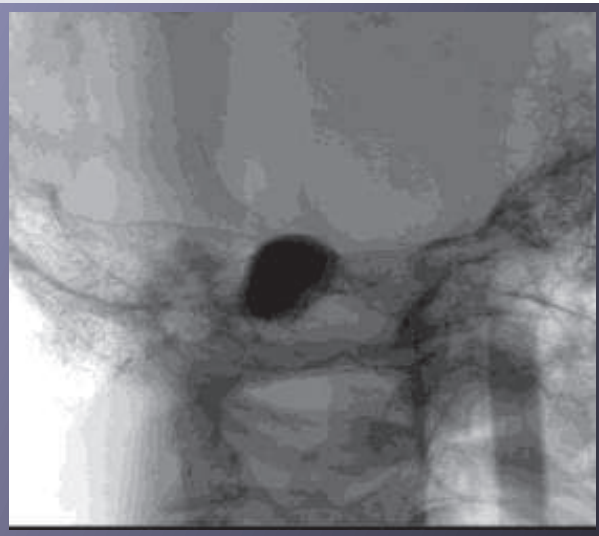
- 2 stents, pas de coil
- 3 mois contrôle angiographique



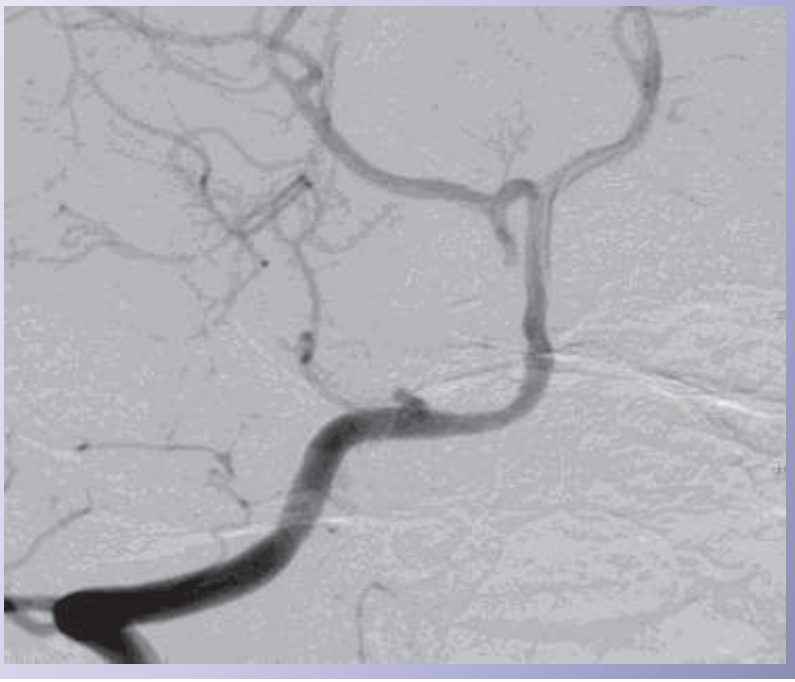


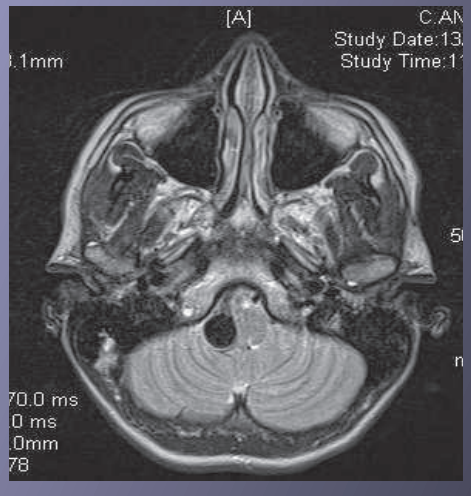


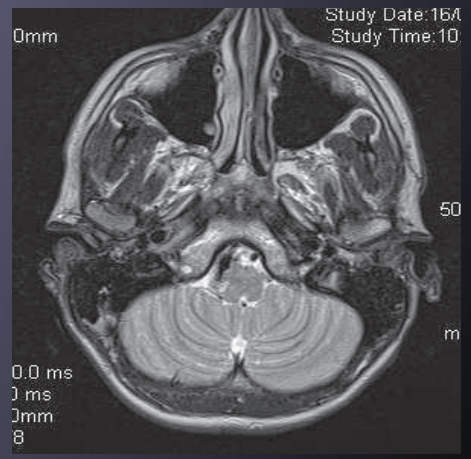




FLOW DIVERSION PIPELINE x 2







PUFS (PED in Uncoilable or failed) is completed:

