Anatomy: Forearm and Hand

Question 1 of 102

A 23 year old woman sustains a laceration injury to her posterior forearm. Which of the following muscles would you least expect to be affected in this injury:

- **a** Abductor pollicis longus
- **b** Supinator
- **c** Brachioradialis
- **d** Brachialis
- **e** Extensor digiti minimi

Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

A 76 year old man presents to the ED complaining of weakness in the right wrist. On examination you note weakness of flexion and abduction. You suspect a pathology of the flexor carpi radialis. The flexor carpi radialis is attached distally to which of the following structures:

a. Scaphoid and trapezoid
b. Scaphoid and base of 2nd metacarpal
c. Base of 2nd and 3rd metacarpal
d. Trapezium and base of 1st metacarpal
e. Scaphoid, trapezium and base of 1st metacarpal

< Previous  Next >  See Answer

Question Navigator

1. Answered
2. Current Question
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
Anatomy: Forearm and Hand

A 70-year-old man presents to the ED complaining of weakness in his right hand. His examination note notes weakness of flexors and adductors. You suspect a pathology of the forearm and hand. The forearm and hand are closely related in both their structure and their function. The following structures are described in this part of the problem:

**Muscles**
- **Median nerve**
- **Ulnar nerve**

**Clinical Tests**
- **Tinel’s test**
- **Phalen’s test**

**Diagnostic Imaging**
- **Nerve conduction studies**
- **MRI of the carpal tunnel**

**Management**
- **Surgical interventions**

**Case Questions**

1. Describe the anatomy of the forearm and hand.
2. What are the common causes of weakness in the hand?
3. What diagnostic tests can be performed to evaluate nerve function in the forearm and hand?
4. How can surgical intervention be performed to treat nerve compression in the forearm and hand?

**Answers**

The nervous system of the forearm and hand is described in the context of the peripheral nerves. The median nerve innervates the muscles of the forearm and hand, while the ulnar nerve innervates the muscles of the hand and forearm. The median nerve is susceptible to compression at the carpal tunnel, leading to symptoms of hand weakness and numbness.

**Notes**

- The median nerve is composed of the following muscles: flexor carpi ulnaris, flexor carpi radialis, palmaris longus, and pronator teres.
- The ulnar nerve innervates the muscles of the hand and forearm, including the flexor digitorum profundus and superficialis, flexor carpi ulnaris, and flexor carpi radialis.
- The median nerve is susceptible to compression at the carpal tunnel, leading to symptoms of hand weakness and numbness.
Anatomy: Forearm and Hand

Question 3 of 102

A 21 year old mechanic presents to ED after sustaining a crush injury to his middle finger whilst at work. Which of the following muscles is least likely to be affected:

a. Flexor digitorum profundus
b. Palmar interossei
c. Dorsal interossei
d. Lumbrical
e. Extensor digitorum

< Previous Next > See Answer

Something wrong?
Anatomy: Forearm and Hand

Question 3 of 102

A 21 year old mechanic presents to ED after sustaining a crush injury to his middle finger whilst at work. Which of the following muscles is least likely to be affected:

- a) Flexor digitorum profundus
- b) Palmar interossei ✓
- c) Dorsal interossei
- d) Lumbrical ❌
- e) Extensor digitorum

Answer

The palmar interossei insert into the extensor hoods of the index, ring and little finger; there is no palmar interosseus attaching to the middle finger and hence it is least likely to be affected in this injury.

Notes

The interosseous muscles originate from and lie between the metacarpal bones. The dorsal interossei insert into the extensor hoods and proximal phalanges of the index, middle and ring finger. The palmar interossei insert into the extensor hoods of the index, ring and little finger.

The four dorsal interossei act to abduct the index, middle and ring fingers, and the three palmar interossei act to abduct the index, ring and little fingers (DABA, PABA). Because the interosseous muscles insert into the extensor hoods, they also contribute to the complex flexion and extension movements of the interphalangeal joints of the digits.

The interosseous muscles are all innervated by the ulnar nerve.

