

Interactive virtual reality enhances physicians' treatment planning of complex conditions

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Interactive virtual reality (VR) brings medical images to life on screen, showing interventional radiologists a patient's unique internal anatomy to help physicians effectively prepare and tailor their approach to complex treatments, such as splenic artery aneurysm repair, according to new research being presented today at the Society of Interventional Radiology's 2018 Annual Scientific Meeting.

"Treating splenic artery aneurysms can be very difficult because of their intricate nature and anatomic variations from patient to patient," said Zlatko Devcic, M.D., a fellow of [interventional radiology](#) at Stanford University School of Medicine and collaborating author of the study. "This new platform allows you to view a patient's arterial anatomy in a three-dimensional image, as if it is right in front of you, which may help interventional radiologists more quickly and thoroughly plan for the equipment and tools they'll need for a successful outcome."

Researchers compared the new VR technology to the use of images from a commonly used visualization software system that displays images on a standard two-dimensional platform.

VR turns a patient's pre-procedural CT scans into 3-D images that the [radiologist](#) can virtually move and examine while wearing virtual reality-type glasses. By allowing the operator to manipulate routine, two-dimensional images in an open three-dimensional space, VR provides a

look into a patients' organs and tissues that had not been possible outside of the human body, until now. As a result, the operator is armed with a deeper and intuitive understanding of spatial relationships, such as between an [aneurysm](#) and the surrounding [arteries](#).

In the study, three radiologists, using both technologies, independently evaluated 17 splenic artery aneurysms in 14 [patients](#). Researchers measured the radiologists' accuracy in identifying inflow and outflow arteries associated with the aneurysms with each method. Radiologists in the study also ranked improvements in their confidence on a four-point scale when using VR compared to the standard method.

Researchers found accuracy was similar with both methods, though confidence improved substantially with VR. In fact, 93 percent of participating physicians who used the VR method indicated higher confidence in their abilities (a score of at least 3).

"Pre-operative planning is possibly the most important step towards successfully treating a patient, so the value of VR cannot be understated," Devcic said. "This technology gives us a totally different way to look at that structure and safely plan our approach to patient care."

Researchers hope that future studies will examine whether this technology will ultimately help reduce the time needed to perform the treatment and as a result, reduce the amount of radiation and contrast exposure to the patient.

More information: Abstract 30: Augmented virtual reality assisted treatment planning for splenic artery aneurysms: A pilot study. Z. Devcic; I. Idakoji; A. Kesselman; R. Shah; M. AbdelRazek; N. Kothary; Stanford University Medical Center, Stanford, CA. SIR Annual Scientific Meeting, March 17-22, 2018. This abstract can be found at

sirmeeting.org

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