

# THORACIC OUTLET SYNDROME



## ■ ■ ■ Description

Thoracic outlet syndrome is characterized by pain and weakness from compression of nerves, and less commonly arteries and veins, in the neck, affecting the shoulders, arm, and hands.

## ■ ■ ■ Common Signs and Symptoms

- Pain, numbness, and tingling in the neck, shoulders, arms, and hands
- Weakness in the arms and hands
- Poor circulation, characterized by coldness, swelling, and blueness in the hands and fingers (rare)

## ■ ■ ■ Causes

The nerves and blood vessels that supply the shoulder, arms and hands start in the neck and pass as a group near the ribs and collarbone. Pressure on the nerves or blood vessel bundle creates symptoms. Pressure may be caused by an extra rib in the lower neck (called a cervical rib), overdeveloped neck muscles (as may be required with some contact sports or may result from overzealous weightlifting programs), muscle weakness, and drooping in the shoulder. Other causes include injury from overextending the arm or shoulder and abnormal positioning of the arm or neck for a prolonged period, such as can occur during surgery, during unconsciousness (for any reason), or while sleeping with a too-firm object under neck. Rarely, a tumor that has spread to the head and neck area from another part of the body may cause pressure on the nerve or blood vessel bundle.

## ■ ■ ■ Risk Increases With

- Fracture of clavicle or first rib
- Bodybuilding, with muscle bulk in thoracic outlet area (neck muscles)
- Rapid weight loss combined with vigorous physical exercise or exertion

## ■ ■ ■ Preventive Measures

- Avoid shoulder and neck injury whenever possible.
- Wear appropriate protective equipment appropriate for your sport.
- Maintain good posture.
- Avoid carrying a bag or backpack on the affected side.
- Change sleeping positions. Try sleeping on one side, or sleep without a firm pillow.
- If symptoms are caused from overdeveloped neck muscles, reduce neck muscle-building exercises.

## ■ ■ ■ Expected Outcome

This condition is usually curable in most patients with physical therapy or changes in sleeping habits. However, occasionally surgery is necessary if symptoms persist despite therapy.

## ■ ■ ■ Possible Complications

- Permanent numbness or loss of arm or hand strength if this syndrome is not treated
- Postoperative pain or abnormal sensation in arm or hand (rare)
- Persistence or recurrence of disorder after surgery
- Acute thrombosis (clotting) of the axillary vein; this is an emergency that needs to be treated immediately

## ■ ■ ■ General Treatment Considerations

Initial treatment involves medications and avoiding the activity that initially caused the problem. Physical therapy and exercises are usually prescribed to promote shoulder muscle function and improve any posture abnormalities. Avoid straining or heavy activity for 3 months. Surgery to relieve pressure on the nerves and blood vessels, such as removal of all or part of a cervical (extra) rib, or to cut muscles pressing on the bundle may be indicated, particularly if symptoms persist despite 6 months of activity modification, therapy, and exercises.

## ■ ■ ■ Medication

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within 7 days before surgery), or other minor pain relievers, such as acetaminophen, are often recommended. Take these as directed by your

