E-074 PREDICTORS OF HEMORRHAGIC CONVERSION FOLLOWING MECHANICAL THROMBECTOMY FOR ACUTE ISCHEMIC STROKE (AIS)

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Introduction Endovascular therapy is known to achieve a high rate or recanalization in patients with acute ischemic stroke (AIS) and is currently a standard part of emergent care. Hemorrhagic Conversion (HC) is a severe complication that may occur following ischemic stroke in patients who undergo a thrombectomy procedure. There is scarce data on the risk factors related to hemorrhagic conversion in patients who undergo mechanical thrombectomy. In our study, we sought to gain information on clinical characteristics and predictors associated with HC in patients treated with an endovascular intervention following AIS.

Methods We conducted a retrospective analysis of a population of adult patients treated with endovascular therapy for AIS at a primary stroke center in the Bronx, NY between January 2016 and February 2020. Bivariate and logistic regression analyses were performed to determine the predictors and impact on clinical outcome for patients who experienced Hemorrhagic Conversion, and for those who experienced symptomatic Hemorrhagic Conversion.

Abstract E-074 Table 1 Multiple logistic regression analysis model for all types of hemorrhagic conversion (10 predictor variables)

Independent Predictor	Adjusted OR (95% CI)	P value
Age	0.990 (0.971-1.010)	0.330
Gender (male)	1.621 (0.865-3.038)	0.132
Prior Stroke	3.230 (1.532-6.811)	0.002
Hypothermia (Decreasing Temp °F)	1.503 (1.084-2.083)	0.015
ASPECTS (<6)	3.311 (1.014-10.86)	0.047
TICI (2B-3)	4.372 (1.387-13.78)	0.012
IVtPA	0.506 (0.262-0.975)	0.042
Anesthesia (general)	2.027 (0.901-4.562)	0.088
Number of Passes (1)	0.951 (0.503-1.796)	0.877
Procedure Length (mins)	1.002 (0.994-1.006)	0.967

Abstract E-074 Table 2 Multiple logistic regression analysis model for symptomatic hemorrhagic conversion (10 predictor variables)

Independent Predictor	Adjusted OR (95% CI)	P Value
Age	.975 (.931-1.02)	0.29
Gender (male)	.852 (.193-3.77)	0.833
Prior Stroke	1.49 (.353-6.29)	0.587
Hypothermia (Decreasing Temp °F)	.787 (.391-1.59)	0.503
Aspects (<6)	2.19 (.272-17.62)	0.461
TICI (2B-3)	.138 (.028-.673)	0.014
IV tPA	2.37 (.583-9.62)	0.228
Anesthesia (general)	1.95 (.435-8.78)	0.382
Number of Passes (1)	1.09 (.257-4.61)	0.908
Procedure Length (mins)	.999 (.991-1.01)	0.774

Results A total of 325 patients who underwent endovascular therapy for AIS were identified. Of these, 74 (22.8%) were observed to have hemorrhagic conversion, and 251 (77.2%) had no hemorrhagic conversion. Of those diagnosed with hemorrhagic conversion, 25 (33.8%) were found to be symptomatic. Bivariate analysis of presenting labs and vital signs showed no association with HC. In logistic regression analyses, a history of prior stroke (OR 3.23; 95% CI 1.53-6.81), ASPECTS score <6 (OR 3.311; 95% CI 1.01-10.86), and TICI 2B-3 (OR: 4.372; 95% CI 1.39-13.78) were found to be independent predictors of hemorrhagic conversion. In the symptomatic hemorrhage group, a TICI (2B-3) recanalization (OR: 0.138; 95% CI .028-.673) was found to be the only independent predictor.

Conclusion History of prior stroke, radiographic evidence of infarct burden, and radiographic success of thrombectomy may be considered significant predictors for hemorrhagic conversion following AIS in patients who undergo mechanical thrombectomy.

