Mechanical thrombectomy for a right hemispheric stroke syndrome due to an acute left A1-A2 junction thromboembolic occlusion

Tyler Scullen MD, Mansour Mathkour MD, Peter Amenta MD

1Department of Neurological Surgery, Tulane University, New Orleans, LA 70130

Introduction

- Mechanical thrombectomy (MT) for large vessel occlusions (LVO) has had a dramatic impact on the management of acute ischemic stroke (AIS).
- The establishment of comprehensive stroke centers (CSC) have allowed for rapid triage, transportation, and treatment of stroke patients.
- The American Heart Association (AHA) guidelines for the application of MT have been outlined in detail.
- AHA guidelines encompass only 30% of patients with LVO presenting to a given CSC.
- Multiple reports have been published evaluating the extended use of emergent recanalization.
- Advances in catheter technology in technique have led to increasing reports of successful recanalization beyond the primary arterial tree.

Clinical Scenario

- 71 yo male with afib, pacemaker, and recent IVDA, off of systemic anticoagulation secondary to recent upper GI bleed.
- Presents to ER with left-sided weakness (NIHSS 4).
- Immediately declined to right hemispheric syndrome (NIHSS 25).
- CT demonstrates:
  - Right internal carotid artery (ICA) terminus occlusion.
  - Extremely tortuous anterior communicating artery (Acomm) and A1-2 junction.
  - Filling of the right anterior circulation across the Acomm.
- CTP show large right ischemic penumbra

Angiography and Intervention

- Chronic RICA occlusion distal to anterior choroidal origin.
- Retrograde filling of distal middle cerebral artery (MCA) from posterior communicating artery (Pcom) collaterals.
- Left A1-A2 junction occluded by thrombus.
- Superselective catheterization around a tight 360° A1-A2 loop with Headway 21 microcatheter.
  - Deployed 4 x 40 Solitaire across thrombus
  - Complete recanalization with one pass (TICI 3)
  - Complete reperfusion of right hemisphere and left ACA territory
- Patient discharged home POD 7 with NIHSS 0

CT Angiography (top) showing a chronic right ICA terminus occlusion (top left arrow) with collateralization across the anterior communicating artery (top right arrow).
CT perfusion showing increased mean transit time (bottom left) and symmetric cerebral blood volume (bottom right) indicating right hemispheric ischemic penumbra.

Endovascular Intervention

Diagnosic angiography (DSA)
- (left) lateral view of right internal carotid artery injection showing chronic occlusion at carotid terminus.
- (right) anteroposterior view of left internal carotid artery injection showing acute thrombus at A1-A2 junction (arrow), preventing collateralization across the anterior communicating artery.

CONCLUSIONS

- Highlights the importance of a high index of suspicion when managing acute stroke.
- Chronic occlusion of the communicating segment of the ICA is an infrequent finding.
- Based on clinical exam and clear chronic right ICA occlusion, the procedure could have been easily, and mistakenly, aborted as symptoms could have been incorrectly attributed to a cardiac event/hypo perfusion in the setting of a chronic right ICA occlusion.
- Outcome demonstrates the utility of MT in select patients that fall outside of the current guidelines for intervention.
- Further advances in technique and technology will continue to expand the indications for acute stroke intervention.