Improving mTICI 2b reperfusion to mTICI 2c/3 reperfusions: A retrospective observational study assessing technical feasibility, safety and clinical efficacy

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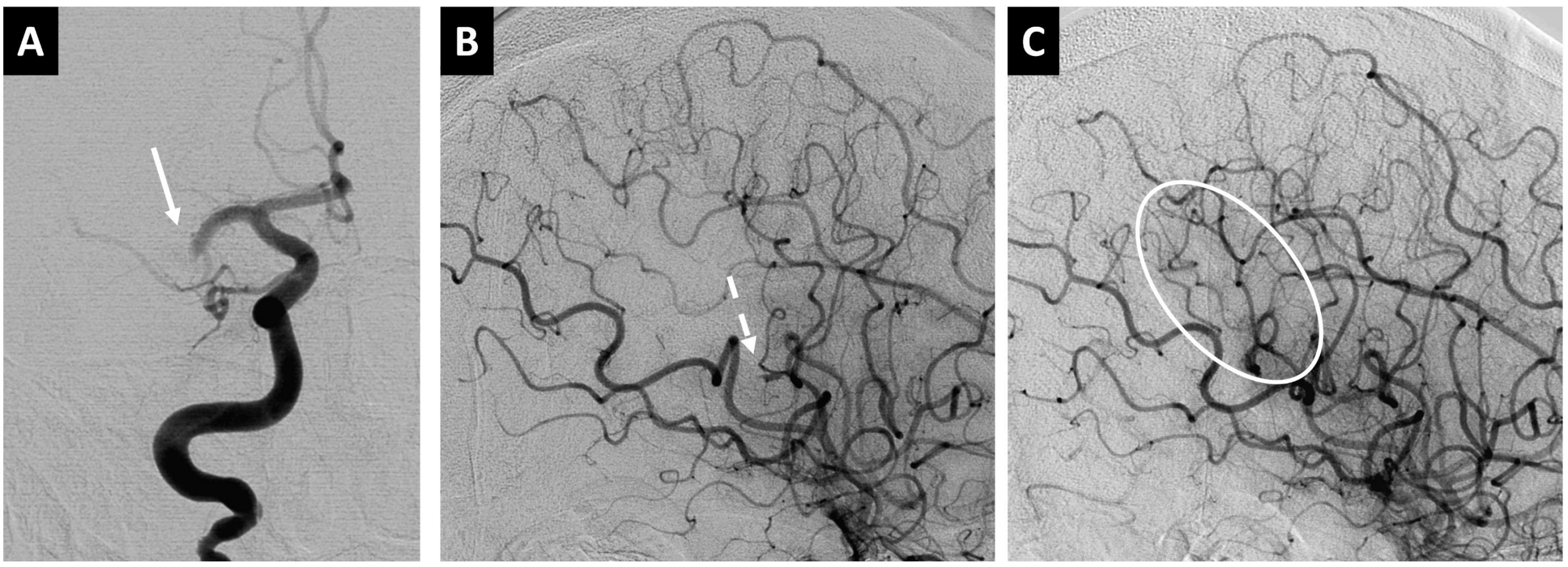
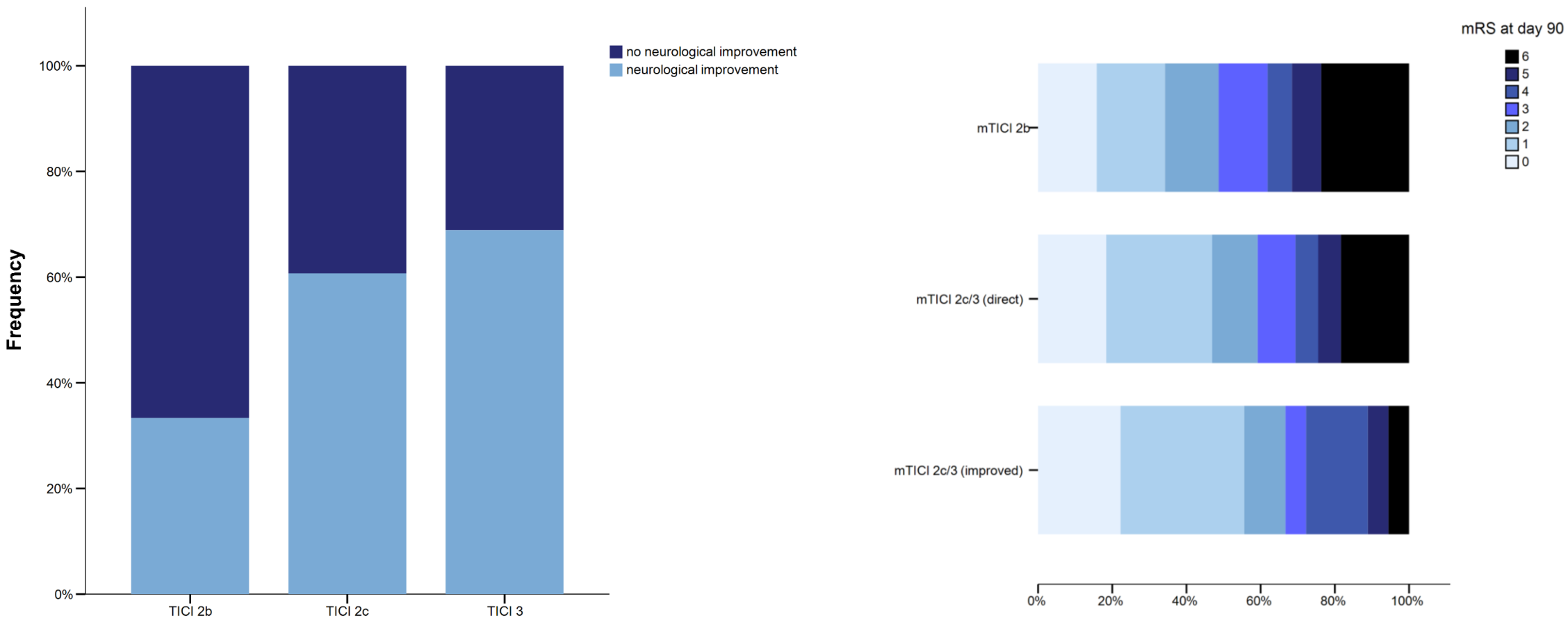
Background: Recent studies suggested that modified Thrombolysis in Cerebral Infarction grade (mTICI) 3 reperfusions are associated with superior outcome than mTICI2b reperfusions, questioning if neurointerventionalists should generally strive to achieve mTICI3.

