Abstract E-052 Table 2 Outcomes following stenting

Successful recanalization (TICI 2b/3)	91.1%
Symptomatic intracranial hemorrhage	12.9%
Asymptomatic small parenchymal hematomas	3%
Stent thrombosis	6.9%
Favorable clinical outcome at 3 months (mRS 0–3)	54.9%
Mortality at 3 months	15.8%

2b/3) was obtained in 91.1% following stenting. Symptomatic intracranial hemorrhage occurred in 13 patients (12.9%), only two of which had received tPA. Significant in-stent stenosis/thrombosis occurred in 7 cases (6.9%). 54.9% had a favorable mRS score at 90 days (0–3) and 90-day mortality occurred in 15.8%. The primary factor associated with complications was placement of multiple stents ($P=0.018$). 71.3% of patients were loaded with antiplatelet agents intraoperatively prior to stent placement, most commonly with aspirin/Plavix ± eptifibatide or Tirofiban, followed by maintenance on dual antiplatelet treatment. There were no significant differences in outcomes between different antithrombotic regimens.

Conclusion Stent placement as a rescue strategy for thrombectomy failure and for tandem configurations offers a high rate of recanalization and favorable outcome without an increase in the hemorrhage risk regardless of antithrombotic regimen and tPA status.

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E-053

PERI-PROCEDURE ANEMIA IS ASSOCIATED WITH POOR FUNCTIONAL OUTCOME AFTER MECHANICAL THROMBECTOMY FOR ACUTE ISCHEMIC STROKE: SINGLE CENTER EXPERIENCE

¹H Carvalho*, ²A Wessell, ²G Cannarsa, ¹T Miller, ¹D Gandhi, ¹G Jindal. ¹Radiology, University of Maryland Medical Center, Baltimore, MD; ²Neurosurgery, University of Maryland Medical Center, Baltimore, MD

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Introduction Anemia has been associated with worse clinical outcomes and increased mortality following acute ischemic stroke, however, the study of anemia in acute ischemic stroke patients treated with mechanical thrombectomy has been limited.

Methods We performed a retrospective study of 346 anterior circulation stroke patients treated with mechanical thrombectomy to investigate the impact of peri-procedure anemia (Hgb <10 g/dL within 48 hours of admission) on outcomes and to determine the relationship between peri-procedure anemia and multiple thrombectomy passes/procedure time at a single Comprehensive Stroke Center from April 2012 to July 2019. Bivariate and multiple logistic regression analyses were performed. A p-value <0.05 was considered statistically significant.

Results One hundred patients (29%) met the criteria for peri-procedure anemia after admission for thrombectomy. Females comprised 73% of patients (n=73) with peri-procedure anemia compared to 39% (n=97) of patients without anemia ($p<0.001$). Peri-procedure anemia was associated with a

longer thrombectomy procedure time (62.80 [3.89] min. vs. 54.38 [2.14]; $p=0.044$). There was a trend towards a greater number of thrombectomy passes among patients with peri-procedure anemia compared to those without anemia ($p=0.058$) on bivariate analysis. Peri-procedure anemia was associated with greater rates of poor functional outcome (73% vs. 54%; $p=0.001$) and death (35% vs. 18%; $p=0.001$). The final logistic regression model included the following variables: patient age, female sex, NIHSS, tPA, procedure time and number of thrombectomy passes. Among these variables, only female sex (OR 4.28, 95% CI 2.54–7.22; $p<0.001$) and ≥ 3 thrombectomy passes (OR 2.05, 95% CI 1.01–4.15; $p=0.047$) were independently associated with peri-procedure anemia after admission for thrombectomy (AUC=0.724). Several clinical factors were included in the final logistic regression model. Age (OR 1.03, 95% CI 1.00–1.05; $p=0.015$), history of diabetes (OR 1.90, 95% CI 1.07–3.37), admission NIHSS (OR 1.09, 95% CI 1.04–1.15; $p<0.001$) and peri-procedure anemia (OR 1.82, 95% CI 1.03–3.22; $p=0.040$) were independently associated with an increased odds of poor outcome. TICI grades 2C/3 (OR 0.18, 95% CI 0.08–0.40; $p<0.001$) were associated with a reduced odds of poor outcome. There was a trend towards an independent association between ≥ 3 thrombectomy passes and poor outcome (OR 1.80, 95% CI 0.94–3.45; $p=0.078$) although not statistically significant.

Conclusion Female sex and ≥ 3 thrombectomy passes were independently associated with peri-procedure anemia. Peri-procedure anemia was associated with worse clinical outcomes at 3-month follow-up. The interventional neuroradiologist should consider the potential adverse effects of peri-procedure anemia and minimize overall procedural blood loss when able, mainly in women that inherently have lower hemoglobin levels than men. Future studies are required to better understand the causal relationship between procedural blood loss and clinical outcomes following thrombectomy.