- Prospective, multicenter, single-arm;
  - ICA, sac >10/ neck > 4 mm, 43% extradural
  - Core-lab
- Number of PEDs?: 349 devices / 108 aneurysms;
- Major ipsilateral stroke and neurologic death: 5.6%,
  - Total number of complications? 44 severe adverse events at 1 year
- Complete aneurysm occlusion
  - 6 months: 82%?
  - 12 months: 86%

EVIDENCE : démarrage oct' 11

STIC: Soutien aux Techniques Innovantes Couteuses

- Française, Financement / ministère (1.1 M €), randomisée, 20 centres;
- IP: F.Turjman
- 130 anévrysmes, 7-15mm, large collet, non rompus, non traités, sans coils, 2 bras:
  - PED vs management standard,
  - Analyse médico-économique
- Objectif primaire:
  - Occlusion angiographique complète à 1 an
- Objectif secondaire: sécurité

A quantitative model of thrombosis in intracranial aneurysms

Scientific Coordinator & Project Leader: Guy Courbebaisse

THROMBUS

http://www.thrombus-vph.eu

Seventh Framework Programme FP7

Theme 3: Information and Communication Technologies
Call FP7-ICT-2009-6 (STREP) - Objective ICT-2009.5.3:
Virtual Physiological Human

February 2011 – January 2014
EC Financial support 2.8 M €

thrombus

Universities: Geneva, Lausanne, Bruxelles, Amsterdam
Labs: CNRS, German Research School,
Companies: EV3, Strokelab, Covalia
Hospitals: Lyons, Lausanne, Charleroi

SEPTIEME PROGRAMME-CADRE

Prise en charge EV des STENOSES IC

WASID (2005)

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Comparison of Warfarin and Aspirin for Symptomatic Intracranial Arterial Stenosis

Marc I. Chimowitz, M.B., Ch.B., Michael J. Lynn, M.S., Harriet Howlett-Smith, R.N., Barney J. Stern, M.D., Vicki S. Hertzberg, Ph.D., Michael R. Frankel, M.D., Steven R. Levine, M.D., Seemant Chaturvedi, M.D., Scott E. Kasner, M.D., Curtis G. Benesch, M.D., Cathy A. Sila, M.D., Tudor G. Jovin, M.D., and Jose G. Romano, M.D., for the Warfarin–Aspirin Symptomatic Intracranial Disease Trial Investigators*

569 patients, ICA : 21 %, MCA : 32 %, Vertebral : 20 %, Basilar : 20 %

(50-99 % stenosis achieved in 87 % of the patients)

WASID

	ASPIRIN	WARFARIN
One-year stroke rate:	12%	11%
Death	4.3	9.7
Major bleeding	3.2	8.3
MI and sudden death	2.9	7.3

- "Warfarin is NOT recommended", Aspirin is as effective and safer

Sous groupe à haut risque ?

High risk subgroup

- Patients:
  - With Severe stenosis (70-99%)
  - Within 30 days prior to enrollment
  - With stroke vs TIA

Have the highest rate of ipsilateral stroke:
22.9% at one year, 25% at 2 years

OUTCOME OF PATIENTS WHO FAILED ANTITHROMBOTIC THERAPY ?

