E-175 INTRAVENOUS 3D DSA: READY FOR PRIMETIME?

[1]D Dawkins*, [1]A Ahmed, [1]D Niemann, [2]S Schafer, [3]B Aagaard-Kienitz. *[1]Neurosurgery, University of Wisconsin Hospital and Clinics, Madison, WI; [2]Research Collaborations Manager Siemens Medical Solutions, Siemens Healthineers, Malvern, PA; [3]Neurosurgery and Radiology, University of Wisconsin Hospital and Clinics, Madison, WI*

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Introduction Catheter-based angiography has long been the gold standard for assessment of cranial vascular anatomy. In patients where arterial access is contraindicated, or a fast assessment is needed, a 3D-DSA with an intravenous injection of contrast might be an acceptable substitute. We assessed our experience in consecutive IV 3D-DSA acquisitions from January 2018 to present.

Methods 42 patients underwent an IV 3D-DSA acquisition at our institution. Acquisitions were performed on angiography systems of different generations. Upon room arrival, an 18Fr injection needle was placed in the patient's right antecubital vein. Data acquisition was similar to a conventional 3D-DSA, using manual instead of automatic triggering for starting the mask and fill acquisitions. In one sequence, a mask acquisition was performed, followed by IV contrast injection and 2D-DSA to determine contrast arrival at the skull base, then manual triggering of the fill acquisition. Acquisition duration for each rotation was 9, 10 or 12 seconds, depending on the chosen acquisition protocol. Non-diluted contrast injection ranged from 80–100 ml of 370 mg/ml concentration iodinated contrast. Data was reconstructed into 3D-DSA, 3D Dual Volume, depicting device to vasculature relationship in a volume rendering, and as a CBCTA. Motion and metal artifact corrections were applied depending on system generation. Data was retrospectively analyzed for case indication, conversion to catheter-based arterial angiography (a surrogate for image quality), room time, use of anesthesia, complications and missed diagnoses.

Results The primary indication for IV 3D-DSA was aneurysm evaluation (35/42 cases), primarily post-surgical clipping (25) and stent assisted embolization (10). Other case indications included intracranial stenosis/occlusion (4/42) and extracranial stent evaluation (3/42). Three of 42 cases were converted to catheter-based arterial angiography due to non-diagnostic image data (7%). Room time was on average 26 minutes and two cases used anesthesia (one due to intra-operative image acquisition and one due to a history of epilepsy and cognitive delay). No complications were observed and no diagnoses were missed.

Conclusion IV 3D-DSA has significantly improved over the recent years and now offers the opportunity to obtain superior spatial resolution imaging compared to MDCT and is non-invasive compared to catheter angiography. Technological improvement such as motion/metal artifact correction allows for close inspection of neck residuals and aneurysm re-growth. Its use in the hybrid OR setting is promising for immediate post-operative confirmation of device placement and long term follow up of patients where catheter-based angiography is contraindicated.

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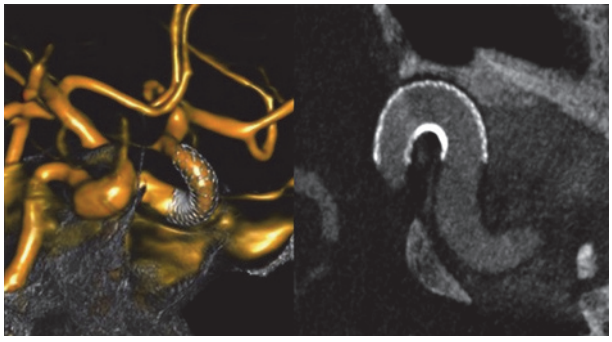

Abstract E-175 Figure 1 Pipeline follow up. 3D Dual volume rendering (A) and CBCTA (B) of pipeline embolization device. Device to

E-176 ASSESSMENT OF COMPOSITION OF BLOOD CLOT BY OPTICAL COHERENCE TOMOGRAPHY (OCT)

Y Ding*, M Abbassi, D Jakaitis, D Dai, R Kadirvel, D Kallmes, W Brinjikji. *Radiology, Mayo Clinic, Rochester, MN*

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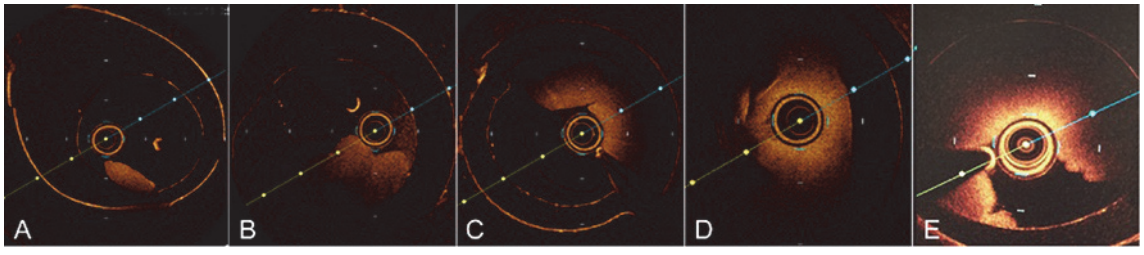
Purpose Optical coherence tomography (OCT) has been reported for potential use for differentiation of clot composition in cardiac patients. We tried to further validate its use for stroke patients using in-vitro clots with different percentage of red blood cells (RBCs) and fibrin.

Methods Blood was collected from a healthy volunteer and separated into plasma, buffy-coat, and erythrocyte-rich layers after centrifugation. The plasma and erythrocytes were harvested separately and then recombined in controlled ratios to form five different clot analogues with 2% thrombin added (5 analogues for each composition): Group A, fibrin-rich (95% plasma:5% RBCs; Group B, fibrin-rich (75% plasma:25% RBCs); Group C, intermediate (50% plasma:50% RBCs); Group D, RBC-rich (25% plasma:75% RBCs,) and Group E,



Abstract E-176 Figure 1