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New Developments In The Treatment of Acute Strokes:
Tips, Tricks, Precaution and Balloon Tipped Guiding Catheters
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No conflict of interest in connection with this presentation.

Tips
• selection of patients
  – viable brain tissue
  – large penumbra
• technique
  – devices for TE
  – access to the lesion
  – thrombus removal

Tips - What is the main problem with acute stroke?
1.9 Mill. neurocytes die every minute!
Too late!

Tips - CTA and CTP deliver essential information in 10 min
Perfusion study more important than time window

Tips - What we must achieve!

- patient in the hospital after event detection < 1 hour
- from hospital admission to angio table < 30 minute including CT, CTA and CTP
Will be impossible in rural areas.
Tricks - We have now efficient devices

- **stent retrievers** catch and pull out the clot
- **balloon tipped catheters** blocks orthograde flow
- **suction** prevents embolization of clot fragments

Tricks - Numerous Technical Devices

- MERCY retriever
- Penumbra suction catheter & separator
- Catch TE system self-expanding basket
- Phenox clot retriever wire brush
- Phenox stent retriever self-expanding stent
- Alligator retriever clawlike four-pronged device
- Trevo stent retriever stent basket
- Solitaire stent retriever stent basket
- Revive stent retriever stent basket

Tricks - Numerous Stent Retrievers

- Solitaire AB y FR
- Trevo / Trevo Pro
- IRIIS Capture LP
- IRIIS Option
- RECOVER

You don’t need them all - Become familiar with one or two!

Tricks - Our Technique...

- Soft tipped guidewire
- Microcatheter
- Balloon tipped catheter in ICA
- Sheath in CCA

Tricks - Balloon tipped guiding catheter

- Balloon catheter is placed in the ICA
- Exception: ICA occlusion

Precaution - Keep in mind...

- Cerebral arteries are thin walled
- Passage of the thrombus must be done gently
- The wire can go in a tiny sidebranch → perforation
Precaution - Keep in mind ...

- Guide wire and micro-catheter cross the occlusion between thrombus and vessel wall ...

Precautions - Keep in mind ...

- Guide wire and micro-catheter may go into a side branch and perforate the artery

Trick ...

- Form a loop of the wire tip to prevent entrance into side branches

Trick - Stent in place ...

- Be patient after deployment of the stent retriever - wait 3-5 min
- The stent struts need that time to dig into the thrombus

Trick - Thrombus extraction ...

- Block the ICA
- Start suction - underpressure!
- Pull slowly

Precaution - Balloon tipped guiding catheter

- Be certain that the thrombus is completely pulled out of the catheter!
- If part of the thrombus is lost in the catheter take it out and flush it.
M2 Occlusion - Successful TE 40 min after arrival at the hospital

Balloon tipped guiding catheter in ICA and suction with a 50 ml syringe

A.C.S. L. E73 Solitaire® 4 mm

Carotid Occlusion - Which type?

Carotid T occlusion
No cross-flow

Carotid bifurcational disease
More often cross-flow preserved

Thrombus in ICA and ... ?

TE with blocked CCA + CAS

Thrombus in ICA and ... ?

M. O. m=64

Principle of Successful TE

TE = block + suck + retrieve

Tips - What else do we do?

- Bridging thrombolysis as soon as cerebral hemorrhage is ruled out
- Heparin 5,000 to 10,000 IE
- Antiplatelet drugs after successful TE for at least 1 month

Mechanical Treatment of Acute Stroke

Be familiar with tools & technique, but organization is of utmost importance!