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75 A PROSPECTIVE, MULTI-CENTER, RANDOMIZED CONTROLLED PIVOTAL STUDY TO EVALUATE THE SAFETY AND EFFECTIVENESS OF TRUFILL® NBCA EMBOLIZATION OF THE MIDDLE MENINGEAL ARTERY FOR THE TREATMENT OF SUBDURAL HEMATOMA – THE MEMBRANE STUDY

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Introduction Chronic subdural hematoma (cSDH) is one of the most common neurosurgical diseases with an incidence of 1-5.3 cases per 100,000 that increases significantly with age. When symptomatic, these lesions are often treated by surgery, an approach which does not directly address the underlying pathophysiology of chronic inflammation and neovascularization of the dura and has a high incidence of recurrence. Middle meningeal artery (MMA) embolization has emerged as a potential minimally invasive endovascular treatment option that may substitute for surgery or serve as an adjunct. TRUFILL n-BCA is potentially well suited as a liquid embolic in this procedure given that it is non-caustic, rapidly deployed, and able to be injected in a highly targeted fashion. Here we present the protocol for a randomized clinical trial to evaluate the safety and effectiveness of n-BCA embolization of the MMA for the treatment of cSDH.

Methods This investigational trial is a prospective, multi-center, open-label, randomized controlled study in which up to 376 subjects will be randomized to receive standard of care (SOC) alone or SOC and TRUFILL n-BCA MMA embolization for the treatment of cSDH. The study is designed to evaluate the effectiveness and safety of MMA in two cohorts - a surgical cohort and a non-surgical cohort.

Results Study Endpoints The primary study effectiveness endpoint is the incidence of residual or re-accumulation of the cSDH (>10 mm) at 6 months as assessed by an independent core laboratory OR re-operation or surgical procedure on the hematoma within 6 months post randomization.

Secondary effectiveness endpoints include mean reduction of hematoma volume at 3, 6 and 12 months compared to baseline, reduction > 50% in hematoma volume at 3, 6 and 12 months as well as others. Secondary safety endpoints include death, stroke, myocardial infarction or thromboembolic complications within 3, 6 and 12 months as well as others. Secondary health economics endpoints include hospital days, intensive care unit days, and change in the EQ-5D-5L score at discharge and 6 months compared to baseline.

Conclusion Middle meningeal artery embolization with n-BCA is an emerging treatment strategy for cSDH. An appropriately powered trial like the MEMBRANE Study will provide high level evidence on the potential safety and efficacy of this treatment paradigm.

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E-076 MASKLESS DSA PROVIDES SIMILAR DETAIL WITH DECREASED RADIATION EXPOSURE

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Purpose Three-dimensional digital subtracted angiography (3D DSA) is vital to neuro-interventional evaluation and planning. The 3D dataset is used for better visualization of pathology and to obtain working angles. The 2D dataset can be evaluated in multiple planes, providing accurate measurements for device sizing. Current practices for acquisition of 3D DSA data for intracranial pathology involves performing two separate acquisitions. The first scan is acquired to image bone and tissue structure. During the second scan, contrast is injected after a short x-ray delay, allowing the vasculature to fill. Both scans are subtracted from each other allowing for a 3D volume of vasculature filling only. Using two scans to obtain the 3D volume doubles the amount of radiation dose. Artificial intelligence (AI) algorithms can be developed to allow for similar data with only one scan thus decreasing radiation dose. For this study, we sought to evaluate a prototype AI based 3D angiography by comparing this technique to conventional 3D DSA when measuring aneurysms.

Materials and Methods Imaging was acquired on the Artis Q-System (Siemens Healthineers, Forchheim, Germany). 20 patients received a standard 5 sec DSA imaging protocol. The standard 3D DSA technique was compared to the prototypical AI-based 3D angiography (3DA). Two separate investigators made measurements of aneurysms in both 2D and 3D datasets for 20 different aneurysms using both imaging techniques. The measurements were processed by a separate investigator using Minitab to run analysis of variance (ANOVA) statistics between the measurements of each investigator. Aneurysm dimensions, including height, width, depth, and neck, were collected. Each investigator independently determined the windowing thresholds and angles for measurement in 3D and 2D formats (figure 1).

Abstract E-076 Figure 1 (A) 2D DSA (B) 3D DSA Angle 1 (C) 3D DSA Angle 2 (D) 2D DSA (E) 3D DSA Angle 1 (F) 3D DSA Angle 2, highlighting the comparisons of the two techniques. Notice the nearly similar detail and measurements of both techniques