The Current Status Of Stroke Thrombectomy

What's New With Devices And Indications: Technical Tips

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Dislosures

- Advisor: Boston Scientific, Medtronic, NEVRO, Viz AI

- Stroke related to large vessel occlusion is a leading cause of disability and death worldwide

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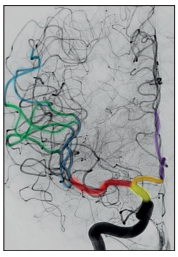
- The techniques used to treat LVO have evolved from use of a stent retriever to contact aspiration or combined techniques
- **Despite successful endovascular therapy** (reperfusion nearly 90%),
  more than half of patients with LVO do not regain functional independence

Is it….

- Patient selection?
- The lack of advanced imaging??
- Technically are we still a generation away???
- Poor efficiency????

Location and branching patterns matter



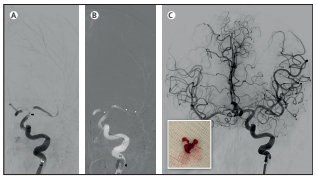


Figure 2: **Acute large vessel occlusion stroke in a patient with sudden right hemiplegia and aphasia**
(A) Cerebral angiogram of the left internal carotid artery showing acute occlusion of the left carotid terminus extending to the A1 and M1 segments of the anterior and middle cerebral arteries (black arrow). (B) Mechanical thrombectomy was performed using a stent retriever (white arrowheads) and balloon guide catheter (black arrowhead). (C) Carotid angiogram after mechanical thrombectomy with complete reperfusion of the left internal carotid artery territory. The retrieved clot is also included.

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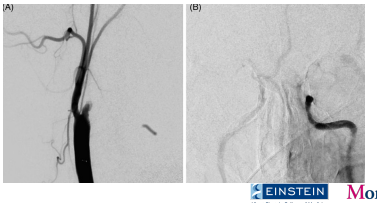
Tandem Lesions

- Carotid occlusion
- MCA Occlusion



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BRITISH JOURNAL OF NEUROSURGERY, 2017

Varied approaches…

Original Investigation | Neurology

Functional and Safety Outcomes of Carotid Artery Stenting and Mechanical Thrombectomy for Large Vessel Occlusion Ischemic Stroke With Tandem Lesions

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Figure 1. Flowchart of the Study Patients

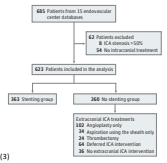
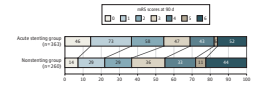


Figure 2. Distribution of 90-Day Modified Rankin Scale (mRS) Score Among Patients With Carotid Artery Stenting and Nonstenting



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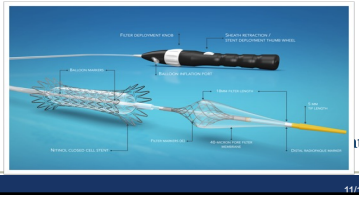
But Time is Brain

- Decision making takes time…
- Use of different devices takes time (balloon, protections device, stent…)
- Neuroguard IEP 3-in-1 Carotid Stent and Post-Dilation Balloon System with Integrated Embolic Protection



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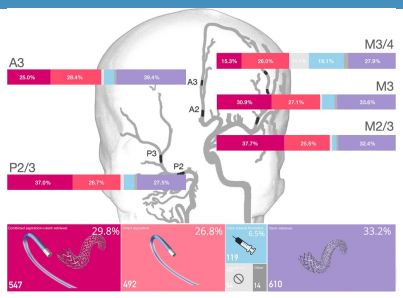
Distal smaller arteries have unique challenges

First-line treatment approach by MeVO occlusion site. Overall device usage and proportion of the respondents that chose each treatment approach in each specific vessel is shown in percentages.



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Adjunctive Therapies are the Next Generation

- **Neuroprotective agents** act by slowing or freezing infarct growth, antiapoptosis, anti-inflammatory effect, antioxidation, stimulating collateral flow, protecting the microcirculation, limiting hemorrhagic conversion of ischemic infarction, and limiting cerebral edema
- Example: Nerinetide is a peptide molecule that inhibits excitotoxic glutamate signalling via disruption of the synaptic folding protein PSD-95

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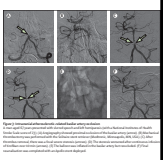
The Other Holy Grail
Intracranial atherosclerotic disease LVO

- Intracranial atherosclerotic disease (ICAD)-related LVO accounts for 10–65% of LVO stroke, and is more frequent in people with Asian, Hispanic, or Black ethnicities
- **The presence of underlying ICAD is associated both with a greater than 3-fold risk of re-occlusion and with procedural challenges due to vessel wall disruption**
- **Can present as an LVO or with prior ischemic infarct or evidence of hypoperfusion,** *the treatment remains the same* (reestablish- downstream flow and reduce post-stenotic proatherogenic and thrombotic stimuli to avert future ischemia)



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Stroke: Vascular and Interventional Neurology

EDITORIAL

The Future of Endovascular Therapy for Intracranial Atherosclerotic Disease

David S. Liebeskind, MD; Muhammad Bilal Tariq, MD; Naoki Kaneko, MD, PhD; Jason D. Hinman, MD, PhD

Stroke Vasc Interv Neurol. 2024

Scenarios

- Rescue stenting in LVO
- Secondary stroke prevention- timing, CTP
- Balloon mounted drug-eluting stents
- **Future trials of ICAD**

Conclusions

- Next generation combined/efficient devices
- Direct Carotid access and closure
- Robots
- Protective agents
- Rehabilitation
- Advanced imaging

Thank you

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