Risky surgery after a stroke due to carotid artery stenosis may no longer be necessary in most patients

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European research led by University College London (UCL), together with Amsterdam UMC and the University of Basel, shows that a

significant proportion of patients who suffer a stroke due to carotid artery narrowing can be treated with medication only.

A risky carotid artery operation, currently still the standard treatment for many patients, may then no longer be necessary for this group of patients. This research, published in *The Lancet Neurology,* may lead to the global guidelines for the treatment of these patients being adjusted.

In the Netherlands, about 2,000 people with carotid artery stenosis are operated on every year after they have had a stroke. Thirty years ago, large studies showed that an operation in which a narrowing in the carotid artery is removed reduced the risk of a new stroke.

As a result, this became the international standardized treatment. Since then, the medications these patients receive alongside their surgery—such as blood thinners, medication for cholesterol and high blood pressure—have improved significantly.

Researchers, including Amsterdam UMC neurologist Paul Nederkoorn, investigated whether routine carotid artery operations are still necessary in all patients. An international research group of neurologists, vascular surgeons, and radiologists together designed the ECST study to answer this question.

"For the vast majority of these patients, in the Netherlands perhaps up to about 75%, medication alone is probably sufficient to reduce the risk of another stroke. It is a lot nicer for the patient not to have to have surgery and it saves a lot of health care costs," says Nederkoorn. "We are now going to work closely with the vascular surgeons to see how we can best fit these results into the current protocols."

Following patients for two years

Between 2012 and 2019, the researchers examined a group of 429 patients, spread over 30 centers in Europe and Canada. All patients had a low or average chance of having another stroke within two years of their initial treatment. Patients with a high risk of another stroke were not included in this study, because it was uncertain beforehand whether medication alone could be equally effective for them.

Patients were divided into two groups. Half received only medication, and the other half also received standard surgery. Two years after the start of their treatment, the patients were monitored for a number of outcomes.

The groups were compared on the basis of how often new strokes had occurred, how many patients had had a heart attack and in how many cases patients had had a stroke unnoticed or where there was a high risk of a new stroke due to accumulations in the carotid artery. This could be seen on the MRI scans that the participating patients received after two years.

The two groups scored equally across all metrics, leading the researchers to conclude that the operation is not necessary for this specific patient group in addition to medication.

Senior author, Emeritus Professor at UCL Martin Brown, said, "While further follow-up and additional trials are needed to confirm these findings, we recommend using the CAR score to identify patients with carotid narrowing who can be managed with optimized medical therapy alone.

"This approach emphasizes personal assessment and intensive treatment of vascular risk factors, potentially sparing many patients from the discomfort and risks of carotid surgery or stenting.

"Additionally, this method could lead to substantial cost savings for health services."

Adjusting international guidelines

Follow-up research should show which patients have such a high risk of another stroke that they still do need surgery in addition to the medication. New techniques for detailed imaging of the atherosclerotic plaque in the carotid artery allow for the selection of particularly high-risk patients much more accurately than before.

The researchers think that in the future this will be the group that may still have to undergo surgery. In this way, every patient with a stroke due to carotid artery narrowing can receive a tailor-made risk-based treatment. That saves many patients a major operation and lowers health care costs. The researchers expect that the national and international guidelines will soon be adjusted.

"At Amsterdam UMC, we are working together with the vascular surgeons and those low- and medium-risk patients are no longer operated on as standard," concludes Nederkoorn.

More information: Optimised medical therapy alone versus optimised medical therapy plus revascularisation for asymptomatic or low-tointermediate risk symptomatic carotid stenosis (ECST-2): 2-year interim results of a multicentre randomised trial, *The Lancet Neurology* (2025).

Provided by Amsterdam University Medical Centers

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