# Successful Mechanical Thrombectomy for Acute Ischemic Stroke Beyond the Thrombolysis Window

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## Summary:

A 70-year old male patient was referred from another hospital to our emergency department with sudden onset right sided weakness and inability to speak. The last known well time was approximately 7 hours prior to presentation. On arrival, the patient was hemodynamically stable. Neurological examination revealed dense right hemiparesis and global aphasia, with a National Institutes of Health Stroke Scale (NIHSS) score of 13, consistent with a moderate to severe acute ischemic stroke.

Emergency neuroimaging was performed. Diffusion weighted MRI demonstrated an acute infarct in the left cerebral hemisphere with an Alberta Stroke Program Early CT Score (ASPECTS) of 7, suggesting a significant volume of salvageable brain tissue. Magnetic resonance angiography revealed an occlusion of the left M1 segment of the middle cerebral artery (MCA), making the patient an appropriate candidate for endovascular reperfusion therapy despite being outside the intravenous thrombolysis window.

The patient was immediately shifted to the catheterization laboratory for mechanical thrombectomy. An 8F femoral artery access was obtained, and a 6F guiding catheter (Ballast, Balt) was navigated and positioned in the left cervical internal carotid artery. A large bore aspiration catheter (REACT 71, Medtronic) was advanced to the site of occlusion. Single pass direct aspiration thrombectomy was performed, resulting in successful clot retrieval. Final angiography demonstrated complete reperfusion with Thrombolysis in Cerebral Infarction (TICI) grade 3 flow (Figure).

## Literature Review

Mechanical thrombectomy has revolutionized the management of acute ischemic stroke due to large vessel occlusion (LVO) and is now firmly established as the standard of care. The landmark MR CLEAN trial was the first randomized controlled study to demonstrate that endovascular therapy, in addition to best medical management, significantly improves functional outcomes and reduces disability compared with medical therapy alone in patients with LVO. [1] Subsequent pivotal trial such as ESCAPE, EXTEND-IA, SWIFT PRIME, and REVASCAT further confirmed the robust benefit of thrombectomy, showing dramatic improvements in rates of functional independence (modified Rankin Scale 0-2 at 90 days) without a significant increase in mortality or symptomatic intracranial hemorrhage.

Based on this strong evidence, current American Heart Association/American Stroke Association (AHA/ASA) guidelines strongly recommend mechanical thrombectomy for eligible patients with LVO within 6 hours of symptom onset, and up to 24 hours in selected patients using advanced imaging criteria, emphasizing the concept of "TIME IS BRAIN" as well as tissue based selection.[2] Rapid and complete reperfusion (TICI 2b-3), especially achieved in fewer passes, has been consistently associated with better neurological recovery and long term outcomes.

Stroke incidence is rising in developing countries, including Nepal, due to increasing life expectancy, urbanization, and a growing burden of vascular risk factors such as hypertension, diabetes, and smoking. In this context, access to advanced stroke care remains limited. However, recent publications

