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Earlier treatment with surgery to remove blood clot linked with less disability following stroke

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Time is of the essence when getting people stricken with acute ischemic strokes to treatment. And the use of stent retrievers—devices that remove the blood clot like pulling a cork out of a wine bottle—has proven to be a breakthrough for removing the life-threatening blockage of blood flow to the brain.

Current professional guidelines recommend that the procedure be performed within six hours for people to benefit. But researchers on a UCLA-led study published today in the *Journal of the American Medical Association* have found that the procedure has benefits for people up to 7.3 hours following the onset of a stroke.

"Extending the time window for therapy will let us help more patients, including patients who were not able to get to a hospital right away because the stroke started while they were asleep or made them unable to call for help," said Dr. Jeffrey Saver, director of the UCLA Comprehensive Stroke Center and the study's lead author.

The researchers also found that for each six-minute delay, there is a 1 percent increase in the proportion of people who end up disabled, underscoring the need for people to seek treatment as quickly as possible when they experience symptoms of a stroke. The study examined the relationship between the onset of the stroke, the amount of time until the blockage was treated and patient outcomes.

The first coil-shaped clot retriever was invented at UCLA and cleared for use in 2004. For this study, researchers primarily used a newer generation of stent retrievers, which were cleared for use in 2012. First, doctors insert the small mesh tubes through an artery in the leg to the blockage in the artery that takes blood to the brain. Next, they open the mesh tubes in the middle of the clot and then extract the stent and the clot to restore blood flow to the brain.

The current study combines data from five clinical trials involving a total of 1,287 people, including the SWIFT PRIME trial led by Saver, that show these devices improved outcomes for people with acute ischemic strokes due to large vessel blockage. The researchers analyzed the relationship between time from onset of the blockage to treatment and outcome among these patients.

The researchers found that people treated earlier with the retrievers plus standard medical therapy were less likely to be disabled three months after surgery than people who only received medical therapy. Outcomes were the best if the procedure was done within the first two hours of a stroke, but those treated up to 7.3 hours after a stroke continued to show a lesser benefit.

Earlier treatment is better than later treatment to restore blood flow and prevent or limit damage to the brain, Saver noted.

"It is important for the public to know the critically important relationship between time to treatment and outcome, so they know to activate the 911 system as soon as possible when they detect stroke symptoms in themselves or friends, family and co-workers," he said. "And it is important to reorganize regional systems of stroke care to ensure that ambulances transport appropriate patients to hospitals that perform this procedure quickly and safely."

The people in these trials were seen at mostly academic medical centers, so the question remains as to whether these same results can be achieved at non-academically affiliated medical centers. Other elements that could skew the results include differences in trial entry criteria and patient characteristics, and that these results may not apply to people who did not qualify for the trials.

In future studies, the researchers plan to use brain imaging techniques to determine if it is possible to identify a specific, smaller group of people who can benefit from the clot retrieval therapy seven to 24 hours after stroke onset, said Dr. Reza Jahan, professor of radiology and neurosurgery at UCLA, and a co-author of the study.

The five trials were funded by European and Canadian government agencies and by companies that make retrieval devices. This pooled analysis was funded by Medtronic, a maker of the retriever devices. The funding went to the University of Calgary, which collaborated on this study.

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