Conclusion Although some randomized controlled trials have provided limited evidence of benefit for using ET in the elderly population, expanding ET to this population in the real-world requires careful refinement of patient selection. This study emphasizes that advanced age coupled to higher NIHSS on admission and an anticipated long procedure should prompt careful discussion of the risks and benefits of ET in the elderly.

Disclosures A. Alawieh: None. **R. Starke:** None. **A. Chatterjee:** None. **A. Turk:** None. **R. De Leacy:** None. **A. Rai:** 2; C; Stryker. **K. Fargen:** None. **P. Kan:** 2; C; Medtronics, Stryker. **J. Singh:** None. **L. Vilella:** None. **F. Nascimento:** None. **T. Dumont:** None. **A. Spiotta:** 1; C; Penumbra, Pulsar Vascular, Microvention, Stryker,. 2; C; Penumbra, Pulsar Vascular, Microvention, Stryker.

P-023 OPTIMIZING RADIAL FORCE OF STENT RETRIEVERS TO MINIMIZE VESSEL WALL INJURY: MECHANICAL BENCH TESTING OF RADIAL FORCE GENERATED BY A NOVEL BRAIDED STENT RETRIEVER COMPARED TO LASER-CUT STENT RETRIEVERS IN THE M1 AND M2 VESSELS

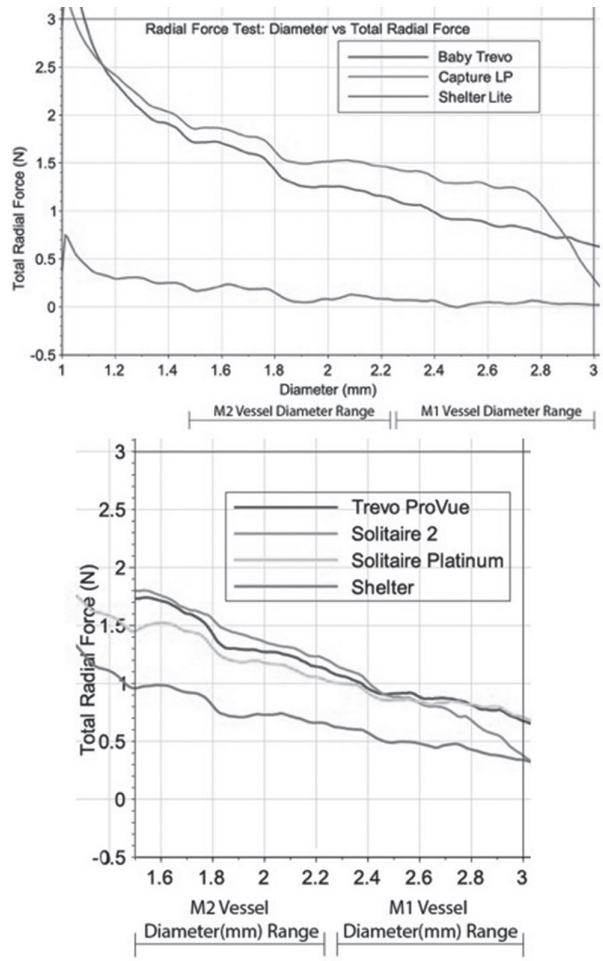
[1]J Katz*, [2]A Abou-Chebl, [3]V Janardhan, [3]V Janardhan. *[1]Neurology, Comprehensive Stroke Center, North Shore University Hospital, Manhasset, NY; [2]Neurology, Baptist Neuroscience Associates, Louisville, KY; [3]Division of Stroke Devices Research, Insera Therapeutics, Inc., Dallas, TX*

10.1136/neurintsurg-2018-SNIS.59

Purpose Stent Retrievers are an important part of the stroke tool kit in achieving high recanalization rates and favorable clinical outcomes in patients with acute ischemic stroke due to large vessel occlusions (LVOs). However, recent reports have raised concern about the risk of vessel wall injury (VWI) when pulling out current laser-cut stent retrievers during active strut apposition to the vessel walls. Development of braided stent retrievers may be gentler on the fragile brain vessels and more optimized (with regards to radial force) for vessel diameters seen in proximal LVOs (such as in M1) and distal LVOs (such as in M2) compared to existing laser-cut stent retrievers.

