Carotid stenting in ICA dissection

Technique, indications and debates at Lariboisière

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Disclosure

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☐ I have the following potential conflicts of interest to report:
  ☐ Consulting
  ☐ Employment in industry
  ☐ Shareholder in a healthcare company
  ☐ Owner of a healthcare company
  ☐ Other(s)

☐ I do not have any potential conflict of interest
Spontaneous ICA dissections (ICAD)

- Different from traumatic ICAD
- Before 60 yrs
- Multiple dissection = 15%
- Local symptoms +/- stroke
Mecanisms of stroke

- Embolism: 85–95%
- Hemodynamic: 5–10%
- Intracranial extension: 0–5%

Lariboisière 2012; Naggara et al. 2012
Treatment of ICAD

• **Current treatment is medical**
  – Antithrombotic (fibrinolytic when eligible)
  – Hemodynamic: bed rest, vascular filling, catecholamine...

• Stenting in that situation is rather easy and safe

• Surgical treatment of ICAD is disappointing and far more difficult than for atherosclerosis because of anatomical limitations (extension up to skull base)
Indications of stenting?

• Acute phase
  – Hemodynamic occlusion?
  – Non-hemodynamic occlusion?
  – Carotido-sylvian tandem occlusion?
  – Intracranial extension?

  Iatrogenic risk is maximal at this phase as we cross with the stent a fresh thrombus

• Chronic phase
  – Cervical carotid aneurysm?
  – Severe stenosis?
Technique of stenting
• **Condition**: to stent a straight dissected arterial segment (not in a curve with excess length)
• Local anesthesia
• First navigation with a microcatheter to get into the normal channel / curve guide
• Exchange manoeuver with 300 cm 0.014
• Long closed-cell stent (Carotid wall stent 7-40)
• Open-cell stent in intrapetrous junction ?
• Balloon occlusion catheter in acute phase ?
1- Hemodynamic ICAD

- Persistent/recurrent symptoms despite hemodynamic treatment
- Severe hemodynamic impairment in transcranial doppler
- Bilateral carotid occlusion / Incompetent circle of Willis
- $\rightarrow$ Risk of growing infarct $=$ ? ($> 10\%$ in our experience)
- $\rightarrow$ Risk of stenting $=$ ? ($<< 10\%$ in our experience)
2- Non hemodynamic ICAD

- Primary / recurrent stroke with antithrombotic treatment = 2%
- Risk of ICA stenting ???

Debette et al. Lancet Neurology 2009
3- Sylvian embolism

- As for any kind of acute cerebral arterial occlusion, the crucial point here is the onset of revascularization (before 6 hours) that is now performed with “stentriever”

- Stenting of the dissection is performed either to give access to intracranial arteries or to prevent recurrent embolism at the end of the intervention or to prevent a hemodynamic situation
Right hemiplegia & aphasia seen at 4 hours after onset
Stenting to get access to cerebral arteries
4. Chronic ICAD

- Benign in the vast majority of cases
- Stroke risk is negligible when compared to the acute phase because lesion are scared
- Stenting has a preventive purpose in very selected cases of persisting cervical aneurysm or tight stenosis

Touzé et al. *Stroke* 2001
However, large aneurysm can embolize to brain
Simple stenting can solve the embolic risk by covering the neck.
One year control angio:
complete repair of the artery
Same when the two ICA are dissected…

- Purpose stenting: to fix one of the two ICA in this young woman
To summarize

• **No evidence of benefit of stenting**

• **Stenting is safely performed**
  – 16/10 patients at the acute/chronic phase at Lariboisiere hospital (no embolism / no stent occlusion / no puncture complication)
  – Feasibility studies in literature ++

• **Eligible patients should be considered:**
  – In high risk of stroke despite the medical treatment
  – In low risk of complication (clinical/anatomical aspect)