

Beyond the Vessel: Investigating the Impact of Active Substance Use on Mechanical Thrombectomy Outcomes for Large Vessel Occlusion Strokes

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Introduction

- Substance use causes >3 million deaths annually and increases stroke risk (~6.5×)^{1,2}.

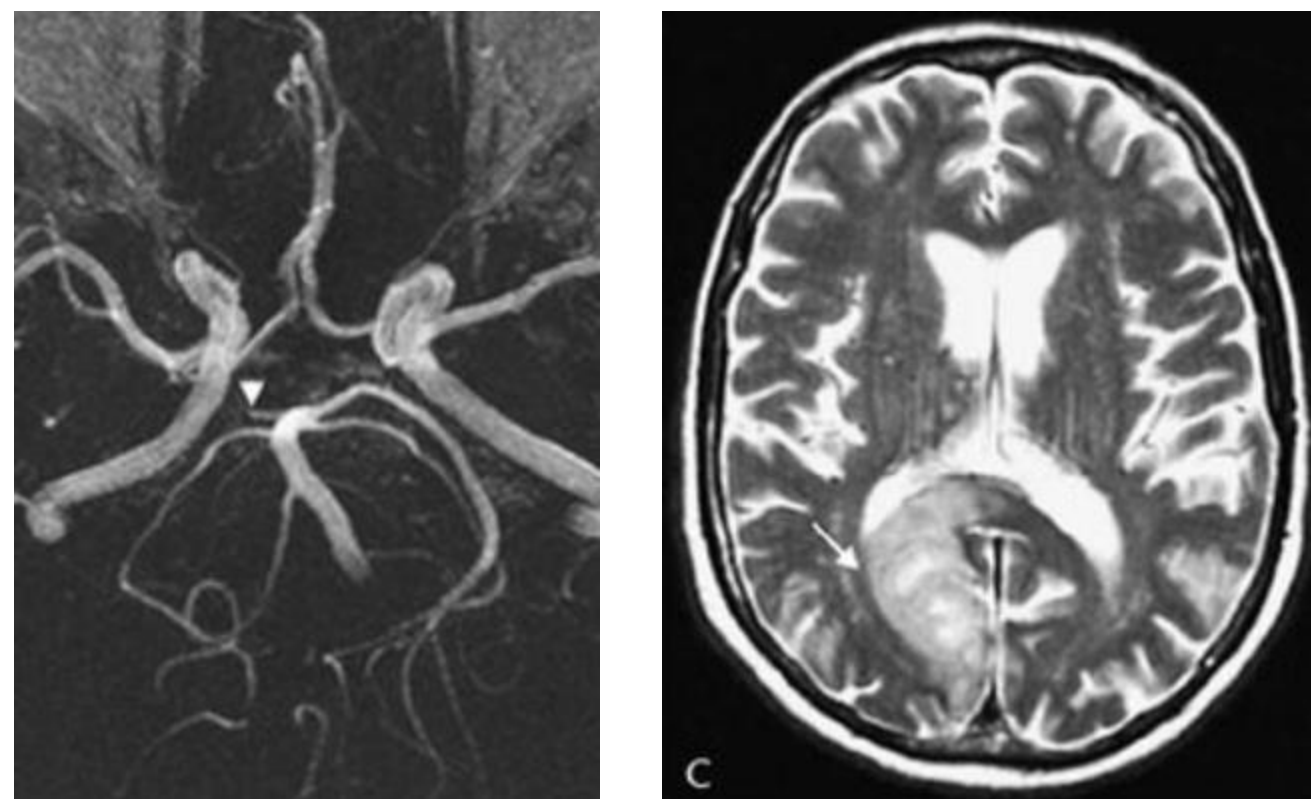


Image 1. Right occipital lobe stroke in 55-year-old male with active cocaine use.³

- Limited data exist on how active substance use (ASU) affects mechanical thrombectomy (MT) outcomes for large-vessel occlusion stroke (LVO-AIS).
- We evaluated the impact of ASU on procedural, radiographic, and clinical outcomes after MT at a large urban comprehensive stroke center.

Methods

- Study Design:** Retrospective review of MT cases (2015–2025) for patients with anterior large vessel occlusions (LVOs), including patients with ASU of Alcohol, Tobacco, Heroin, THC, Cocaine, Amphetamine, and Opioid.
- Analysis:** Matched-pair comparison of BGC vs GS assessing 90-day modified Rankin Scale (mRS), 24-hour NIHSS, successful reperfusion (mTICI ≥ 2b/2c), length of stay, and symptomatic intracranial hemorrhage (sICH) and other procedural complications.

