Introduction With emerging evidence in recent years proving efficacy of endovascular thrombectomy in treatment of acute strokes, there are a growing number of Primary Stroke Centers in the United States launching interventional neuroradiology services to perform acute thrombectomies at their own institutions rather than transferring patients to a higher level of stroke care. Efficacy and speed of recanalization in these hospitals that may not have biplane angiography available could be brought into question. In our current health system we have a team of multiple interventionalists performing thrombectomies in five hospitals with either mono-plane or biplane angiography suites. In this study we aimed to compare the angiographic and clinical outcome of acute stroke patients who underwent thrombectomy in bi-plane angio suites with those of performed in mono-plane systems.

Methods In this retrospective analysis, 198 patients with isolated middle cerebral artery occlusions who underwent acute intervention from March 2015 to August 2018 were included. Procedures were performed at five different hospitals in our health system. Three of these hospitals use mono-plane rooms and two centers use bi-plane machines. The same group of Neurointerventionists performed thrombectomies at all hospitals.

Results A total of 198 patients with MCA occlusions were included with 160 (80.8%) cases performed in bi-plane angio suites. Recanalization time was 9.9 minutes longer in mono-plane group (66.9 ± 56.0 vs. 56.8 ± 45.6 minutes) but this did not reach statistical significance (p>0.05). Bi-plane angiography was not significantly associated with higher recanalization rates (TICI 2B/3 94.2% vs. 91.4%, p>0.05). With respect to clinical outcomes, there was no significant difference between bi-plane angiography vs. mono-plane in the National Institute of Health Stroke Scale at 90 days (20 vs. 21, p>0.05). There was no significant difference in a favorable modified Rankin Scale score (mRS ≤ 3) at 90-days between the bi-plane and mono-plane cohorts (51.7% vs. 47.7%, p<0.05).

Conclusion Although performing stroke thrombectomy with monoplane angiography could theoretically delay recanalization compared to the use of a bi-plane machine, we found no significant difference between these groups in favorable radiographic reperfusion (TICI 2B/3 or favorable clinical outcomes (mRS ≤ 3) at 90-day follow-up in our cohort of patients with MCA occlusions. This data not only supports both feasibility and efficacy of performing stroke thrombectomy on monoplane angiography, but it also has implications for increasing access to thrombectomy to more stroke patients without sacrificing the time needed for potentially lengthy hospital transfers.

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