

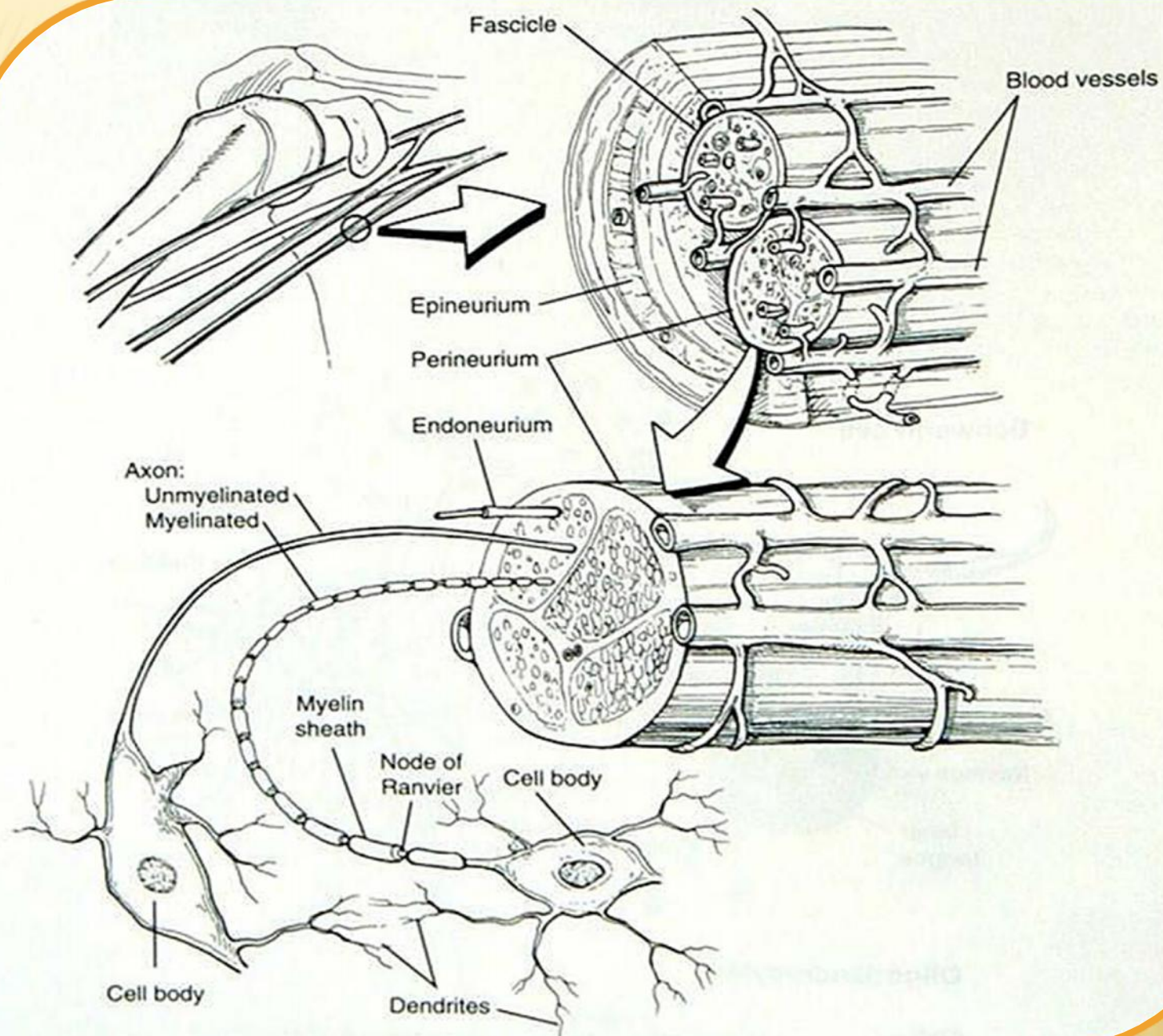
INVESTIGATING NERVE INJURIES IN THE UPPER LIMB

By

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What You Should to Know

- ❖ Nerve Anatomy and Histology
- ❖ Types of Nerve Injury
- ❖ Causes of Nerve Injury
- ❖ Diagnosis of Nerve Injury
- ❖ Some Examples of Nerve Injury



What does a nerve do?