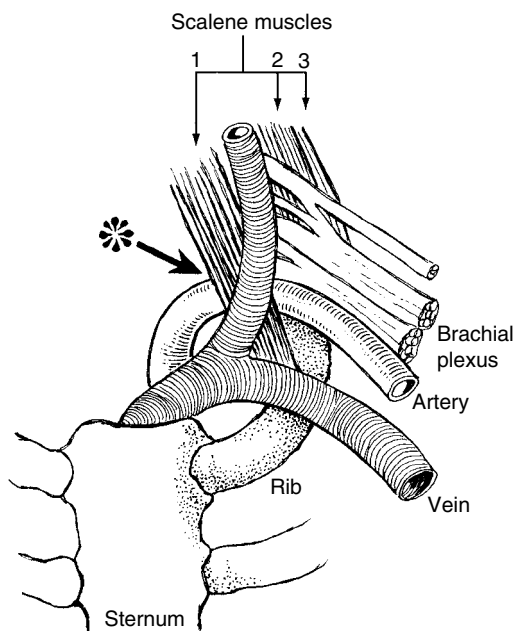
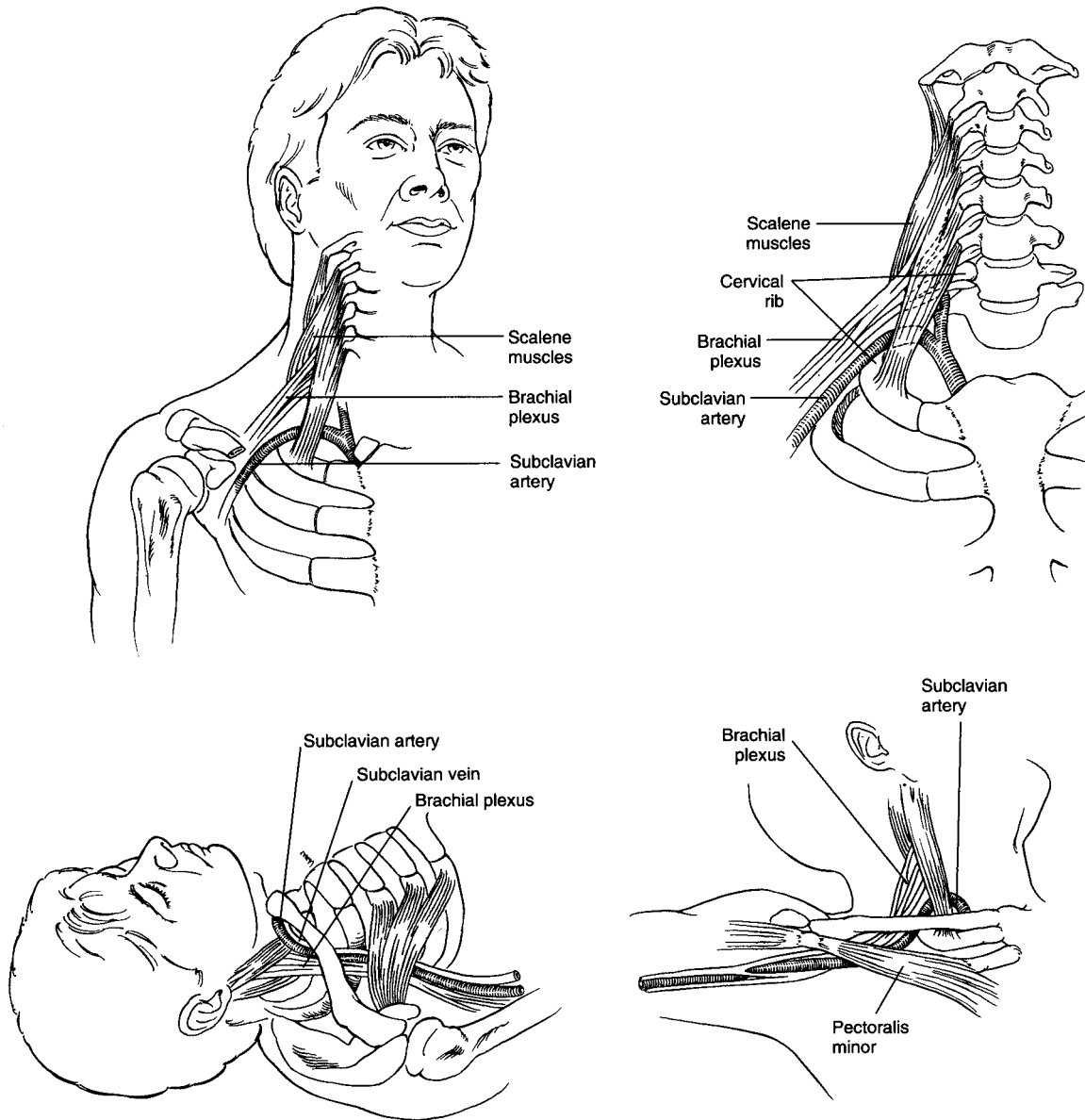


Figure 1

From Economou SG, Economou TS: Instructions for Surgery Patients. Philadelphia, WB Saunders, 1998, p. 605.



