

Nerve Palsies - Winged Scapula

Winged scapula occurs due to a long thoracic nerve injury which prevents the serratus anterior muscle from anchoring the medial scapula to the thoracic wall, causing the scapular edge to bulge out like a wing. Because the serratus anterior also aids the upper limb in abduction above 90 degrees, patients have difficulty raising their arm above the head. Sources of lateral thoracic nerve injury include axillary node dissection during a mastectomy and or a stab wound to the lateral trunk.



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Nerve

Long Thoracic Nerve

[Long Thor Nerve](#)

Consists of anterior nerve roots from C5-C7 and innervates the serratus anterior. It runs posterior to the brachial plexus, axillary artery and nerve, and courses over the serratus anterior. When the long thoracic nerve is damaged, the serratus anterior cannot anchor the scapula to the thorax, which creates a "winged scapula" appearance and prevents arm abduction above 90 degrees.

Causes

Axillary Node Dissection in Mastectomy

[Axe Dissected for Breast removal](#)

Axillary, or armpit lymph nodes run over the anterior and lateral thoracic wall. This group of 20-30 lymph nodes drain lymph – a clear or white fluid made up of white blood cells – from most of the breast and upper limb into the thoracic duct on the left and the right lymphatic duct on the right. Because some breast cancers spread to the axillary lymph nodes, certain patients may require an axillary lymph node dissection, which may damage the long thoracic nerve, as it runs in close proximity.

Stab Wound

[Stabbing Wound](#)

Stab wounds to the lateral trunk may damage the lateral thoracic nerve and serratus anterior.

Muscle Affected

Serratus Anterior

[Serrated-knife Anteater](#)

Originates at the first through ninth ribs and inserts at the medial border of the scapula. It is innervated by the long thoracic nerve and receives blood supply from the lateral thoracic and thoracodorsal arteries. While it works in concert with the trapezius to abduct the upper limb above 90 degrees by externally rotating the shoulder girdle.

Functional Deficit

Scapula Cannot Anchor to Thorax

Scapula detaching from Thorax

The serratus anterior muscle inserts on the medial border of the scapula, which stabilizes and anchors it to the thoracic wall. When a patient with a damaged long thoracic nerve or a serratus anterior pushes against a wall, the scapula on the damaged side of the body will “pop out”, creating the appearance of a “wing”.

Presentation

Inability to Raise Arm Above Head

Unable to Raise Arm Above Head

In order to raise the arm to 180 degrees, the supraspinatus abducts the arm the first 15 degrees. The deltoid then aids in abducting the arm to 90 degrees. Finally, the trapezius and serratus anterior work together to abduct the upper limb 180 degrees by stabilizing the scapula and externally rotating the arm. If the long thoracic nerve or serratus anterior is damaged, the patient will experience weakness in raising their arm above 90 degrees, as the trapezius cannot fully compensate for the serratus anterior.