feature variables as inputs. Numerous machine learning studies and competitions have demonstrated that XGBoost is a high-performance prediction model, so the predictions of the PNN were compared to those predicted by XGBoost. Furthermore, both PNN and XGBoost were trained using bagging ensemble learning, a technique for training an ensemble of multiple member models based on bootstrapping to improve prediction robustness.

Results For both regression and classification, there were almost no differences in the prediction performance between the PNN and XGBoost ensembles. Prediction accuracy was improved when more correlated feature variables were available (from Group Preop to Group DC). For example, the best performance was achieved using Group Postop in regression of NIHSS changes (RMSE: 4.34 for PNN vs. 4.30 for XGBoost) and using Group DC in classification of mRS severity (accuracy: 0.78 for PNN vs. 0.77 for XGBoost; the same trend using different feature groups can be found in other measures, such as precision, recall, F1-scoure, and AUC-ROC). Furthermore, PNN accurately described the distributions of NIHSS changes represented by predicted means and SDs. Notably, in Group Preop, even patients with the worst predicted outcomes had an approximately 50% chance of improvement. Feature importance analysis showed that both the predictions of the NIHSS changes and mRS severity primarily relied on earlier NIHSS, Pre mRS, and patient age.

Conclusions This study demonstrates the utility of probabilistic ensemble learning in clinical decision-making and prognosis. It can provide robust predictions as well as quantify data uncertainty. Our results regarding NIHSS changes reinforce the substantial benefits of MT, that can improve outcomes in nearly half of patients. The degree of disability relevant to the 90-day follow-up mRS can be determined by probabilistic learning available as early as discharge.

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P-009 REPERFUSION INJURY AFTER ENDOVASCULAR THROMBECTOMY MAY BE RELATED TO PRE-TREATMENT INFARCT TOPOGRAPHY

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Introduction With continued expansion in indications for endovascular thrombectomy (EVT), understanding the pathophysiology of reperfusion injury and hemorrhagic transformation (HT) becomes increasingly important. Pre-EVT infarct topography may have implications for treatment decisions acutely (such as stenting), and with post EVT care (such as antithrombotics and blood pressure goals). We sought to quantify region-specific volumes of infarcted tissue on MRI before EVT, understand their importance for reperfusion injury and HT, and identify associations with clinical and imaging characteristics.

Methods Patients were identified from a prospectively maintained database. Each patient's diffusion weighted sequence underwent manual infarct delineation and was registered to a standard space for overlay with cortical, subcortical, and white matter atlases. HT was defined as ECASS PH1 or PH2. Variables with $p<0.10$ in univariate analyses were included in multivariable models.

Results 165 participants [median age 69 (IQR 56-79), 56% women] were identified. Intravenous alteplase was administered to 52%; 70% achieved TICI 2b-3 reperfusion. HT occurred in 8%. The distribution of pre-EVT infarcts was 48% (38-60%) white matter, 23% (6-47%) cortex, and 15% (4-28%) basal ganglia. Pre-EVT infarct volumes [median (IQR)] were 22 cc (12-43 cc) for total, 11 cc (6-19 cc) for white matter, 5 cc (1-19 cc) for cortex, and 3 cc (1-6 cc) for basal ganglia infarct. Paramagnetic sequences showed 3% had petechial hemorrhage and 40% had susceptibility vessel sign. Basal ganglia infarct volume was independently associated with HT (OR=1.342, 95%CI=1.002,1.797) in a model accounting for white matter infarct volume, cortex infarct volume, smoking, and puncture-to-recanalization time. Basal ganglia infarct volume was linked to susceptibility vessel sign (Beta=0.233, p=0.006) and NIHSS (Beta=0.220, p=0.012), when controlling for total infarct volume.

Conclusions Greater basal ganglia infarct volume was associated with a higher risk of HT when accounting for infarct volumes in other regions. Susceptibility vessel sign was associated with basal ganglia infarct volume, which may be related to acute middle cerebral artery perforator occlusion.

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P-010 ENDOVASCULAR THROMBECTOMY WITH OR WITHOUT BRIDGING THROMBOLYSIS IN ACUTE ISCHEMIC STROKE: A COST-EFFECTIVENESS ANALYSIS

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Background There is unclear added benefit of intravenous thrombolysis (IVT) with endovascular thrombectomy (EVT). We performed a cost-effectiveness analysis to assess the cost-effectiveness comparing EVT with IVT versus EVT alone.

Methods We used a decision tree to examine the short-term costs and outcomes at 90 days after the occurrence of index stroke to compare the cost-effectiveness of EVT alone with EVT plus IVT for patients with stroke. Subsequently, we developed a Markov state transition model to assess the costs and outcomes over 1-year, 5-year, and 20-year time horizons. Treatment costs and clinical outcome inputs were derived from administrative data and literature included in our

systematic review, respectively. We estimated total and incremental cost, quality-adjusted life years (QALYs), and incremental cost-effectiveness ratio (ICER), expressed as an incremental cost per QALY gained of EVT with IVT compared with EVT alone. We calculated the reference case estimates through probabilistic analysis.

