Two different carotid artery stenting procedures show little difference in effectiveness

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Use of either proximal embolic protection devices (P-EPDs) or distal filter embolic protection devices (F-EPDs) during elective carotid artery stenting results in low rates of in-hospital stroke and death, according to a new study from researchers at the Perelman School of Medicine at the University of Pennsylvania. The study, published in *JACC: Cardiovascular Interventions*, found that although P-EPDs have been theorized to be more effective than F-EPDs at preventing stroke during carotid artery stenting, this first comparative effectiveness study revealed no statistically significant difference between the two devices.

Carotid artery stenting is commonly used to treat carotid artery disease, in which the carotid arteries (those that carry blood from the heart to the brain) develop a buildup of plaque that can lead to stroke. During carotid artery stenting, the placement of small mesh-like tubes via catheters to open the artery and stabilize the plaque, there is a risk of releasing small amounts of debris into the brain's circulation. To prevent this problem, two types of EPDs were developed: F-EPDs have a small filter to catch debris; while P-EPDs stop blood flow to the brain in the carotid artery being stented, then debris-containing blood is removed before normal blood flow resumes.

"These study results challenge the notion that proximal EPDs are significantly superior to distal EPDs, or that they can serve as a 'magic bullet' for stroke prevention during carotid artery stenting," said first author Jay Giri, MD, MPH, assistant professor of clinical medicine at Penn. "Even for patients who had recent symptoms of stroke or mini-stroke—who have been thought to get more benefit from proximal EPD—this study showed no statistical difference in device effectiveness."

The research team examined 10,246 consecutive elective carotid artery stenting procedures performed with embolic protection between January 2009 and March 2013 in the CARE (Carotid Artery Revascularization and Endarterectomy) Registry. P-EPDs were used in 590 (5.8 percent) of the cases, and the rest were F-EPDs. The differences in in-hospital stroke or death between P-EPDs (1.5 percent) and F-EPDs (2.4 percent) were not statistically significant, and the 30-day adverse events rates were similar for both P-EPDs (2.7 percent) and F-EPDs (4.0 percent).

"There is certainly no signal of harm with use of proximal EPDs, and our study cannot rule out a small benefit of these devices. The choice of EPD type in a given case really comes down to physician discretion," added Giri.

Given the overall results of this study, the research team has concluded that although a large controlled trial randomizing patients to these two devices might be useful, its feasibility is unlikely due to the scope necessary.

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