**Results** 629 patients qualified for the study. Median age was 64 [54–75], median NIHSS was 16 [12.5–21] and median time from last-known normal to CT was 317 mins [193–578]. 161 (25.6%) presented with a TMC. On univariate analysis a TMC was associated with isolated deep MCA strokes (77.6% vs 56.6%, p<0.001) and higher collateral scores (3[2–3] vs 2 [1–3], p<0.001). There were no differences between patients presenting with a TMC and others in good outcomes (mRS 0–2) (50.8% vs 47.6%, p=0.53) or 90-day mortality (23% vs 17.6%,p=0.17) while TMC patients had lower rates of any parenchymal hematomas (5.2% vs 14.6%, p=0.02). After adjusting for potential confounders, isolated deep MCA strokes was identified as an independent predictor of TMC (OR 2.49 95%CI 1.63–3.8, p<0.001).

**Conclusions** Our results show that CT perfusion might miss infarct core in 25% of the case, especially in isolated deep MCA strokes. In those cases, a CT Perfusion based paradigm to determine eligibility for ET might not be as accurate. Future studies looking into the optimal selection tools for this patient population as well as refinements of the post-processing algorithms addressing this pitfall are warranted.

**Disclosures M. Bouslama:** None. **K. Ravindran:** None. **G. Rodrigues:** None. **L. Pisani:** None. **D. Haussen:** None. **C. Barreira:** None. **M. Frankel:** None. **R. Nogueira:** 2; C; Stryker Neurovascular (Trevo-2 Trial PI - modest, DAWN Trial PI – no payment, Trevo Registry Steering Committee – no payment, Physician Advisory Board/Consultant - significant), Covidien/Medtronic (SWIFT and SWIFT-PRIME Steering Committee - modest, STAR Trial Core Lab - significant), Neuravi/Cerenovus (ARISE-II Trial Steering Committee – no payment, Physician Advisory Board - modest), Phenox (Physician Advisory Board/Consultant – modest), Genentech (Physician Advisory Board/Consultant – modest). 6; C; Penumbra (3-D Separator Trial Executive Committee – no payment).

## E-058 LATEST ADVANCEMENTS IN CONE BEAM CT IMPROVE VISUALIZATION OF EARLY ISCHEMIC BRAIN PARENCHYMAL CHANGES DURING STROKE

[1]N Cancelliere*, [1]P Nicholson, [1]J Bracken, [2]F Nijnatten, [2]E Hummel, [2]T Grunhagen, [2]M Vlimmeren, [1]T Krings, [1]V Mendes Pereira. *[1]Joint Department of Medical Imaging, University Health Network, Toronto, ON, Canada; [2]Philips Healthcare, Best, Netherlands*

10.1136/neurintsurg-2019-SNIS.133

**Background and purpose** Time is essential for treatment of acute ischemic stroke (AIS) for patients with large-vessel occlusion (LVO). It is now well established that decreasing the time between stroke-onset to groin-puncture significantly improves functional outcomes for these patients (Bourcier et al., 2019). One potential method of shortening this time is to by-pass the CT department and bring patients directly to the angiosuite for baseline imaging. However, in order for this to gain mainstream acceptance, the diagnostic quality of cone beam CT performed in the angiosuite needs to be comparable to that of conventional CT to exclude haemorrhages and well-define the stroke core. Therefore, the purpose of this study was to compare the imaging quality of the latest generation cone beam CT (CB-CT) imaging to conventional multidetector CT (MD-CT) using a quantitative and qualitative analysis

**Methods** Patients with AIS who received endovascular mechanical thrombectomy were prospectively included in this monocentric study (n=55). Baseline MD-CT imaging acquired in CT was compared to one of two CB-CT imaging protocols acquired in the angiosuite: either the traditional CB-CT imaging protocol or the newest generation CB-CT imaging protocol, which has a faster acquisition time and improved built-in reconstruction algorithms. All three imaging datasets were analyzed using quantitative and qualitative measures. Average houndsfield units and standard deviations were calculated in 4 gray and 4 white matter regions and a contrast-to-noise ratio (CNR) was calculated. Two neuroradiologists with varying levels of expertise assessed 6 measures of image quality (Noise, Artefacts, Gray/white matter differentiation, Subarachnoid space sharpness, Ventricular margins, Distinctiveness of posterior fossa contents) using a 5-point Likert-scale (1= Very poor, 2= Poor, 3= Acceptable, 4= Good; 5= Very Good). Diagnosis of early ischemic changes were quantified using ASPECTS and scores were compared between groups.

