

Stopping a Stroke in its Tracks: Catheter Device Restores Blood Flow to Brain by Suctioning Blood Clots

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Bobbie Laird was suffering a life-threatening stroke triggered by a blood clot in her brain that was nearly half an inch long.

But Dr. John Whapham of Loyola University Health System was able to stop the stroke in its tracks by using a catheter device that busted up the clot and suctioned the debris.

Most strokes are caused by [blood clots](#) in [brain](#) vessels. [Brain cells](#) die when deprived of blood and oxygen. But if a patient gets to the hospital in time, fast treatment often can restore blood flow and minimize damage.

When Laird arrived by ambulance at Loyola's emergency room, she was paralyzed on the left side of her body. She was disoriented and losing consciousness. A clot had traveled from her heart and lodged in her right middle cerebral artery, which supplies blood to most of the right side of her brain. As blood backed up behind the clot and congealed, the clot grew to 10 to 12 millimeters long.

Fortunately, Laird arrived by ambulance within a three-hour time window when treatment is most effective. She was seen by Dr. Rima Dafer, a vascular [neurologist](#) (stroke specialist). Laird was treated with tPA, an intravenous clot-busting drug. The [Food and Drug Administration](#) has approved tPA for the treatment of stroke if given

within three hours of the onset of symptoms.

There was a slight improvement -- Laird moved her arm a little bit -- but the improvement was temporary. So Laird was taken to the catheterization lab to determine if she could potentially benefit from a procedure to extract the blood clot from the clogged vessel.

Whapham inserted a catheter device called Penumbra® in an artery in the groin. Whapham guided the device up through the heart and carotid artery into the brain. He deployed a tiny agitator, which broke up the clot, then suctioned the debris through a thin tube. Blood flow was restored to the right side of the brain, which controls the left side of the body. Among those assisting in the procedure was clinical nurse Diane Broadley.

Whapham has done similar procedures on hundreds of stroke patients. He has to work fast, because each passing minute increases the chance of permanent damage. But he also has to be careful not to perforate a vessel in the brain, which could be fatal. "It is a very high stakes procedure," he said.

Laird said she is recovering well from her stroke. Her speech is good, and she can walk, although she still is a little wobbly. She is undergoing physical therapy and occupational therapy at Loyola.

"The procedure gave me another chance," Broadley said. "I have a lot to be thankful for."

The FDA has approved the catheter device for clot removal in carefully selected patients. Additional clinical trials are needed to define the role of this and similar devices in the emergency management of patients with acute strokes caused by blood clots, Dafer said.

Whapham said Laird's case illustrates the importance of calling 911 immediately at the first signs of a stroke. "Time is brain," Whapham said. "You have less time to waste with a stroke than you do with a heart attack."

Whapham is part of a new generation of neurologists who are using catheters to extract blood clots, repair aneurysms, open clogged arteries and repair blood vessel malformations in the brain. Catheter procedures are much less invasive and risky than traditional brain surgery, which involves cutting a large opening in the skull.

Catheter technology, originally developed for heart surgery, has been modified for narrower and more challenging [blood](#) vessels in the brain. "There has been a huge evolution in devices over the last five years," Whapham said. "Technology is getting better by the week."

Whapham is an assistant professor in the Departments of Neurology and Neurological Surgery, Loyola University Chicago Stritch School of Medicine. Dafer is an associate professor in the Department of Neurology.

Provided by Loyola University Health System

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