

(BA) or vertebral arteries (VA), up to 24 hours from stroke onset (or last known well), without evidence of ICAD and/or tandem occlusions, and target lesion treated with Medtronic React 71 aspiration catheter were considered for inclusion. A single-use tubing set was used in conjunction with the Medtronic React 71 catheter and a commercially available pump. The primary outcome was the rate of FPE success with complete/near reperfusion, as defined by mTICI $\geq 2c$ after one pass. Secondary outcomes included frontline technical success, as defined by mTICI $\geq 2b$ after final pass with no rescue therapy, and incidence of vessel injury and/or vasospasm. Outcomes were compared against historical controls from a recent meta-analysis (n=9,082).

Results A total of 29 patients were included (table 1). The rate of FPE (mTICI $\geq 2c$ after one-pass) was significantly higher in the RapidPulse-cohort than in the historical cohort (69% [20/29] vs. 28%; $p < 0.0001$). Minor transient vasospasm was observed in one patient. No vessel injury was observed.

Conclusion In this early experience, the RapidPulse™ Aspiration System was shown to be safe, and effective, resulting in one of the highest rates of FPE reported to date. This novel technology may allow clinicians to reduce reliance on more complex techniques and significantly reduce the disposable device costs associated with treating LVOS. Additional studies are currently underway.

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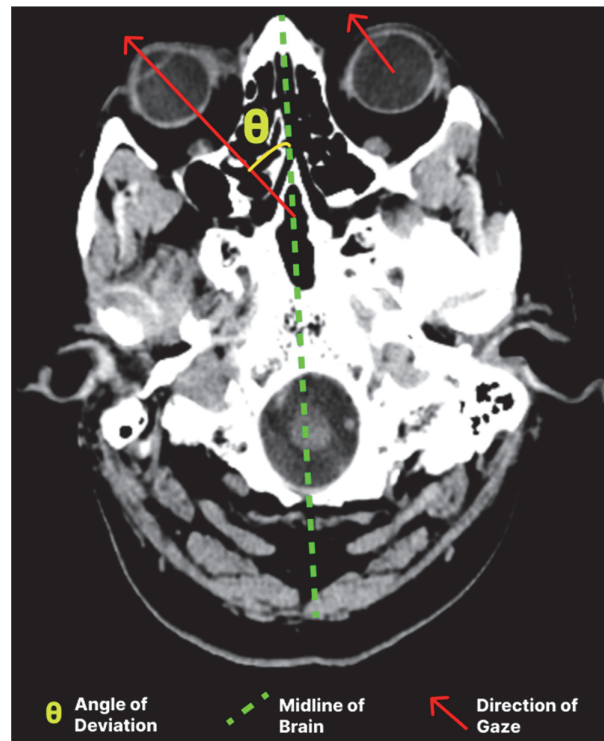
0-064 AI BASED GAZE DEVIATION DETECTION TO AID LVO DIAGNOSIS IN NCCT

¹U Upadhyay, ¹S Golla, ¹S Kumar, ²K Szweida, ³R Shahripour, ⁴J Tarpley*. ¹Qure.ai, Mumbai, INDIA; ²Pacific Neuroscience Institute, Santa Monica, CA; ³Providence Specialty Medical Group, Santa Monica, CA; ⁴Pacific Neuroscience Institute, Torrance, CA

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Introduction Stroke caused by emergent large vessel occlusion (LVO) is a critical time-sensitive diagnosis requiring prompt identification to identify candidates for endovascular therapy (EVT). As a result, identifying imaging findings on non-contrast computed tomography (NCCT) that are predictive of LVO would aid in the identification of potential EVT candidates. We present and validate gaze deviation as an indicator for detecting LVO using NCCT. In addition, we present an Artificial Intelligence (AI) algorithm for detecting this indicator.