Results

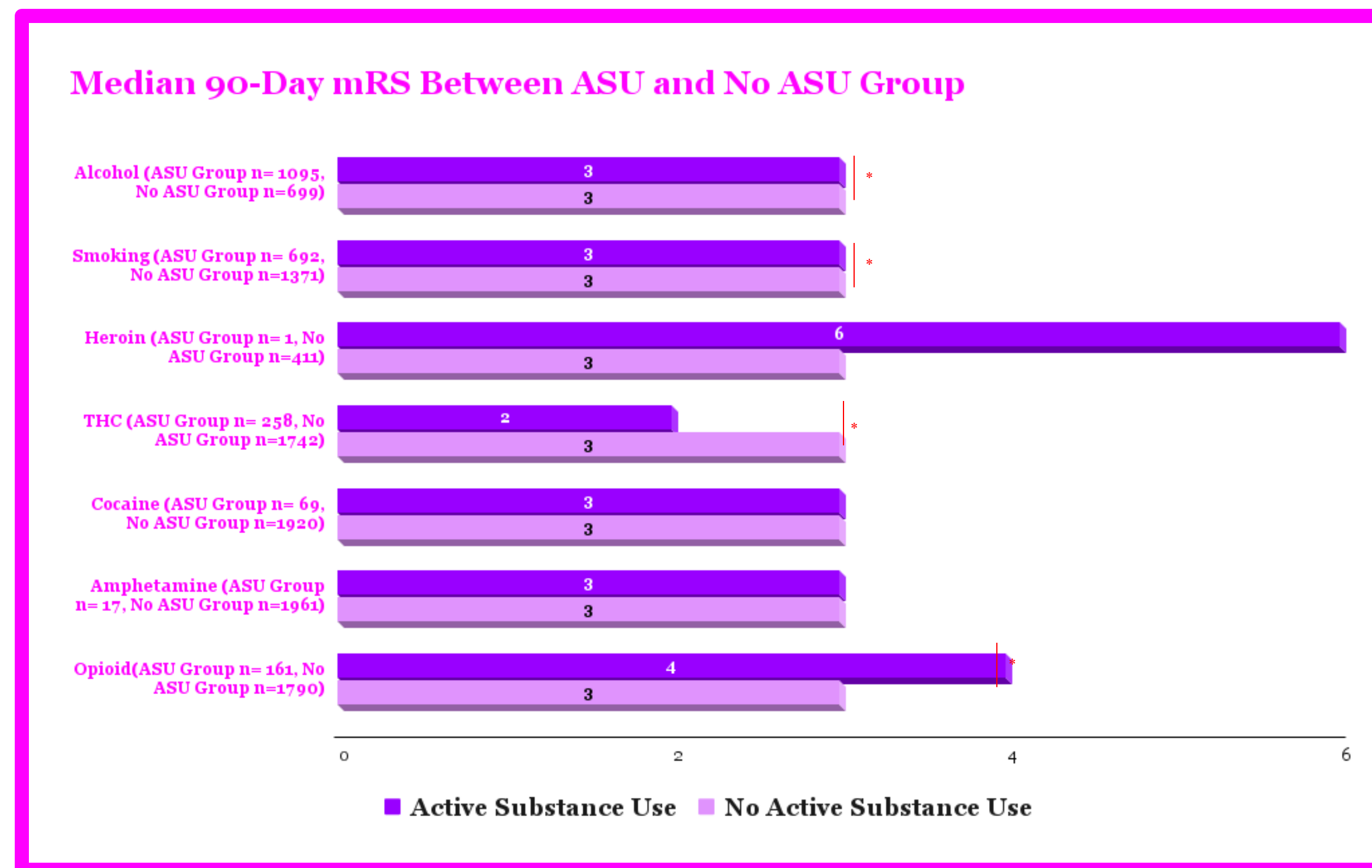


Figure 1: 90-Day mRS was significantly improved in Active THC Use group (p=0.002), and worsened for the Active Opioid Use group (p=0.004)

