Acute Stroke

Level of arterial occlusion

- Angio CT
- Perfusion CT
- RMN

Perfusion CT

Treatment of acute stroke (i.v)

Eligible patients who receive intravenous (IV) tissue plasminogen activator (tPA) in the first 4.5 / 6 hours after symptom onset have a much better chance of a favorable outcome.

It remains the only proven effective intervention for acute ischemic stroke (level 1, Class A American Heart Association [AHA] recommendation).
Emergency CEA

Early experience

- Anecdotal cases
- No selection = bad results

Urgent treatment

Exclusion criteria
- major stroke,
- cerebral ischemic lesion greater than 2.5 cm at CT
- loss of consciousness, signs of intracranial hemorrhage.

EARLY CAROTID REvascularization

The real goal of early intervention is to stop the plaque embolization from a vulnerable lesion at the carotid bifurcation.

Should we remove this plaque? or can we stent it?

“Time is brain”

The pooled analyses from ECST and NASCET*: “the benefit from CEA is maximal in symptomatic patients operated on within 2 weeks of the index event”

But most specialists involved in stroke care are reluctant to undertake carotid revascularization immediately after the onset of stroke for fear that hemorrhagic transformation of the cerebral infarct will occur.

Risk Score

Siena Carotid Artery Stenting Score: A Risk Modelling Study for Individual Patients

Carlo Setacci, Emiliano Chisci, Francesco Setacci, Francesca Iacopini, Gianmarco de Omato and Alessandro Rossi

Deferred urgency carotid artery stenting in symptomatic patients: clinical lessons and biomarker patterns from a prospective registry.

Brain ischemia biomarkers
- Pregnancy – associated protein A (PAPP-A)
- High sensitivity C – Reactive protein (hs-CRP)
- Interleukin 6

Does Free Cell Area Influence the Outcome in Carotid Artery Stenting?
M. Bosiers, G. de Donato, K. Delonse, J. Verbist, P. Peeters, F. Castriti, A. Cremonesi and C. Setacci

European Journal of Vascular & Endovascular Surgery

Carotid Artery Stenting in Recently Symptomatic Patients: A Single Center Experience
Carlo Setacci, Gianmarco de Donato, Emiliano Chisci, and Francesco Setacci.
Annals of Vascular Surgery
Volume 24, Issue 4, May 2010, Pages 474-479
Cerebral proximal protection

**Strengths & Weaknesses**

- Complete brain protection all the time
- Tight, soft plaques, tortuous ICA (no landing zone required)
- Any 0.014" guidewire may be used to cross the lesion

**Weaknesses**

- Blood flow interruption
- True intolerance rare: 0.3%-0.6%
- No angio guidance
- Use landmarks (bones, teeth, etc)
- Potential ECA/CCA spasm/dissection
- Do not overinflate the balloons
- Contraindicated in CCA+ICA or ECA+ICA lesions
  - CCA+ICA: Minimize the distance between lesions.
  - ECA+ICA: If wire crosses, then OK.
- May be difficult to position in complex anatomy
  - Choose an alternative vascular approach
  - Modify the technique (NO.1A technique)
- Large introducer size (8-9F)

Currently used in 15-20% of CAS procedures.

New carotid stent design

- Terumo - RoadSaver
- Gore – Mesh carotid stent
- Inspire – C-Guard

New carotid stent design

- Terumo RoadSaver: Double layer micromesh nitinol design
- Inspire C-Guard: nitinol stent wrapped with an expandable, MicroNet (PET mesh)

New Generation, Mesh-Covered Stents

**Outcomes**

- No procedural neurological complications occurred (TIA/stroke/death 0% at 30 days).
- Slice-based analysis
  - Compared with conventional stents, the incidence of plaque prolapse was lower
How to choose in emergency
CAS vs CEA

**CAS**
- Is an option in cases:
  - Pts with severe comorbidities
  - Pts with anatomic complex situations
  - CAS is indicated in case of tandem intracranial lesion but requires correct expertise & plaque evaluation (DUS/IVUS/OCT) & correct stent & cerebral protection.

**CEA**
- Is still the gold standard

“time is brain” ...and the most effective management is the quickest one, according to a correct selection that allows recognition of those who can really take advantage from early treatment and those, on the other hand, suffer severe irreversible neurological deficit and don’t benefit from early revascularization.

CONCLUSIONS (I)

CONCLUSIONS (II)

Appropriate knowledge of
- anatomy,
- anomalies,
- equipment

With growing experience and the use of dedicated CAS technology, CAS can now be performed safely and efficiently by skilled operators even in urgent cases.