

INTERVIEW

Genicular Artery Embolization in 2023: An Interview With Dr. Osman Ahmed

Osman Ahmed, MD
UChicago Medicine, Chicago, Illinois

Keywords
[Genicular Artery Embolization](#)
[Knee Osteoarthritis](#)

May 2023
ISSN 2152-4343



Osman Ahmed, MD
UChicago Medicine, Chicago, Illinois

VASCULAR DISEASE MANAGEMENT
2023;20(5):E92-E93

At the 2023 Society of Interventional Radiologists (SIR) Annual Meeting in Phoenix, Arizona, Interventional Radiologist Osman Ahmed, MD, from UChicago Medicine in Illinois, gave a presentation titled “Genicular Artery Embolization: A 2023 Update.” Genicular arterial embolization (GAE; also called *geniculate artery embolization*) is a minimally invasive procedure that can provide pain relief for patients with knee osteoarthritis (OA) by reducing blood flow to the synovium of the knee.

Vascular Disease Management spoke with Dr. Ahmed to discuss the latest studies on GAE for OA of the knee and what their results mean for the

future of this treatment.

Dr. Ahmed, tell us about the presentation you gave at SIR 2023 on GAE.

GAE is a rapidly evolving and rapidly adopted technique to treat primary OA. A lot of literature is coming out on GAE, and as a community, we’re just trying to keep up with the new data because there are a lot of unanswered questions. The premise of the presentation was to review new research that has come out since last year’s SIR meeting. If you dig through the data, a lot of the studies have been in animals—to try and create OA in an animal and then perform GAE to see if the procedure cools inflammation or reduces the amount of synovial inflammation that’s caused by arthritis.

What have the studies on using GAE to treat OA shown in the last year?

Probably the most important thing is that the studies were able to create an arthritis model in animals, so the first takeaway was that you could create arthritis in an animal, and by doing that, you create inflammation. It was confirmed both on histology as well as angiography. You could actually see abnormal neovessels in the knee being created. The second was that then you could use GAE to treat and reduce the number of neovessels angiographically, just like we do in humans. Also, you’re able to now look at those animals under a microscope, which we can’t do with humans, and see the effects—again, showing that you can create arthritis and inflammation and reduce that inflammation with GAE.

Some of those animal studies also looked at different types of particles; an unanswered question with GAE is that we don’t know what the ideal embolic should be. Should it be resorbable? Should it be permanent? Should it be small? Should it be big? Some of these early studies are trying to look at the effects of the particles: Are certain particles able to reduce the neovessels better than others?

Conceptually, smaller particles are probably more likely to be able to kill more vessels. But the trade-off is, is it going to cause more complications because it’s smaller and penetrating more distally and causing more ischemia? And does that result in more skin discoloration?

Two studies have suggested that the smaller the particle size, the more likely you're going to get rid of the neovessels. But then, the chances of getting what we call ischemic complications potentially may be higher. Again, these are small animal studies, but they give us an idea of what we may be doing in humans.

Where do you see the research on GAE going? If you were to give this presentation at next year's SIR Annual Meeting in March 2024, what you might be talking about?

It's funny you ask that because I was thinking about that as we've been talking. What's the direction? There are some exciting human trials that are ongoing. One is called the GAUCHO (Genicular Artery Embolization Using Imipenem/Cilastatin vs Microsphere for Knee Osteoarthritis) trial, which we talked about in the presentation. It's a human study randomizing imipenem, which is a resorbable, vs embospheres. That study is going to try and determine if there are any differences between resorbable and permanent microspheres.

Probably the most important study that has started is GENESIS II (Genicular Artery Embolization for Knee Osteoarthritis II), which is a randomized controlled trial sham study from England from Dr. Mark Little and colleagues. That won't be done by next year's SIR meeting, but hopefully by May 2024, as it has already started enrolling subjects. We may be able to get some preliminary data or something like that, or just results in terms of ongoing recruitment, which again would be a positive thing because one of the things to validate is that people are willing to undergo a sham procedure. So that'll be important to see, that the trial is accruing and enrolling patients.

It's a very exciting time for people who are interested in GAE because it has a lot of promise as a procedure. But there are many unanswered questions, a lot of work to be done, and a lot of research to be done. Hopefully, people will be inspired by a presentation like this in the sense that it outlines how far we need to go to validate GAE and get it accepted in treatment guidelines. ■

Related Articles

[Geniculate Artery Embolization: A Review of Hemarthrosis and Osteoarthritis](#)

[Geniculate Artery Embolization Offers Pain Relief From Osteoarthritis](#)