Methods: Retrospective analysis of successfully reperfused MCA occlusions (n=215) with available angiography runs between every maneuver. Final reperfusion success and reperfusion successes between all single maneuvers were evaluated applying the modified version of the TICI score (including TICI2c). Final TICI2c/3 reperfusions were dichotomized in 'direct' (reperfusion before final maneuver ≤ mTICI2a) or 'secondary improved' (mTICI 2b was already achieved).



Illustrative case of a patients with 'secondary improved' mTICI 3
A, initial presentation of a patient with a NIHSS of 10 due to a right sided M1 occlusion (white solid arrow); B, after two recanalization maneuvers a mTICI 2b reperfusion was achieved with a residual occlusion of a M2 branch (white dashed arrow); C, after one additional maneuver a complete reperfusion mTICI 3 could be achieved. The additional maneuver took nine minutes. The patient had a full recovery with 90d mRS of 0.

Results: Patients with mTICI2c reperfusion resembled the outcome of patients with mTICI 3 rather than mTICI2b reperfusions. Compared with mTICI2c/3-patients, mTICI2b-patients had fewer rates of neurologic improvement (33.3% vs 61.2%, p=0.001) and good functional outcome (48.7% vs. 61.1%, p=0.028). In 28 patients, mTICI2b reperfusion was improved to mTICI2c/3 without complications. Outcome of patients with 'direct' or 'secondary improved' mTICI2c/3 did not differ (p>0.5).



Conclusion: Improving mTICI2b reperfusions to mTICI2c/3 reperfusions is sometimes technically feasible and safe and is associated with a clinical benefit comparable to 'direct' mTICI2c/3 reperfusions. If confirmed, a more aggressive treatment approach in cases of already achieved mTICI2b may be justified, although proper patient selection is needed.