

Thoracic outlet syndrome

Overview

Thoracic outlet syndrome (TOS) is a group of conditions in which there's pressure on blood vessels or nerves in the area between the neck and shoulder. This space is known as the thoracic outlet. Compression of the blood vessels and nerves can cause shoulder and neck pain. It also can cause numbness in the fingers.

Common causes of thoracic outlet syndrome include trauma from a car accident, repetitive injuries from a job or sport, and pregnancy. Differences in anatomy, such as having an extra or irregular rib, also can cause TOS. Sometimes the cause of thoracic outlet syndrome is not known.

Treatment often involves physical therapy and pain relief. Most people improve with these treatments. For some, surgery may be recommended.

Symptoms

There are three types of thoracic outlet syndrome:

- **Neurogenic thoracic outlet syndrome.** This is the most common type of thoracic outlet syndrome. In this type, a group of nerves called the brachial plexus is compressed. The nerves of the brachial plexus come from the spinal cord. The nerves control muscle movements and feeling in the shoulder, arm and hand.
- **Venous thoracic outlet syndrome.** This type of thoracic outlet syndrome occurs when one or more of the veins under the collarbone are compressed and damaged. This can result in blood clots.
- **Arterial thoracic outlet syndrome.** This is the least common type of TOS. It occurs when one of the arteries under the collarbone is compressed. The compression may cause injury to the artery resulting in a bulge, known as an aneurysm, or blood clot formation.

Thoracic outlet syndrome symptoms can vary depending on the type. When nerves are compressed, symptoms of neurogenic thoracic outlet syndrome include:

- Numbness or tingling in the arm or fingers.
- Pain or aches in the neck, shoulder, arm or hand.
- Arm fatigue with activity.
- A weakening grip.

Symptoms of venous thoracic outlet syndrome can include:

Feedback

- A change in the color of the hand or one or more fingers.
- Hand or arm pain and swelling.

Symptoms of arterial thoracic outlet syndrome can include:

- A pulsating lump near the collarbone.
- Cold fingers, hands or arms.
- Hand and arm pain.
- A change in color in one or more of the fingers or the entire hand.
- Weak or no pulse in the affected arm.

When to see a doctor

See your healthcare professional if you regularly experience any of the symptoms of thoracic outlet syndrome.

Causes

Thoracic outlet syndrome is often caused by compression of the nerves or blood vessels in the thoracic outlet, the area between the neck and shoulder. The cause of the compression varies and can include:

- **Differences in anatomy.** Some people are born with an extra rib in the neck found above the first rib. The extra rib, known as a cervical rib, can compress nerves or blood vessels. There also may be a tight fibrous band connecting the spine to the rib that causes compression.
- **Poor posture.** Drooping your shoulders or holding your head in a forward position can cause compression in the thoracic outlet area.
- **Trauma.** A traumatic event, such as a car accident, can cause internal changes that then compress the nerves in the thoracic outlet. The onset of symptoms related to a traumatic accident often is delayed.

Risk factors

There are several factors that seem to increase the risk of thoracic outlet syndrome, including:

- **Sex.** Women are more than three times more likely to be diagnosed with thoracic outlet syndrome than are men.
- **Age.** Thoracic outlet syndrome may occur at any age but is most commonly diagnosed in adults between the ages of 20 and 50.

Complications

Complications from this condition stem from the type of thoracic outlet syndrome. If you have swelling or a painful discoloration in the arm, it is important to seek urgent medical attention. You may need treatment for blood clots or an aneurysm.

Feedback

For neurogenic TOS, repetitive nerve compression can result in long-term injury resulting in chronic pain or disability. Neurogenic TOS can be confused for other joint or muscle injuries. If symptoms don't improve, it is important to seek medical attention for an evaluation and testing.

Prevention

If you're at risk of thoracic outlet compression, avoid repetitive movements and lifting heavy objects. If you're overweight, losing weight may help you prevent or relieve symptoms of thoracic outlet syndrome.

Even if you don't have symptoms of thoracic outlet syndrome, avoid carrying heavy bags over your shoulder. This can increase pressure on the thoracic outlet. Stretch daily, and do exercises that keep your shoulder muscles strong and flexible.

Daily stretches focusing on the chest, neck and shoulders can help improve shoulder muscle strength and prevent thoracic outlet syndrome.

By Mayo Clinic Staff

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