

# Surgery and stenting safe, effective lowering long-term risk of stroke

February 18 2016

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Stenting and surgery are equally effective at lowering the long-term risk of stroke from a narrowed carotid artery, according to results of CREST—a 10-year, federally funded clinical trial led by researchers at Mayo Clinic's campus in Florida. The results are being published today online in the *New England Journal of Medicine* and presented at the American Heart Association's International Stroke Conference in Los Angeles.

One of the largest randomized [stroke](#) prevention trials ever, CREST (Carotid Revascularization Endarterectomy versus Stenting Trial) conducted a study of 2,502 patients with an average age of 69 for up to 10 years at 117 centers in the U.S. and Canada. The centers were coordinated through Rutgers-New Jersey Medical School, and the patient results were analyzed at the University of Alabama at Birmingham.

The study found the risk for stroke after either stenting or [surgery](#) (endarterectomy) was about 7 percent. The 10-year comparisons of restenosis (re-narrowing of the carotid artery) were low for both stenting and surgery—about 1 percent per year. Equal benefit was found for older and younger individuals, men and women, patients who had previously had a stroke, and those who had not.

"This very low rate shows these two procedures are safe and are also very durable in preventing stroke," says CREST principal investigator Thomas G. Brott, M.D., a neurologist and the Eugene and Marcia Applebaum Professor of Neurosciences on Mayo Clinic's campus in

Florida. "Because Medicare-age patients with carotid narrowing are living longer, the durability of stenting and surgery will be reassuring to the patients and their families."

A [carotid artery](#) runs up each side of the neck. Plaque buildup can cause narrowing and hardening of the artery - a condition called atherosclerosis. This can reduce blood flow and cause clotting, which can result in a stroke.

Endarterectomy removes the narrowed segment of the artery surgically, while stenting uses a catheter to place a stent in the narrowed artery to widen it.

In 2010, phase one of CREST found stenting and surgery to be equally safe procedures, with fewer strokes among those who had surgery, and fewer heart attacks among those who received stents. Those results also were published in the *New England Journal of Medicine*.

"This second phase completes a story, and the results are very encouraging," Dr. Brott says. "We have two safe procedures. We know now that they are very effective in the long run. Now the patient and the physician have the option to select surgery or stenting, based on that individual patient's medical condition and preferences."

Walter Koroshetz, M.D., director of the National Institute of Neurological Disorders and Stroke, also noted that "the stroke rate in CREST was less than half of what was seen in similar studies from the late 1900s, which reinforces the benefits of modern medical control of vascular risk factors."

Despite the results of CREST, the question of the best way to manage stroke risk has not been answered yet. Because of that, CREST-2 was launched in December 2014 to compare stenting and surgery to medical

management. CREST-2, which is expected to end in 2022, is being funded by a \$39.5 million grant from the National Institute of Neurological Disorders and Stroke.

"Carotid narrowing causes about 5 to 10 percent of all strokes in the U.S.," Dr. Brott says. "Since there are about 800,000 strokes a year, we're talking about 40,000 to 50,000 strokes a year. If we can find the best way to prevent those strokes, then we will have provided a service to those patients."

Provided by Mayo Clinic

Citation: Surgery and stenting safe, effective lowering long-term risk of stroke (2016, February 18) retrieved 15 July 2023 from <https://medicalxpress.com/news/2016-02-surgery-stenting-safe-effective-lowering.html>

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