Background Recent introduction of large bore aspiration catheters have contributed to higher reperfusion rates. The alteration of these catheters to have angled tips, which increase clot engagement by approximately 15%, has been suggested to improve rates of complete clot ingestion, resulting in higher quality thrombectomies. We aimed to evaluate the recanalization efficacy of new generation angled tip aspiration catheters in comparison to commonly used straight tip aspiration catheters for large vessel occlusions (ELVOs), comparing angiographic and clinical outcomes, including in-hospital mortality and discharge NIHSS.

Methods We performed a multicenter retrospective analysis of consecutive acute ischemic stroke patients with M1 occlusion treated within 24 hours from the time of last known well. Patients were divided into two cohorts: those in whom a 0.071 angled tip catheter was the initial device used to attempt reperfusion and those in whom a 0.064-0.074 inch flat tip (non-angled) catheter was the initial device used to attempt reperfusion. The primary outcome was the rate of excellent reperfusion (TICI 2C). Secondary outcomes included the rate of successful reperfusion (TICI2B), use of stent retrievers, and access to successful reperfusion time. All data were self-adjudicated. No outside funding was provided for this analysis.

Results Total of 650 patients with acute M1 occlusion who underwent thrombectomy were identified. Angled tip Zoom 71 catheter was used in 162 patients, while 488 patients were treated with flat tip aspiration catheters (ranging 0.064 to 0.071 inch in inner diameter). The baseline mRS score, admission NIHSS score, the rate of intravenous thrombolytic therapy, symptom onset to hospital arrival, and use of anesthesia were not different between the cohorts. The primary outcome was significantly higher in the angled tip cohort (67% vs 59%, p=0.03). There was no difference in the rate of TICI2B reperfusion (96% vs 94%, p=0.71). There was a lower rate of stent retriever use (25% vs 44%, p<0.0001) in the angled tip cohort. Access time to successful reperfusion was significantly faster with angled tip catheters (21 vs 29 minutes, p<0.0001). Access time to TICI 2B (25 vs 31 minutes, p=0.03) and final recanalization (29 vs 35 minutes, p=0.03) remained significantly shorter in the angled tip cohort, after adjusting for age, thrombectomy technique, use of secondary aspiration catheter.

Conclusion This multicenter, consecutive real-world experience demonstrates that M1 thrombectomy with an angled tip aspiration catheter is associated with higher rates of TICI 2C or better reperfusion, equal rates of TICI 2B or better reperfusion, and faster time to successful reperfusion.

vs. 23 min, p = 0.64). The median number of passes required for recanalization was lower in the direct aspiration group (1 vs. 2, p = 0.01). Although there was no difference in successful recanalization (TICI 2b-3) between the groups (86.1% vs. 88%, p = 0.71), there was a lower rate of complete recanalization (TICI 2c-3) in the direct aspiration group (46% vs. 51.7%, p = 0.007). There was also a lower rate of adjunctive treatments (defined as the use of GP IIb/IIIa inhibitors, P2Y12 inhibitors, and/or salvage angioplasty and/or stenting) required in the direct contact aspiration group (36.1% vs. 44.4%, p < 0.001). There were no differences in discharge NIHSS scores (5 vs. 4, p = 0.21) or in-hospital mortality (22.2% vs. 22.5%, p = 0.92).

Conclusions In the NVQI-QOD registry, stent-retriever techniques were associated with higher rates of complete recanalization when compared to direct contact aspiration alone, but successful (TICI 2b-3) recanalization rates were similar. There were no statistically significant differences in procedure times, clinical outcomes at discharge, or in-hospital mortality.


Introduction Although National Institutes of Health Stroke Scale (NIHSS) scores provide an objective measure of clinical deficits, data regarding the impact of neglect or language impairment on outcomes after mechanical thrombectomy (MT) is lacking. We assessed the frequency of neglect and language impairment, rate of their rescue by MT, and impact of rescue on clinical outcomes.

Methods This is a retrospective analysis of a prospectively collected database from a comprehensive stroke center. We assessed right (RHS) and left hemispheric strokes (LHS) patients with anterior circulation large vessel occlusion (ACLVO) undergoing MT to assess the impact of neglect and language impairment on clinical outcomes, respectively. Safety and efficacy outcomes were compared between patients with and without rescue of neglect or language impairment.

Results Among 324 RHS and 210 LHS patients, 71% of patients presented with neglect whereas 93% of patients had language impairment, respectively. Mean age was 71±15, 56% were females, and median NIHSS was 16 (12-20). At 24 hours, MT resulted in rescue of neglect in 31% of RHS and rescue of language impairment in 23% of LHS patients, respectively. RHS patients with rescue of neglect (56% vs 34%, p <0.001) and LHS patients with rescue of language impairment (64% vs 25%, p <0.001) were observed to have a higher rate of functional independence compared to patients without rescue. After adjusting for confounders including 24-hour NIHSS, rescue of neglect among RHS patients was associated with functional independence [p=0.01] and lower mortality [p=0.01]. Similarly, rescue of language impairment among LHS patients was associated with functional independence [p=0.02] and lower mortality [p=0.001].

Conclusion Majority of LHS-ACLVO and of RHS-ACLVO patients present with the impairment of language and neglect, respectively. In comparison to 24-hour NIHSS, rescue of these deficits by MT is an independent and a better predictor of functional independence and lower mortality.