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0-024 **FOUR OR MORE THROMBECTOMY PASSES, TPA USE, AND HIGH INITIAL STRESS GLUCOSE RATIO ARE INDEPENDENTLY ASSOCIATED WITH MALIGNANT CEREBRAL EDEMA AFTER MECHANICAL THROMBECTOMY: A SINGLE-CENTER, RETROSPECTIVE STUDY**

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Background The development of malignant cerebral edema (MCE) after large-vessel occlusion mechanical thrombectomy (MT) with the ensuing requirement for decompressive craniectomy is a dreaded outcome of stroke. We analyzed factors associated with the development of malignant cerebral edema following mechanical thrombectomy.

Methods We performed a retrospective analysis of anterior cerebral circulation large vessel occlusion cases that underwent MT from April 2012 to November 2019 at single comprehensive stroke center. Data included patient demographics, presenting NIHSS score, vessel occlusion site, onset-to-revascularization timing, presenting blood glucose, 90 day modified Rankin Scale (mRS), post-procedural intracerebral hemorrhage (PH1 or PH2), and post-procedural development of MCE (midline shift greater than 5 mm associated with neurological deterioration after greater than 50% infarction of the MCA territory). Multi-variate logistic regression analyses were performed to determine significant predictors of malignant cerebral edema and poor functional outcome (mRS 3–6) at 90 days.

Results 400 patients were included in the analysis. 42 (10.5%) patients developed MCE following mechanical thrombectomy with 26 (6.5%) patients undergoing decompressive craniectomy. Significant independent predictors of MCE following MT included: NIHSS (OR 1.10, 95% CI: 1.03–1.18; p=0.008), tPA administration (OR 2.38 95% CI: 1.04–5.46; p=0.041), 4 or more thrombectomy passes (OR 5.25, 95% CI: 1.53–17.94; p=0.008), and initial stress glucose ratio (OR

14.92 95% CI: 3.95–56.43; p<0.001). Significant predictors associated with decreased risk of MCE included: M1 occlusion compared to ICA occlusion (OR 0.40 95% CI: 0.18–0.88; p=0.022) and TICI 2C/3 recanalization (OR 0.27, 95% CI: 0.09–0.78; p=0.015). Significant predictors of a poor functional outcome included: age (OR 1.05, 95% CI: 1.03–1.07; p<0.001), NIHSS (OR 1.10, 95% CI: 1.05–1.15; p<0.001), initial stress glucose ratio (OR 4.49, 95% CI: 1.60–12.61; p=0.004), intracerebral hemorrhage (PH1 or PH2) (OR 4.74, 95% CI: 1.20–18.69; p=0.026) and MCE (OR 6.56, 95% CI: 2.00–21.59); p=0.002). The sole significant predictor against a poor functional outcome at 90 days was TICI 2C/3 recanalization (OR 0.17, 95% CI: 0.07–0.38; p<0.001).

Conclusion Our data demonstrate an association of malignant cerebral edema with ICA occlusion, higher presenting NIHSS scores, tPA administration, 4 or more thrombectomy passes, and a high initial stress glucose ratio. Malignant cerebral edema is associated with poor functional outcome at 90 days. Further investigation of causes of malignant cerebral edema after MT are warranted.

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0-025 **OUTCOMES OF RESCUE ENDOVASCULAR TREATMENT OF ACUTE ISCHEMIC STROKE IN PATIENTS WITH UNDERLYING INTRACRANIAL ATHEROSCLEROSIS – INSIGHTS FROM STAR REGISTRY**

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Introduction Mechanical Thrombectomy (MT) is the standard of care for patients presenting with emergent large vessel occlusion (ELVO) with salvageable tissue. A subgroup of ELVO is refractory to reperfusion due to underlying intracranial atherosclerosis (ICAS), often requiring rescue therapy with balloon angioplasty, stenting or both. Whether such rescue therapy is safe and effective remains to be established. The purpose of this study is to investigate the safety, efficacy, and long-term outcomes of MT for ELVO related ICAS.

Methods We queried the databases of 11 thrombectomy-capable centers in the US and Europe included in STAR (Stroke Thrombectomy and Aneurysm Registry). In this analysis, we included patients who underwent rescue therapy (balloon angioplasty and/or stenting) in the setting of ELVO due to underlying ICAS. A matched sample was produced by matching on the variables of age, admission NIHSS, and location of the occlusion.

Results Out of 2827 thrombectomy patients included in STAR at the time of this analysis, 190 patients required rescue therapy for ELVO with underlying ICAS. Balloon angioplasty was performed on 116 patients, and 113 patients had intracranial stenting. On multivariate analysis, after controlling for age, sex, race, hypertension, diabetes, prior stroke, NIHSS on

Abstract O-025 Table 1 Baseline features, procedural metrics and outcomes in the 2 treatment groups (rescue therapy vs. matched control)

Variable	ICAS group (N=161)	Control group (n=161)	P-value†
Age, median (IQR)	67 (60-76)	67 (59-77)	0.751
Females, n (%)	63 (39.1%)	73 (45.3%)	0.259
White, n (%)	88 (54.7%)	80 (49.7%)	0.372
HTN, n (%)	118 (73.3%)	122 (75.8%)	0.676
DM, n (%)	51 (31.7%)	45 (28%)	0.443
Afib, n (%)	20 (12.4%)	70 (43.5%)	<0.001
HLD, n (%)	68 (42.2%)	53 (32.9%)	0.077
Admission NIHSS, median (IQR)	15 (9-20)	16 (10-20)	0.346
IV-tPA, n (%)	73 (45.3%)	82 (50.9%)	0.313
ASPECT, median (IQR)	9 (7-10)	8 (7-10)	0.113
Posterior circulation, n (%)	15 (9.3%)	15 (9.3%)	1
Onset to groin, median (IQR)	309 (183-525)	266 (189-368)	0.143
Successful first attempt, n (%)	22 (13.7%)	52 (32.3%)	0.001
mTICI _{2b} , n (%)*	117 (86%)	132 (85.2)	0.833
Procedure time, median (IQR)	47 (29-82)	31 (20-50)	<0.001
Good 90 day outcomes, n (%)	68 (42.2%)	82 (50.9%)	0.118
sICH, n (%)	12 (7.5%)	9 (5.6%)	0.498

*Missing 31

†Calculated using chi-square test for categorical variables and Wilcoxon test for the continuous variables (because of the non-normal distribution).

admission and location of occlusion; compared to angioplasty alone, or stenting alone, combination therapy with angioplasty and stenting was associated with higher odds of favorable long-term functional outcome (mRS 0–2) (OR 4.404, 95% CI 1.318–9.712; $P=0.021$). In the matched analysis, 161 rescue therapy patients matched to a similar number of controls. There was no difference in age, race, sex, rate of IV tPA administration, ASPECTS score, or onset to groin time. Successful first attempt rate was lower (52% vs. 22%, $p=0.001$) and procedural time was longer in the rescue therapy group (47 min vs. 31 min, $p<0.001$). There was no difference in symptomatic intracranial hemorrhage (7.5% vs. 5.6%, $p=0.49$), or favorable long term functional outcome (modified

Rankin scale 0–2) (42.2% vs. 50.9%, $p=0.118$) between patients in the rescue therapy and control groups.

Conclusion In patients with ELVO with underlying ICAS requiring rescue therapy, despite longer procedural time and lower rate of first pass revascularization, rescue therapy appears to be safe with similar rate of favorable long-term functional outcomes compared to patients with large vessel occlusion from embolic source.

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