

Thoracic outlet syndrome

Definition

Thoracic outlet syndrome is a rare condition that involves pain in the neck and shoulder, numbness and tingling of the fingers, and a weak grip. The thoracic outlet is the area between the rib cage and collar bone.

Causes

Blood vessels and nerves coming from the spine or major blood vessels of the body pass through a narrow space near the shoulder and collarbone on their way to the arms. As they pass by or through the collarbone (clavicle) and upper ribs, they may not have enough space.

Pressure (compression) on these blood vessels or nerves can cause symptoms in the arms or hands. Problems with the nerves cause almost all cases of thoracic outlet syndrome.

Compression can be caused by an extra cervical rib (above the first rib) or an abnormal tight band connecting the spinal vertebra to the rib. Patients often have injured the area in the past or overused the shoulder.

People with long necks and droopy shoulders may be more likely to develop this condition because of extra pressure on the nerves and blood vessels.

Symptoms

Symptoms of thoracic outlet syndrome may include:

- Pain, numbness, and tingling in the pinky and ring fingers, and the inner forearm
- Pain and tingling in the neck and shoulders (carrying something heavy may make the pain worse)
- Signs of poor circulation in the hand or forearm (a bluish color, cold hands, or a swollen arm)
- Weakness of the muscles in the hand

Exams and Tests

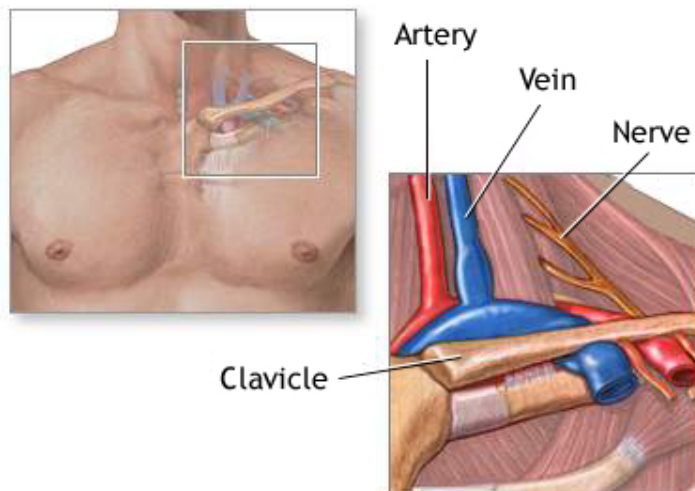
When you lift something, the arm may look pale due to pressure on the blood vessels.

The diagnosis is typically made after the doctor takes a careful history and performs a physical examination. Sometimes the following tests are done to confirm the diagnosis:

- Electromyography (EMG)
- CT angiogram
- MRI
- Nerve conduction velocity study
- X-ray

Tests are also done to make sure that there are no other problems, such as carpal tunnel syndrome or a damaged nerve due to problems in the cervical (neck) spine.

Treatment



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When thoracic outlet syndrome affects the nerves, the first treatment is always physical therapy. Physical therapy helps strengthen the shoulder muscles, improve range of motion, and promote better posture. Treatment may also include pain medication.

If there is pressure on the vein, your doctor may give you a blood thinner to dissolve the blood clot. This will help reduce swelling in your arm.

You may need surgery if physical therapy and changes in activity do not improve your symptoms. The surgeon may make a cut either under your armpit or just above your collarbone.

During surgery, the following may be done:

- An extra rib is removed and certain muscles are cut.
- A section of the first rib is removed to release pressure in the area.
- Bypass surgery is done to reroute blood around the compression or remove the area that is causing the symptoms.

Your doctor may also suggest other alternatives, including angioplasty if the artery is narrowed.

Outlook (Prognosis)

Having the first rib removed and the fibrous bands broken may relieve symptoms in certain patients. Surgery can be successful in 50% to 80% of patients. Conservative approaches using physical therapy are helpful for many patients.

At least 5% of patients have symptoms that return after surgery.

Possible Complications

Complications can occur with any surgery and relate to the type of procedure and anesthesia used.

Damage to nerves or blood vessels may occur during surgery. This could lead to weakness of the arm muscles, or weakness of the muscles that help control the diaphragm when you breathe.

References

Smythe WR, Reznik SI, Putnam Jr. JB. Lung (including pulmonary embolism and thoracic outlet syndrome). In: Townsend Jr. CM, Beauchamp RD, Evers BM, Mattox KL. *Sabiston Textbook of Surgery*. 18th ed. Philadelphia, Pa: Saunders Elsevier;2007:chap 59.

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