**Figure 2**

From Zachazewski JE, Magee DJ, Quillen WS: Athletic Injuries and Rehabilitation. Philadelphia, WB Saunders, 1997, p. 447.

- physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Antispasmodics and muscle relaxants may be prescribed. Use only as directed and only as much as you need.

**■ ■ ■ Notify Our Office If**

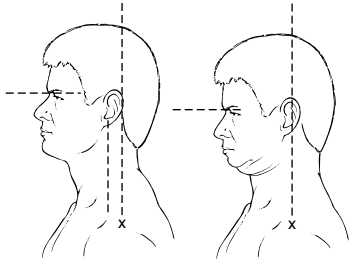
- Symptoms worsen or do not improve in 6 weeks despite treatment

- You develop coldness, swelling, and blueness in the hands and fingers
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

### > RANGE OF MOTION AND STRETCHING EXERCISES • Thoracic Outlet Syndrome

These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Emphasis is placed on assisting you in obtaining a better posture. The most common poor posture seen with in thoracic outlet syndrome involves a person standing with rounded shoulders and a forward head. These initial exercises will assist you in obtaining a proper posture. Please remember:

- Flexible tissue is more tolerant of the stresses placed on it during activities.
- Each stretch should be held for 20 to 30 seconds.
- A *gentle* stretching sensation should be felt.



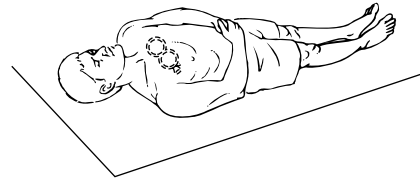
#### CERVICAL SPINE • Axial Extension

1. Sit in a chair or stand in your normal posture.
2. Gently tuck your chin and glide your head backward. Keep your eyes level as shown. You should not end up looking up or looking down.
3. You will feel a stretch in the back of your neck and at the top of your shoulders.
4. Hold this position for \_\_\_\_\_ seconds.
5. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.



#### THORACIC EXTENSION • Upper

1. Sit erect/in a good posture in a chair with a firm, high back as shown. If the chair does not have a good lumbar support, place a small rolled-up towel in the small of your back as shown in the diagram.
2. Clasp your hands together behind your neck. Bring your elbows together under your chin, gently cradling and supporting your head and neck. This will prevent your neck from bending backward.
3. **Bend backward through the upper back** over the top of the chair. When you do this your shoulders and elbows should move upward and backward. You should feel a stretch at the base of your neck and the top of your shoulder blades.
4. Hold this position for 10 seconds. Return to the starting position.
5. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.



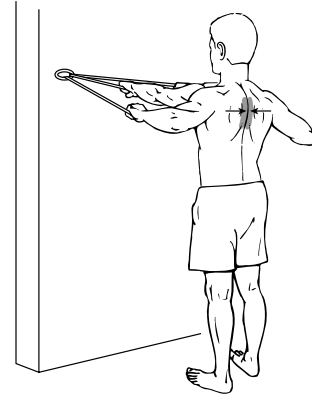
#### THORACIC EXTENSION • Mid

1. Place two racquetballs in a small sock as shown. Tie off the end of the sock.
2. Lie on your back with the sock placed as shown. The bony structures that run down the middle of the back should be cradled between the two balls.
3. Lie in one position for 15 to 30 seconds. Gently move your body 1 to 2 inches, rolling the balls to a new position. Repeat, moving the balls as appropriate as long as you continue to feel a stretch.
4. Repeat exercise \_\_\_\_\_ times, \_\_\_\_\_ times per day.

