

Stents and surgery for blocked neck arteries are neck-and-neck as lasting stroke prevention

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A new comparison of the procedures to help prevent strokes by removing or relieving blockages in the arteries of the neck concludes they are equally effective at halting repeat blockage. Two years after treatment with either surgery or a minimally invasive treatment using wire coils called stents, the re-blockage rate remained the same, approximately six percent. Results of the analysis were detailed in a presentation at the American Stroke Association's International Stroke Conference today in New Orleans.

"This was a huge surprise," says Brajesh K. Lal, M.D., lead author and associate professor of vascular surgery at the University of Maryland School of Medicine in Baltimore. The carotid arteries on each side of the neck supply blood to the brain. Fatty material called plaque can partially or totally block blood flow through the arteries to the brain, which can result in a stroke. Carotid artery blockages cause about 10 percent of strokes. Surgery or stenting preserves blood flow and lowers the risk of stroke.

"For years, surgery has been the standard of care to unclog the carotids," says Dr. Lal, who is also chief of vascular surgery at the Baltimore VA Medical Center. "Physicians have been reluctant to utilize carotid artery stenting because of lessons learned from stenting in the coronary arteries, which lead to the heart. Coronary blockages recurred 20-30 percent of the time after one-to-three years. The results of our study may help physicians and patients weigh the risks and benefits of these two carotid procedures along with medical management to come up with the best treatment options."

"National research projects such as this confirm the value of efforts to determine what new tools and treatments will be of true benefit to patients,"

says E. Albert Reece, M.D., Ph.D., M.B.A., vice president for Medical Affairs at the University of Maryland and dean of the University of Maryland School of Medicine. "In this case, the data will help inform patient treatment that may help reduce the toll of stroke, the number four cause of death and the leading cause of adult disability in the United States."

The study participants were part of the Carotid Revascularization Endarterectomy versus Stenting Trial (CREST). A previous CREST analysis showed no difference in the rates of stroke, heart attack or death among patients undergoing surgical removal of a blockage (carotid endarterectomy) or stenting.

In the new multi-center analysis, the largest to compare re-blockage rates after either procedure, 1,086 patients received stenting and 1,105 received endarterectomy. All were assessed at one, six, 12 and 24 months after the procedure with an ultrasound to identify those who had developed a 70 percent or greater blockage in the treated section.

After two years, the researchers found:

- Identical rates of recurring blockage (restenosis) at 5.8 percent after stenting and endarterectomy.
- Complete blockage (occlusion) in 0.3 percent after stenting and 0.5 percent after endarterectomy.
- Combined restenosis/occlusion in six percent after stenting and 6.3 percent after endarterectomy.
- Twenty stent patients and 23 endarterectomy patients had undergone a second procedure to open a re-blocked carotid.
- Rates of restenosis were about double in

women and patients with diabetes and abnormal lipid levels.

- Stroke rates were 4 times higher in patients who developed a restenosis compared to those that did not develop a restenosis during follow-up.

Physicians participating in the study underwent standardized training and credentialing in the two procedures and the research protocol included a standardized way to measure restenosis. Monitoring of CREST participants will continue for 10 years.

Dr. Lal says this analysis is prompting physicians to re-think the role of stents to prevent stroke. Based on the coronary artery experience, a much higher rate of restenosis with stents had been expected. "Because you are leaving a foreign body behind in the artery and the artery is pulsating with every heartbeat, the belief was that with each of these pulsations the stent would perhaps irritate the artery and cause a reaction and restenosis."

Now, he says that theory can be modified, with the recognition that the size of an artery makes a big difference. Coronary arteries are very small, about two millimeters wide. "If the coronaries develop even a small layer of recurrence within them, it occupies 50-60 percent of the inside of the vessel (lumen), a significant loss. On the other hand, carotid arteries are three-to-five times the size of the coronary arteries, so you don't lose that much lumen," says Dr. Lal. "It's almost as if the carotid artery passage has so much more resilience, because it's got a lot of reserve, and if you lose a proportion of that channel, you still have enough blood flowing."

Prior to this study, Dr. Lal says the U.S. Food and Drug Administration had approved stenting for patients who were not good candidates for surgery. The FDA cited CREST in its approval of an expanded indication for use of the stent to include all patients with clogged carotid arteries who are at risk for stroke.

Provided by University of Maryland Medical Center

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