

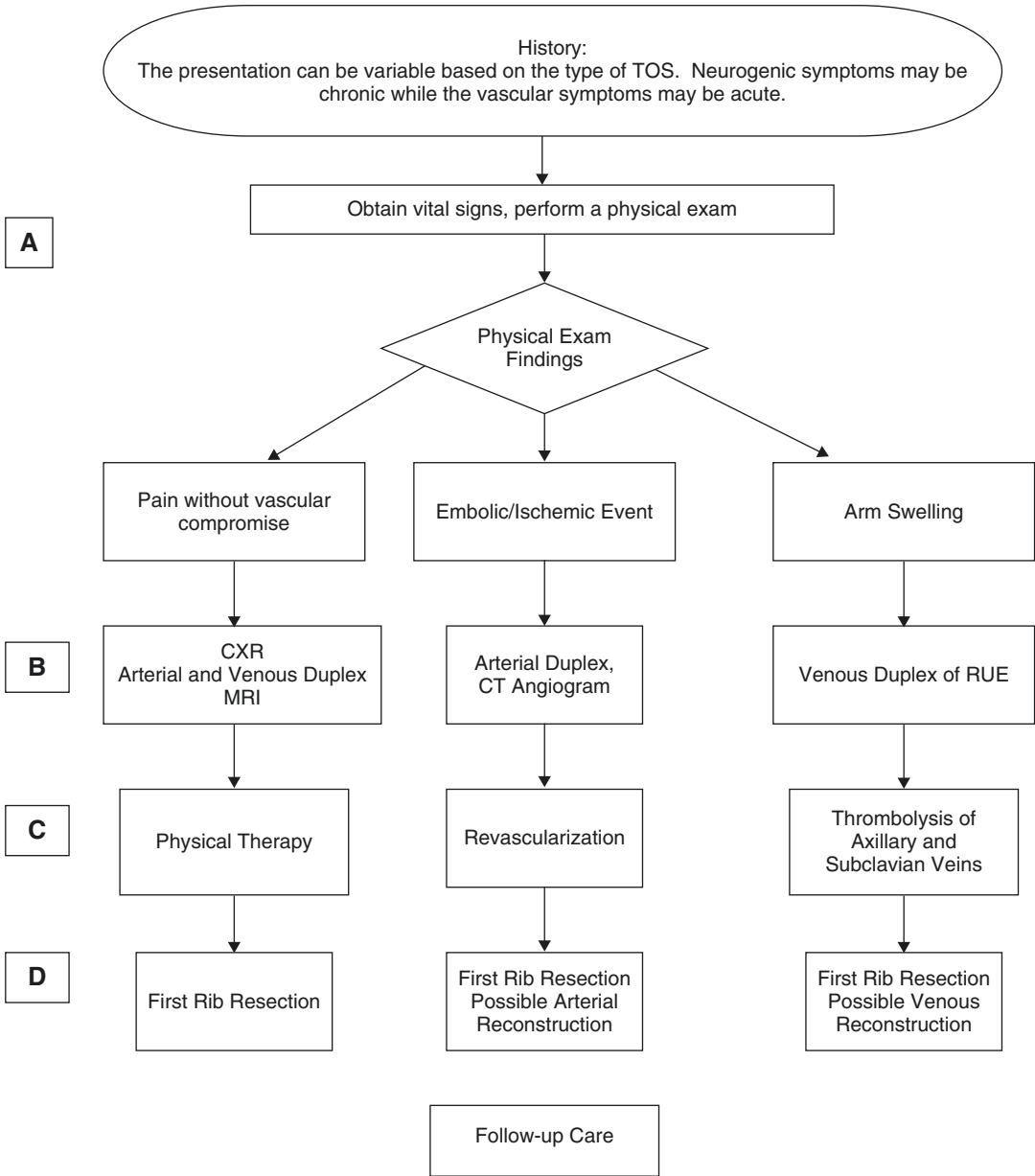


Tarik Z. Ali and Josh Radtka

Algorithmic Approach

- A. Thoracic outlet syndrome (TOS) is a constellation of upper extremity symptoms resulting from compression of the brachial plexus, subclavian artery, and subclavian vein as they pass between the clavicle and the first rib. The majority of patients are between 20 and 50 years of age and about 70% are females [1]. There are three types of TOS: neurogenic, arterial, and venous. The history and physical exam are important in differentiating the different types of thoracic outlet syndromes. Neurogenic is the most common type and is usually a diagnosis of exclusion. Common symptoms are pain, paresthesia, and weakness in the affected extremity without localization to a particular nerve distribution [2]. Arterial TOS occurs when compression of the subclavian artery creates an aneurysm distal to the site of compression. This could cause embolization distally, leading to ischemic symptoms. Venous TOS or Paget-von Schrotter syndrome occurs when repetitive movement in the compressed vein results in endothelial damage and can lead to subclavian and axillary vein thrombosis. This leads to swelling, pain, and possible cyanosis.
- B. In order to determine if the extremity swelling is secondary to venous thrombosis, a venous duplex should be performed. If there is no thrombus present, then an alternative diagnosis for the upper extremity swelling should be sought. A chest X-ray should be obtained to determine if cervical ribs or anomalous first ribs are present. If the patient is suspected to have neurogenic TOS, the Adson test, elevated arm stress test, or the Elvey test are maneuvers that may be helpful in establishing a diagnosis.
- C. If a subclavian-axillary vein thrombosis is discovered, patient should be considered for pharmaco-mechanical thrombolysis. Long-term anticoagulation alone has been associated with significant disability [3]. Prior to thrombolytic therapy, the patient's history should be reviewed to ensure that there are no any absolute contraindications to treatment. After successful thrombolysis, definitive treatment includes venous stent placement in the offending vessel.
- D. Once the thrombus is removed and the venous narrowing is identified, extrinsic compression needs to be corrected with a first rib resection. The timing of this intervention is controversial and has been recommended to occur from immediate to 3 months post thrombolysis [3]. After the first rib is removed, venous stenosis requires treatment with either open or endovascular methods.

T. Z. Ali · J. Radtka (✉)
Division of Vascular Surgery, Penn State Milton
S. Hershey Medical Center, Hershey, PA, USA
e-mail: jradtka@pennstatehealth.psu.edu



Algorithm 144.1

References

1. Sanders. Thoracic outlet syndrome: general considerations. In: Cronenwett J, editor. Rutherford's vascular surgery. Philadelphia: Elsevier; 2010. p. 1865–77.
2. Thompson, Driskill. Thoracic outlet syndrome: neurogenic. In: Cronenwett J, editor. Rutherford's vascular surgery. Philadelphia: Elsevier; 2010. p. 1878–98.
3. Schanzer, Messina. Thoracic outlet syndrome: general considerations. In: Cronenwett J, editor. Rutherford's vascular surgery. Philadelphia: Elsevier; 2010. p. 1907–17.