➤ **STRENGTHENING EXERCISES** • Thoracic Outlet Syndrome

These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. *These exercises should not cause an increase in your symptoms; if they do stop them immediately and consult your physician, physical therapist, or athletic trainer.* Emphasis is placed on performing these exercises with a proper posture using light resistance. Endurance and posture are the key. Make sure that you use a good, upright posture when doing this exercise. Please remember:

- Strong muscles with good endurance tolerate stress better.
- Do the exercises as *initially* prescribed by your physician, physical therapist, or athletic trainer.
- Progress slowly with each exercise, gradually increasing the number of repetitions and weight used under their guidance.



**SHOULDER** • Scapular Retraction

1. Anchor rubber band/tubing to a stable, fixed object.
2. Hold one end of the band/tubing in each hand with your arms straight out in front of you.
3. Squeeze/"pinch" your shoulder blades together.
4. Keeping your shoulder blades pinched together, pull your arms back as shown. Your hands should be level with your shoulders when you finish. Do not let your elbows go behind your body.
5. Hold this position for \_\_\_\_ seconds and then slowly return to the starting position.
6. Repeat exercise \_\_\_\_ times, \_\_\_\_ times per day.

➤ **POSTURE AND BODY MECHANICS CONSIDERATIONS** • Thoracic Outlet Syndrome

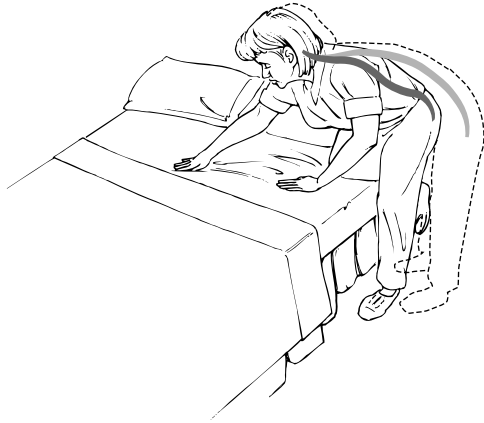
Maintaining the most appropriate posture and using correct body mechanics can have a significant effect on back pain. The following are basic suggestions regarding proper posture and body mechanics. These should be specifically discussed with your physician, physical therapist, or athletic trainer. Please remember:

- Good posture minimizes the stress and strain on any portion of your spine.
- Do the exercises as *initially* prescribed by your physician, physical therapist, or athletic trainer.
- Incorporate these exercises and posture principles into all of your daily and recreational activities.



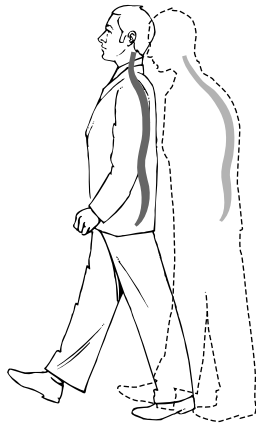
**PROLONGED STANDING IN SLIGHT FLEXION**

When you must stand in a position that requires a prolonged period of time and slight flexion, consider finding a foot stool or other object to place one foot on. This will assist in minimizing the load on your back.



### PROLONGED ACTIVITY IN A FLEXED POSITION

Try to avoid doing any activity in a flexed position for a prolonged period of time. Put one leg up if possible, which will minimize stress on your back. You should also attempt to keep a normal spinal posture when doing any activity.



### SLOUCHING

Avoid slouching when you walk or stand. Stand up straight. Walk erect and tall.



### WORK STATION

When sitting at a desk or work station make sure you attempt to do the following:

1. Have an adjustable-height chair. It is critical that your feet touch the floor. If this is not possible because of chair and/or desk height, obtain a foot rest.
2. Make sure that your chair can fit under the desk and you can pull as close to your work surface as you need to.
3. Avoid slouching. Use a lumbar roll/cushion/pillow behind your low back.
4. Make sure that your work surface is the appropriate height.

Notes:

(Up to 4400 characters only)

Notes and suggestions