

Study Finds Low Risk in Treating Previously Coiled Aneurysm

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Andrew Ringer, MD

(PhysOrg.com) -- The risks associated with treating a recurrent or residual brain aneurysm that was initially treated by endovascular coiling are low, according to a multicenter study led by researchers at the University of Cincinnati (UC) Neuroscience Institute.

In the study of 311 patients with coiled aneurysms who underwent retreatment procedures at eight academic health centers, the risk of death or permanent major disability was slightly over one in 100, or 1.28 percent.

The study is part of an ongoing effort to quantify the risks of treating dangerous brain aneurysms by filling them with tiny coils delivered with a catheter. It was published in the August 2009 issue of *Neurosurgery*.

“This quantitative evidence is important to patients and physicians because there is often more than one way to treat a [brain aneurysm](#),” says Andrew Ringer, MD, associate professor and director of endovascular neurosurgery at UC and a neurosurgeon with the Mayfield Clinic. “Having an aneurysm coiled and avoiding a surgical procedure that requires opening the skull can be a very attractive option for patients. On the downside, coiling carries a higher rate of aneurysm recurrence than the standard surgical treatment.”

A brain aneurysm is a balloon-like bulge or weakening of an arterial wall. If the walls of an aneurysm become too thin, it can rupture, often causing [brain damage](#) or death. Approximately 27,000 individuals suffer a ruptured brain aneurysm in the United States each year, according to the National Institute of Neurological Disorders and Stroke.

Some brain aneurysms can be treated surgically through an opening in the skull or eyebrow. During the surgical procedure, a [neurosurgeon](#) can place a clip on the aneurysm at its base, thereby blocking the blood flow into the aneurysm and preventing it from bleeding.

Because some aneurysms cannot be clipped because of their shape or location, specialists have developed the alternative technique of coiling. During a coiling procedure, a surgeon threads a flexible catheter from the large femoral artery near the groin up to one of four arteries in the neck that lead to the brain. The surgeon then advances platinum coils through small tubing into the aneurysm. The compacted coils are designed to block [blood flow](#) and prevent the aneurysm from bleeding.

The Food and Drug Administration originally approved coiling as a treatment for aneurysms that could not be surgically clipped, but over time endovascular coiling has emerged as a first-line option for surgically accessible aneurysms as well.

The retreatment study, Ringer says, supports an emerging consensus among neurosurgeons that retreatment is no longer a deterrent to the coiling of brain aneurysms. Of the 311 patients who underwent one or more retreatments, three died and one developed a major and permanent neurological disability. One patient suffered a significant neurological symptom that was transient, and four suffered a permanent minor symptom.

By comparison, previous studies of coiling and clipping cases have shown that the initial treatment for an unruptured aneurysm results in death or any disability 8 to 10 percent of the time. (Statistics of cases performed by Mayfield Clinic neurosurgeons, presented at national meetings, show that death or permanent disability occurs in only 3 percent of patients.) An untreated aneurysm of average size (7 to 12 mm), meanwhile, carries a mortality risk of 2.6 percent over five years. The risk of death from an untreated, ruptured aneurysm is much higher, with recurrent hemorrhage occurring in 50 percent of patients over a period of 6 months.

In the retreatment study Ringer collaborated with colleagues from the Endovascular Neurosurgery Research Group, which includes specialists from the University of Illinois at Peoria, Thomas Jefferson University (Philadelphia), the University of Puerto Rico, Vanderbilt University, the State University of New York at Buffalo and Albany and Rush University (Chicago).

The research group had previously documented the low risk associated with angiographic screening for aneurysm recurrence in patients who had undergone aneurysm coiling. When considering the option of coiling, Ringer says, “Physicians must consider the risks of both aneurysm screening (surveillance) and retreatment.”

A potential bias in the retreatment study, Ringer points out, was the

surgeons' selection of those patients who would undergo retreatment with coiling. It is possible, he said, that surgeons chose not to perform retreatment procedures on patients whose recurrent or residual aneurysm was too dangerous.

In their financial disclosures, the researchers stated that Ilad Levy, MD, of SUNY-Buffalo, received industry grant support and honoraria from Boston Scientific and Cordis; and Demetrius Lopes, MD, of Rush University, received industry grant support and honoraria from Boston Scientific and EV3, Inc., and honoraria from BSC, Cordis, EV3, Inc., MicroVention/Terumo and Penumbra, Inc.

Primary risk factors for brain aneurysms include smoking, hypertension and alcohol and drug abuse.

Provided by University of Cincinnati ([news](#) : [web](#))

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