

a sacrifice of flow via the left A1. Finally the patient was evaluated by a retinal specialist for post-treatment changes.

Results CTA and catheter angiography revealed a 25 mm donut-shaped giant aneurysm. Contrast entered via the proximal A1 and continued in a circular pattern. The outflow was separate, into the more distal A1. A Murphy's point along the superior margin of the donut represented the rupture site. Dome protection with coils at that location also disrupted the circulation of blood, reversed flow direction that now took the short route instead of the circular, long route. One week later an adequate carotid cross-compression angiogram revealed good cross-filling from right ACA to left ACA. That simplified our treatment options; the aneurysm was obliterated with coils. The left A1 segment was sacrificed. Following the procedure the patient noted 'black spots' in her vision in the left eye; neurologic exam was nonfocal; bedside acuity exam was 20/25. Retinal evaluation revealed small retinal hemorrhages in the left eye.

Conclusion Donut-shaped giant aneurysms are a rare subtype, accounting for $\leq 1\%$ of partially thrombosed giant aneurysms. The mechanism is proposed to be a circular, laminar flow within the aneurysm that leads to eventual central intraluminal thrombosis. In our patient the unusual feature is the separate inflow and outflow zones, separated by a 4-millimeter segment of the donut. The relationship to the optic tract remained unclear, to be further evaluated with an upcoming MRI. Our patient experienced visual symptoms shortly after final embolization and subsequently was found with several small retinal hemorrhages. How the optic nerve is associated with the aneurysm, is it possibly pinched between the aneurysm and the bony sella, or simply has some shared vascular supply, may be better determined by MRI.

Disclosures S. Strasser: None. L. Miskolczi: None. C. Azaret: None. C. Ionita: None. T. Lara: None. M. Lesser: None.

E-028 PARTICLE SIZING THROUGH IN-LINE HOLOGRAPHY

I Smith*. Northern Arizona University, Flagstaff, AZ

10.1136/neurintsurg-2019-SNIS.103

Introduction/Purpose Endovascular devices are becoming more widely accepted ischemic stroke treatment options in patient

healthcare. Current device testing methods must be developed to quantify downstream particulate migration. *In vivo* models are limited by local vessel structure and may lack neurovascular feeder vessels. Limited feedback devalues assessment of particles and downstream movement of devices/materials. NAU's Bioengineering Devices Lab has developed an *in vitro* blood flow and stroke model, which replicates the conditions of the neurovascular system. In prior workings, the *in vitro* model has quantified material particles via filtration and microscopy to analyze captured particles. This process was time, resource, and data-intensive and required flow within the model to cease as researchers interchange filters. Now a noninvasive method allows researchers to quantify and characterize particles in real time.

Materials and methods These improvements are made possible through digital holography. Holography records a particle's amplitude and wavefront phase to produce a pattern that can create a 3D holographic image with a CMOS camera. The pump delivers pulsatile flow with a pressure profile that tunes to physiological conditions. The Holographic system consists of a HeNe laser and an in-line cuvette to analyze the liquid passing through with light refraction (figure 1).

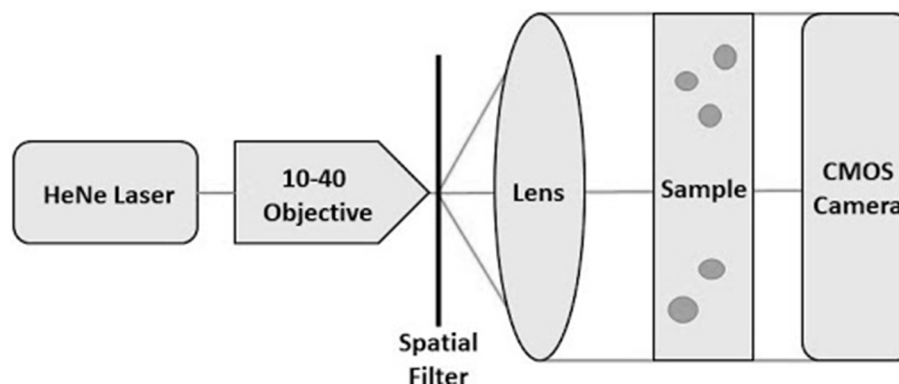
Results Long and short term testing helps determine the potential material efficiency within the vascular system. Analysis of real-time data will quantify particulate size. Results then are compared to (<USP 788> - table 1) regulations.

Abstract E-028 Table 1 (<USP 788>) Specifications for injectable liquids and particulate size

Particulate Size	Required Specs
> 100 μm	0 particles
25 μm to 100 μm	< 300 particles
10 μm to 25 μm	< 3000 particles

Conclusion The study results will help predict device performance within the neurovascular system to affirm the safety of the polymer biomaterial, PPODA-QT, in practical usage. With state of the art equipment and procedures, new innovative research arises.

Disclosures I. Smith: None.



Abstract E-028 Figure 1 Holography Imaging Setup. Laser diffraction compares the particle index to refraction of the particles to determine size. Digital convergence of 3D diffraction patterns to 2D particle image via algorithm is conducted. PPODA-QT injects into the in-vitro model's aneurysm bubble, and a LabView VI (National Instruments, TX) processes real-time particulate migration data