- TIA or stroke attributed to significant ICS
  - 51.7% had a recurrent ischemic event under antithrombotic therapy
  - Median time: 36 days

Thijs, Neurology, 2000

EVT of ICS: WINGSPAN

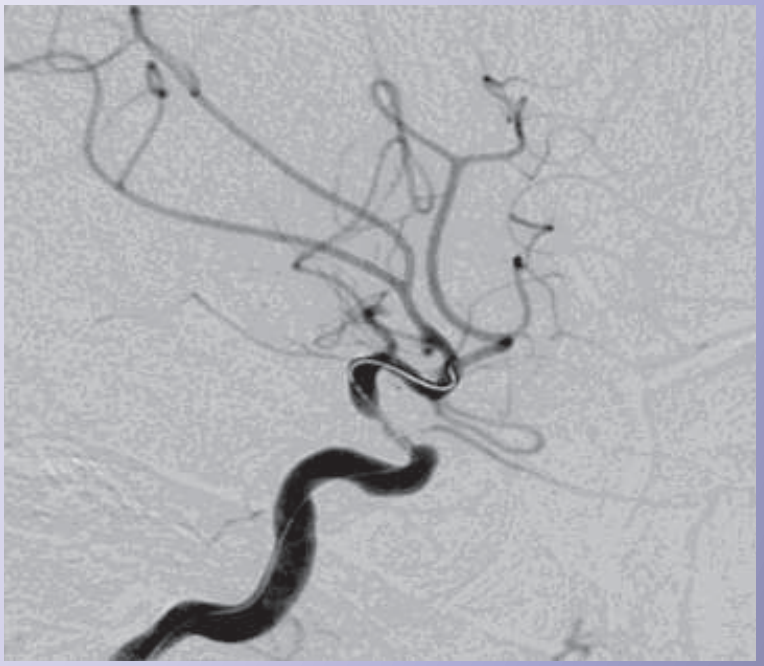
- The best documented device in intracranial stenting…

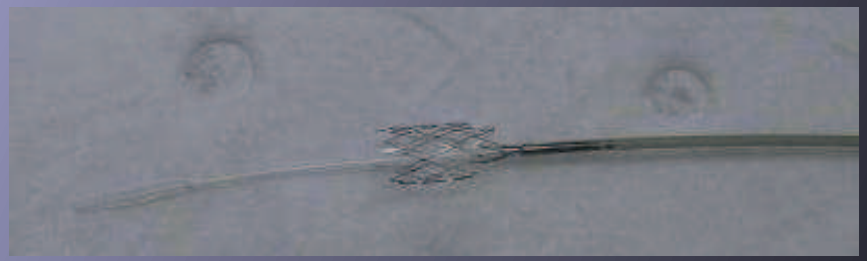
A Systematic Review on Outcome After Stenting for Intracranial Atherosclerosis

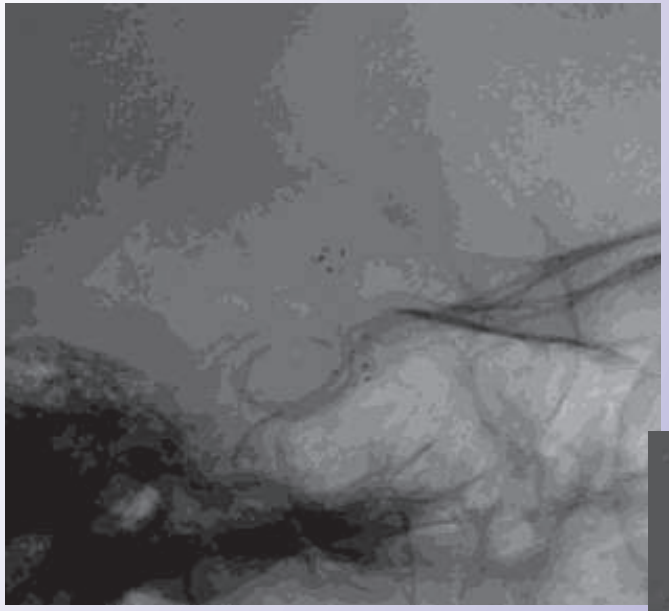
Klaus Gröschel, MD; Sonja Schnaudigel, MD; Sara M. Pilgram, MD; Katrin Wasser, MD; Andreas Kastrup, MD

