

THORACIC OULET SYNDROME (TOS)

Thoracic outlet syndrome refers to compression of the neurovascular structures at the superior apex of the thorax.

The brachial plexus trunks and subclavian vessels can be compressed or irritated at 3 different sites as they pass from the base of the neck towards the axilla and proximal arm.

The first and most common compression site, the interscalene triangle. The triangle is bordered anteriorly by the anterior scalene muscle, the middle scalene muscle posteriorly and by the medial surface of the first rib inferiorly.

The second, the costoclavicular triangle. This triangle is bordered anteriorly by the middle third of the clavicle, posteromedially by the 1st rib and posterolaterally by the upper border of the scapula.

The last is the sub-coracoid space, beneath the coracoid process deep to the pectoralis minor tendon.

Fibrous muscle bands, elevated first ribs, cervical ribs or repetitive trauma can contribute to the symptoms of TOS.

As diagnosing this condition is subjective, the incidence ranges from 3-80 cases per 1000.

Brachial plexus compression (lower spinal nerves C8, T1) occurs in 95% of cases, subclavian vein compression in 4% and subclavian artery in 1%.

The female to male ratio is 3:1 and onset of this syndrome occurs in persons aged 20-50 years.

Signs and Symptoms.

As a syndrome is defined as a collection of signs and symptoms that collectively characterize or indicate a particular disease/abnormality, symptomology of TOS varies.

Vascular

- swelling or puffiness in the arm or hand
- discolouration of the hand
- feeling of heaviness in the arm or hand
- pulsating lump above the clavicle
- deep "tooth like" pain located in the neck and shoulder region, which increases at night
- fatigue of the arm or hand
- superficial vein distention in the arm or hand

Neurological

- parasthesia (C8, T1) dermatome
- muscle weakness of the finger flexors and intrinsic hand muscles
- radiating pain in the arm or hand.
- Tingling and numbness in the neck, shoulder arm and hand.

TOS can also present with non specific head aches.

Neurovascular compression can be caused by:-

- facet joint inflammation leading to muscle spasm, or direct trauma to the muscle (anterior scalene muscle).
- Elevated 1st rib or a cervical rib (costoclavicular approximation).
- Repetitive strain injury – shoulder elevation and hyper abduction (pectoralis minor).

Provocation tests.

EAST TEST.

This test assess the vascular compression of the neurovascular bundle.

The patient is seated and their shoulders and elbows are elevated to 90°. The patient is asked to “open and close” their hands for 3 minutes or until symptoms are reported. Typically, pain, heaviness, fatigue or tingling in the affected arm/hand is reported.

ADSONS OR SCALENES MANOEUVRE

The patient is seated. The practitioner locates the radial pulse. The patient is asked to rotate their head with slight extension to the tested arm. The practitioner extends the arm while assessing the radial pulse. This position allows the approximation of the attachments of the scalene muscle further compressing the vascular structures. The practitioner note alteration in the amplitude of the pulse.

COSTOCLAVICULAR MANOEUVRE

The practitioner locates the radial pulse and draws the patients arm inferiorly and posteriorly as the patient inhales. As with the Adsons manoeuvre the pulse is assessed.

ALLENS TEST

The practitioner flexes the patients elbow to 90° while the shoulder is extended horizontally and laterally rotated. The patient is asked to rotate their head away from the tested arm. The radial pulse is palpated, if an alteration is noted with neck rotation the test is considered positive.

NEUROLOGICAL SCREEN

A full neurological screen is essential as 95% of cases present with neurological symptoms.

The practitioner assesses for a lower motor neurone lesion.

N.B.

Suggestions have been made that the condition of TOS can only be diagnosed if BOTH vascular and neurological testing is “positive”.

Ref.

www.emedicine.com Thoracic Outlet Syndrome.