Clinical Associations and Adverse Events Linked to Mechanical Thrombectomy Outcome in Acute Ischemic Stroke

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Background

- Cerebrovascular accident is the second leading cause of disability and death worldwide. Despite major advancements in stroke care, it remains a highly debilitating condition with significant complications.
- Mechanical thrombectomy (MT) is one of the most extensively studied and effective treatments for acute ischemic stroke.
- Procedural success is defined by achieving a modified Thrombolysis in Cerebral Infarction (mTICI) score of ≥2B, which reflects reperfusion of ≥50% of the affected vessel, while an mTICI grade 3 represents complete reperfusion.
- Outcomes of MT are influenced by multiple patient- and procedure-related factors. Identifying predictors of unsuccessful recanalization is essential for anticipating MT outcomes and guiding patient selection, allowing for more individualized treatment decisions.

Objectives

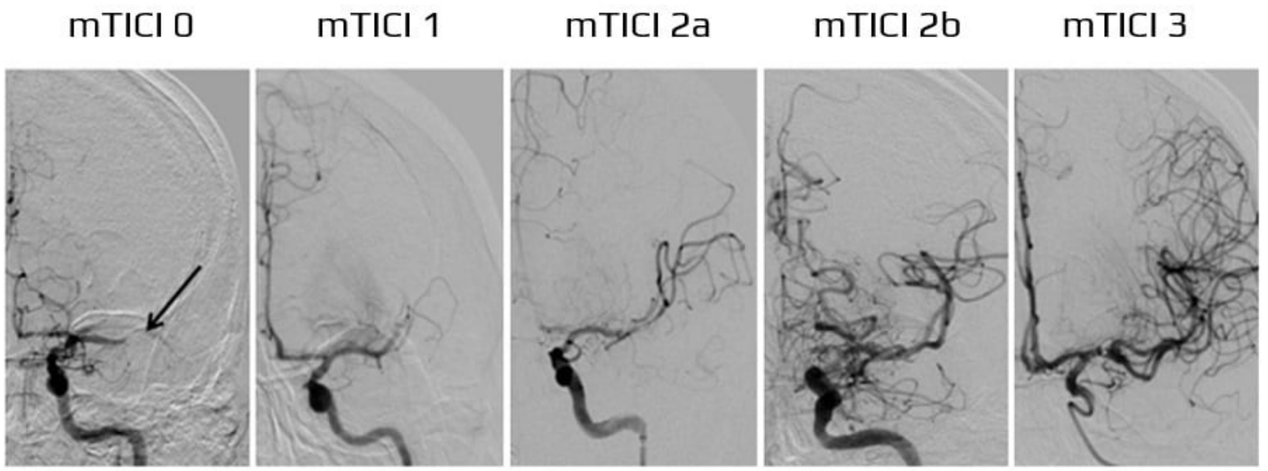
- This study evaluates the outcomes associated with successful MT in Dubai, United Arab Emirates.
- By analyzing patient-specific and procedural factors in a Middle Eastern cohort, it aims to expand current knowledge on MT and support strategies to optimize outcomes across diverse populations.

Methodology

- A retrospective cohort study was conducted at a tertiary hospital in Dubai, UAE, from January 2022 to July 2023.
- Eligible patients were adults (>18 years) presenting with acute ischemic stroke who underwent MT. Patients who only received diagnostic angiography without therapeutic MT were excluded.
- Data were collected using a structured questionnaire covering 49 variables across five domains:
  - Demographics
  - Stroke risk factors
  - Clinical and radiological characteristics
  - Imaging and treatment time intervals
  - MT procedure details and clinical outcomes
- Analysis was performed using SPSS v25. Patients achieving an mTICI ≥2B were compared with those who did not reach this outcome.

Results

- Total participants: 175
- Successful MT: 90.3% (n=158)
- Mean age: 52.7 ± 14.2 years
- Male: 81.7% (n=143)
- **Significant findings:**
- Successful MT correlated with:
  - Favorable discharge outcomes (p<.001)
  - Improved NIHSS at 24 hours (p<.001)
  - Improved NIHSS at discharge (p=.012)
- Unsuccessful MT associated with:
  - Symptomatic ICH within 36 hours (p=.005)
  - Craniectomy (p=.034)
- Patients with symptomatic ICH had longer door-to-mTICI 2B times (p=.008).
- **No significant association**: Demographics, antiplatelet/anticoagulant use, "wake-up stroke," tPA administration, TOAST classification, time intervals, hospital stay, or ICU/intubation needs.



Discussion

- Patients in this study were younger than the reported global mean age for ischemic stroke, suggesting possible genetic and environmental influences with higher prevalence of risk factors.
- MT success rates were comparable to those reported in South Carolina, USA. While prior studies linked unsuccessful MT with longer onset-to-groin times, our data did not demonstrate this association.
- Consistent with previous literature, prolonged groin-to-mTICI 2B times were significantly associated with ICH.
- Overall, our findings align with existing evidence, though variations in univariate results and demographics may reflect regional genetic and environmental differences.

Conclusion

- Successful MT was linked with favorable clinical outcomes, whereas unsuccessful MT correlated with higher rates of neurological complications.
- Several factors showed no significant impact on MT or stroke outcomes, highlighting the need for further research to confirm these findings.

References

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