UF Health Neurosurgery
Neurovascular Services

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Comprehensive cerebrovascular and endovascular neurosurgery

At UF Health, our neurosurgeons are leaders in the nation for cerebrovascular and endovascular neurosurgery. Our experienced neurosurgeons provide specialized, state-of the-art care to patients with neurovascular conditions; care that is both timely and compassionate.

UF Health neurosurgeons perform more than 1000 procedures per year, including both endovascular and open cerebrovascular surgery to treat the most complex neurovascular disorders. They are pioneers in advancing the treatment of neurovascular disease through clinical and basic science research, and through developing, testing and refining the latest technologies and devices to improve patient care. In addition, these physicians are dedicated to training and educating the next generation of neurovascular surgeons. Finally, the UF neurovascular team members are leaders in clinical and scientific research in cerebrovascular disease and are investigators of many clinical trials advancing cerebrovascular medicine.

Intraoperative images through surgical microscope of cerebral aneurysm before (left) and after (right) clip placement

Opposite page: UF Neurovascular surgeons
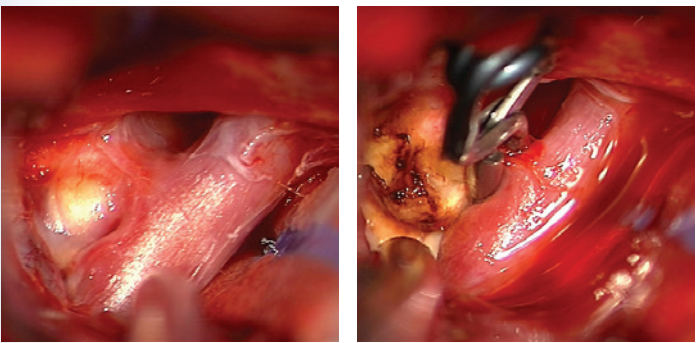Spiros Blackburn, MD, and Brian Hoh, MD,
FACS, FAHA, FAANS

Treating a full range of neurovascular conditions

Conditions treated include cerebral aneurysms, arteriovenous malformations, carotid and intracranial atherosclerosis, stroke, cavernous malformations and Moyamoya disease.

Cerebral Aneurysms: When a weakness in the wall of a cerebral artery allows the vessel to swell, an aneurysm develops. The aneurysm may rupture causing death or a stroke, or it may compress surrounding tissue or cranial nerves. Fortunately, many aneurysms now may be diagnosed with CT scans or MRIs before they rupture.

Treatment includes open neurosurgery, or craniotomy, to clip the aneurysm. In many cases, patients may be able to have a minimally invasive endovascular treatment. One procedure is called "coiling" in which micro-coils are placed inside the aneurysm via a catheter to close off blood flow and thus prevent rupture or stop bleeding, or a stent, such as the Pipeline Embolization Device.

Arteriovenous Malformations (AVMs): An arteriovenous malformation (AVM) is a collection of abnormal blood vessels within the brain tissue. AVMs can cause an array of symptoms, including seizures, loss of vision and other neurological problems. AVMs can also rupture, causing devastating hemorrhage in the brain. AVMs can be diagnosed with a CT scan or MRI, but an angiogram is usually performed to provide the information needed for treatment.

There are three main treatment methods for AVMs, sometimes used in combination. The treatment method, or combination of methods, depends on the size and location of the AVM. The UF Health neurovascular team has expertise in treating AVMs with every form of treatment, including embolization, surgical resection or radiosurgery.

Endovascular embolization is a minimally invasive technique that blocks blood flow to the AVM vessels. It is often used prior to open surgery or radiosurgery to decrease the size of the AVM. Removal of the AVM, or resection, is usually performed through open surgery. Radiosurgery is sometimes used to eliminate the vessels through high doses of radiation without open surgery. UF Health neurovascular surgeons are pioneers in radiosurgery for treating AVMs and are experts in embolization and surgical treatments.

Carotid and Intracranial Atherosclerosis: Like the arteries to the heart and other parts of the body, the vessels that supply blood to the brain may become narrowed and constricted due to hardening of the arteries, or atherosclerosis. When blood flow to any part of the brain is restricted, a stroke can occur.

When atherosclerosis affects the carotid arteries in the neck, a surgical procedure called carotid endarterectomy can be performed to clean out the artery. An alternative treatment to keep the artery open is a minimally invasive endovascular procedure called carotid angioplasty and stenting.

When severe atherosclerosis affects the intracranial arteries, intracranial balloon angioplasty and stenting is


Brian Hoh, MD, in the UF Health Shands Hospital Interventional Neuroradiolgy suite.

performed. If angioplasty and stenting are not possible, UF cerebrovascular surgeons are experts in a procedure known as extracranial to intracranial (EC-IC) bypass, performed to increase cerebral blood flow. Similar to cardiac bypass surgery, this procedure entails attaching a branch of the external carotid artery or a vein graft to a branch of the internal carotid artery to bypass the blockage. EC-IC may also be used to treat unclippable, giant aneurysms, and to treat Moyamoya disease, a progressive narrowing of intracranial blood vessels.

Stroke: Stroke occurs when the blood flow to the brain is disrupted, as the result of either a blockage or a hemorrhage. Stroke is the third leading cause of death in the United States, affecting about 795,000 people every year. A transient ischemic attack (TIA) or mini-stroke is a temporary blockage of a vessel to the brain that may last for as little as 15 minutes.