Results The average costs per patient were estimated to be $47,304, $49,510, $59,770 and $ 76,561 for EVT only strategy, and $55,482, $57,751, $68,314, and $85,611 for EVT with IVT over 90-day, 1-year, 5-year, and 20-year, respectively. The cost saving of EVT only strategy was driven by the avoided medication costs of IVT (ranging from $8,178 to $9,050). The additional IVT led to a slight decrease in QALY estimate during the 90-day time horizon (loss of 0.002 QALY), but a small gain over 1-year and 5-year time horizons (0.011, and 0.0636 QALY). At a willingness-to-pay threshold of $50,000 per QALY gained, the probabilities of EVT only to be cost-effective were 100%, 100%, and 99.3% over 90-day, 1-year, and 5-year time horizons.

Conclusion Our cost-effectiveness model suggested that EVT only may be cost-effective for patients with acute ischemic stroke secondary to large vessel occlusion.

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P-011 RISK OF INTRACRANIAL HEMORRHAGE ASSOCIATED WITH RESCUE INTRACRANIAL STENTING IN PATIENTS WHO RECEIVE IV THROMBOLYSIS

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Introduction/Purpose Up to 20% patients fail to achieve reperfusion after mechanical thrombectomy (MT). In cases of failed intracranial recanalization despite MT, bailout intracranial rescue stenting (RS) may be beneficial for successful recanalization. This is particularly applicable in patients who have underlying intracranial atherosclerotic disease associated with >70% residual stenosis or occlusion due to underlying dissection. Recent studies have suggested that RS is effective and safe, however this is still a topic of active investigation. Typically, patients who require RS will also necessitate immediate platelet inhibition to prevent thromboembolic complications. However, there is limited data supporting the safety of RS in patients treated with prior intravenous thrombolysis. Here, we aim to evaluate the safety of RS for ongoing emergent large vessel occlusion after failed MT in patients who have received prior treatment with intravenous recombinant tissue plasminogen activator (IV tPA).

Material and Methods This is a single center retrospective case series. We screened 5677 consecutive patients who presented with acute stroke symptoms to our stroke center between 2013 and 2022. 954 underwent endovascular treatment. 69 patients required rescue intracranial stenting due to failed recanalization with MT. From these patients, 23 patients received IV tPA prior to the endovascular procedure. We collected data regarding patient characteristics, initial NIHSS and ASPECT score, the degree of recanalization by Modified Thrombolysis in Cerebral Infarction (mTICI), modified Rankin Scale (mRS) at 3 months after stroke, asymptomatic and symptomatic intracranial hemorrhage (sICH) according to European Cooperative Acute Stroke Study II (ECASS) criteria and mortality rate within 90 days of treatment.

Results 69 patients were included in the analysis, 46 in the no IV tPA group and 23 in the IV tPA group. The average age was 64 vs 61. The average presenting NIHSS was 12 vs 19. The rate of successful recanalization TICI 2B-3 was 45/46 (98%) vs 21/23 (91%). The rate of all intracranial hemorrhage was 18/46 (39%) vs 11/23 (48%). The rate of symptomatic hemorrhage was 5/46 (11%) vs 3/23 (13%). The 90-day good mRS (0-2) score was 12/46 (26%) vs 10/23 (43%). The all-cause mortality rate at 90 days was 13.46 (28%) vs 9/23 (39%).

Conclusions In this retrospective study of a 10-year experience at a high-volume comprehensive stroke center, our study shows that rescue stenting after failed mechanical thrombectomy in the setting of prior administration of IV thrombolysis appears to be associated with a higher rate of all types of intracranial hemorrhages, but similar rates of symptomatic intracranial hemorrhage. 90-day functional status was better in the patients who received IV tPA, although the 90-day mortality was higher. Our report suggests that further larger studies are needed to determine the safety and efficacy of RS for failed mechanical thrombectomy in the setting of intravenous thrombolysis.

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P-012 STENT-RETRIEVER WITH INTEGRATED EMBOLIC PROTECTION

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Background Clinical outcome is improved with first-pass complete reperfusion during mechanical thrombectomy. Laboratory data have shown that both stent retriever and aspiration thrombectomy generates thousands of clot fragments, of which many cause embolism of smaller vessels within the vascular territory originally affected, or in a new vascular territory. A new retriever device (Neva Net, Vesalio, Lake Forest CA) has been innovated that includes a distal metallic mesh that serves as an embolic filter (figure 1). We hypothesized that incorporation of the filter within the stent retriever would reduce distal emboli.

Methods Simulated use mechanical thrombectomy was conducted in a validated middle cerebral artery occlusion in a vascular phantom. Briefly, a vascular replica of the entire circle of Willis was perfused with blood mimicking fluid at physiologically correct pressure and flows. A barium doped, bovine clot was introduced into the right ICA leading to complete occlusion of the right M1 segment of the MCA. The