Elastic modulus, shear modulus, and gelation time were evaluated for the varying formulations of PPODA-QT to identify whether differences in contrast agent and/or contrast concentration compromised the resulting material’s integrity. A graph of viscosity and phase angle shows the polymerization of the PPODA-QT within an acceptable procedural timeframe (figure 1A).

Radiopacity was quantified in three visualization scenarios, following the ASTM F640–79 protocol. These real-time visualization steps simulated injection into an appropriate vascular model (aneurysm approximation — figure 1B). The time-lapse visualization allowed quantification of percent-loss of contrast over time, as the PPODA-QT was submerged in Ringer’s solution. The fluoroscope images were analyzed using Adobe Photoshop software.

Conclusions The PPODA-QT device introduces innovations in delivery control, aneurysm healing effects, and reduced downstream emboli that have not been consistently addressed by previous treatment options. This venture represents a collaboration between bioengineering and neurosurgery fields, namely, the Northern Arizona University’s Bioengineering Devices Lab and Barrow Neurological Institute. This study will ultimately prove important in providing physicians with a new and effective weapon in their arsenal for the treatment of cerebral aneurysms.

Disclosures W. Merritt: 1; C; National Institute of Health. 5; C; Northern Arizona University, Aneuvas Technologies Inc. T. Byakeddy: 1; C; National Institute of Health. W. Caimé: 1; C; National Institute of Health. A. Huckleberry: 1; C; National Institute of Health. T. Becker: 1; C; National Institute of Health. 4; C; Aneuvas Technologies Inc. A. Ducruet: 5; C; Barrow Neurological Institute.

Abstract E-030 Figure 1  A) graph of PPODA polymerization time—PPODA is considered solidified at a phase angle of 45°; B) radiopacity test for PPODA in a simulated aneurysm model

Abstract E-031 Figure 1

E-031 RADIAL ACCESS FOR CEREBROVASCULAR INTERVENTION USING PENUMBRA BENCHMARK 071 GUIDING CATHETER

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**Introduction** Radial access is increasingly being considered as first line access for neurovascular interventions. Currently, there are no dedicated guiding catheter designs for neurovascular procedures via radial approach. We sought to evaluate technical success, complications, and efficiency when using the Penumbra Benchmark 071 inch guiding catheter in conjunction with Penumbra Select diagnostic catheters for neuro interventional procedures.

**Methods** A single-center retrospective review over 2 year period (1/2016 to 3/2018) of consecutive radial access procedures (using a 6F sheath) was performed. Patient demographics, equipment, time from radial access to target vessel catheterization, procedure times, and complications were identified. Results 28 patients undergoing cerebrovascular intervention met criteria for inclusion. There was 100% technical success in accessing the target vessel using radial access as the first line approach. Average age: 63 Gender: 75% Female Target vessel: Right internal carotid artery – 32%, left internal carotid artery – 36%, vertebral artery – 25% Time from radial access to target vessel access: 14 min (including 2 patients with 37 and 33 min access required for LICA).

**Procedures** Aneurysm treatment 10/28 (36%) primary coiling 2/28 (7%) Balloon assisted coiling (*1 patient was BAC with PED) 8/28 (29%) Stent-assisted coiling 4/28 (14%) Pipeline embolization) 2/28 (7%) Intracranial stenting Wingspan 1/28 (4%) AVM or dural AV fistula embolization 1/28 (4%) Left Subclavian Stent Complications: With the exception of mild non-flow limiting spasm, no major catheter-related complications (iatrogenic dissection) or radial access site complications were encountered. No patients required conversion from radial to femoral access. One patient had in-stent thrombosis which was successfully treated with IA infusion of BBIA; no associated permanent neurologic deficits.

**Discussion** Although not specifically designed for radial access, the Penumbra Benchmark 071 inch guiding catheter, we were able to use it to perform 32 consecutive neurovascular procedures, without major access site or catheter-related complications.

When the catheter is placed in a high proximal intracranial position, there is sufficient internal diameter and a stable proximal construct can be established to perform a wide range of complex neurovascular interventions including pipeline embolization, balloon assisted coiling, and arteriovenous malformation embolization.

**Conclusion** The Penumbra Benchmark 071 guiding catheter can be used to perform neurovascular interventions via a radial access and was found to beatraumatic, easily trackable, flexible and stable, with a large enough ID to perform most cerebrovascular procedures.

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**Recent breakthrough in endovascular technology, appearance of a broad variety of intracranial stents and flow-diverting devices, turned endovascular surgical neuroradiology into the first line of treatment for said pathology in several institutions. Nowadays exist two standard approaches for endovascular treatment of distal aneurysms with the first one being an implantation of flow-diverting device and stent assisted coil embolization (SAC) as the second one.**

**Materials and methods** 1567 patients with cerebral aneurysms underwent treatment in our department since January 2011. Among them, 116 patients had distal circulation aneurysms. Twenty-four patients were treated with flow-diverter implantation, the devices were as follows: Pipeline (n-5), Pipeline Flex (n-11) Pipeline Shield (n-1), FRED (n-4), Fred jr (n-1) P64 (n-2). 92 patients were treated by stent-assisted coil embolization. Among them 81 patient were treated by low-profile stent-assisted coil embolization with LVIS jr. 11 patients were treated by stent-assisted coil embolization with Enterprise (n-6), Solitaire AB (n-4) and Leo (n-1) We defined localization of an aneurysm in distal circulation for aneurysms beyond the circle of Willis. Rates of technical issues, intraoperative complications, morbidity and mortality and recanalization (Raymond and Roy scale) were assessed for either group.

**Results** Among patients treated by FD 2 (8.3%) had major complications that led to dependent outcome in one case and to mortality in other one. Among patients treated by SAC 2 (1.7%) had major complications that led to dependent outcome. However the difference between groups by initial analysis did not meet statistical significance (p=0.46). The rate of combined Raymond and Roy class 1+2 recanalization did not vary significantly between groups (p=0.46) and consisted 20.5% (5 pts) for FD and 29% (34 pts) for SAC. Nevertheless, true recanalization rate for FD was significantly lower (p=0.0273) and consisted 4.1% (1 pt) vs 25% (30 pts) for SAC.

**Conclusion** While either method allows for safe occlusion of an aneurysm with a similar complication rate, flow diversion provides higher rate of total occlusion, but combined near total (Raymond and Roy 2) and total occlusion rate does not vary among groups. Morbidity and mortality in either group didn’t exceed the rate stated by the literature. Keeping in mind that, low-profile stent-assisted coil embolization provides immediate occlusion in comparison with long-term occlusion by FD we can suggest, that both methods are suitable but the decision should be based on individual risk of aneurysm rupture for each patient.

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