The symptoms of stroke can include weakness or numbness in one part of the body, difficulty seeing, difficulty speaking, sudden headache or loss of balance.
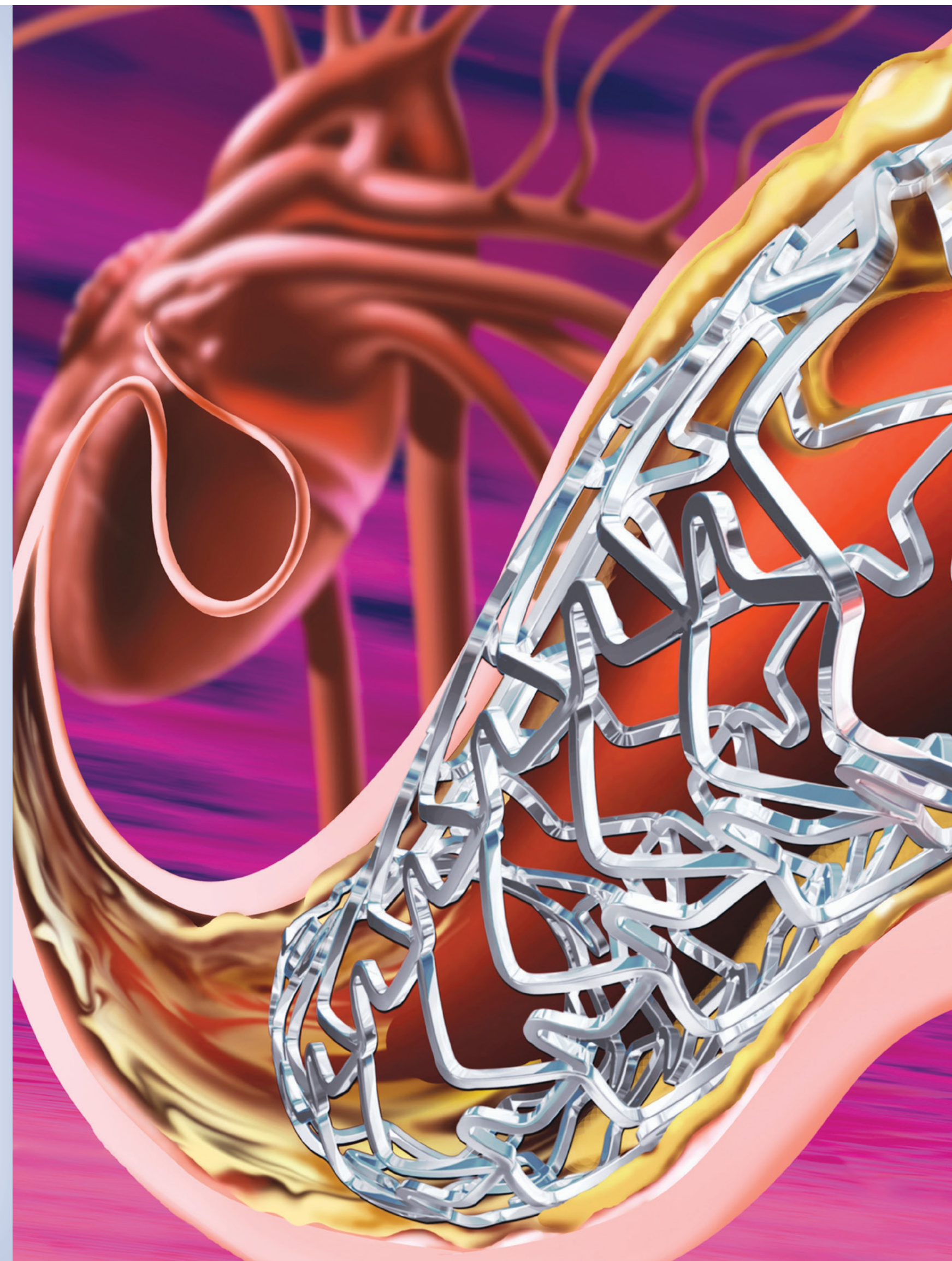
Diagnosis is usually confirmed through a CT scan or MRI. Regardless of the type of stroke, the faster a patient gets emergency medical attention for stroke, the more effective the treatment.

If a stroke has already occurred, the first line of treatment may be thrombolysis, the use of clot-busting medications. This is only effective if administered within the first few hours after the stroke has occurred, and only in certain types of stroke. UF Health neurosurgeons are part of a select group of physicians in the country with expertise in sophisticated endovascular procedures including the retrieval of clots or the lysis of clots in blockages causing stroke.

Endovascular neurosurgery

The neurosurgery team at UF Health performs many of the latest state-of-the-art endovascular neurosurgical procedures. These minimally invasive techniques blend neurosurgery with radiology and involve the use of advanced image-guidance technology. The procedures are performed at UF Health Shands Hospital using thin catheters introduced into the vascular system through a vessel in the groin, arm or neck. Procedures include diagnostic angiography, balloon angioplasty, stent placement, embolization and coiling.

Cerebrovascular surgery

The UF Health Neurovascular team performs hundreds of open cerebrovascular surgeries per year at UF Health Shands Hospital. Operations include craniotomy for

Brian Hoh, MD, in 30-bed UF Health Shands Hospital Neuro Intensive Care Unit.

aneurysm clipping, craniotomy for arteriovenous malformation excision, craniotomy for EC-IC bypass and carotid endarterectomy. State-of-the-art intraoperative equipment includes: continuous evoked potential monitoring of brain function, intraoperative angiography to optimize results and computerized image guidance to improve the accuracy of surgery.

How do I get more information about neurovascular surgery at UF?

We pride ourself on providing referring physicians and patients with easy access. Referring physicians should call the department's main number 352.273.9000 to arrange for a neurovascular consultation. Patients are routinely seen on a next day basis, if needed. The department's website (neurosurgery.ufl.edu) provides information about all aspects of neurosurgery and on neurovascular surgery.