TNK cost being lower than tPA, and in addition to potential reduced ER stay and waiting time prior to transport, improved recanalization, reduction in MT need, shorter hospitalizations, and improved outcomes, significant cost reduction may be achieved. Further study of these factors is needed.

Conclusion Intravenous TNK in patients with LVOAIS is feasible, safe and effective. In our cohort from 'real world' patients, TNK was associated with lower need for MT, high recanalization rates and shorter hospitalization.

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P-043

ELEVATED D-DIMER LEVELS PREDICTS MORTALITY IN COVID-19 WITH STROKE: ANALYSIS OF MULTI-CENTER ELECTRONIC HEALTH RECORD DATA

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Introduction Coronavirus disease (COVID-19) has been associated with coagulopathy, and D-dimer levels have been implicated as predictors of disease severity. In this study, we examined whether D-dimer remains useful to predict mortality in COVID-19 patients presenting with acute ischemic stroke (AIS).

Methods We conducted a retrospective cohort study using the Optum® de-identified COVID-19 Electronic Health Record (EHR) dataset. Patients were included if they were 18 and older, were hospitalized within 7 days of confirmed COVID-19 from March 1, 2020 - November 30, 2020, and were tested for D-dimer during their hospitalization. ICD-9 and 10 diagnostic codes were used to identify AIS and comorbidities. D-dimer level was evaluated using receiver-operator curve analysis for the optimal threshold to predict in-hospital mortality and Kaplan-Meier survival curves were constructed. Risks of in-hospital mortality were compared between patients with D-dimer levels below and above the cutoff and risk ratios (RRs) were estimated adjusting for baseline characteristics and clinical variables.

Results Among 15,250 patients hospitalized with COVID-19 positivity, 285 presented with AIS at admission (2%). Patients with AIS were older (median age 70 [60-79] vs 64 [52-75]) and had higher prevalence of congestive heart failure, hypertension, diabetes, vascular disease and atrial fibrillation. D-dimer levels at admission were greater for patients presenting with AIS (median [IQR], 1.42 [0.76-3.96] µg/ml feu) compared to those without AIS (0.94 [0.55-1.81] µg/ml feu) and peak levels were also greater for patients with AIS (3.86 [1.23-15.58] vs 1.42 [0.76-3.96] µg/ml feu). Peak D-dimer level was a good predictor of in-hospital mortality among all patients (c-statistic 0.774 [95% CI 0.764-0.784]) and among patients with AIS (c-statistic 0.751 [95% CI 0.691-0.810]). The optimum cutoff threshold was identified as 2.07 µg/ml feu with 72% sensitivity and 70% specificity, and elevated peak D-dimer level above this threshold was associated with increased mortality (adjusted RR 3.00 [95% CI 2.75-3.28]) among all patients. Among AIS patients, the optimum cutoff threshold was identified at 5.15 µg/ml feu with 73% sensitivity and 69% specificity. Elevated peak D-dimer level above

Abstract P-043 Figure 1 A Receiver operator characteristic curves for D-dimer to predict deaths in COVID-19; B. Kaplan-Meier survival estimates

this cut-off was associated with almost 3 times increased mortality (adjusted RR 2.89 [95% CI 1.87-4.47]).

Conclusions Peak D-dimer levels above 5.15 µg/ml feu are associated with increased mortality in COVID-19 patients with AIS.

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P-044

PRIMARY RESULTS OF THE VESALIO NEVA VS FOR THE TREATMENT OF SYMPTOMATIC CEREBRAL VASOSPASM FOLLOWING ANEURYSM SUBARACHNOID HEMORRHAGE (VITAL) STUDY

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Introduction Cerebral vasospasm after aneurysmal subarachnoid hemorrhage is linked to delayed cerebral ischemic and worse neurological outcomes. Pharmacological treatment with intra-arterial vasodilators allows for transient improvement in cerebral perfusion. Balloon angioplasty may provide durable luminal gain, but risks vessel rupture and thromboembolic events. The Neva VS is a novel cerebral dilation device based on

predicate stent retriever technologies. We report the results of the Vesalio Neva VS for the Treatment of Symptomatic Cerebral Vasospasm Following Aneurysmal Subarachnoid Hemorrhage (VITAL) Study.