**Results** Mean CNR in MD-CT (2.86±0.72) was superior to CB-CT imaging (2.24±0.87; p=<0.01); however, after dose correction (MD-CT= 105 mGy vs. CB-CT= 65 mGy), the difference in mean CNR values between both groups was eliminated (CB-CT dose corrected CNR= 2.93±1.29; p=0.58). Kruskal-Wallis one-way analysis of variance with follow-up Dunn's tests revealed that although MD-CT is superior to CB-CT image quality, the latest generation CB-CT imaging protocol provides images that are consistently superior to the traditional CB-CT imaging protocol in all 6 categories scored. New CB-CT images had less noise (p= <0.001) and artefacts (p= <0.01), and better gray/white matter differentiation (p= <0.001), subarachnoid space sharpness (p= <0.001), ventricular margins (p= <0.01) and distinctiveness of Posterior fossa contents (p= <0.02) compared to traditional CB-CT. Additionally, 90.3% of new CB-CT (n=28/31) scans were deemed acceptable to give an ASPECTS score, compared to only 50% of traditional CB-CT (n=3/6) images.

**Conclusions** The latest generation of CB-CT images are superior to older CB-CT imaging protocols, having superior quantitative and qualitative features. Although MD-CT is still superior, recent improvements suggest that CB-CT is acceptable for emergency stroke imaging assessment before mechanical thrombectomy, which reduces door-to-groin puncture times and improve patient outcomes.

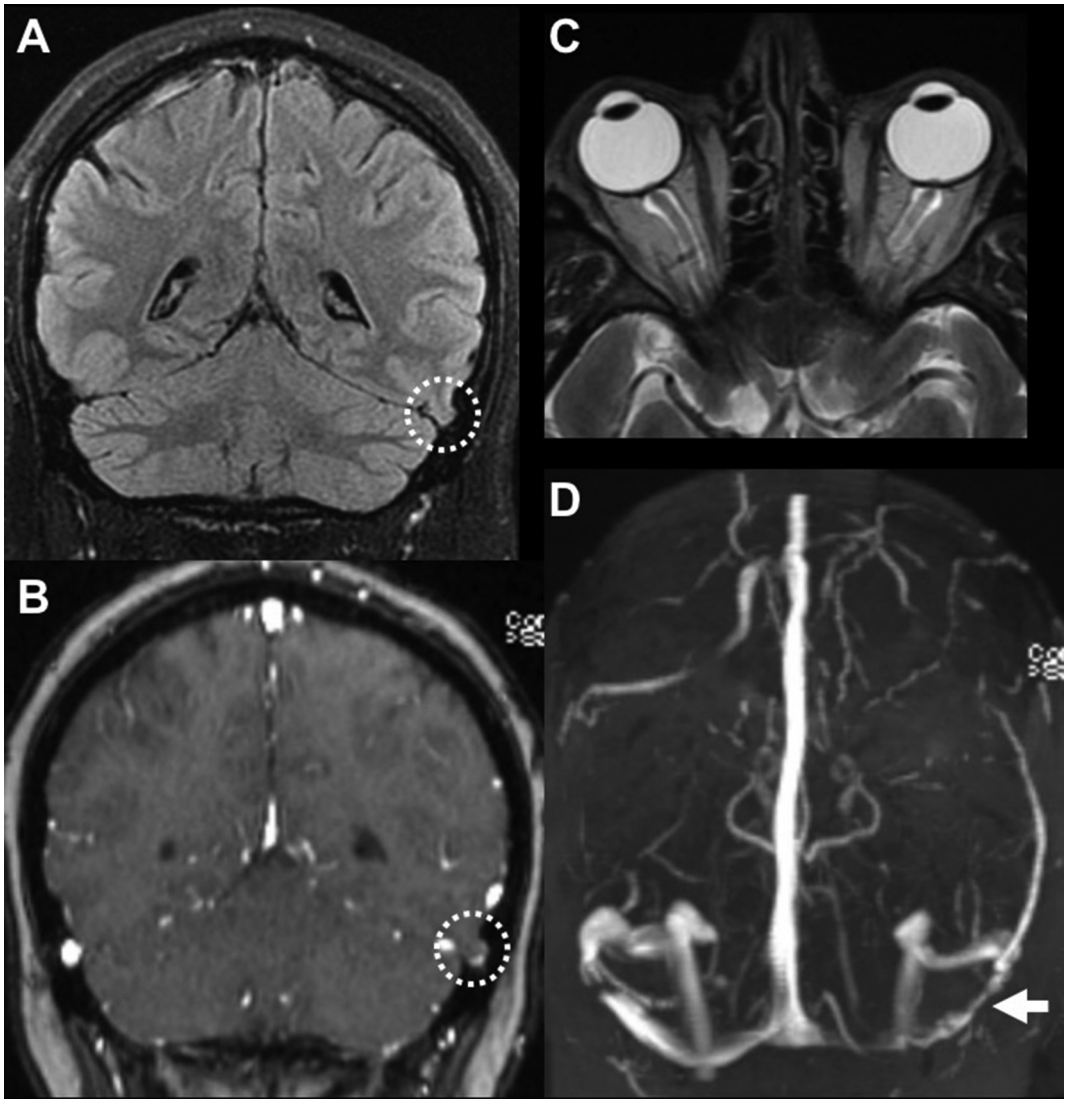
**Disclosures N. Cancelliere:** None. **P. Nicholson:** None. **J. Bracken:** 5; C; Philips Healthcare. **F. Nijnatten:** 5; C; Philips Healthcare. **E. Hummel:** 5; C; Philips Healthcare. **T. Grunhagen:** 5; C; Philips Healthcare. **M. Vlimmeren:** 5; C; Philips Healthcare. **T. Krings:** None. **V. Mendes Pereira:** 1; C; Philips Healthcare. 2; C; Stryker, Medtronic.