Methods Mechanical bench testing of radial force (RF) generated by stent retrievers was performed using a radial compression station mounted on a Tensile Testing Machine (Blockwise Engineering, Phoenix, AZ). The total radial force (RF) in Newtons (N) generated in vessel diameters (d) (Range 2.25 to 3 mm) seen in proximal LVOs (~M1), and vessel diameters (d) (Range 1.5 to 2.24 mm) seen in distal LVOs (~M2) was measured (figure 1). Radial Force of less than or equal to 1N was grouped as 'low' and radial force greater than 1N was grouped as 'high' for this analysis.

Results The results of the radial force testing are shown in the table 1. The total radial force (RF) of all laser-cut stent retrievers studied were all higher in the M2 vessels (>1N) compared to M1 vessels (≤1N), whereas the total radial force (RF) of the braided stent retrievers were uniformly low in both the M1 (≤1N) and M2 (≤1N) vessels. Choosing a stent retriever with lower OD does not translate to lower radial force. As a result, sizing of stent retrievers to target vessels should not only factor the OD of the devices but also the total radial force in the target vessel diameter.



Abstract P-023 Figure 1

Abstract P-023 Table 1 Comparison of total radial force in M1 and M2 vessels

Device	Distal OD of device (mm)	RF at 2.25 mm (N)	RF at 3 mm (N)	RF at 3 mm (Low or High)	RF at 1.5 mm (N)	RF at 2.24 mm (N)	RF at 1.5 mm (Low or High)
SHELTER® Retriever	6.0	0.56	0.30	Low	0.91	0.57	Low
Solitaire Platinum	6.0	0.98	0.73	Low	1.38	0.99	High
Trevo ProVue	4.0	1.11	0.64	Low	1.70	1.12	High
Solitaire 2	4.0	1.16	0.41	Low	1.81	1.17	High
SHELTER® Retriever Lite	4.5	0.09	0.03	Low	0.19	0.09	Low
Baby Trevo	3.0	1.11	0.67	Low	1.70	1.12	High
Capture LP	3.0	1.42	0.35	Low	1.86	1.43	High

Conclusion Novel braided stent retrievers have lower radial force compared to existing laser-cut stent retrievers in the M1 and M2 vessel diameters. Further studies *in-vivo*need to assess the impact of lower radial force on minimizing VWI.

Disclosures J. Katz: None. **A. Abou-Chebl:** None. **V. Janardhan:** 4; C; Insera Therapeutics, Inc. **V. Janardhan:** 4; C; Insera Therapeutics, Inc.

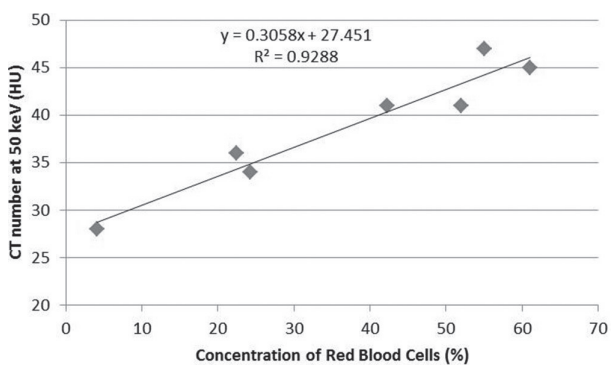
P-024 DUAL-ENERGY CT-BASED CHARACTERIZATION OF EXPERIMENTAL HUMAN CLOT ANALOGUES WITH DIFFERENT COMPOSITIONS CREATED UNDER DYNAMIC FLOW CONDITIONS: AN *IN VITRO* STROKE STUDY

[1]S Fitzgerald*, [1]A Rizvi, [1]G Michalak, [1]R Kadirvel, [2]K Doyle, [1]W Brinjikji, [1]D Kallmes. *[1]Radiology, Mayo Clinic, Rochester, MN; [2]CÚRAM–Centre for Research in Medical Devices, National University of Ireland Galway, Galway, Ireland*

10.1136/neurintsurg-2018-SNIS.60

Background and purpose Study investigators have demonstrated the utility of CT to characterize different clot compositions among patients with acute ischemic stroke (AIS) for preclinical evaluation of endovascular embolectomy devices. To this end, device selection can be optimized with accurate characterization of embolus in large vessel occlusions in these patients. Further still, prior data suggests increased clot attenuation with red blood cell (RBC) content on non-contrast CT scan. Nevertheless, there is paucity of evidence-based data for dual-energy CT-based characterization of human clot analogues created under dynamic flow conditions with different clot compositions to simulate various stroke etiologies. We therefore performed an *in vitro* study to optimize human clot characterization utilizing non-contrast dual-energy CT.

