Nerve Palsies - Klumpke's Palsy

Klumpke’s Palsy occurs when patients suffer damage to the lower trunk of the brachial plexus, which is comprised of the C8 and T1 nerve roots. This type of damage may occur due to upward arm force during delivery, trauma to the neck, or grabbing a tree branch to break a fall. Clinical manifestations may include claw hand and Horner Syndrome, if the sympathetic fibers of T1 are involved.



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Nerve

C8 to T1 Roots
Cat (8) Ball to Tea 1
Form the lower trunk of the brachial plexus. Intrinsic muscles of the hand receive all innervation from C8 and T1. T1 also gives rise to sympathetic nerve fibers.

Lower Trunk
Lower Trunk of tree
C8 and T1 nerve roots form the lower trunk of the brachial plexus. The lower trunk contributes to the posterior and medial cords, which give rise to the axillary, radial, ulnar, and part of the median nerve.

Causes

Upward Arm Force during Delivery
Upward Arm during Delivery
Lower trunk damage may occur when physicians pull upwards on a baby’s abducted arm during delivery. stretching the axilla. This type of damage usually occurs with larger babies during vaginal deliveries. Other risk factors include gestational diabetes, prior large birth weight babies, small mothers with larger babies, overdue pregnancies, advanced maternal age, and excessive maternal weight gain during pregnancy often leads to larger babies.

Adult Trauma
Adult with Trauma-spike
Traumatic accidents to the the neck, such as whiplash from a car crash or grabbing a tree branch to break a fall, may stretch and damage lower trunk nerve roots of the brachial plexus, leading to Klumpke’s Palsy.

Grabbing Tree Branch to Break a Fall
Grabbing a Branch to Keep from Falling
Traumatic accidents to the the neck, such as whiplash from a car crash or grabbing a tree branch to break a fall, may stretch and damage the lower trunk nerve roots of the brachial plexus, leading to Klumpke’s Palsy.

Muscle Affected

Intrinsic Hand Muscles
In Hand Muscles
These muscles are exclusively innervated by the C8 and T1 nerve roots. The muscles of the thenar eminence, which are lumbricals 1 and 2, opponens pollicis, abductor pollicis brevis, and flexor pollicis brevis, are innervated by the distal median nerve. The interossei, lumbricals 3 and 4, and the hypothenar eminence muscles, including opponens digiti minimi, abductor digiti minimi, and flexor digiti minimi brevis, are innervated by the ulnar nerve.

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Presentation

Claw Hand

Claws Hand

When C8 and T1 nerve roots are damaged, the hand forms a total claw because the four lumbricals are unable to flex at the metacarpophalangeal joints or extend at the proximal and distal interphalangeal joints.

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