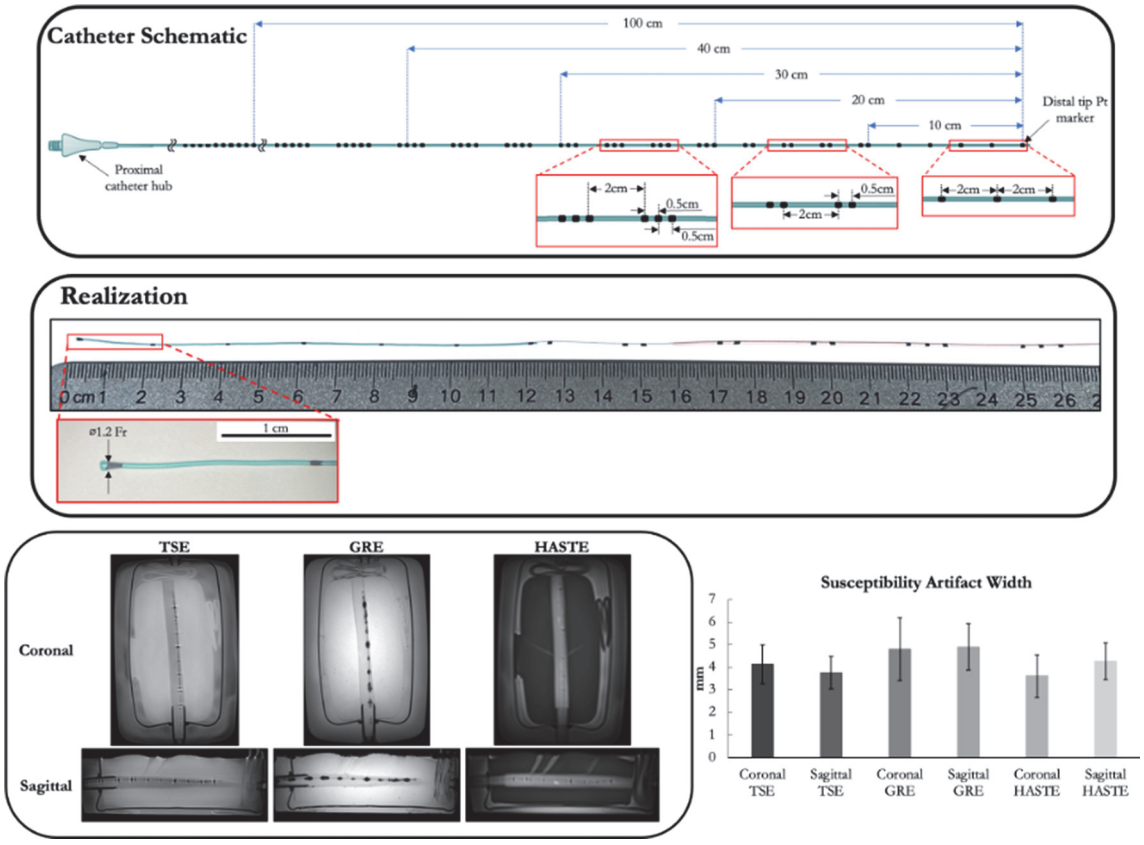

Abstract E-198 Figure 1

coaxially through a supporting polymeric guide catheter in the absence of flow. Real-time MR navigation was performed using a half-Fourier single shot turbo spin echo sequence (HASTE). Navigator feedback regarding visualization characteristics was collected. Susceptibility artifacts were measured per ASTM F2119–07 and on real-time captures in the same phantom.

Results Distal-most markers within 10 cm of the tip and some pairs within 20 cm of the tip were visualized, while others remained out of the field of view. The GRE demonstrated worst-case susceptibility artifacts – 4.80 mm and 4.91 mm in coronal and sagittal orientations, respectively. Navigators agreed that markers provided sufficient negative contrast and marker patterns clearly conveyed catheter positioning.

Conclusions A microcatheter with improved passive tracking methods was demonstrated at 3T. Passive markers enabled quick identification of tip position in real-time, streamlining the procedure. Preliminary results and navigator feedback in this study exhibited a prototype with improved tracking characteristics; however, navigation in more tortuous anatomy with flow is needed.

Disclosures B. Kilbride: None. **C. Jordan:** None. **P. Su:** 5; C; Siemens Medical Solutions USA Inc. **A. Chu:** 5; C; Penumbra Inc. **D. Barry:** 5; C; Penumbra Inc. **T. Moore:** None. **K. Narsinh:** None. **D. Cooke:** None. **A. Martin:** None. **M. Wilson:** None. **S. Hetts:** None.

E-199 AI-DRIVEN ANALYTICS PLATFORM FOR ADVANCED SURGICAL OR MONITORING IN NEUROINTERVENTION: WORLD'S FIRST FEASIBILITY STUDY

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Introduction/Purpose Safety in the Operating Room (OR) has improved in recent years with technical advancements, from modernization of medical equipment to personnel training and implementation of standard operating procedures. While the operator and surgical team have been trained with communication and teamwork skills that support situational awareness of errors in the OR, adverse events and workflows have nevertheless gone unnoticed. The OR Black Box™ is a system that tracks activities in the OR with cameras, sensors, and audio recording equipment from which data can be analyzed by deep learning technology. There is opportunity to proactively evaluate safety and efficiency in the interventional radiology workflow for endovascular interventions. The purpose of this study is to assess the angiosuite environment and identify potential areas of improvement in the neurointerventional radiology suite to support the clinical team in improving patient care.

