MEDICAL EDUCATION RESOURCE

Nerves of Arm 2

Ulnar Nerve (C8, T1)

Root Value

- **C8, T1** (from **medial cord** of the brachial plexus).

Course in Arm

1. Arises in **axilla**, medial to axillary and brachial arteries.
2. Descends along **medial side of arm** with **superior ulnar collateral artery**.
3. At mid-arm, **pierces medial intermuscular septum**.
4. Enters **posterior compartment**, lies on **medial head of triceps**.
5. Passes **behind medial epicondyle of humerus** in a **groove between medial epicondyle and olecranon** (superficial and unprotected).
6. Enters forearm between **two heads of flexor carpi ulnaris**.

Branches in Arm

- **No branches** in the arm.

Relations

- **Proximal:** medial to brachial artery.
- **Distal:** accompanied by superior ulnar collateral artery.
- **Posterior:** lies in a groove behind medial epicondyle (site of injury).

Clinical Anatomy

- **Injury at elbow (posterior to medial epicondyle):**
  - Causes severe pain/tingling (“funny bone” effect).
  - Weakness of flexor carpi ulnaris and medial part of flexor digitorum profundus.
  - **Claw hand deformity** (hyperextension at MCP, flexion at IP joints of ring & little fingers).
  - Sensory loss: medial 1½ fingers (both palmar and dorsal aspects).
- **Ulnar nerve palsy signs:**
  - Loss of adduction of thumb (Adductor pollicis).

- Flattened hypothenar eminence.
- Positive Froment’s sign.

- **Compression at cubital tunnel** ? cubital tunnel syndrome.

Radial Nerve (C5–T1)

Root Value

- **C5, C6, C7, C8, T1** (terminal branch of **posterior cord** of brachial plexus).

Course in Arm

1. In **axilla**, lies behind axillary artery (gives branches to long & medial heads of triceps).
2. Enters **spiral (radial) groove** of humerus with **profunda brachii artery**.
3. Winds obliquely around posterior aspect of humerus ? between **lateral & medial heads of triceps**.
4. Pierces **lateral intermuscular septum** ? enters **anterior compartment**.
5. Lies between **brachialis and brachioradialis**, just above lateral epicondyle.
6. Divides into **superficial** (sensory) and **deep (posterior interosseous)** branches in front of lateral epicondyle.

Branches in Arm

1. Muscular Branches

- To **long, lateral, and medial heads of triceps**.
- To **anconeus** (from medial head branch).

2. Cutaneous Branches

- **Lower lateral cutaneous nerve of arm.**
- **Posterior cutaneous nerve of arm.**
- **Posterior cutaneous nerve of forearm.**

3. Articular Branch

- To elbow joint.

Functions

- **Motor:** supplies all **extensors of elbow, wrist, and fingers** (via triceps and posterior compartment muscles).
- **Sensory:** posterior surface of arm, forearm, and dorsum of hand (lateral 3½ proximal phalanges).

Clinical Anatomy

- **Injury in axilla** (crutch palsy):
  - Loss of elbow, wrist, and finger extension ? *complete wrist drop*.
  - Sensory loss over posterior arm, forearm, and dorsum of hand.
- **Injury in spiral groove (mid-humerus fracture):**
  - Triceps partly spared (long & lateral heads intact).
  - Wrist and finger drop present (posterior interosseous nerve paralysis).
  - Sensory loss on dorsum of hand and posterior forearm.
- **Injury near elbow:**
  - Affects deep branch ? loss of finger extension but **wrist extension preserved**.
  - Superficial branch ? isolated sensory loss on dorsum of hand.
- **Testing:**
  - Ask patient to extend wrist and fingers; inability indicates radial nerve lesion.