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Lights, Camera, Action: New Catheter Lets Doctors See Inside Arteries for First Time

UC San Diego Health first in region to use image-guided, plaque-busting catheter

Removing plaque from clogged arteries is a common procedure that can save and improve lives. This treatment approach was recently made even safer and more effective with a new, high-tech catheter that allows cardiologists to see inside the arteries for the first time, cutting out only the diseased tissue. Interventional cardiologists at Sulpizio Cardiovascular Center at UC San Diego Health are the first in the region to use this technology.



Avinger's Pantheris™ Lumivascular new image-guided catheter with a camera the size of a grain of salt.

The new image-guided device, Avinger's Pantheris™ Lumivascular atherectomy system, allows doctors to see and remove plaque simultaneously during an atherectomy – a minimally invasive procedure that involves cutting plaque away from the artery and clearing it out to restore blood flow.

The new technology treats patients suffering from the painful symptoms of peripheral artery disease (PAD), a condition caused by a build-up of plaque that blocks blood flow in the arteries of the legs and feet, preventing oxygen-rich blood from reaching the extremities. Patients with PAD frequently develop life threatening complications, including heart attack, stroke, and in some severe cases, patients may even face amputation.

“Peripheral artery disease greatly impacts quality of life, with patients experiencing cramping, numbness and discoloration of their extremities,” said Mitul Patel, MD, cardiologist at UC San Diego Health. “This new device is a significant step forward for the treatment of PAD with a more efficient approach for plaque removal and less radiation exposure to the doctor and patient.”

X-ray technology was previously used during similar procedures, but those images are not nearly as clear and do not allow visualization inside the blood vessel. The new catheter, with a fiber optic camera the size of a grain of salt on the tip, is fed through a small incision in the groin that does not require full anesthesia. Once inside, the interventional cardiologist is able to see exactly what needs to be removed without damaging the artery wall, which can cause further narrowing.

PAD affects nearly 20 million adults in the United States and more than 200 million globally. September is PAD Awareness Month, which has a personal meaning to one of Patel's patients, who recently underwent an atherectomy at UC San Diego Health with the new catheter.



Mitul Patel, MD, cardiologist at UC San Diego Health.

Patel said the patient had severe scar tissue and plaque build-up at a previously treated site in his right leg, limiting blood flow to his calf muscle and his ability to exercise or even walk a short distance.

“He was a good candidate for the new image-guided catheter approach. The device allowed for excellent visualization inside his leg artery as we removed only the diseased tissue,” said Patel.

Now able to walk several miles with this wife without any limitations, the patient's quality of life has improved, and with some lifestyle changes, he hopes to manage his PAD and prevent another blockage.

Pantheris was approved by the FDA in March 2016. So far, cardiologists at UC San Diego Health have used the new catheter on 10 patients undergoing an atherectomy procedure with successful results.

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