

Venous Thoracic Outlet Syndrome

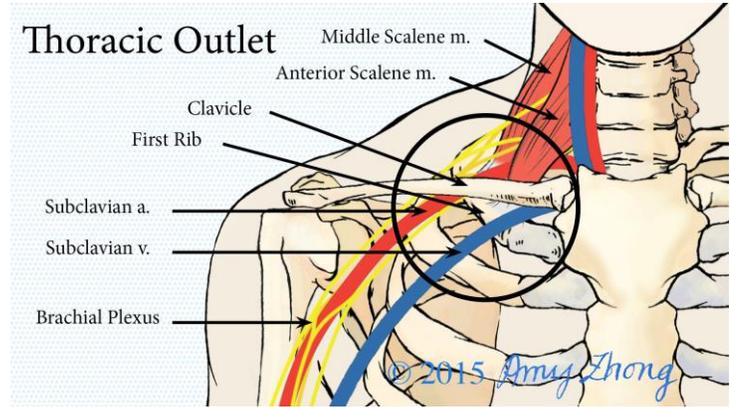
An In-Depth Guide for Patients and Healthcare Providers

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1. What is venous thoracic outlet syndrome?

Venous thoracic outlet syndrome is a condition that occurs when the subclavian vein is compressed by the first rib and the subclavius/anterior scalene muscle resulting in a blood clot. The anterior scalene is a muscle located in the neck that attaches to the first rib in the area known as the thoracic outlet. Typically, the structures that control the function of the arm including the subclavian artery, subclavian vein and the nerves of the brachial plexus are able to pass through this area without incident. (Figure) In the case of venous thoracic outlet syndrome the veins are compressed which results in a blood clot.



2. What causes venous thoracic outlet syndrome?

Venous thoracic outlet syndrome occurs over time as the subclavian vein is compressed by the subclavius/anterior scalene muscle and first rib with arm use. With the arms in an extended or overhead position, the space around the structures within the thoracic outlet space narrows. In thoracic outlet syndrome this space becomes so narrow that compression of the subclavian vein occurs triggering blood clot formation.

3. What are signs and symptoms of venous thoracic outlet syndrome?

Persistent swelling with pain and color change in the arm is typical in patients with venous thoracic outlet syndrome. These symptoms are usually persistent and unable to be relieved with other conservative treatments. Symptoms may be temporally associated with an increase in arm use (weight lifting, overhead arm work such as painting, etc.) just prior to their onset but not always. Prominent veins may become visible across the chest and arm. Some of these symptoms may have been present for a shorter duration prior to the final precipitating event that results in vein occlusion and presentation for medical care.

4. How is venous thoracic outlet syndrome diagnosed?

An upper extremity venous duplex or ultrasound study is the best way to diagnose venous thoracic outlet syndrome after symptom onset. This is usually done at an imaging center or in the emergency department. This also may be done in conjunction with CT or MRI imaging to assess for bony involvement and vessel compression. Blood testing for a hypercoagulable disorders (such as Factor V Leiden) is not usually necessary.

5. **Who is more likely to get venous thoracic outlet syndrome?**

Anyone can develop venous thoracic outlet syndrome, but high-level athletes and people who do repetitive overhead maneuvers are at greatest risk for developing venous thoracic outlet syndrome. Athletes who are participating in a rigorous training program, especially those associated with upper extremity exercise, can cause augmentation in the surrounding musculature of the thoracic outlet area leading to a greater risk for venous compression.

6. **How is venous thoracic outlet syndrome treated?**

Systemic anticoagulation therapy should be prescribed once the clot diagnosis has been confirmed. Patients are also frequently treated with clot busting medications (thrombolysis), followed by surgery to decompress the vein. Physical therapy is begun in the rehabilitative phase after surgery. Treatment also typically involves a 3-6 month course of oral anticoagulation. Depending on the acuity of the blood clot a venogram with possible intervention, including catheter directed thrombolysis and/or angioplasty, could be indicated. After physical therapy, the patient progresses back into regular activity slowly. The goal is to get the patient back to the level of activity prior to the blood clot. This can take up to 1 year after surgery but progress is always patient dependent.

7. **What is McCleery's syndrome?**

McCleery's syndrome is intermittent swelling, color change and pain in the arm associated with activity. These symptoms are relieved with rest. This is an early sign that vascular injury is occurring which is the precursor to thrombosis. Generally the frequency and severity of the symptoms progresses until clot formation occurs. Treatment of this early form of venous thoracic outlet syndrome is the same as thrombotic venous thoracic outlet syndrome.

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