



Knee Pain?

GAE, A Minimally Invasive
Treatment for Knee Pain

*Stop the pain. Avoid surgery.
Get back to your life.*



NORTH STAR
VASCULAR & INTERVENTIONAL
KNEE PAIN CLINIC

What Causes Osteoarthritis (OA)?

Knee cartilage is the smooth, protective tissue that cushions your joint. Over time, it can wear down or become damaged, leading to:

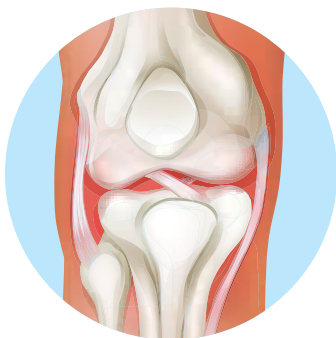
- Pain, swelling, and stiffness
- Bones rubbing directly against each other
- Inflammation in the joint lining (called synovitis)
- Changes in the shape of the joint (joint deformity)

As this happens, a vicious cycle begins: inflammation causes more damage to the cartilage, and that damage triggers even more inflammation. This ongoing cycle makes the pain and joint breakdown worse over time if left untreated.

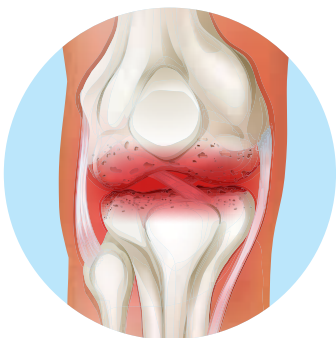
OA is common, affecting 46% of people in their lifetime.

Risk factors include:

- Age
- Female
- Being overweight
- Past knee injuries or bone conditions
- Repetitive stress from work or sports
- Family history of OA



Normal Knee Joint



Knee Joint With Arthritis

Why Choose GAE Over Surgery?

- No general anesthesia
- No major incisions—and no scarring to worry about
- No long rehabilitation
- Faster return to normal activity
- Ideal for patients not ready—or not eligible—for joint replacement

Why North Star Vascular & Interventional?

- National leaders in interventional radiology
- Among the first in the U.S. to perform GAE
- Trusted to train other physicians nationwide
- Modern, outpatient center in Twin Cities
- Full range of minimally invasive procedures for vascular, orthopedic, and cancer care



Why It Matters

Osteoarthritis is progressive—meaning it gets worse over time. Treating inflammation early helps preserve joint function and can delay or prevent major surgery.

If untreated, knee OA can lead to:

- Chronic pain and stiffness
- Limited mobility
- Worsening joint damage
- Surgery as the only option

GAE is a safe, lasting option—even if you've been told surgery is your only path forward.

What is GAE?

Genicular Artery Embolization (GAE) is a non-surgical treatment for people with painful knee osteoarthritis (OA). It's done in a clinic setting, so you can go home the same day. Using real-time imaging and a thin tube inserted into an artery, our doctors block the small blood vessels that feed the inflamed area of the knee. This helps reduce inflammation and relieve pain—without cuts, stitches, or a hospital stay.

What Happens During the Procedure?

- Performed by a board-certified interventional radiologist
- Outpatient procedure—no hospital stay required
- A tiny catheter is inserted through an artery in your upper thigh
- Using real-time medical imaging, the catheter is guided to arteries feeding the inflamed knee lining
- Microscopic particles are injected to reduce blood flow to inflamed tissue
- No cutting, no anesthesia, minimal discomfort.

We use state-of-the-art tools and technology to ensure safety, accuracy, and a comfortable experience.



Am I a Candidate for GAE?

You may benefit from GAE if:

- You have moderate to severe knee pain
- Imaging shows bone-on-bone or osteoarthritis
- Your pain is related to repetitive use or joint strain (not a recent injury)
- You do not have structural damage, such as a torn ligament or tendon
- You want to avoid or delay total knee replacement
- Injections don't work for you anymore

Even if you don't meet all of these criteria, you may still be a candidate. Contact us to learn more.

Results You Can Feel

In a large clinical study, patients reported a significant drop in knee pain—from 8 out of 10 to 3 out of 10—within the first week after the procedure.

Other benefits include:

- Less joint inflammation
- Improved mobility
- Long-term relief without ongoing medications or invasive surgery

North Star Vascular & Interventional

The doctors at NSVI are pioneers in interventional radiology. Hailing from some of the region's most prestigious healthcare and academic institutions, they were among the first to perform certain imaging-guided procedures in the United States. In fact, NSVI doctors play a leading national role in training other doctors to perform minimally invasive musculoskeletal procedures like GAE.

NSVI offers the full range of minimally invasive vascular and interventional radiology services, including cancer treatment, at their state-of-the-art Minneapolis-based outpatient center. Cancer, spine fractures, uterine fibroids, knee osteoarthritis and vascular disease can be treated faster, less expensively and with greater precision and safety than ever before.

**To learn more, visit
NorthStarIR.com.**



NORTH STAR
VASCULAR & INTERVENTIONAL

KNEE PAIN CLINIC



NorthStarIR.com

P: (952) 960-9399

F: (952) 206-6467

8401 Golden Valley Rd
Suite 340
Golden Valley, MN 55427