

# Clearing Arteries, Conquering Tumors from the Inside



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*At UPMC Passavant, vascular surgeons and interventional radiologists are using sophisticated technology and miniaturized instruments to navigate blood vessels, clear blockages, and treat diseases at the source.*



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In the 1960s sci-fi movie *Fantastic Voyage*, a rescue team enters a man's bloodstream to save his life. Today, interventional radiologists and vascular surgeons at UPMC Passavant are using guidance technology and tiny tools inserted through small incisions to plug life-threatening bleeds, clear arteries, block off tumor-feeding blood vessels, drain blocked organs, and deliver targeted cancer treatments—all without surgery.

"We're treating patients from the inside," says **Paul J. Lee, MD**, a board-certified interventional radiologist and chief of community interventional radiology at UPMC Passavant. "We use image guidance to navigate inside the body in real time to diagnose and treat diseases."

At UPMC Passavant, vascular surgeons use a state-of-the-art hybrid operating suite to perform delicate procedures

on arteries and veins throughout the body, except the heart and brain. Interventional radiologists, who work with a wide range of specialists to treat diseases and conditions, perform minimally invasive procedures in a separate, but similarly equipped angiogram suite.

Many conditions that once required surgery can now be treated nonsurgically with endovascular and interventional radiology procedures. Patients typically experience less pain, less risk, and a shorter recovery period.

Using x-rays, fluoroscopy, ultrasound, computed tomography (CT), and other precise imaging tools, these specialists use image guidance to navigate the body using fine catheter tubes and wires or needles to reach the source of the problem.

"It is interesting to try and figure out the best tool in our toolbox to use for each situation," says Dr. Lee. "We use technology to make sure the needle or catheter goes where it is supposed to go so we can deliver the best and least invasive treatment for the patient."

### ONE PATIENT'S STORY

Mary Mangold was carrying groceries up the steps of her Glenshaw home last March when she first felt pain in her left thigh. "It was intermittent. When I sat down the pain went away," she says. "But I couldn't go 100 feet without the pain starting up again."



Mary and Fred Mangold

Over the next few weeks, the pain shifted to her calf, becoming increasingly painful with every step. Mary, 71, also started feeling numbness in her leg. She initially sought help at an urgent-care center and then her family doctor. Thinking it was related to an old back problem, in July, she met with a spine specialist. By then, a small abrasion on the bottom of her left foot had developed into an ulcer; her foot felt cold and her toes were red.

The specialist immediately referred her to Georges E. Al-Khoury, MD, chief of vascular surgery at UPMC Passavant. A doppler study confirmed a diagnosis of peripheral artery disease (PAD)—a narrowing or blockage of arteries carrying blood to the extremities—caused primarily by a buildup of plaque, or atherosclerosis.

### SILENT SYMPTOMS OF CARDIOVASCULAR DISEASE

PAD often occurs in the legs, because they are farthest from the heart and the blood vessels are smaller, says Dr. Al-Khoury. The longer that circulation is slowed or stopped, the more likely it is that tissue will die and amputation may be necessary.

"Poor circulation is a sign that atherosclerosis, or hardening of the arteries, is building up in the arteries throughout the body," he says. "Anyone who has leg pain or trouble walking distances should be evaluated. The

## Tiny Tools and Small Incisions

According to Dr. Lee, interventional radiology treatments offered at UPMC Passavant include:

- Cutting-edge cancer treatment: Delivering chemotherapy or radioactive beads by catheter directly through the artery feeding blood to the tumor
- Ablation: Destroying tumors with heat (radiofrequency ablation) or extreme cold (cryoablation)
- Embolization: Blocking blood vessels to stop bleeding
- Biopsy: Using a needle to biopsy tissue in the liver, lungs, lymph nodes, and other areas
- Fluid collection/drainage: Sampling or draining fluid from the body due to abscesses, infection, or obstructions
- Port/peripherally inserted central catheter (PICC) line placement: Inserting ports and PICC lines for long-term delivery of chemotherapy, antibiotics, nutrition, and other medications, as well as making blood draws

sooner PAD is treated, the better." A simple test called the ankle-brachial index, which measures blood pressure in the legs, can detect signs of a blockage.

