

# That arm pain might signal a vascular disorder

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"Young" and "athletic" aren't adjectives often mentioned in the same sentence as vascular surgery, but that's the crazy thing about thoracic outlet syndrome. The disease strikes young people—often patients in

their 20s and 30s—and the usual culprits of vascular disease like diabetes, high cholesterol and high blood pressure play no part.

Professional athletes—frequently Major League baseball pitchers, like former New York Mets hurler Matt Harvey—are sometimes diagnosed with thoracic outlet syndrome. The disorder can be misdiagnosed, which is particularly worrisome considering how high the stakes can be. Some forms of thoracic outlet syndrome can cause permanent damage. In an extreme case, a person could lose an arm due to [blood-flow](#) compromise.

Two surgeons from Penn State Heart and Vascular Institute—Dr. Tarik Ali and Dr. Maria Castello Ramirez—explain the illness, its warning signs and when you should seek help.

### **What is thoracic outlet syndrome?**

At the base of everyone's neck, there's space for a bundle of nerves, an artery and a vein. In some people, that space doesn't offer quite enough room for all three, Ali said. Or the space becomes insufficient when an athlete uses the muscles in the shoulder and neck frequently, and they grow. Everything becomes pinched, and that's where the trouble starts.

"It comes in three flavors," Castello Ramirez said.

Most people—as many as 90% of thoracic outlet syndrome patients, Ali said — get the neurogenic version of the disease, where only the nerve plexus is pinched. As a result, people present with arm symptoms such as pain and numbness. Eventually the disorder can become debilitating.

The other two—venous and arterial—occur when either the vein or artery becomes compressed. Those conditions are more serious and usually require surgery.

## What happens there?

Both the venous and arterial versions of thoracic outlet syndrome can affect blood flow. In the case of the vein, [blood clots](#) can develop. The blockages cause swelling of the arm. Often the swelling is so severe, the patient can no longer move his or her arm. If left untreated, blood return from the arm can be disrupted permanently.

When the artery is compressed, an aneurysm—a ballooning of the artery—can appear as blood flow to the arm ratchets off. "People can lose fingers, hands and even arms," Ali said. "People can die from this in severe cases."

Vein clots can also be fatal if they travel to the lungs, but usually the damage is localized to the arm. The result is called deep vein thrombosis, a condition where the clot forces the blood around the obstruction and swelling occurs.

## How do you treat it?

"There's an old saying in surgery," Ali said. "If you operate for pain, all you're going to get back in return is pain."

In other words, in the case of the more common neurologic version of the disease, doctors don't usually recommend surgery. Instead, [physical therapy](#) is often recommended to relieve the pressure on the nerve in the neck as a first line therapy. Only after conservative management fails is surgery offered.

But when it comes to the rarer venous and arterial version of the disease, surgery is necessary. Doctors will often remove the first rib under the clavicle to alleviate some of the pressure. They may also remove portions of muscle. Patients usually miss neither nor flesh, Castello

Ramirez said. The rib serves no function, and other muscles kick in to take over for their missing counterparts.

### **When should I seek help?**

"I would say if people have swelling and pain of the arms in the absence of trauma—if it gets really swollen and painful, it could be [deep vein thrombosis](#)," Castello Ramirez said.

If, in addition to the pain, your skin appears mottled and is cool to the touch, a vascular issue could be the culprit, she said. But any time you experience pain that's debilitating or affects your ability to lift your arms, talk to your doctor.

### **How do you diagnose it?**

It's tricky. MRIs fail to turn up abnormalities. "It's normal anatomy," Ali said. If you compare someone with thoracic outlet syndrome to someone without, the vein, the artery and the nerve and the space between will probably look very similar.

Vascular surgeons diagnose thoracic outlet syndrome by evaluating blood flow using tests like venograms (injecting dye into the blood and using an X-ray to see it) or ultrasounds with arm maneuvers, Castello Ramirez said.

In the case of neurogenic thoracic outlet syndrome, electromyography can help make the diagnosis.

Outside of the vascular surgeon's office, it can sometimes be misdiagnosed. Primary care doctors may detect a blood clot and prescribe a drug to dissolve it, but they'll miss the root cause—thoracic outlet syndrome. That can lead to long-term complications, such as clots

that won't break down. In such cases, said Ali, the relatively simple surgery to remove the rib or portion of muscle will no longer work.

Patients shouldn't be afraid to ask for a test for thoracic outlet syndrome if they suspect it, said Ali.

Provided by Pennsylvania State University

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