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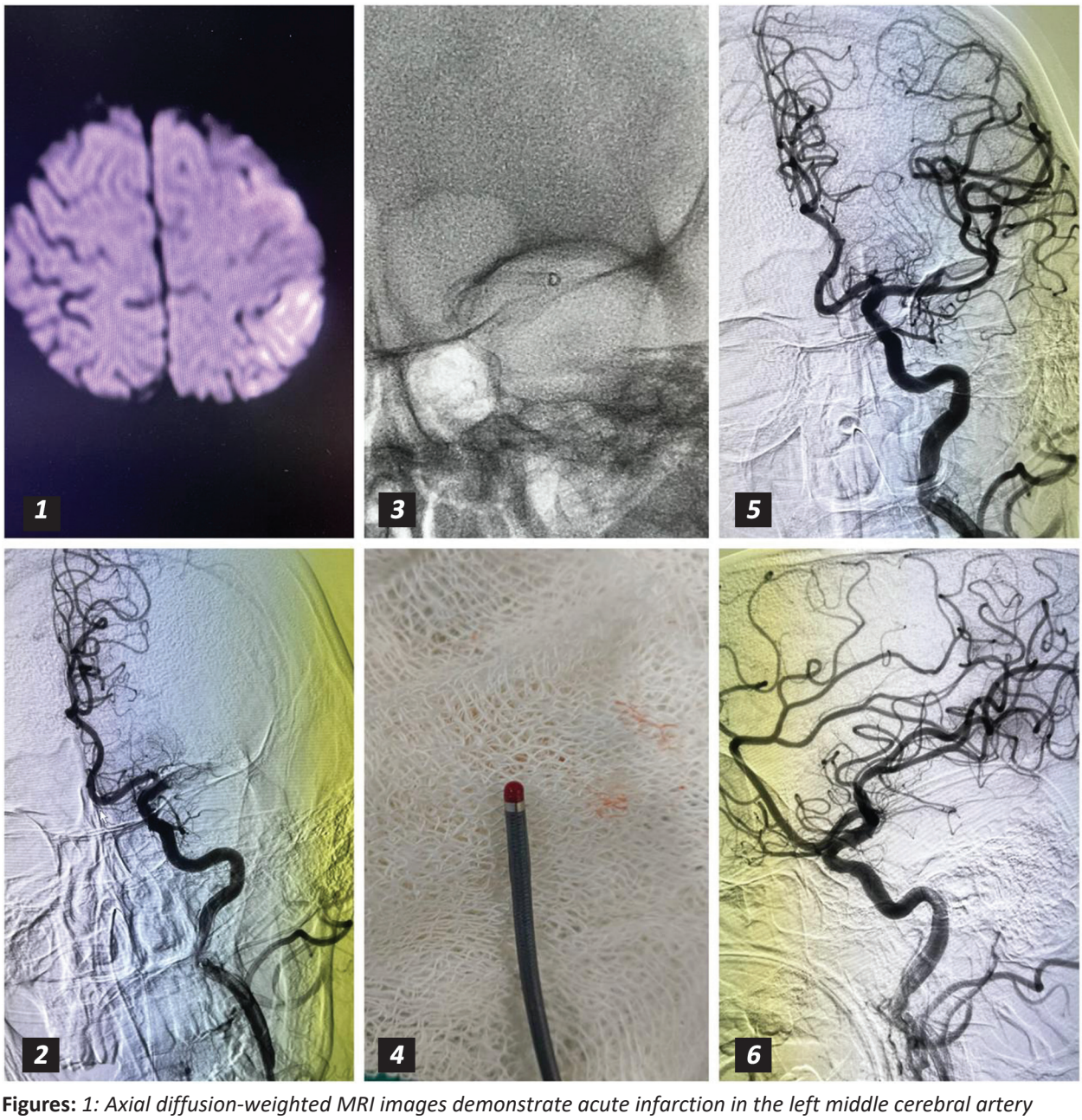


**Figures:** *1: Axial diffusion-weighted MRI images demonstrate acute infarction in the left middle cerebral artery (MCA) territory, 2: Pre-thrombectomy angiographic run shows complete occlusion of the left MCA, 3: Fluoroscopic image shows a large bore aspiration catheter positioned at the site of left MCA occlusion, 4: The REACT aspiration catheter is shown capturing the retrieved thrombus, 5 & 6: Post-thrombectomy angiography in anteroposterior and lateral projections demonstrates complete recanalization of the left MCA and its distal branches (TICI 3).*

from Nepal, including pioneering work by Phuyal et al., have demonstrated that mechanical thrombectomy is feasible, safe, and effective even in resource-limited settings.[3]These studies reported high rates of successful recanalization and favorable clinical outcomes comparable to international standards, highlighting the transformative impact of thrombectomy on stroke care in Nepal.

The successful implementation of mechanical thrombectomy programs in Nepal highlights the urgent need to expand comprehensive stroke services, improve referral pathways, and increase awareness, as timely endovascular treatment can dramatically reduce stroke related mortality and long term disability in our population.

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