

## **CerebroSense: A Brain Pulsatility Measurement Device**

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During open-brain surgeries, neurosurgeons and anesthesiologists take advantage of the pulsation of the brain with a metric known as brain pulsatility, defined as the change of cerebral volume over the change in cuff pressure. This metric is monitored as a way to evaluate the cerebral condition of the patient. However, the current measurement is limited to a qualitative determination by means of a surgeon physically feeling the brain. This qualitative assessment can easily result in inaccurate determinations leading to complications during and after surgery, in particular, problems caused by the under/over anesthesiological compensation, such as cerebral ischemia and cardiovascular problems.

The team's solution is CerebroSense, a brain pulsatility measurement device that utilizes ultrasonic sensing technology to provide a non-contact, quantitative, and real time determination. This device can be safely pointed at the exposed brain tissue, sending sound waves towards the surface of the brain and returning a pulsatility value.

With an approximate 160,000 open-brain surgeries performed in the US per year, and an average cost of \$60,000 per case due to complications, CerebroSense offers a way to reduce both costs and risks as the first device of its kind to gather quantitative data intraoperatively.