Like Mary, most PAD patients have no symptoms in the early stages of the disease. In her case, plaque was blocking blood flow in the superficial femoral artery—the main supplier of blood to her leg. Although she is a retired nurse who previously worked for the UPMC Homecare Division, she was unaware she was in any danger until the ulcer developed.

"It never dawned on me that I had circulation problems," she says. "I was shocked that it got so bad, so quickly."

### RESTORING BLOOD FLOW

Patients diagnosed with PAD often can be treated with lifestyle changes and medication. In more severe cases, blood flow can be restored surgically or through less invasive endovascular procedures.

"Not every patient is the same and not every blockage is the same," says Dr. Al-Khoury. "We do what's best for each patient. And whenever possible, we try to use the least invasive procedures. At UPMC Passavant, we're fortunate to have the very best technology and equipment."

In August, Dr. Al-Khoury treated Mary's PAD with a minimally invasive procedure, using image-guided x-ray to thread a catheter through a small incision in her groin and



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through the blood vessel to the affected artery. There, he cleared several blockages and inserted three stents to keep blood flowing.

“It was fascinating,” says Mary, who was under light sedation throughout and able to watch the entire procedure on a monitor.

A few hours later, she was up and walking. “I knew right away that it worked. The pain and numbness were gone,” she says.

### IMPROVED QUALITY OF LIFE

Since her procedure, Mary has resumed her daily activities, including grocery shopping, laundry, and trips to the mall. She no longer has to limit her walking or trips up and down the steps. And her foot is healing nicely.

“There were so many things that I was avoiding because I couldn’t walk any distance without pain. Now, I’m back to doing everything I did before,” she says.

“Dr. Al-Khoury did a wonderful job and UPMC Passavant provided excellent care. I couldn’t have had a better experience.”

Mary is now on a blood thinner and will continue to have regular checkups and doppler studies to check her circulation. If any leg pain develops again, she won’t hesitate to call. “I realize now just how lucky I was,” she adds. “I’m grateful every day that I can walk pain free.” ■

## PAD Fast Facts

PAD is a common, but serious disease. According to the Centers for Disease Control and Prevention, only one in four Americans is aware of PAD although it affects about 8.5 million people.

If lifestyle changes are unable to relieve symptoms, the board-certified vascular surgeons at UPMC Passavant can open blocked arteries using the latest minimally invasive procedures, including:

- Balloon angioplasty (to open the artery)
- Stent placement (to hold the artery open)
- Atherectomy (to remove plaque from the artery)

Severe symptoms may require bypass surgery to reroute blood around the closed artery. At UPMC Passavant, vascular surgeons have access to a state-of-the-art hybrid operating suite, where they can perform both endovascular and open procedures.

### ARE YOU AT RISK FOR PAD?

Here are some of the key factors that can increase your likelihood of having PAD:

- Smoking
- Diabetes
- High blood pressure
- High cholesterol
- Obesity
- Atherosclerosis
- Age (over 60)
- Family history of vascular disease

### SIGNS AND SYMPTOMS

Most people don’t experience symptoms until the disease is more advanced. If symptoms are present, they may include:

- Pain, cramping, or fatigue in the hips, thighs, or calves when walking, climbing stairs, or exercising that goes away with rest. “That’s a classic symptom,” says Dr. Al-Khoury.
- Non-healing wounds
- Leg discoloration
- A noticeable decrease in the temperature of one leg or foot compared to the other
- Decreased hair or nail growth

### BE AWARE

- PAD symptoms are often ignored or mistaken for something else
- People with PAD have a greater risk for heart attack and stroke, since the same factors that cause blockages in the limbs can cause blockages in other parts of the body
- Left untreated, PAD can lead to gangrene and amputation
- Although it’s more common in the legs, PAD also can affect arteries in your abdomen, limiting blood supply to organs such as your bowels and kidneys