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E-054

DEVELOPMENT OF AN ANTHROPOMORPHIC XMR PHANTOM FOR NEURO-INTERVENTIONAL CATHETERS

B Kilbride*, C Jordan, 94107, P Kumar, 94107, T Moore, 94107, M Wilson, 94107, S Hetts, 94107. Radiology and Biomedical Imaging, University of California San Francisco, San Francisco, CA

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Introduction Integrated imaging suites possess great clinical significance. In the case of dual MRI and X-ray suites, devices designed to be used in their workflow have lagged in development due to engineering challenges presented by the unique working environment. In the field of neuro-intervention, device visibility is paramount. Such device efficacy must be tested *in vitro* in vascular phantoms that mimic the *in vivo* environment; however, the imaging physics of X-ray and MRI mean that a standard phantom in one imaging environment cannot be used effectively in the other. Here, we sought to develop a carotid artery and vertebral bone phantom using poly(vinyl) alcohol cryogel (PVA-C) and epoxy resin to navigate neuro-interventional catheters in integrated MR and X-ray imaging suites.

X-ray

GRE

Abstract E-054 Figure 1 Visualization of phantom under X-ray and MR. The MRI scans of the phantom demonstrate a passive tracking catheter place in the internal carotid

Methods Human-scale models of a carotid artery and cervical spine were adapted from the NIH 3D Print Exchange and printed using an Ultimaker 3 (Ultimaker, Geldermalsen, Netherlands). The vertebral model was used to create a negative silicone mold.

Bone Equivalent Material Epoxy resin representing a homogeneous mix of cortical and trabecular spongiosa was made using established methods. 36.4% Araldite GY 6010 and Jeffamine T-403 (Huntsman, The Woodlands, TX) were mixed (w/w) with 25.5% silicon dioxide (40–100 mesh sand) and 23.5% calcium carbonate (Sigma Aldrich, St. Louis, MO). The mixture was degassed, poured into the vertebral silicone mold, and cured at 20°C for 72 hours.

PVA-C Phantom PVA solution was made using previously established methods. Sevol Grade 165 PVA powder was used to create 1.5 L 10% (w/w) PVA. The solution was poured into a 1.8 L container, and the carotid artery and epoxy vertebral models were submerged. Four complete freeze-thaw cycles were performed. The carotid artery model was removed, leaving open lumens in the cryogel.

Imaging A gradient echo sequence was acquired at 3T (Discovery MR 750w, GE Healthcare, Milwaukee, WI). A 30 cm × 30 cm flat panel C-arm X-ray system guidance (Cios Alpha, Siemens Healthineers, Munich, Germany) was used to acquire X-ray images of the phantom.

Results MR and X-ray images showed a phantom with bone- and tissue-like properties (figure 1). Rigidity of the PVA-C was found to be sufficient for future navigation studies with test devices.

Conclusions The phantom showed promise as an important tool in imaging research to assess and improve future neuro-interventional devices. These initial steps provide the foundation for a human-scale phantom to test devices for integrated MR and X-ray imaging techniques.

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E-055

PATIENT CHARACTERISTICS, QUALITY AND OUTCOMES AFTER ENDOVASCULAR THERAPY FOR IN-HOSPITAL ISCHEMIC STROKE

¹F Akbik*, ²H Xu, ³Y Xian, ⁴S Shah, ⁵E Smith, ⁶D Bhatt, ⁷R Matsouaka, ⁸G Fonarow, ⁹L Schwamm. ¹Neurology, Neurosurgery, Emory University, Atlanta, GA; ²Duke Clinical Research Institute, Durham, NC; ³University of Calgary, Calgary, AB, CANADA; ⁴Brigham and Women's Hospital, Boston, MA; ⁵Neurology, UCLA, Los Angeles, CA; ⁶Neurology, Massachusetts General Hospital, Boston, MA

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Introduction A significant number of acute ischemic strokes occur while patients are hospitalized for other reasons. No national data have been reported on endovascular therapy (EVT) for in-hospital onset stroke. Here we compare the patient characteristics, process measures of quality, and outcomes for in-hospital onset vs. community-onset of strokes in a large US national registry.

Methods We performed a retrospective cohort study of Get With The Guidelines-Stroke (GTWG-Stroke) from January 2008 to June 2018 from 2,333 participating sites that included 2,428,178 patients with acute ischemic stroke. Among 67,493 in-hospital onset strokes, 2494 (3.7%) underwent EVT. We examined the association between key patient characteristics (in-hospital onset, demographics, comorbidities, treatment with EVT) and functional outcomes using multivariable logistic regression models.

Results The rate of EVT increased from 2.5% in 2008 to 6.4% in 2018 ($p < 0.001$), with a significant and sustained increase in EVT after the second quarter of 2015 ($p < 0.0001$). Compared with patients with community-onset strokes, patients with in-hospital onset stroke had longer times to cranial imaging and arterial puncture but similar median NIHSS (16 (9 – 21) vs. 16 (10 – 21) Std Diff 1.9). Patients with in-hospital onset stroke were less likely to undergo EVT within 120 mins of symptom recognition, have