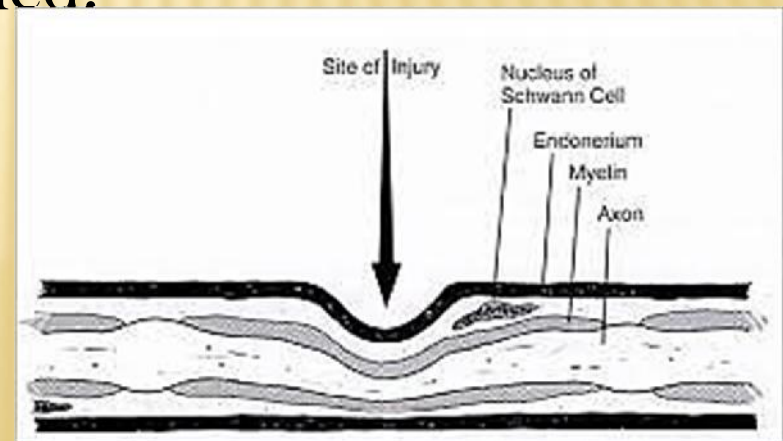
- Motor
- Sensation
- Proprioception / Co-ordination
- Reflexes
- Autonomic
 - Sweating / pilomotor / vasomotor

Types of Nerve Injury

❖ Neuropraxia

Transient interruption in neural conduction. There is temporary loss of function which is reversible within hours to months of the injury.

It may be caused by compression, blunt blows or shock injuries to the nerve. There is frequently greater involvement of motor function than sensory function with autonomic function being retained.

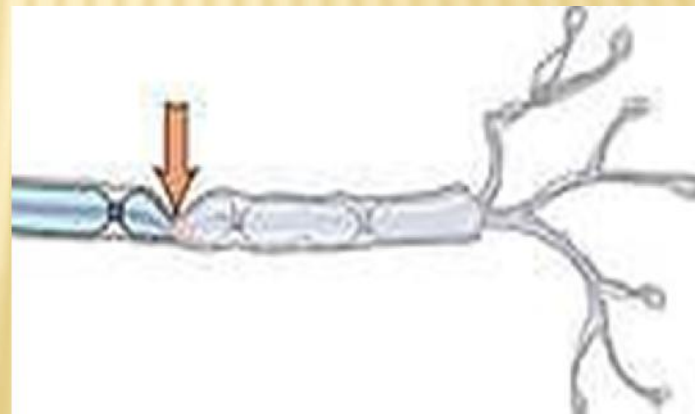


Types of Nerve Injury

❖ *Axonotmesis*

A severe crush, contusion with loss of continuity of the axon and its myelin sheath however the internal epineurial and endoneurial tubules are intact.

There is equal loss of both motor and sensory components. Rate of axonal growth varies between 1-3mm per day

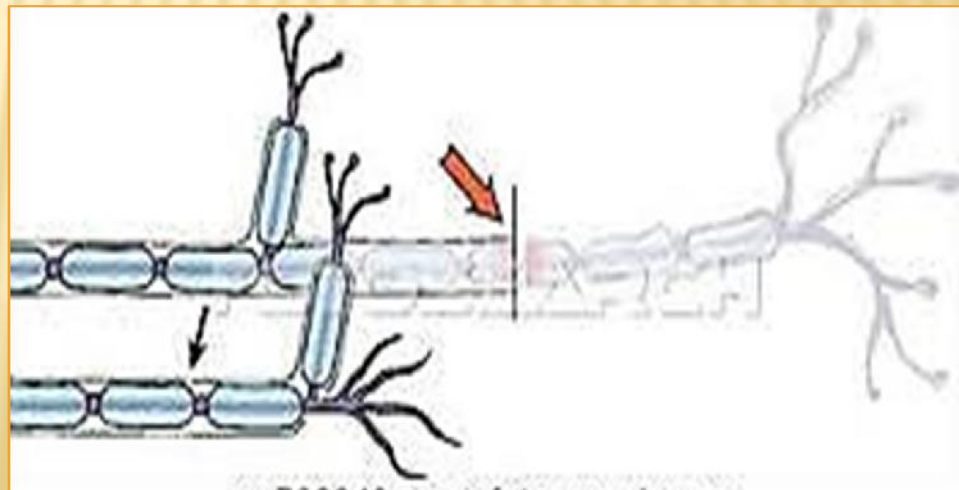


Types of Nerve Injury

❖ ***Neurotmeses***

Severe contusion, stretch or lacerations the axon and myelin sheath along with the encapsulating connective tissue lose their continuity.

There is complete loss of motor, sensory and autonomic function. If only the endoneurial tube is damaged the outcome is better.



