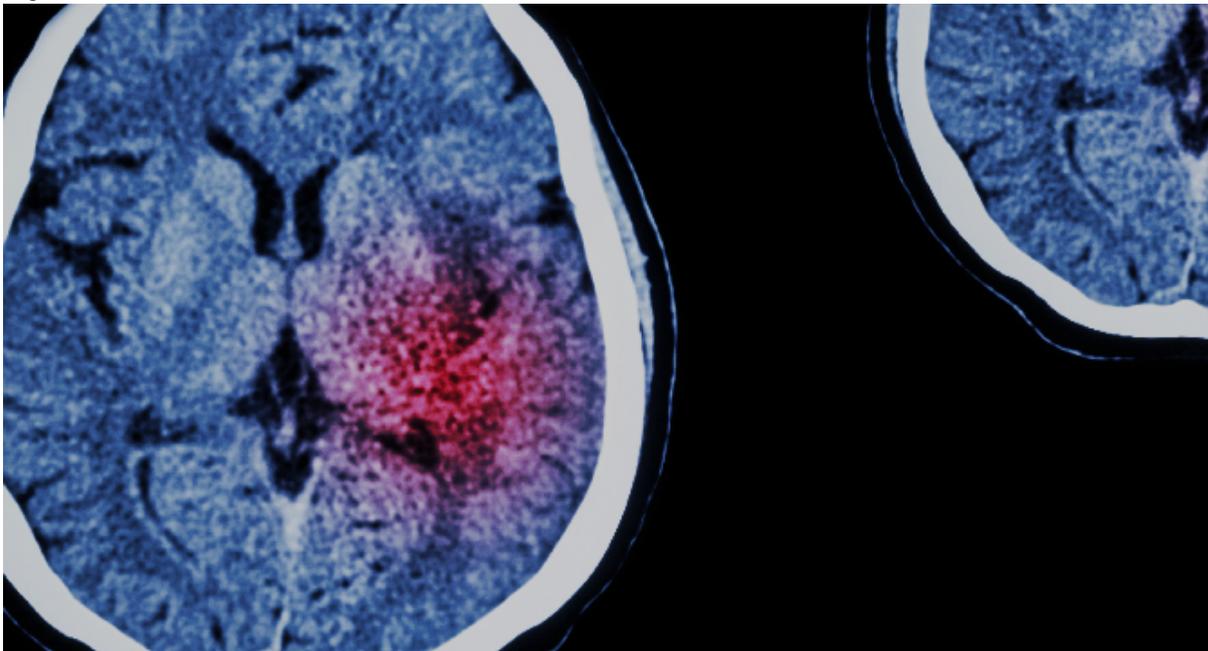




New procedure allows doctors to navigate delicate brain tissue to treat bleeding strokes

By AMERICAN HEART ASSOCIATION NEWS



Any stroke can leave a devastating wake of damage in the brain, harming a person’s ability to move and talk and think. But hemorrhagic strokes – the less-common type caused by bleeding in the brain – have been the most frustrating because treatment options are few and outcomes so persistently poor.

“Only 10 to 15 percent of these patients have acceptable or good outcomes,” said Julian Bailes, M.D., chairman of the Department of

Neurosurgery and co-director of the NorthShore Neurological Institute outside Chicago. About one in five hemorrhagic stroke victims die, and many survivors suffer severe disability.

For ischemic strokes caused by a clot, a clot-busting drug called tPA has been available for two decades, and guidelines were updated last year to recommend a new treatment that uses tiny devices to snag large clots from a blocked artery in the brain. Meanwhile, hemorrhagic stroke treatment options have lagged behind.

But this fall, neurosurgeons in Atlanta will launch a clinical trial to test a new type of minimally invasive surgery for intracerebral hemorrhagic stroke. Surgeons start by opening a small window in the skull, about an inch wide. They navigate carefully to the damaged area using MRI scans of the patient's brain. Dime-sized instruments drain the pooled blood and remove any clots, with surgeons avoiding sensitive brain tissue as the tools are removed.

All that within about 30 minutes, said Bailes, who will lead one of the 15 institutions participating in the trial. But he is also one of a growing number of surgeons around the country already using a version of the new method to treat hemorrhagic stroke patients.

"It's quick, easy, a very effective cutting-edge surgery that seems to have tremendous advantage," said Bailes, a brain injury expert played by Alec Baldwin in the film *Concussion*.

So it doesn't matter that the official clinical trial won't begin until later this year, and it could be months or more before results are analyzed.

"We don't want to deny access for appropriate patients," he said.

For ischemic strokes, clot-busting drugs can help if given quickly. That's a big reason people are urged to understand stroke symptoms and get to the hospital fast.

In hemorrhagic strokes, though, a brain vessel leaks or ruptures. Leaking blood damages brain cells, so any medications that stop clotting could make these strokes worse. Of the roughly 795,000 strokes that occur in the United States each year, about 13 percent are hemorrhagic, according to the National Institute of Neurologic Disorders and Stroke. The upcoming multicenter, randomized trial, dubbed ENRICH, will have its roots in Atlanta, the “buckle of the stroke belt” in the South, said Daniel Barrow, M.D., one of the study’s lead investigators and chair of the neurosurgery department of Emory University. Stroke death rates in Southern states – home to more than half of the nation’s African-Americans – are significantly higher than in other regions of the United States. The reasons are not clear, but Barrow said it may be related to higher-than-average rates of high blood pressure – a leading risk factor for stroke – among African-Americans.

Barrow and fellow lead investigator Gustavo Pradilla, M.D., the chief of neurosurgery at Atlanta’s Grady Memorial Hospital, are optimistic but realistic. Pradilla and Bailes are coauthors on a small study recently published online in *Neurosurgery* that showed the approach was safe and effective.

“But we need to see if this randomized trial shows clear indications of benefit,” Barrow said.

When the trial launches in October, the research team will enroll at least 300 intracerebral hemorrhage patients, who will receive either medical management (the current standard of care) or the surgery. Management consists of blood pressure-lowering drugs, supportive care and perhaps medications to reduce pressure inside the skull.

The experimental surgery has several parts, beginning with sophisticated MRI-based “tractography” to map the stroke-affected areas

of the brain in exquisite detail. GPS-type navigation systems help surgeons guide their instruments through the brain, avoiding areas involved in speech and motor skills and fibers that connect one lobe of the brain to others.

BrainPath, medical technology made by Indianapolis-based NICO Corporation, helps make the surgical technique possible. Using the navigation system, commercially available since 2012, a surgeon can guide instruments carefully toward the stroke site, pushing aside delicate brain tissue.

More than 3,000 BrainPath procedures have been performed nationwide to treat brain tumors and hemorrhagic strokes, according to the company. Pradilla has done more than 60 of them.

Although the new trial is focused on the technique and not any particular commercially available technology, BrainPath will be used to help standardize the surgeries that are part of the trial, Pradilla said. In Chicago, Bailes is already enthusiastic. “The prognosis for these patients just wasn’t very good, and for years we have wanted a way to remove these blood clots sitting in the brain,” he said. “I think we have it.”