MEDICAL EDUCATION RESOURCE

# Back of Forearm and Hand,Dorsum of the Hand,Anatomical Snuffbox

## Back of Forearm and Hand

### Surface Landmarks

- **Olecranon Process:**
  - Prominent bony point of elbow; attachment of triceps tendon.
  - In extension ? lies in line with medial and lateral epicondyles.
- **Posterior Border of Ulna:**
  - Subcutaneous throughout; forms a palpable ridge along medial side of back of forearm.
- **Styloid Processes:**
  - **Radial styloid** – more distal and lateral; palpable at base of anatomical snuffbox.
  - **Ulnar styloid** – smaller and lies higher.
- **Dorsal Venous Network:**
  - Clearly visible superficial veins on dorsum of hand ? drains into cephalic (lateral) and basilic (medial) veins.

- **Tendons at Wrist During Extension:**
    - Seen as distinct ridges:
        - Lateral: *Extensor pollicis brevis* and *abductor pollicis longus*.
        - Middle: *Extensor digitorum* and *extensor indicis.*
        - Medial: *Extensor carpi ulnaris.*

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## Dorsum of the Hand

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### Skin and Superficial Fascia

- Skin ? thin, loose, and freely movable ? allows expansion during grip.
- Contains **dorsal venous arch**, **cutaneous nerves**, and **superficial lymphatics.**

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### Deep Fascia

- Thinner than in palm.
- Sends septa between extensor tendons forming **dorsal compartments** beneath the extensor retinaculum.

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### Extensor Tendons

- Spread out into **dorsal digital expansions (extensor hoods)** over the MCP joints.
- Each expansion receives slips from lumbricals and interossei ? coordinates finger extension.

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### Clinical Note

- **Synovial sheath infections** on dorsum are rare but may follow traumatic punctures.
- **Tenosynovitis** in these sheaths restricts wrist and finger extension.

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## ? Anatomical Snuffbox

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### Definition

A **triangular depression** on the lateral side of wrist seen when thumb is fully extended.

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### Boundaries

| BOUNDARY | STRUCTURE |
|---|---|
| **Anterior (lateral)** | Tendons of *abductor pollicis longus* and *extensor pollicis brevis* |
| **Posterior (medial)** | Tendon of *extensor pollicis longus* |

| BOUNDARY | STRUCTURE |
| --- | --- |
| **Floor** | Scaphoid and trapezium bones, and base of 1st metacarpal |
| **Roof** | Skin and superficial fascia |
| **Contents** | Radial artery (passes obliquely), cephalic vein, and superficial branch of radial nerve |

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### Clinical Anatomy of Snuffbox

- **Radial pulse** felt here (in distal part).
- **Tenderness in scaphoid fracture** (classical sign).
- **Radial artery puncture** or **cannulation** site.
- **Superficial branch of radial nerve** lies superficially ? can be injured in snuffbox trauma or surgery.

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## ? Extensor Retinaculum

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### Definition

A thickened part of deep fascia that **holds extensor tendons** in place at the back of wrist — prevents “bow-stringing” during extension.

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## Attachments

- **Lateral:** Lower end of radius.
- **Medial:** Pisiform and triquetral bones.

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## Compartments Beneath Extensor Retinaculum

| COMPARTMENT | TENDONS CONTAINED | MNEMONIC: 1–6 (LATERAL ? MEDIAL) |
|---|---|---|
| **1** | Abductor pollicis longus & Extensor pollicis brevis | *(AB-L-E-PB)* |
| **2** | Extensor carpi radialis longus & brevis | *(ECRL, ECRB)* |
| **3** | Extensor pollicis longus | *(EPL)* |
| **4** | Extensor digitorum & Extensor indicis | *(ED, EI)* |
| **5** | Extensor digiti minimi | *(EDM)* |
| **6** | Extensor carpi ulnaris | *(ECU)* |

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## Relations

- **Superficial:** Skin and superficial fascia with dorsal veins.

- **Deep:** Carpal bones.
- Each tendon is enclosed in a **synovial sheath** for frictionless movement.

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### Functions

- Maintains **alignment of extensor tendons** during wrist motion.
- Prevents **tendon displacement** during extension and abduction.

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### Clinical Anatomy

- **Tenosynovitis:** Common in first dorsal compartment ? *De Quervain's disease*.
  - Pain and tenderness near lateral wrist.
  - Involves tendons of *abductor pollicis longus* and *extensor pollicis brevis.*
- **Triggering or snapping** may occur due to stenosis of tendon sheath.
- **Ganglion cysts** may arise from dorsal tendon sheaths.

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## ? Dissection of Back of Forearm and Hand

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### Steps

1. Place limb prone (palm down). Make longitudinal incisions along the **midline of posterior forearm and dorsum of hand**.

2. Reflect skin and superficial fascia ? identify **superficial veins** (cephalic, basilic) and **cutaneous nerves** (posterior & lateral cutaneous nerves of forearm).

3. Remove deep fascia ? identify **extensor retinaculum** near wrist.

4. Under it, locate **six dorsal compartments** and their tendons:

    - Compartment 1 (lateral): *Abductor pollicis longus, Extensor pollicis brevis.*
    - Compartment 2: *ECRL, ECRB.*
    - Compartment 3: *EPL* (forms medial boundary of snuffbox).
    - Compartment 4: *Extensor digitorum, Extensor indicis.*
    - Compartment 5: *Extensor digiti minimi.*
    - Compartment 6: *Extensor carpi ulnaris.*

5. Identify **radial artery** in anatomical snuffbox and **superficial branch of radial nerve**.

6. Trace **extensor tendons** to their expansions over MCP joints and phalanges