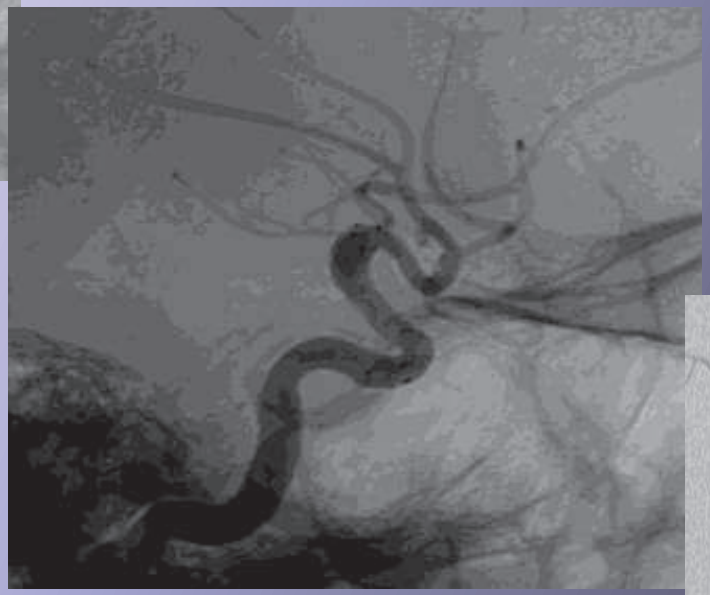
Stroke. 2009;40:e340-e347

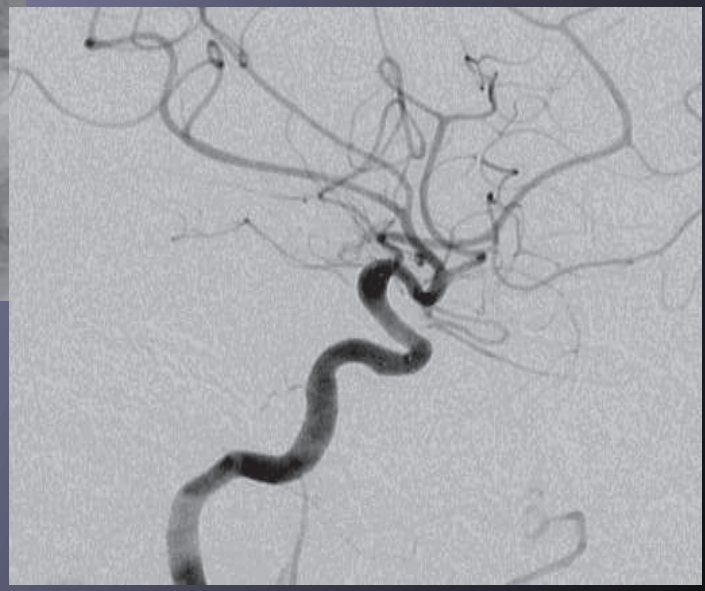
- Procedure: 65 ans,
  2 AIT sous antiagrégation,
  90%





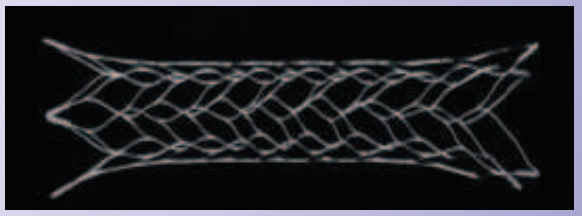






Self Expanding stents

Closed cell design



Enterprise:

