New device offers revolutionary treatment for difficult-to-Treat brain aneurysms

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Physicians at Rush University Medical Center are offering a new and effective treatment to patients suffering from complex brain aneurysms. The recently FDA-approved technology called the Pipeline Embolization Device (PED gives doctors the ability for the very first time to treat some of the most complex and dangerous brain aneurysms using minimally invasive techniques. The treatment is focused on reconstruction or remodeling of the weak blood vessel harboring the brain aneurysm.

“The Pipeline Device may offer improved patient results with a safe and effective treatment of large or giant, wide-necked aneurysms, which until now has been an unmet clinical need,” said Dr. Demetrius Lopes, neuroendovascular surgeon at Rush University Medical Center. "We are able to help people who did not have a better option and would otherwise die without treatment.”

Rush is the only hospital in Illinois and one of only seven medical centers in the U.S. with the ability to offer treatment with PED and was one of only a handful of centers in the U.S. that participated in the initial FDA clinical trials.

The premarket approval of PED is based on the results of the PUFS (Pipeline for Uncoilable or Failed Aneurysms) clinical study, a single-arm study of large and giant, wide-neck or fusiform aneurysms that included safety and efficacy data on 108 patients. Rush was the only Illinois site involved in the PUFS trial.

It is estimated that one in 50 Americans have a brain aneurysm, an abnormal ballooning of a portion of an artery in the brain due to a weakened blood vessel wall.

“Treatment for aneurysms can be tricky, especially when they are large or giant, wide-necked aneurysms,” said Lopes, who is an assistant professor of neurological surgery at Rush University.

Large aneurysms, which are more than 10 mm in diameter and giant aneurysms, which are more than 25 mm in diameter are especially problematic. If left untreated, they can result in compression of the brain and surrounding structures, bleed and cause ischemic strokes.

Previously, doctors would try filling an aneurysm with platinum coils to block blood flow into the aneurysm and prevent rupture. However, coiling, while effective for small aneurysms, would not always work for large or giant aneurysms. The other option is to open up the skull, and use a clip to clamp off blood flow to the aneurysm if it is in a location where it can reached through open brain surgery. This type of major surgery requires four to six weeks of recuperation.

The PED is a new class of embolization device designed to divert blood flow away from the aneurysm. It is composed of multiple, fine, individual strands of platinum and cobalt chromium which are braided into a flexible, mesh tube. The device is threaded up through a catheter placed in a blood vessel in the leg up to the brain. Once the device is implanted across the neck of an aneurysm, the PED essentially rebuilds the diseased brain artery by rerouting blood flow away from the aneurysm and along the course of the normal, reconstructed blood vessel.

“This novel technology is the only durable endovascular treatment for large and giant brain aneurysms,” said Lopes. “It provides a better chance of relief of brain compression, long-lasting aneurysm occlusion

and low complication rates."

"Because reconstruction with PED is a minimally invasive procedure where an artery in the leg is accessed through a tiny incision, it is possible for patients to undergo treatment and leave the hospital the very next day," said Lopes.

The thinness of the device also allows for telescoping or endovascular bypass, a technique where multiple PEDs are placed within each other with less risk of narrowing the artery while creating a new and stronger blood vessel.

Provided by Rush University