

Embolune By Louis Chen

- **Embolune** was is a revolutionary device invented by Biomedical Engineers from Stanford University. It was invented to treat cerebral aneurysm. The team of 6 engineers won the first Biomedical Engineering Innovation Design Award (BMEidea) competition, which was held this year.
- A cerebral aneurysm is a “weakness in the wall of an artery causing a pouch or a swelling in the blood vessel. The thin walls of an aneurysm can burst and cause bleeding into the tissues of the brain”
 - There is a 66% Mortality Rate when it ruptures, it is almost equivalent to a gunshot to the head. If the first time heals, there is a 96% mortality rate from the re-rupture (usually within 3 months)
 - Responsible for 5-6 percent of all strokes
 - Blood damages the brain cells in the cerebrum, especially excessive blood from a blood vessel burst
 - Exact Mechanisms for how cerebral aneurysm are caused are still unknown. However they believe that diet, smoking, genetics, previous damage, and complications in blood infections may have a roll in this.
 - This affects 8 percent of all Death’s in the US

Challenges

One of the biggest challenges is to get to the area where the blood vessel has the weakness. When a Cerebral Aneurysm is within the brain stem (diencephalon, mesencephalon, metencephalon), it can be reached rather easily. However when it is within the parietal lobes, any of the deeper layers in the brain, it requires heavy, very invasive, complex surgery involving removing parts of the cranium, and requires heavy long recovery.

There are 3 Alternative Methods, clipping, Medication, and coiling. These are in common practice now.

- Embolune is based off of coiling, following the same non evasive procedures.
- This tip is a porous balloon mechanism that when discharge sends a balloon into the aneurysm, and quickly hardens with a polymer substance which permanently fills the area.

Sources

- <http://www.neurosurgerytoday.org>
- <http://www.brainaneurysm.com>
- Human Anatomy Lab guide and Dissection Manual
- Human Anatomy Book
- <http://w3.dwm.ks.edu.tw>
- <http://www.sirweb.org>
- <https://www.browardhealth.org>
- <http://www.devicelink.com>