SUMMARY

Thoracic outlet is a space between the rib cage (thorax), and the collar bone (clavicle) through which the main blood vessels and nerves pass from the neck and thorax into the arm. The nerves and blood vessels leave the neck between the two muscles, scalenus anticus and medius.

Thoracic outlet syndrome (TOS) consists of symptoms that affect the neck, shoulder & upper extremity caused by compression or irritation of the brachial plexus, subclavian vein & subclavian artery.

A variety of terms have been used to describe this syndrome; first rib syndrome, costaclavicular syndrome, shoulder hand syndrome & scalenus anticus syndrome. The syndrome develops because of abnormalities of the first rib, the scalenus anticus, the clavicle or a cervical rib.

Pain and paraesthesia are commonly present due to nerve compression, edema and venous distention due to vein compression and less commonly weakness and coldness of upper limb due to arterial compression.

Careful history & thorough examination are important components in establishing diagnosis of thoracic outlet syndrome. Plain x-ray may show the cervical rib. also nerve conduction studies, CT & Doppler ultrasonogaphy may help in diagnosis.

The treatment of thoracic outlet syndrome is either conservative or surgical. The conservative program should be persuaded for as long as it

seems effective & as long as the patient can tolerate symptoms. The surgical treatment is considered if the patient has unacceptable symptoms after adequate conservative treatment.

The surgical approach depends on the cause. Cervical ribs, either complete or fibrous and first rib should be excised. Additional bands in the scalenus medius are divided. If no obvious cause of compression is found, division of the scalenus anterior at its insertion (scalenotomy) has been widely practised in the past. However definite evidence of vascular or neurological thoracic outlet obstruction in the absence of a cervical rib or fibrous band is now treated by excision of the first rib. If there is evidence of arterial damage such as a significant post-stenotic dilatation or an aneurysm of the subclavian artery, that section of the artery is excised and replaced with a short length of vein or a prosthetic graft such as polytetrafluoroethylene.

Several approaches have been described to remove the first rib as posterior parascapular, transaxillay, supraclavicular infraclavicular, transthoracic, and through the bed of the resected clavicle. Also scalenectomy and combined approaches are used.

When an operation is performed for arterial obstruction, with a clearly established diagnosis the results are excellent. If neurological compression at the thoracic outlet has been diagnosed without doubt, surgical relief of the obstruction will also produce a good outcome. If there is muscle wasting of the small muscles of the hand recovery will be slow; if this is long standing it is unlikely to improve, although sensory symptoms and pain are relieved immediately.