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Action</th>
<th>Innervation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dorsal interossei</td>
<td>Abduction of fingers at MCPJ</td>
<td>Ulnar nerve</td>
</tr>
<tr>
<td>Palmar interossei</td>
<td>Adduction of fingers at MCPJ</td>
<td>Ulnar nerve</td>
</tr>
</tbody>
</table>

Modified by FRCEM Success. Original by By OpenStax [CC BY 4.0](http://creativecommons.org/licenses/by/4.0), via Wikimedia Commons
A 47 year old secretary presents to the ED complaining of pain in the left wrist. After examination you suspect carpal tunnel syndrome. Which of the following structures passes through the carpal tunnel:

a. Tendon of the flexor carpi radialis
b. Ulnar artery
c. Ulnar nerve
d. Tendon of the palmaris longus
e. Tendon of the flexor pollicis longus
Anatomy: Forearm and Hand

A 47 year old secretary presents to the ED complaining of pain in the left wrist. After examination you suspect carpal tunnel syndrome. Which of the following structures passes through the carpal tunnel:

- Tendon of the flexor carpi radialis
- Ulnar artery
- Median nerve
- Tendon of the palmaris longus
- Tendon of the flexor pollicis longus

Answer

The tendons of the flexor pollicis longus, flexor digitorum superficialis and flexor digitorum profundus pass through the carpal tunnel. The ulnar nerve and ulnar artery pass into the hand anterior to the flexor retinaculum and carpal tunnel.

Notes

<table>
<thead>
<tr>
<th>Anatomical Boundaries</th>
<th>Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roof</td>
<td>Flexor retinaculum</td>
</tr>
<tr>
<td>Carpal arch</td>
<td>Pluriform and hook of the hamate medially, tubercles of the scaphoid and trapezium laterally</td>
</tr>
<tr>
<td>Contents</td>
<td>Four tendons of flexor digitorum profundus, four tendons of flexor digitorum superficialis, tendon of flexor pollicis longus, median nerve</td>
</tr>
</tbody>
</table>

The carpal tunnel is formed by a deep carpal arch and a superficial flexor retinaculum. The base of the carpal tunnel is formed medially by the pluraform and the hook of the hamate and laterally by the tubercles of the scaphoid and trapezium. The flexor retinaculum is a thickened band of fibrous connective tissue on the volar aspect of the hand, which bridges the gap between these carpal bones and forms the roof of the carpal tunnel.

The following structures pass through the carpal tunnel:

- the four tendons of the flexor digitorum profundus (FDP)
- the four tendons of the flexor digitorum superficialis (FDS)
- the tendon of the flexor pollicis longus (FPL)
- the median nerve.

Free movement of the tendons in the carpal tunnel is facilitated by synovial sheaths, which surround the tendons. All of the tendons of the FDP and FDS are contained within a single synovial sheath with a separate sheath enclosing the tendon of the FPL. The median nerve lies anterior to the tendons in the carpal tunnel.

Carpal tunnel syndrome is caused by compression of the median nerve within the carpal tunnel.

Modified by FRCEMS Success. Original by Henry Vandyke Carter (Public domain), via Wikimedia Commons

Resources

- The Royal College of Emergency Medicine
- Irish Association for Emergency Medicine
- Advanced Trauma Life Support
- Resuscitation Council (UK)
- Trauma Museum
- Fidjipedia
- Advanced Life Support Group
- Emergency Medicine Journal
- Ultrasound
- Initial Anatomy
- Pediatric

©2014 - 2017 FRCEMS Success | Website designed & hosted by Cyberfrog Design
Anatomy: Forearm and Hand

Question 5 of 102

A patient sustains an injury to the anterior forearm after falling from a bicycle. Which of the following muscles would you least expect to be affected in this injury:

- a. Palmaris longus
- b. Brachioradialis
- c. Pronator quadratus
- d. Pronator teres
- e. Flexor digitorum profundus

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

Focal cutaneous an injury to the anterior forearm after falling off a bicycl. The following muscles will most likely be affected in this injury:

- Brachioradialis
- Brachialis
- Biceps brachii
- Brachioradialis

Answer

The biceps brachii is a muscle of the anterior compartment of the forearm. It acts as the flexor of the forearm at the elbow.

Notes

The anterior compartment is divided into:
- The superficial group, consisting of the flexor carpi radialis, flexor carpi ulnaris, palmaris longus, and flexor digitorum profundus.
- The deep compartment, consisting of the flexor digitorum superficialis, flexor pollicis longus, and pronator quadratus.

