

# Genicular Artery Embolization Offers Minimally Invasive Treatment for Osteoarthritis of the Knees

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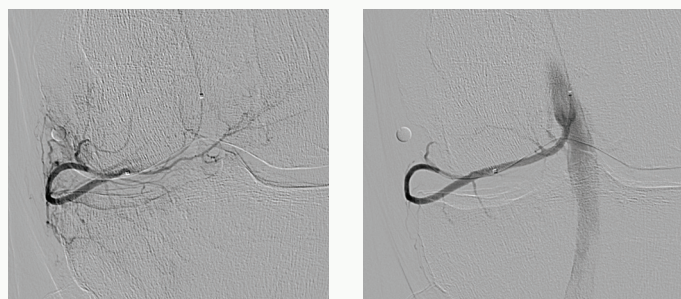
Osteoarthritis of the knees is a very common cause of disability, with pain and reduced tolerance for activity having a significant negative impact on patients' lifestyles. A promising new treatment, genicular artery embolization, may offer effective treatment to patients who have failed more conservative treatments but are not ready for joint replacement. UCLA interventional radiologists are currently enrolling patients in a clinical trial of the new treatment, a minimally invasive outpatient procedure that allows patients to resume normal activities the next day.

Most patients are able to manage mild to moderate arthritic knee pain with conservative measures, including nonsteroidal anti-inflammatory medications, ice and physical therapy. Some find symptom relief in injections of cortisone to reduce inflammation or hyaluronic acid to help cushion the joint. But these therapies are not effective in all cases — or can lose their effectiveness with time and repetition. Patients whose symptoms are not successfully controlled with these conventional therapies and who are not candidates for knee replacement surgery — or who are not open to surgery — may benefit from the new procedure, which seals off blood flow from abnormal new vessels that form in the arthritic joint. “Many people with recurrent pain after knee injections are simply not ready for knee replacement surgery or are not good candidates. For these patients, more treatment options are needed,” explains Siddharth Padia, MD, Associate Professor of Interventional Radiology and Director of Interventional Radiology at UCLA Medical Center, Santa Monica.

Osteoarthritis is due at least in part to a cycle of inflammation and cartilage degeneration in the affected joint. It is thought that the formation of abnormal neovessels contributes to joint inflammation by excessively vascularizing the joint. The abnormal vessel growth is also accompanied by sensory nerve growth, which significantly contributes to patients' symptoms. Genicular artery embolization cuts neovessels off from their blood supply and restores normal circulation to the joint.

## How is genicular artery embolization performed?

The outpatient embolization procedure is performed under conscious sedation. After a local anesthetic is applied to the fold



*Initial and final angiograms of the knee after embolization. A circular marker was placed at the site of pain. The area of hypervascularity/inflammation corresponding to the patient's medial knee pain was embolized, with subsequent resolution of hypervascularity.*

of the leg, a small catheter is inserted into the femoral artery and threaded into the relevant genicular arteries under X-ray guidance. Dye is injected into the catheter and an angiogram is performed to identify the abnormal flow in the genicular arteries. During the procedure, a three-dimensional CT scan is also done to reveal the spatial relationship between the neovessels and structures of the joint.

The interventional radiologist injects the embolizing agent to restrict blood circulation in the targeted arteries. The procedure is completely painless, and patients treated with genicular artery embolization are usually able to go home within two to three hours and can resume normal activities the following day.

## Results from prior studies

Recently published results from a study in Japan conducted by Yuli Okuno, MD, PhD, who helped pioneer the procedure, show significant improvements in pain symptoms and joint function following the embolization procedure. The WOMAC (Western Ontario and McMaster Universities Osteoarthritis Index) — a set of questionnaires used to evaluate osteoarthritis patients for pain, stiffness and joint function — was used to measure outcomes at multiple post-procedure milestones. In the study, WOMAC scores decreased from a pre-procedure baseline average of 43 (out of a total of 96 possible) to 24 at one month, 14.8 at four months, 11.2 at six months, 8.2 at one year and 6.2 at two years.

Significantly, nearly all patients in that study who were treated with NSAIDs, opiates or joint injections prior to the embolization procedure no longer required these treatments for their knee pain at one and two years following the procedure. This demonstrates that the embolization procedure provides effective and durable relief for joint pain. “In some instances, the pain from knee arthritis can be so severe as to require opioids for pain control. There is a significant need to decrease the use of these medications due to concerns about tolerance and addiction. Genicular artery embolization has been shown to markedly reduce the need for opioids,” states Dr. Padia.

Those enrolled in the clinical study of genicular artery embolization at UCLA will receive the embolization procedure and post-procedure follow-up at no cost to the patient or the patient's insurance. For more information, please visit [uclahealth.org/radiology/clinical-trials](http://uclahealth.org/radiology/clinical-trials). 