

New analysis shows surgery is safe and effective for people with unruptured brain arteriovenous malformation

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Contrary to the results of a seminal study in the field, a recent analysis presented today at the [Society of NeuroInterventional Surgery's \(SNIS\)](#)

[20th Annual Meeting](#) indicates that surgical approaches (embolization, microsurgery, radiosurgery) for treating selected patients with unruptured arteriovenous malformation (AVM) is safe and effective.

AVMs are tangled [blood vessels](#) with abnormal connection between arteries and veins, bypassing the capillary system, and they are most commonly found in the [brain](#) and spinal cord. Untreated, these vessels can weaken and rupture, causing [brain hemorrhage](#), stroke, [brain damage](#), and death. However, treating unruptured AVMs has been controversial because of the risk of complications—including stroke and death—from AVM surgery.

In 2014, a long-term study evaluating patients across nine countries, "A Randomized Trial of Unruptured Brain Arteriovenous Malformations (ARUBA)," suggested that it's safer to avoid surgery for people with unruptured AVMs, and alternatively, the management should be focused on treating AVM symptoms (including headaches and seizures). However, new research notes that the limitations of the ARUBA study's results make it less generalizable to determine the guideline for treating individuals with unruptured AVMs, and that neurointerventionalists and neurosurgeons can surgically treat unruptured AVMs successfully for carefully selected patients.

A new collaborative study, "Treatment Outcomes for ARUBA-Eligible Brain Arteriovenous Malformations: A Comparison of Real-World Data from the NVQI-QOD AVM Registry to the ARUBA Trial," led by a team from Cleveland Clinic, reviewed patient information from hospitals and surgical centers around the U.S. using the Neurovascular Quality Initiative Quality Outcomes Database, on which SNIS collaborates.

"We performed a retrospective analysis of prospectively collected data of ARUBA-eligible patients, who underwent intervention at 18

participating centers," said Nina Moore, MD, senior author of the study, researcher, and neurosurgeon at the Cleveland Clinic. "Our results suggest that intervention for unruptured brain AVMs at comprehensive stroke centers across the United States is safe and effective."

The study authors specifically analyzed records for 173 patients who are ARUBA-eligible with similar demographics and characteristics of the AVMs, finding that more patients survived and thrived after AVM surgery than in the ARUBA study. For example, only 8.7% of surgically treated patients from this study experienced death or stroke, compared to 30.7% in the ARUBA trial. In addition, only 25.4% of patients from the database experienced post-surgery physical impairment, compared to 46.2% in the ARUBA trial.

The study authors also didn't find a difference in the risk of stroke and/or death among the surgical modalities used. As a result, the study authors suggest that comprehensive stroke centers across the United States would be able to safely surgically treat unruptured AVMs.

"Seeing through this data that neurointerventionalists and neurosurgeons can safely treat unruptured brain AVMs via different surgical modalities is very encouraging," said Anas Alrohimi, MD, Ph.D., primary author, and neuroendovascular surgery fellow at the Cleveland Clinic. "In this constantly evolving field, it is crucial we continue to investigate new procedures that impact the patients' outcomes. It's exciting to open up opportunities to manage this potentially deadly condition and improve [patients'](#) quality of life."

Provided by Society of NeuroInterventional Surgery

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