What muscles in the anterior compartment are innervated by the median nerve, except for the flexor carpi ulnaris and the profundus of the flexor digitorum superficialis, which are innervated by the ulnar nerve.

Muscle | Action | Innervation
--- | --- | ---
Flexor carpi ulnaris | Flexor of the hand | Median nerve
Flexor carpi ulnaris | Flexor of the wrist | Median nerve
Palmaris longus | Flexor of the wrist | Median nerve
Pronator teres | Pronator of the forearm | Median nerve
Flexor digitorum superficialis | Flexor of all the fingers | Median nerve
Flexor pollicis longus | Flexor of the thumb | Median nerve
Flexor digitorum profundus | Flexor of all four fingers | Radial nerve
Pronator quadratus | Pronator of the forearm | Median nerve

The flexor muscles of the anterior forearm all originate from the medial aspect of the upper arm. A detailed knowledge of the biceps brachii is important in understanding the effects of flexor tears at any level of the limb.

- The flexor pollicis longus is a strong tendon in relation to the distal part of the forearm.
- The flexor digitorum superficialis is closely related to the palmar surface of the flexor pollicis longus on the anterior aspect of the skin.
- The flexor digitorum profundus is closely related to the palmar surface of the flexor pollicis longus in the flexor sheath.
- The flexor digitorum profundus is related to the base of the fourth and fifth metacarpals.
- The flexor pollicis longus is related to the tendinous part of the flexor digitorum profundus, which is continuous with the palmar aponeurosis.

Fibers of the tendon | Insertion | Number of tendons
--- | --- | ---
Flexor pollicis longus | Base of the distal phalanx of the thumb | 2
Flexor digitorum profundus | Base of all the fingers | 4
Flexor digitorum superficialis | Base of all the fingers | 4
Palmar aponeurosis | Base of the 1st and 2nd metacarpals | 4
Palmaris longus | Palmar aponeurosis | 1
Anatomy: Forearm and Hand

Question 6 of 102

A patient sustains an injury to the radial nerve through a midshaft humeral fracture. Which of the following clinical findings would you least expect to see in this patient:

a. Wrist drop
b. Loss of extension of the forearm
c. Loss of extension of the fingers
d. Weakness of supination
e. Loss of sensation over the dorsum of the lateral three and a half digits.

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Current Question
7 ...
8 ...
9 ...
10 ...
11 ...
12 ...

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

Question 7 of 102

A 29 year old male presents to ED having falling awkwardly during a judo match. On examination he is unable to flex his index and middle fingers at the metacarpophalangeal or interphalangeal joints and unable to flex the distal phalanx of his thumb. He has loss of sensation over the lateral palm and fingers. Which of the following nerves has most likely been injured, and at what level:

- Anterior interosseous nerve i the proximal forearm
- Median nerve in the cubital fossa
- Ulnar nerve at the elbow
- Median nerve at the wrist
- Radial nerve in the midarm
Anatomy: Forearm and Hand

A 28 year old man presents to ED having falling off his bike. Imaging shows fracture of the medial epicondyle and ulnar nerve injury. Which of the following muscles will most likely be affected:

a. Flexor digitorum superficialis
b. Supinator
c. Brachialis
d. Brachioradialis
e. Flexor digitorum profundus
Anatomy: Forearm and Hand

The forearm muscles are divided into the anterior compartment and the posterior compartment. The anterior compartment contains the flexor muscles, which are involved in flexing the wrist and fingers. The posterior compartment contains the extensor muscles, which are involved in extending the wrist and fingers. The muscles in the forearm are attached to the bones by tendons, which allow for the movement of the hand and fingers. The muscles are also innervated by nerves that supply motor and sensory functions to the forearm and hand.