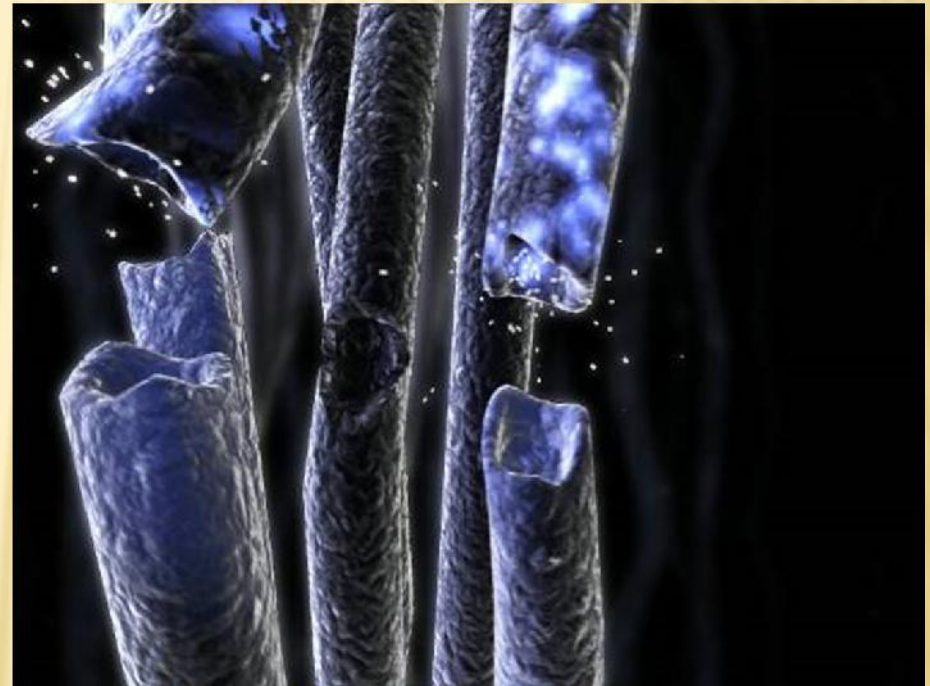
Causes of Nerve Injury

❖ Mechanical

- Compression
- Traction
- Laceration

❖ Others

- Metabolic
- Ischemia
- Thermal
- Radiation



Diagnosis of Nerve Injury

❖ History

❖ Clinical Examination

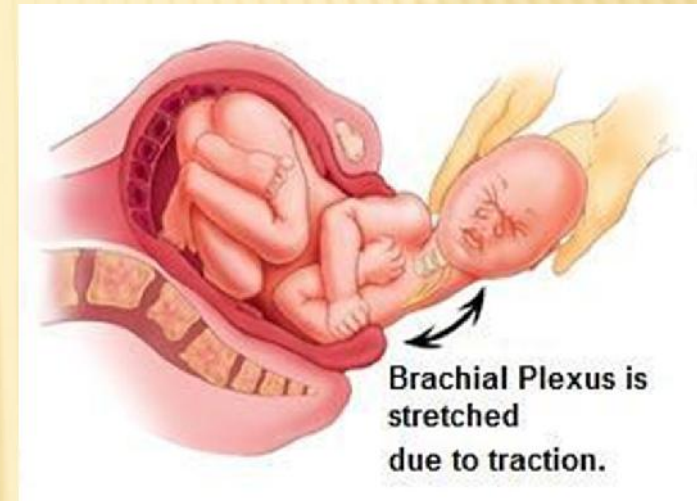
- Weakness
- Wasting
- Flaccidity
- Loss of Sensation
 - Pain / temperature / fine touch
- Loss of Sweating

Examples Of Nerve Injury In The Upper Limb

- ❖ Erb's Palsy
- ❖ Klumpke's Paralysis
- ❖ Claw Hand
- ❖ Wrist Drop
- ❖ Carpal Tunnel Syndrome