Methods AI algorithms have tremendous potential to aid in this triage process but have so far been limited to brain parenchymal predictors of LVO. We present an AI algorithm to detect gaze deviation from an NCCT scan. The AI algorithm was trained using a set of 200 scans to identify gaze direction. The gaze deviation is calculated by measuring the



Abstract O-064 Figure 1

Abstract O-063 Table 1 Baseline characteristics and outcomes of RapidPulse cohort

Table 1 – Baseline characteristics and outcomes of the RapidPulse Cohort

Baseline Characteristics	RapidPulse Cohort (n=29)
Mean age (SD)	75.3 (±14.9)
Female, n (%)	8 (33.3%)
Baseline NIHSS score, median (IQR)	18.5 (14.5-22.5)
Site of occlusion	
Basilar	6.8% (2/29)
ICA	3.5% (1/29)
M1	72.4% (21/29)
M2	6.8% (2/29)
T-occlusion	10.3% (3/29)
Baseline ASPECTS, median (IQR)	9 (6.25-10)
Outcomes	
First Pass Success (FPE) mTICI $\geq 2c$ after single pass	69% (20/29)
Frontline technical success, mTICI $\geq 2b$ after final pass with no rescue therapy	83% (24/29)
Incidence of vessel injury (i.e., vessel dissection, perforation, ICH) post procedure	0
Device related vasospasm	3.4% (1/29)

angle between the gaze direction and the midline of the brain. We used this AI algorithm to identify clinical symptoms of ipsiversive gaze deviation in 116 stroke patients with LVO treated with EVT. This data was gathered at two stroke centers of a neuroscience institute, where it was annotated and validated by experienced neuro-intervention providers.

Results NCCT revealed that 71.1% (59/83) of proximal occlusions had an ipsiversive gaze deviation. In 79% (47/59) of cases, the AI algorithm correctly identified this clinical predictor of proximal LVO. M2 occlusions with less severe clinical symptoms were less likely to show ipsiversive gaze deviation on NCCT, with 42.4% (14/33) of patients showing it. Again, the AI algorithm performed admirably, identifying 85.7% (12/14) of these gaze deviations based solely on NCCT. When tested on normal control scans, the AI algorithm yielded an accuracy of 80.1%. AI algorithm had sensitivity and specificity of 80.8% and 80.1%, respectively.

Conclusions Ipsiversive Gaze deviation on NCCT is a good predictor of LVO due to proximal vessel occlusions in ICA terminus and M1 occlusions. However, it is a poor predictor of LVO due to M2 occlusion. We report an AI algorithm that can identify this clinical sign on NCCT. These findings can aid in the triage of LVO patients and expedite the identification of EVT candidates.

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O-065

TECHNICAL AND CLINICAL OUTCOMES IN MEDIUM VESSEL OCCLUSION (MEVO) THROMBECTOMY BY FRONTLINE TECHNIQUE – A MULTICENTER STUDY

¹A Alawieh*, ²R Chalhoub, ²S Al-Kasab, ³P Jabbour, ⁴M Psychogios, ⁵R Starke, ⁶A Arthur, ⁷K Fargen, ⁸R DeLeacy, ⁹P Kan, ¹⁰T Dumont, ¹¹A Rai, ¹²R Crosa, ¹³S Tjoumakaris, ¹⁴I Maier, ¹⁵N Goyal, ¹⁶S Wolfe, ¹⁷C Cawley, ¹⁷J Osbun, ¹⁸B Howard, ¹⁸L Dimisko, ¹⁸H Saad, ¹⁹C Ogilvy, ²⁰W Cawley, ²¹J Mascitelli, ²²I Fragata, ²³M Levitt, ²⁴A Shaban, ²⁵J Kim, ²⁶S Yoshimura, ²⁷A Polifka, ²⁸R Williamson, ²⁹B Gory, ³⁰M Mokin, ³¹M Moss, ³²M Park, ³³A Spiotta, ¹J Grossberg. ¹Neurosurgery, Emory University, ATLANTA, GA; ²Neurosurgery, Medical University of South Carolina, Charleston, SC; ³Neurosurgery, Thomas Jefferson University, Philadelphia, PA; ⁴Neurosurgery, University of Basel, Basel, Switzerland; ⁵Neurosurgery, University of Miami, Miami, FL; ⁶Neurosurgery, University of Tennessee Health Science Center, Memphis, TN; ⁷Neurosurgery, Wake Forest University, Winston-Salem, NC; ⁸Neurosurgery, Mount Sinai Hospital, New York, NY; ⁹Neurosurgery, University of Texas Medical Branch, Webster, TX; ¹⁰Neurosurgery, University of Arizona, Tucson, AZ; ¹¹West Virginia University, Morgantown, WV; ¹²Médecia Uruguaya, CEN Neuro Endovascular Center, Montevideo, Uruguay; ¹³Thomas Jefferson University Hospital, Philadelphia, PA; ¹⁴University of Göttingen, Göttingen, Germany; ¹⁵Anderson Orthopaedic Clinic, Arlington, VA; ¹⁶Wake Forest University, Lexington, NC; ¹⁷Neurosurgery, Washington University, St. Louis, MO; ¹⁸Neurosurgery, Emory University, Atlanta, GA; ¹⁹Neurosurgery, Beth Israel Deaconess Medical Center, Boston, MA; ²⁰Rush University, Chicago, IL; ²¹UT San Antonio, San Antonio, TX; ²²Centro Hospitalar Universitário de Lisboa Central, Lisbon, Portugal; ²³University of Washington, Seattle, WA; ²⁴University of Iowa, Iowa City, IA; ²⁵Chonnam National University Hospital, Seoul, Korea, Republic of; ²⁶Hyogo College of Medicine, Nishinomiya, Hyogo, GA; ²⁷University of Florida, Gainesville, FL; ²⁸Allegheny Health Network, Pittsburgh, PA; ²⁹Centre Hospitalier Régional Universitaire de Nancy, Nancy, France; ³⁰USF Health, Tampa, FL; ³¹Washington Regional Medical Center, Fayetteville, AR; ³²University of Virginia, Charlottesville, VA; ³³MUSC, Charleston, NC

