

**UAMS News Bureau**

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**UAMS Cardiology Team Clears 95%-blocked Artery  
With New Shockwave Technology**

LITTLE ROCK — A new technology that uses sonic waves to blast calcium deposits out of arteries is now available at the University of Arkansas for Medical Sciences (UAMS).

The treatment option for advanced heart disease debuted in central Arkansas on June 16 when UAMS cardiologist Subhi Al'Aref, M.D., used it to successfully open and clear a patient's severely calcified stent.

Stents are tiny tubes that can be inserted into narrowed arteries that have been pried open with balloons, to keep them open and restore blood flow. But as heart disease progresses, bone-like calcium deposits can form, causing rigidity in the artery and increasing the risk of complications – such as perforation of the arterial wall -- while trying to insert or open a stent.

A new treatment called intravascular lithotripsy (IVL) allows doctors to shatter the calcium using sonic pressure waves, or shockwave technology, delivered through a catheter mounted on a balloon. The waves pass through soft arterial tissue and create a series of micro-fractures in the calcium, allowing the artery to be expanded at low pressure and a stent to be safely implanted to improve blood flow, with minimal trauma to normal arterial tissue.

The technology is a novel application of lithotripsy, which has been used for decades to safely break up kidney stones.

Before it was available, doctors had to use small drills to crack the hardened calcium and open the artery, but that procedure, known as atherectomy, has a steep learning curve, is difficult to perform and can result in serious complications for the patient. In addition to being safer, shockwave therapy also provides much quicker results.

Al'Aref, an assistant professor in the UAMS College of Medicine Department of Internal Medicine, used the new technology to treat a 70-year-old woman who came to UAMS after repeatedly visiting another hospital's emergency room with complaints of chest pain that were related to the severe calcification of an old stent that was 95%

blocked. The woman had been told there were no treatment options available, but the cardiology team at UAMS decided to try to open the old stent using the newly approved shockwave technology.

“We ballooned the stent successfully the first time, and the second time we used the shockwave technology to expand the stent even more, in order to treat the calcium that was outside the stent and prevented it from being adequately expanded,” Al’Aref said. “We also stented another artery.”

The woman has a follow-up visit scheduled but hasn’t returned to the emergency room.

The technology was granted a breakthrough device designation by the U.S. Food and Drug Administration prior to its approval in February. The coronary application of the technology has been widely adopted in Europe and since 2018, more than 25,000 patients have undergone a procedure using it, according to Shockwave Medical, a public medical device company headquartered in California whose founders adapted kidney stone lithotripsy for the cardiovascular application.

“With this technology, we should be able to treat heavily calcified vessels more easily and hopefully with fewer complications,” said Gaurav Dhar, M.D., a cardiologist and professor in the Department of Internal Medicine.

UAMS is the state’s only health sciences university, with colleges of Medicine, Nursing, Pharmacy, Health Professions and Public Health; a graduate school; hospital; a main campus in Little Rock; a Northwest Arkansas regional campus in Fayetteville; a statewide network of regional campuses; and seven institutes: the Winthrop P. Rockefeller Cancer Institute, Jackson T. Stephens Spine & Neurosciences Institute, Harvey & Bernice Jones Eye Institute, Psychiatric Research Institute, Donald W. Reynolds Institute on Aging, Translational Research Institute and Institute for Digital Health & Innovation. UAMS includes UAMS Health, a statewide health system that encompasses all of UAMS’ clinical enterprise including its hospital, regional clinics and clinics it operates or staffs in cooperation with other providers. UAMS is the only adult Level 1 trauma center in the state. *U.S. News & World Report* named UAMS Medical Center the state’s Best Hospital; ranked its ear, nose and throat program among the top 50 nationwide; and named six areas as high performing — COPD, colon cancer surgery, heart failure, hip replacement, knee replacement and lung cancer surgery. UAMS has 2,876 students, 898 medical residents and four dental residents. It is the state’s largest public employer with more than 10,000 employees, including 1,200 physicians who provide care to patients at UAMS, its regional campuses, Arkansas Children’s Hospital, the VA Medical Center and Baptist Health. Visit [www.uams.edu](http://www.uams.edu) or [www.uamshealth.com](http://www.uamshealth.com). Find us on [Facebook](#), [Twitter](#), [YouTube](#) or [Instagram](#).

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