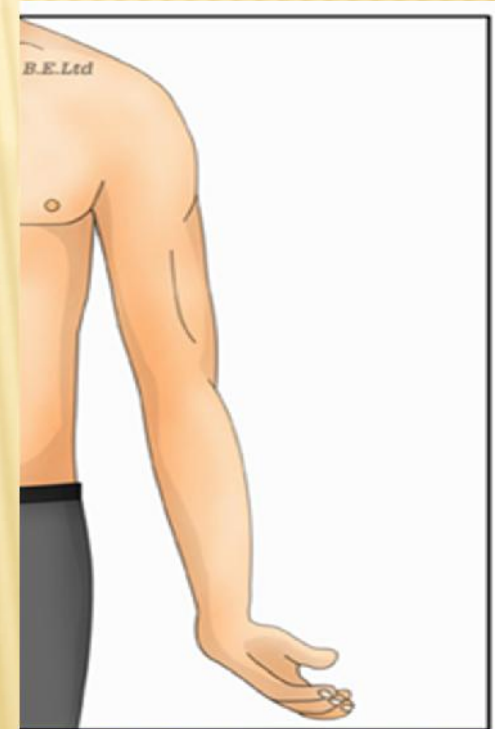
ERB'S PALSY

- It is a nerve injury that affects the movement of a child's shoulder, arm, and hand.
- It is caused commonly by shoulder dystocia of newborn baby that cause traction injury of upper trunk of brachial plexus (C5-6).
- The most commonly involved nerves are the Suprascapular nerve, Musculocutaneous nerve, and the axillary nerve.



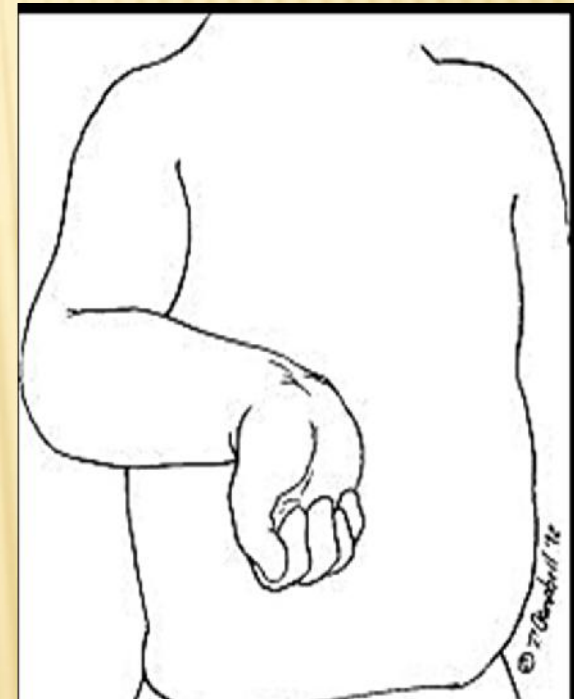
ERB'S PALSY

- The position of the limb, under such conditions, is characteristic: the arm hangs by the side and is rotated medially; the forearm is extended and pronated. The arm cannot be raised from the side; all power of flexion of the elbow is lost, as is also supination of the forearm". The resulting biceps damage is the main cause of this classic physical position commonly called "waiter's tip."
- The three most common treatments for Erb's Palsy are: Nerve transplants (usually from the opposite arm or limb), Subscapularis releases and Latissimus Dorsi Tendon Transfers.



Klumpke's Paralysis

- ❖ It is a form of paralysis involving the muscles of the forearm and hand, resulting from a brachial plexus injury in which the eighth cervical (C8) and first thoracic (T1) nerves.
- ❖ The subsequent paralysis affects, principally, the intrinsic muscles of the hand (the interossei, thenar and hypothenar muscles) and the flexors of the wrist and fingers (flexor carpi ulnaris and ulnar half of the flexor digitorum profundus).



Claw Hand

- ❖ It commonly occurs due to laceration of Ulnar nerve at wrist joint
- ❖ The interossei are paralyzed, so abduction and adduction of the fingers cannot occur. Movement of the little and ring fingers is greatly reduced, due to paralysis of the medial two lumbricals.
- ❖ Sensory loss over palmar side of medial one and a half fingers only.
- ❖ **Characteristic signs:** Patient cannot grip paper placed between fingers. For long-term cases, a hand deformity called 'Ulnar Claw' develops.



Wrist Drop

- ❖ It is a sign of Radial nerve injury usually as a result of **dislocation** of humerus at the shoulder joint or **fractures** of humerus.
- ❖ **Motor functions:** Triceps and muscles in posterior compartment are paralyzed; patient is **unable to extend** at the elbow, wrist or extend the fingers.
- ❖ **Sensory functions:** There will be a loss of sensation over the whole cutaneous innervation the radial nerve.



Carpal Tunnel Syndrome

- ❖ It is a median entrapment neuropathy that causes paresthesia, pain, numbness in the distribution of the median nerve.
- ❖ The predisposing factors include: diabetes, obesity, pregnancy, hypothyroidism, and heavy manual work or work with vibrating tools.
- ❖ The main symptom is intermittent numbness of the thumb, index, long and radial half of the ring finger.



- ❖ Conservative treatments include use of night splints and corticosteroid injection.



**THANK YOU
FOR
LISTENING**