Materials and Methods The OR Black Box™ system was installed in two dedicated neurointervention procedure suites: Philips Azurion and Siemens ARTIS icono. Audiovisual data was securely transmitted from each OR to the Surgical Safety Technologies Servers at the hospital data center. Analysis of the technical and non-technical performance, as well as environmental distractions during the procedure was conducted using a machine learning algorithm. Technical performance was assessed with the Generic Error Rating Tool (GERT) and Objective Structured Assessment of Technical Skills (OSATS). The non-technical performance was assessed by the Scrub Practitioners' intra-operative non-technical skills (SPINTS - SPLINTS) and Non-Technical Skills for Surgeons (NOTSS).

Results We present data on the initial series of cases performed in our two angiosuites, including procedures for aneurysms, acute ischemic stroke, and arteriovenous embolization. The workflow performance will be analyzed to identify organizational and patient-related disruptions, as well communication gaps that limit team cohesion for optimal patient care. Furthermore, the results will demonstrate the gaps in the surgical team's awareness of adverse events that could be addressed by improving the physical organization of the operating room and communication method between the neurointerventional, nursing, technologist, and anesthesiology teams. As such, the output of the OR Blackbox™ will reveal the root cause of adverse outcomes that can be prevented through individualized team training interventions for each of the two procedure suites. Results will be discussed in comparison to OR Blackbox™ in other areas of surgery, which would encourage adaptations of quality improvement practices between disciplines.

Conclusion The current study will provide insight on the implementation of the OR Black Box™ in the first neurointerventional radiology suites in the world. The preliminary results will guide implementation of improved protocols to optimize OR safety and increase efficiency of the interventional neurosugery workflow. We believe that deep learning technology will drive the future of neurointerventional procedures, and neurointerventional safety is no exception. While new understandings could disrupt standard practices, the ultimate safety and efficiency achieved will optimize patient outcomes.

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E-200 VALUE OF DUAL ARTERIAL ACCESS FOR IMPROVED ANGIOGRAPHIC CONTROL FOR DOUBLE-LUMEN ARTERIAL BALLOON ONYX EMBOLIZATION OF MULTI-FEEDER COMPLEX CRANIAL DAVFS: A TECHNICAL NUANCE

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Objective Describe experience managing intracranial dural arteriovenous fistulas (DAVF) via endovascular embolization utilizing transarterial embolization technique with liquid embolic agents. We illustrate the technical nuance of using dual arterial access for angiographic control runs in complex dAVFs supplied by multiple feeders from two distinct arterial systems.

Methods Retrospective analysis of intracranial DAVF embolization as a single treatment technique at our institution from 2013–2023.

Results Twenty-two patients with intracranial DAVF who underwent endovascular treatment as their initial treatment were included. All embolizations were approached transarterially with Onyx (n=18), NBCA (n=2), or combination (n=2). 95% (n=21) of patients had angiographic evidence of complete fistula obliteration after initial embolization. Six DAVF TAEs were performed with dual arterial access for simultaneous embolic delivery and angiographic control intraoperatively. Two patients (2/22) recanalized twice post-procedure, with one of these patients found to have incidental new DAVF at follow-up. Median patient follow-up was 15 months (IQR: 6–36) with median mRS on discharge of 1 and GOS at 3 months of 5.

Conclusion In this initial series of patients with DAVF managed by endovascular embolization, the authors found that this approach was feasible, safe, and effective in achieving fistula obliteration. Dual-arterial access conveniently provides access for control angiography and assessing embolysate delivery intraoperatively.

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E-201 OPTIMIZATION OF FLOW DIVERTER AND STENT COATINGS WITH PPODA, AN ESTABLISHED BIOCOMPATIBLE POLYMER

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Introduction Endovascular flow diverters (FDs) and stents, comprised of superelastic nitinol or cobalt alloys, have limited long-term biocompatibility. These metals are associated with thromboembolic complications, leach genotoxic and allergy-inducing metal ions, and exhibit inconsistent endothelialization across the aneurysm neck, resulting in delayed aneurysm occlusion. Although coated FDs exist, there is limited data on biocompatibility of coated versus uncoated FDs. There remains a need for further biocompatibility improvements using novel biomaterials and coating methods. PPODA-QT is a biocompatible polymer under development for the treatment of intracranial aneurysms. ISO-certified biocompatibility testing in canines confirmed that PPODA-QT exhibited superior hemocompatibility and complete endothelial growth over the aneurysm neck by 6-months. In this study, various PPODA coating methods were tested on nitinol wires to determine coating continuity and mechanical stability for use in future biocompatibility studies.

Materials and Methods Ultrasonic cleaning was used to prepare the surface of nitinol wires. Chemical vapor deposition (CVD) was used to functionalize the wire surface to improve polymer adhesion. Silane-bound wires were then exposed to a basic PPODA solution, resulting in a Michael addition reaction between the terminal thiol groups of the silane and PPODA. Scanning electron microscopy (SEM) with energy dispersive x-ray spectroscopy (EDS) was used to verify coating presence and continuity. Various nitinol surface treatments and CVD parameters, such as oxide thickness and deposition time