Foreshortening
Recapture

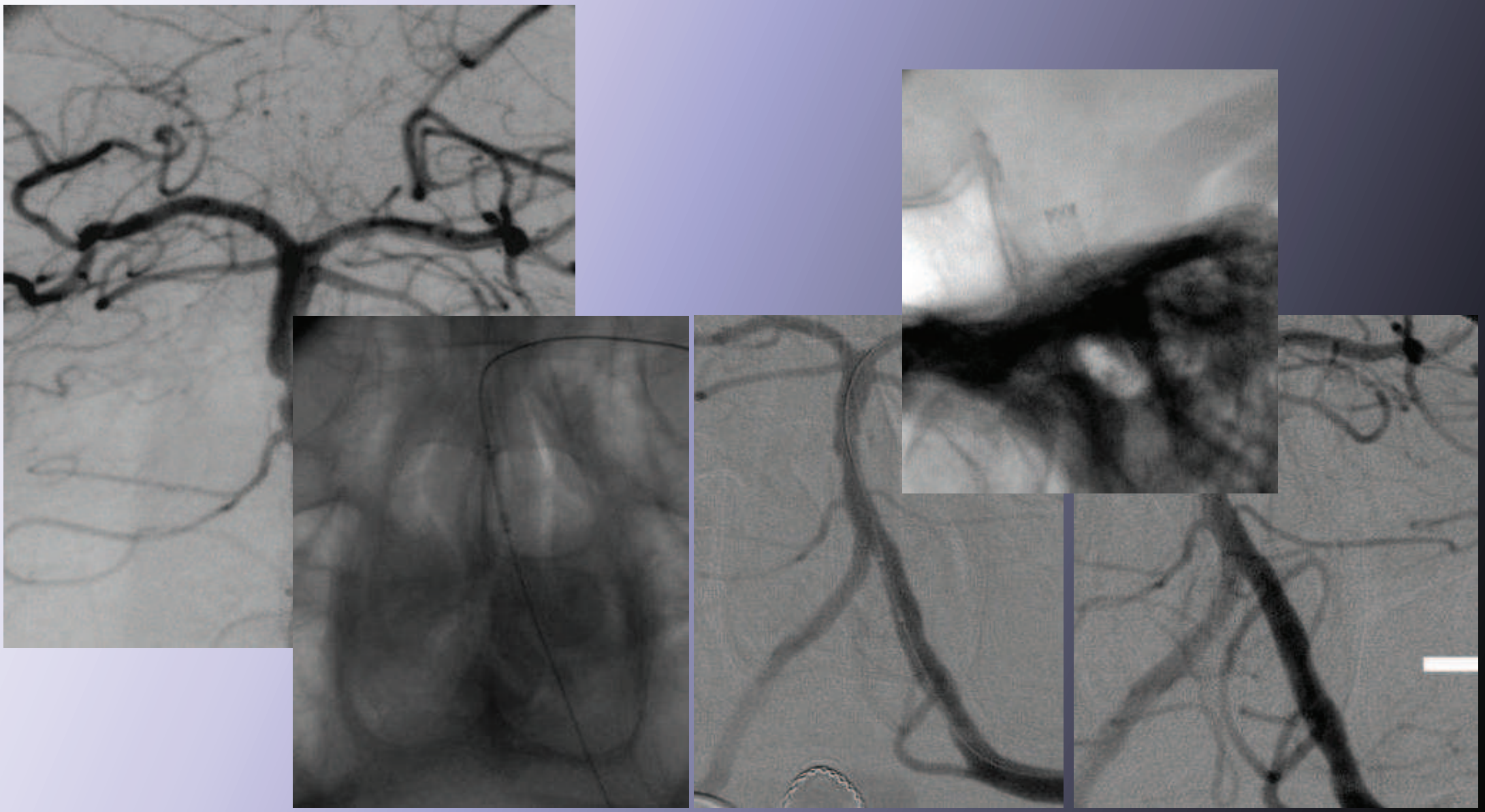
open cell design

Wingspan

Coronary stents: limitations

- Rigidity : poor navigability in ICA siphon
- Doggy bone effect during inflation
- Unique diameter : no adaptation to different arterial calibers
- Dedicated B.E.Stents for ICS: pharos, micrus

Balloon expandable stent: pharos



Percutaneous Transluminal Balloon angioplasty is *not* the solution

- Acute vessel recoil in 40.3%
- Acute occlusion
- Post residual stenosis # 40%
- Dissection (intimal flap) > 20%

Marks, Stroke, 2006; 37, 1016- 1020

Determine whether intensive medical therapy plus intracranial stenting is superior to intensive medical therapy alone for preventing stroke/vascular death

Chimowitz, New Engl J Med, 2011

Résultats:

- Étude interrompue à 451 patients: A 30 jours
  - 14.7 % de complications dans le bras avec stenting
  - 5.8 % avec traitement médical

Que change SAMMPRIS?

- Risque spontané, après le 1er épisode,pas le 2ème sous traitement médical.
  - PEC aggressive des facteurs de risque,
    - X2 antiagrégants, gestion TA et cholestérol,
  - Vraie vie?
- Risque thérapeutique: amélioration technique?
  - JNS, 2011, Costalat et al
  - Multicentrique française, SIC ***réfractaires***
  - 60 patients: 4.8 % de complications (vs 14%) permanentes!!!