PRODUCT
Mechanical testing machine for examination of small arteries and veins

INDICATION
Cerebrovascular Tissue, Small Vessel Tissue, Mechanical Testing

VALUE PROPOSITION
- Allows for in-depth analysis of delicate veins and arteries.
- Accurate mechanical testing for small vessels.
- Provides relevant measurements for device design and testing.

DEVELOPMENT STAGE
Prototype Developed
MVP Build-Out

INTELLECTUAL PROPERTY
Patent Pending

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IDF 2023-169

Cerebrovascular Tissue and Small Vessel Tissue Mechanical Testing Machine

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UNMET NEED
Biomechanical testing machines allow researchers to study mechanical properties of various biological tissues by applying controlled mechanical loads. These machines are tailored for specific tissues and contribute important information regarding testing of relevant medical devices. However, current machines on the market are not well-suited for cerebral vessels and arteries as they are meant for larger tissues. Small vessels and arteries can be damaged and lead to inaccurate measurements, as well as fail to recapitulate vessel dilation in a physiologically relevant fashion. A new test machine is needed to allow smaller arteries and veins to be accurately tested.

SOLUTION
Current mechanical testing machines use grippers to mount and pull specimens biaxially, but this creates stress and confounds mechanical data. The proposed device provides time-dependent, nonlinear viscoelastic data of small arteries and veins through constant and pulsatile mechanical testing. A constant internal pressure is applied to the desired vessel, providing relevant measurements for medical device design and testing. Additionally, Newtonian and non-Newtonian fluid testing can be conducted, examining mechanical response and providing accurate data where it would have been extremely difficult, if not impossible, to do using existing biaxial mechanical testing machines.