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Background Endovascular thrombectomy (EVT) is the standard of care for proximal large vessel occlusion (LVO) stroke. Due

to the high effect size of EVT, neurointerventionalists have expanded the indications of EVT to include more distal occlusions. Data on technical and clinical outcome in Medium vessel occlusions (MeVOs) comparing frontline techniques remain limited. We evaluated technical and clinical outcomes after EVT in MeVO while comparing different frontline thrombectomy techniques.

Methods We report an international multicenter retrospective study of patients, 18 years or older, undergoing EVT for ischemic stroke at 32 centers between 01/2015 and 12/2021. Patients were divided into proximal occlusions (ICA/M1/Veretebrobasilar) or isolated medium vessel occlusions (M2, A1, P1) and categorized by the thrombectomy technique. Primary outcome was a good functional outcome (mRS 0–2) at 90 days and compared between different techniques. Secondary outcomes included successful recanalization, procedure time, thrombectomy attempts, post-procedural hemorrhage and mortality. Multivariate logistic regressions were used to evaluate the impact of technical variables including procedure time, attempts, and frontline technique on clinical outcomes. Propensity score matching was used to compare outcome in patients with MeVO treated with aspiration versus stent retriever as frontline approach.

Results We included 7,477 patients including 5977 proximal occlusions and 1287 medium vessel occlusions. MeVO did not independently predict good functional outcome at 90 days compared to proximal when baseline covariates were accounted for ($p=0.55$). In MeVO, successful recanalization was an independent predictor of good outcome at 90 days ($aOR=3.2, p<0.05$) irrespective of frontline technique. Younger age, use of bridging therapy, lower ASPECT scores and lower admission NIHSS were also predictors of good outcome. Procedure time less than 1 hr or thrombectomy attempts less than 4 were independent predictors of 90-day good outcomes in the MeVO cohort irrespective of technique ($aOR = 2.2$ and 2.8 respectively, $p < 0.05$). Use of frontline stent-retriever was an independent predictor of symptomatic hemorrhage compared to aspiration ($aOR = 2.6, p<0.01$) without impacting odds of good outcome at 90 days ($aOR = 0.95, p> 0.1$). In a propensity matched cohort of aspiration versus stent-retriever patients with MeVO thrombectomy, there were no differences in 90-day mRS scores. The rates of hemorrhage were higher with stent-retriever use (9% vs. 4%, $p<0.01$), procedure time was longer with stent retriever use (51 min vs. 33 min, $p<0.01$) while the number of attempts was higher with aspiration (2.5 vs. 2, $p < 0.01$). Rates of hemorrhage and good outcome showed an exponential relationship to procedural metrics, and were more dependent on procedure time in the aspiration group compared to the number of attempts in the stent-retriever group.

Conclusions Clinical outcomes following EVT for MeVO are comparable to those in LVOs with similar baseline covariates with no differences between the different frontline techniques. The golden hour or 3-pass rules in LVO thrombectomy still apply to MeVO thrombectomy. Different frontline techniques may exhibit different utility metrics; SR thrombectomy was more influenced by more attempts whereas aspiration outcomes were more dependent on procedure time.