## E-059 DURAL VENOUS SINUS CEPHALOCELES IN THE PULSATILE TINNITUS CLINIC

[1]J Villanueva-Meyer*, [2]L Eisenmenger, [1]V Shah, [3]K Meisel, [1]M Amans. *[1]Radiology and Biomedical Imaging, UCSF, San Francisco, CA; [2]Radiology, University of Wisconsin, Madison, WI; [3]Neurology, UCSF, San Francisco, CA*

10.1136/neurintsurg-2019-SNIS.134

Brain herniations into the dural venous sinuses are recently described rare findings that are of uncertain etiology and clinical significance. We describe 18 instances of brain herniations




**Abstract E-059 Figure 1** Intracranial hypertension in the setting of a left transverse sinus cephalocele. (A,B) Coronal FLAIR and T1 post-contrast MR images show a small herniation of the left occipital lobe into the transverse sinus (dotted circle). (C) Axial T2 MR image shows flattening of the posterior globes and protrusion of the optic nerve heads as well as prominent subarachnoid space in the optic nerve sheathes. (D) MR venogram shows bilateral, left greater than left, transverse sinus stenosis, most pronounced at site of cephalocele (white arrow).

into dural venous sinuses in 16 patients identified on MRI and discuss their imaging findings, possible causes, and relationship to the patient's symptoms. All patients were examined with MRI including pre- and post-contrast T1- and T2-weighted sequences. With respect to brain herniations we documented their location, signal intensity, size, presence of arachnoid granulation, and associated dural venous sinus stenosis. We then reviewed clinical records in an attempt to establish if any symptoms were related to the presence of these herniations. 262 patients who presented to our institution's Pulsatile Tinnitus Clinic over a three year period were examined. 16 patients had brain herniations into dural venous sinuses (age range 25–79). 11 patients had unilateral temporal or occipital herniations into the transverse sinus or the transverse-sigmoid sinus junction, respectively. Three patients had unilateral cerebellar herniations into the transverse sinus. One patient had bilateral temporal herniations into the transverse-sigmoid sinus junction. One patient had bilateral occipital and cerebellar herniations into the transverse sinuses. Arachnoid granulations were seen in association with 13 of the herniations. Focal dural venous sinus stenosis was associated with 15 of the 18 herniations. In 9 of 16 patients (56%) symptoms matched side of brain herniation. 9 of 16 patients (56%) had intracranial hypertension. Brain herniations into dural venous sinuses are uncommon incidental findings with an uncertain relationship to pulsatile tinnitus and intracranial hypertension.

**Disclosures J. Villanueva-Meyer:** None. **L. Eisenmenger:** None. **V. Shah:** None. **K. Meisel:** None. **M. Amans:** None.

## E-060 A CASE OF TWIG-LIKE OR UNFUSED MIDDLE CEREBRAL ARTERY AND REVIEW OF LITERATURE

[1]A Schnure*, [2]A Sweidan, [1]I Yuki, [1]S Suzuki. [1]*Neurosurgery, UC Irvine, Orange, CA*; [2]*Neurology, UC Irvine, Orange, CA*

10.1136/neurintsurg-2019-SNIS.135

**Introduction** Twig-like or unfused middle cerebral arteries (MCA) are rare vascular anomalies. During embryologic development, it is hypothesized that the primitive MCA is made up of arterial twigs which develop into the definitive MCA.