Methods This is a single arm, prospective, multi-center trial to assess the safety and probable benefit of the Neva VS device to treat symptomatic vasospasm. Patient were screened and enrolled if they had confirmed cerebral vasospasm $\geq 50\%$ on non-invasive imaging and confirmed on digital subtraction angiography. Patient's who failed medical therapy of systemic hypertension and oral nimotop and a vessel diameter between 2.0 - 4.0 mm were considered. Patients were excluded with a Hunt-Hess Grade 5 or large core infarctions with an ASPECTS score ≤ 5 prior to treatment. The Neva VS device was deployed for an average of 5 minutes in the target vessel and vessel diameters were measured pre and post treatment by an independent core lab. The primary endpoint was achieving a $> 50\%$ vessel diameter after treatment with the Neva VS device.

Results A total of 30 patients with a mean age of 52.3 ± 11.1 years and mean Hunt-Hess grade of 3.1 ± 0.9 were enrolled in the study. The majority of patients were women 86.7% (N=26) who had undergone coiling 93.3%(N=28). A total of 35 procedures were performed with 28 patients undergoing one treatment, two patients with two treatments, and one patient with three treatments. A total of 72 vessels were treated in these 35 procedures. The breakdown by vessel is as follows: MCA 40 (55.5%), ICA 17 (23.6%), ACA 8 (11.1%), posterior circulation 7 (9.7%). The mean narrowing of the target vessel pretreatment with $> 50\%$ luminal narrowing after core lab adjudication (N=66) was 68.4% with reduction of the narrowing to 30.6% post treatment. The primary endpoint was achieved in 56 of 66 segments (84.8%). Two patients (6.6%) developed a transient cerebral thrombus during the procedure without neurological sequelae. Two patients (6.6%) suffered a vessel rupture from balloon angioplasty and unrelated to the Neva VS treatment.

Conclusions The Neva VS device appears safe and effective at reducing luminal compromise related to cerebral vasospasm following aneurysmal subarachnoid hemorrhage. This treatment offers a novel strategy with more operator control and lower risk of vessel perforation.

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P-045

NON-DEFINITIVE SURGICAL CLIPPING OF CEREBRAL ANEURYSMS: A META-ANALYSIS OF WRAPPING, RESIDUAL, AND RECURRENCE RATES

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Introduction Microsurgery for cerebral aneurysms is called definitive, yet some patients undergo a craniotomy that results in incomplete treatment. Three types of incomplete treatment are: aneurysm wrapping, post-clipping remnants, and late regrowth of obliterated aneurysms. Each of these is associated with increased risk of subarachnoid hemorrhage. This was a systematic review and meta-analysis to quantify the overall rate of non-definitive open surgery for cerebral aneurysms.

Methods A comprehensive literature review using MEDLINE and Cochrane Library databases up to February of 2021 was completed. The following search terms were used: (Intracranial Aneurysm) AND (Clip) AND (residual), (Intracranial Aneurysm) AND (Clip) AND (recurrence), (Intracranial Aneurysm) AND (Wrapping), (Intracranial Aneurysm) AND (Regrowth). Articles were screened based on specific inclusion criteria for each respective analysis. We included studies of aneurysms in a single location (e.g. middle cerebral artery) but excluded studies limited to morphological sub-types or sizes (e.g. fusiform or giant aneurysms). Pooled rates of aneurysm wrapping, residual confirmed by imaging, and regrowth following confirmed total occlusion were subsequently calculated along with corresponding confidence intervals using a random effects model. An assessment of statistical heterogeneity and publication bias among the included studies for each analysis was also completed with resultant I^2 and Egger's test P-values.

Results A total of 812 unique studies were identified by literature review and 65 studies met inclusion criteria for final analysis. In 43 studies that met inclusion criteria, 573/15,715 aneurysms were wrapped for a rate of 3.3% (95% Confidence Interval [CI], 2.7% to 4.0%). In 44 studies, 912/14,045 aneurysms had residual neck or dome filling for a rate of 6.3% (95% CI, 5.1% to 7.5%). In 15 studies, 71/2,568 originally occluded aneurysms showed regrowth for a rate of 2.1% (95% CI, 1.2% to 3.1%). Together, there was a total rate of non-definitive treatment of 11.7% (95% CI, 11.1% to 12.3%) for open surgery of cerebral aneurysms. I^2 values for the wrapping, residual, and regrowth analyses were 88%, 93%, and 58%, respectively, indicating significant heterogeneity among the included studies. Egger's test P-value for the wrapping, residual, and regrowth analyses were 0.55, 0.24, and 0.13, respectively, suggesting no significant publication bias among the included studies. Sub-analyses revealed that the rate of aneurysm wrapping has decreased over time based on publication date, while rates of residual and regrowth have not