Methods Experimental clot analogues of varying compositions of RBCs and fibrin were created from fresh human blood. A modified chandler loop system was used for creation of these clots to simulate *in-vivo* dynamic flow conditions. The fresh human clot analogues were subsequently scanned with a second-generation dual source scanner (Siemens Definition Flash) using dual-energy head CT protocol (80/Sn 140 kV). Virtual mono-energetic images at 50 keV were generated from the dual-energy data. A region of interest (ROI) was placed over each clot phenotype and mean clot attenuation was measured. The composition of each clot composition was histologically verified using Hematoxylin and Eosin staining.



Abstract P-024 Figure 1

Results Eight fresh human clot analogues of varying compositions were generated in an increasing fashion of RBC content with corresponding decreasing fibrin content (RBC content: 3.83%, 4.07%, 22.41%, 24.31%, 42.31%, 51.79%, 54.91%–60.82%, respectively). Non-contrast dual-energy CT allowed for significantly improved discrimination among RBC-rich and fibrin-rich clot analogues based on Hounsfield Unit (HU) Density (R^2=0.9288, p<0.01).

Conclusions A non-contrast dual-energy CT with 80/Sn 140 kV provided significant differentiation among varying RBC-rich and fibrin-rich *in vitro* human emboli. Further studies are warranted to validate these findings.

Disclosures S. Fitzgerald: None. **A. Rizvi:** None. **G. Michalak:** None. **R. Kadirvel:** None. **K. Doyle:** None. **W. Brinjikji:** None. **D. Kallmes:** None.

P-025 OFF-HOUR PRESENTATION AND OUTCOMES IN PATIENTS WITH LARGE VESSEL OCCLUSION AFTER ENDOVASCULAR THERAPY: A MATCHED CASE-CONTROL STUDY

J Grossberg*, M Bouslama, D Haussen, M Frankel, R Nogueira. *Emory, Atlanta, GA*

10.1136/neurintsurg-2018-SNIS.61

Background Patients who are admitted during off-hours (nights and weekends) are thought to have worse outcomes. This might be explained by delayed times to treatment. We sought to determine the effect of off-hour presentation on processes of care and outcomes at a comprehensive stroke center.

Methods We reviewed our prospectively collected endovascular database at a tertiary care academic institution between Sep 2010-Dec 2016. All patients that underwent endovascular therapy for large vessel occlusion acute ischemic stroke were included and categorized into two groups: those arriving during regular hours (weekday 7 AM–7 PM) or off-hours. The 2 groups were then matched for age, baseline NIHSS and glucose levels using a weighted Euclidian distance method. Baseline, procedural, and radiological characteristics, as well as outcome parameters were compared.

Results 926 (463 pairs) patients were included. Patients presenting off-hours had higher rates of hypertension (78.2% vs 66.7%, p<0.01) and longer median time from last-known normal to picture (273 min [167–421] vs 253 [145–472], p=0.04). Other baseline characteristics including comorbidities, NIHSS, ASPECT scores, occlusion site were well balanced. There was no difference between groups in picture to puncture median time (57 min [38–95] vs 52 [36–78], p=0.11) and utilization of CT angiography (p=0.56) or CT perfusion (p=0.82) imaging. Moreover there were no differences between groups in terms of rates of successful reperfusion (mTici 2b-3) (p=0.26), parenchymal hematomas (p=0.12), 90 day good outcomes (mRS 0–2) (p=0.99) or mortality (p=0.52). In multivariate analysis, off-hour presentation was not associated with 90 day good outcome.

Conclusions Our study shows that patients presenting off-hours have similar picture to puncture times and clinical outcomes as those presenting during regular hours.

Disclosures J. Grossberg: 1; C; Georgia Research Alliance. 4; C; NTI. **M. Bouslama:** None. **D. Haussen:** None. **M. Frankel:** None. **R. Nogueira:** None.