Conclusion By building upon previous animal modeling experiences with rabbit, swine, and canine, we are able to develop a specific model for the simulation of endovascular techniques and device deployment in large aneurysm morphologies. This model is currently being used to test the liquid embolic, NeuroCURE[®]. The model has been approved by the Food and Drug Administration (FDA) for NeuroCURE assessment, with the goal of reducing large aneurysm recurrence rates in patients.

Disclosures T. Becker: 1; C; NIH STTR Phase II (2R42NS097069-02A1). 2; C; Anevas Technologies, Inc. 4; C; Anevas Technologies, Inc. 6; C; Anevas Technologies, Inc. W. Merritt: 2; C; Anevas Technologies, Inc. C. Settanni: 1; C; IH STTR Phase II (2R42NS097069-02A1). N. Norris: 1; C; IH STTR Phase II (2R42NS097069-02A1). A. Ducruet: 1; C; IH STTR Phase II (2R42NS097069-02A1). 4; C; Anevas Technologies, Inc. M. Preul: 1; C; NIH STTR Phase II (2R42NS097069-02A1). 4; C; Anevas Technologies, Inc.

E-203 SHEATHLESS LOW-PROFILE RADIAL ACCESS UTILIZING THE 071 BENCHMARK GUIDE CATHETER FOR COMPLEX ANTERIOR & POSTERIOR CEREBROVASCULAR INTERVENTIONS: HIGH TECHNICAL SUCCESS/LOW COMPLICATIONS WITH 'RULE OF .8'

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Introduction/Purpose Two factors limiting first line radial access for complex cerebrovascular interventions include: radial artery diameter and available catheter technology. Our rule for patient selection is to maintain a radial artery/sheath ratio of $\geq .8$, which we used as the primary inclusion criteria for all procedures. We have increasingly attempted sheathless radial access allowing for largest inner and smallest outer diameter. We describe a low cost/simplified approach to direct radial access with a commonly available guide catheter. We then present our experience of transradial cerebrovascular interventions comparing outcomes between procedures performed using a 6F Terumo Slender Sheath/Benchmark guide (OD 2.53 mm) versus direct sheathless radial access with the Benchmark (OD 2.0 mm).

Materials and Method Single institution retrospective electronic query of all 6F radial access procedures performed between October 2010 and March 2020 access for cerebrovascular intervention using a Penumbra Benchmark 6F guiding catheter. The procedures were divided in Group 1 - 133 pts (sheath) and Group 2- 32 patients (sheathless). Summary Technique for Direct/Sheathless Access

1. **Ultrasound guided:** Target vessel selection/measurement. ***Inclusion:** artery diameter/sheath diameter $\geq .8$)

4F micropuncture/21 g needle: Radial angiogram and Radial cocktail **Exchange:** Micropuncture sheath/sheathless Benchmark/BER over $.035 \times 180$ cm glidewire Primary outcomes included: failure of primary access (need to convert to femoral access) and major complications requiring surgery or transfusion. Secondary outcomes included: infection, development of AV fistula, or development of pseudoaneurysm.

Results Procedural success (completion of planned procedure) was achieved in 98.2% of patients (average of groups 1 and 2), no significant difference. Procedures performed included a wide spectrum of intracranial pathologies, however, aneurysm

treatment represented $>60\%$ of procedures. Success with the primary access site cannulation was 100% for both Group 1 and Group 2, when using rule of $\geq .8$. No major complications were encountered in either group of patients; no patients required transfusion or emergency vascular surgery for vessel injury/avulsion, digital ischemia, or compartment syndrome. One patient was identified in Group 1 with a symptomatic radial artery-vein fistula underwent successful elective out-patient surgical repair at 12 months.

Conclusion Sheathless radial access using a Penumbra Benchmark 071 guiding catheter can be used for cerebrovascular interventions in both anterior and posterior circulation pathology. High technical success completing index procedure, success with arterial cannulation and low complication rates may be attributed to patient selection/technique (maintaining artery/sheath ratio of $\geq .8$). Direct radial access requires smaller vessel diameter potentially expanding eligible patients with smaller radial artery diameters.

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E-204 NOVEL BLOOD ANALOGUE FOR IN-VITRO NEUROVASCULAR MODELING

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Introduction *In-vitro* models for simulating surgical procedures is a cost-effective way of creating fail-safe surgical protocols. Insights gained from these models can also aid in testing new medical devices and reduce the use of animal models. Traditional glass- and silicone-based *in-vitro* models use distilled water with surfactant additives for lubricity. However, a new material, carboxymethyl cellulose (CMC) dissolved in distilled water, can mimic the mechanical and rheological properties of blood. We have shown that CMC fluid out-performs distilled water, glycerol mixtures, and bovine blood, in terms of physiological accuracy.

Methods We tested the density and dynamic viscosity of the following blood analogs: CMC, distilled water, glycerol mixture (22 wt%), bovine blood (*Bos taurus*). For each material, samples were tested with a 20 mm cylindrical parallel plate head geometry (0.25 ml) attached to a hybrid rheometer (DHR-2, TA Instruments), set at 37°C (human physiological temperature). Three samples of each blood analog were tested and repeated 5 times. A shear rate sweep from 15 to 105 1/s was tested to cover a wide range of physiological blood flow rates.