



## New Device for Treating Stroke by Removing Clot and Embolic Plaque

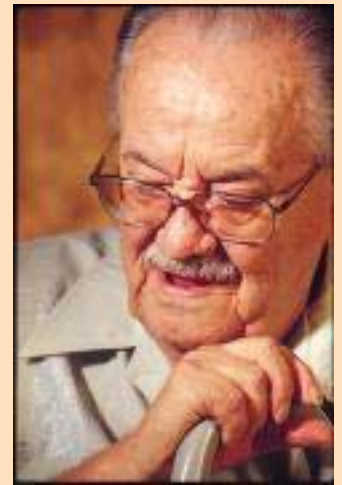
*Each year about 700,000 people in the United States suffer a new or recurrent stroke. More than 163,000 stroke victims die each year, making stroke the third leading cause of death. Many of the 4.8 million U.S. stroke survivors alive today suffer from stroke-related disabilities. Overall, the estimated direct and indirect cost of stroke is over \$50 billion a year. Researchers at the University of Florida have developed a new device that will allow doctors to break up and retrieve stroke-causing material from blood vessels. The device consists of a tiny balloon-catheter that is used to expand an elastic cage. The cage gently cuts the blood clot, then captures the clot material when the cage collapses. This new technology will assist doctors in improving the quality of life for stroke victims.*

### Applications

New medical device to cut and remove stroke-causing material from the blood vessels of stroke victims

### Advantages

- ◆ Can be made of soft, elastic material, minimizing the damage caused to the blood-vessel walls surrounding the clot
- ◆ Made of inexpensive polymers, reducing the material and manufacture expense associated with currently available devices
- ◆ Device is highly flexible and maneuverable, allowing it to be navigated through the twisting vascular structure in the brain more easily than other devices, and permitting operation in previously inaccessible vascular areas, including intracranial, urinary, biliary, bronchial, coronary, and other systems
- ◆ Device is elastic, allowing the cage to be expanded and collapsed multiple times in order to obtain the best size and position for clot removal
- ◆ Permits exact cage size control, making it possible to work with a variety of blood vessel sizes with the same device



UF's thrombus cage helps improve the quality of life for stroke victims

### The Technology

The invention is a novel mechanical thrombolytic and thrombus retrieval device most suitable for the treatment of stroke. It consists of a balloon expandable tubular covering, which is elatomerically captured over the modified balloon of a balloon-catheter. The tubular covering has a number of pre-designed cuts on its surface. When the balloon is inflated by means of saline pressure, it forces the tubular covering to take the shape of a cage with a number of pressure-activated soft and elastomeric string-like thrombus cutters. These strings cut (thrombolysed) the clot and capture (retrieve) them inside the cage when the catheter is gently operated back-and-forth (push-pull mechanism) through the clot.

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## The Inventors



*From left:*

**Christopher Batich, Ph.D.**, Director of the UF Biomedical Engineering Program, holds at least 10 patents with 11 more pending. He has been featured in Marquis' Who's Who in Medicine and Healthcare and The Official Who's Who of American Inventors. Dr. Batich has served on the university's Biotechnology Patent Committee since 1984.

**Eric Eskioglu, M.D.**, came to the University of Florida after a surgical residency at Vanderbilt. He served as Clinical Research Training Program Fellow at the National Institute of Neurological Disorders and Stroke.

**Robert A. Mericle, M.D.**, Assistant Professor at the University of Florida Department of Neurosurgery, has authored over 40 scientific articles and book chapters, has five patents pending, and is Director of the university's Neuro-endovascular Fellowship Program.

**Swadeshmukul Santra, Ph.D** is an Assistant Professor in the University of Florida Department of Neurosurgery. He has collaborated with Dr. Mericle to research endovascular treatment of intracranial aneurysms, intracranial arteriovenous fistulas, and stroke. Dr. Santra has authored more than 20 papers in a variety of peer-reviewed journals and applied for 3 US patents so far.

**Jessie Stanley** is a University of Florida student and Senior Laboratory Technician, responsible for development of animal models for testing endovascular devices and performing animal experiments.

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