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Rescue angioplasty and stenting during mechanical thrombectomy for acute ischemic stroke due to intracranial atherosclerotic disease - Institutional experience

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Background: Intracranial atherosclerotic disease (ICAD) is a frequent cause of large vessel occlusion (LVO) stroke in Asia and can complicate mechanical thrombectomy (MT) by causing persistent stenosis or reocclusion. Rescue angioplasty and stenting are increasingly used to address these challenges, but real-world data remain limited.

Objective: To describe clinical and procedural characteristics, angiographic and neurological outcomes, and safety of emergency rescue angioplasty with or without stenting during MT for ICAD-related stroke.

Methods: A total of 44 MT cases for acute ischemic stroke performed at Hospital Sultan Abdul Aziz Shah (HSAAS), UPM, a tertiary stroke centre between January and May 2025 were reviewed. Eight patients (18.2%) required rescue angioplasty due to refractory occlusion from ICAD using GatewayTM PTA Balloon Catheter. Three patients (37.5%) experienced reocclusion following rescue angioplasty which necessitated urgent stenting using Wingspan Stent System. Data collected included vessel involved, pre- and post-procedure NIHSS, functional outcome (mRS), angiographic success (TICI), and complications.

Results: The median age was 64 years, with 61% male. The most frequently treated vessels were the internal carotid artery (ICA), middle cerebral artery (M1), and basilar artery. Technical success (TICI 2b/3) was achieved in 7 of 8 cases. Median NIHSS improved from 15 pre- procedure to 3 post-procedure. Four patients (50%) achieved functional independence (mRS 0 - 2) at discharge or follow-up. Complications included one symptomatic intracerebral hemorrhage, one vessel dissection, and one death. No acute reocclusion occurred in stented patients.

Conclusion: Rescue angioplasty and stenting during MT for ICAD-related stroke are effective and safe, yielding high reperfusion and favorable neurological outcomes. These findings align with recent evidence and support tailored endovascular strategies in ICAD-prevalent populations.