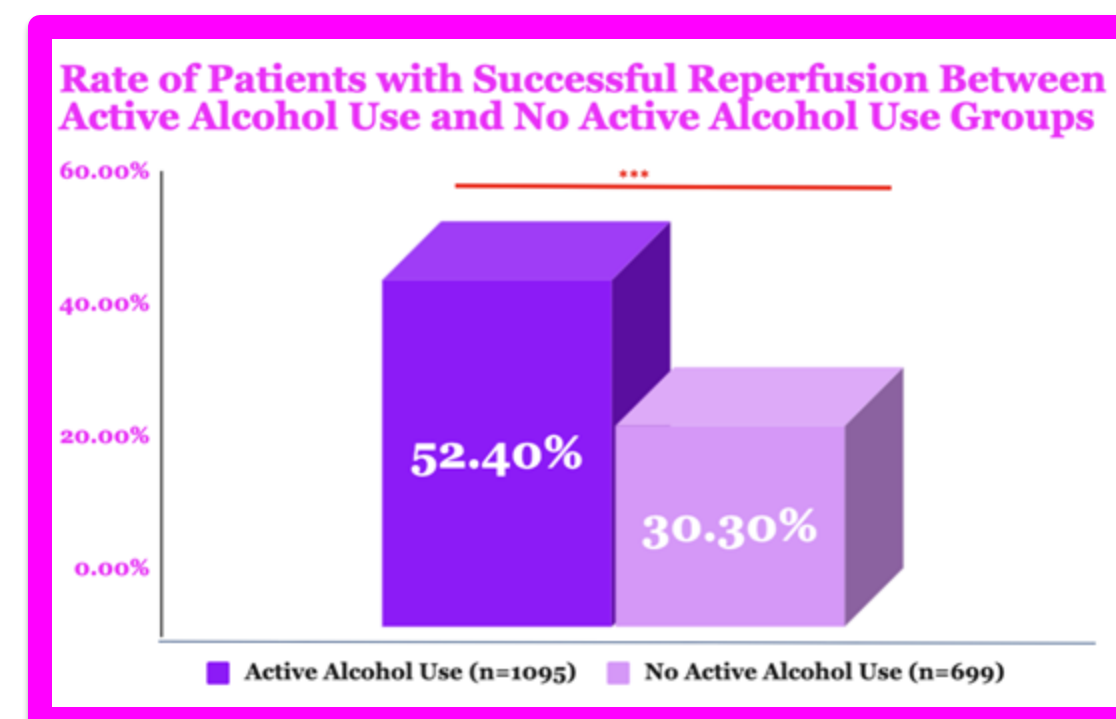


Figure 2: Patients with active alcohol use had a significantly increased rate of successful reperfusion compared to patients without active alcohol use (p<0.0001).

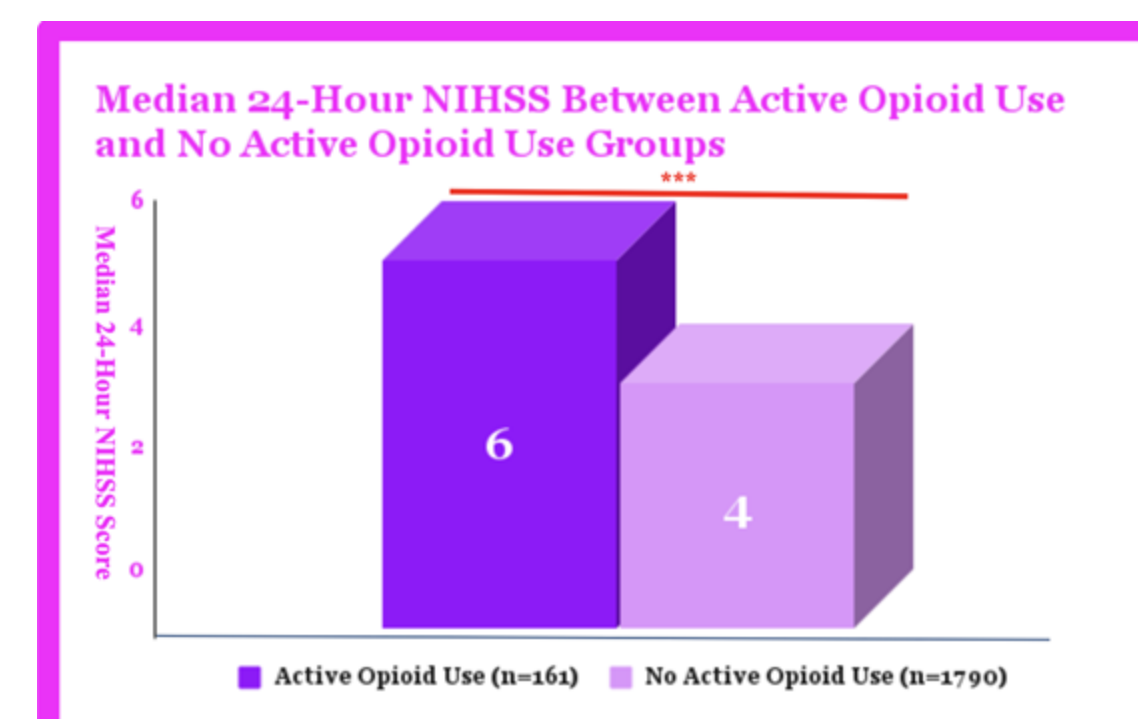


Figure 2: Patients with active opioid use had a significantly increased median 24-hour NIHSS score compared to patients without active alcohol use (p<0.002).

Conclusions

- ASU showed variable effects on MT outcomes
 - Alcohol, tobacco, and cannabis use were linked to better reperfusion or recovery
 - Opioid use predicted worse short and long-term neurologic outcomes
- There may be substance-specific physiologic effects or comorbidities, underscoring the need for further study in this understudied population.

Future Directions

- We are conducting further chart-review to strengthen the data-set.
- We are also conducting a matched-pair analysis to nullify the effects of confounding variables.

References

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