Muscles of the Forearm

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexor digitorum superficialis</td>
<td>Flexes the index and long fingers</td>
</tr>
<tr>
<td>Flexor digitorum profundus</td>
<td>Flexes the ring and little fingers</td>
</tr>
<tr>
<td>Flexor carpi ulnaris</td>
<td>Flexes the wrist and extends the fingers</td>
</tr>
<tr>
<td>Extensor carpi ulnaris</td>
<td>Extends the wrist</td>
</tr>
<tr>
<td>Extensor digitorum communis</td>
<td>Extends the fingers</td>
</tr>
<tr>
<td>Extensor digitorum brevis</td>
<td>Extends the ring and little fingers</td>
</tr>
</tbody>
</table>

Table of Contents

- Anatomy: Forearm and Hand
- Muscles of the Forearm
- Circulation

Circulation

<table>
<thead>
<tr>
<th>Structure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arteries</td>
<td>Radial artery, ulnar artery, and common carotid artery</td>
</tr>
<tr>
<td>Veins</td>
<td>Brachial vein, cephalic vein, and basilic vein</td>
</tr>
<tr>
<td>Lymphatic vessels</td>
<td>Axillary lymph nodes</td>
</tr>
</tbody>
</table>

- The radial artery is the main artery of the forearm and supplies blood to the hand and wrist.
- The ulnar artery is the main artery on the ulnar side of the forearm and supplies blood to the hand and wrist.
- The common carotid artery is a major vessel that supplies blood to the head and neck.
- The brachial vein is the largest vein in the upper arm and is a major route for the return of blood to the heart.
- The cephalic vein is a superficial vein that runs along the lateral side of the arm and empties into the subclavian vein.
- The basilic vein is a superficial vein that runs along the medial side of the arm and empties into the subclavian vein.

- The axillary lymph nodes are a group of lymph nodes located in the armpit region and play a role in the immune system.
Anatomy: Forearm and Hand

Question 9 of 102

A 34 year old woman sustains a midshaft humerus fracture with nerve damage falling off a horse. Which of the following movements would most likely be affected by this injury:

a. Abduction of the arm
b. Pronation of the forearm
c. Extension of the forearm
d. Extension of the wrist
e. Extension of the arm

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

A patient sustains a fracture of the midshaft of the humerus with resultant damage to the radial nerve. He has wrist drop and is unable to extend his fingers. He is still able to supinate his forearm. Supination of the forearm is still possible through the action of which of the following muscles:

- Supinator
- Coracobrachialis
- Biceps brachii
- Brachialis
- Supraspinatus

< Previous  Next >  See Answer

Something wrong?
Anatomy: Forearm and Hand

A patient sustains a fracture of the midshaft of the humerus with resultant damage to the radial nerve. He has wrist drop and is unable to extend his fingers. He is still able to supinate his forearm. Sphincter of the forearm is still possible through the action of which of the following muscles:

- a) Supinator
- b) Coracobrachialis
- c) Biceps brachii
- d) Brachialis
- e) Supraspinatus

**Answer**

Supination of the forearm is primarily produced by the supinator (radial nerve) and the biceps brachii (musculocutaneous nerve). Radial nerve damage will result in paralysis of the supinator muscle, but the biceps brachii muscle function is preserved.

**Notes**

The anterior compartment of the arm consists of three muscles.

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Actions</th>
<th>Innervation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coracobrachialis</td>
<td>Flexion of arm</td>
<td>Musculocutaneous nerve (C5 - C7)</td>
</tr>
<tr>
<td>Biceps brachii</td>
<td>Flexion and supination of forearm, flexion of arm</td>
<td>Musculocutaneous nerve (C5, C6)</td>
</tr>
<tr>
<td>Brachialis</td>
<td>Flexion of forearm</td>
<td>Musculocutaneous nerve (C6, C7); small contribution by radial nerve (C7) to lateral muscle</td>
</tr>
</tbody>
</table>

The coracobrachialis (green) is innervated by the musculocutaneous nerve (C5 - C7). It acts to flex the arm at the glenohumeral joint.

The biceps brachii (red) is innervated by the musculocutaneous nerve (C5 - C6). The biceps is primarily a powerful flexor and supinator of the forearm at the elbow joint. It also assists with flexion of the arm at the shoulder joint (with the coracobrachialis muscle). The biceps reflex (tap proximally to the spiral cord segment C6).

The brachialis (blue) is innervated primarily by the musculocutaneous nerve (C5, C6) with a small contribution from the radial nerve (C7). The brachialis flexes the forearm at the elbow joint.

---

**Resources**

- The Royal College of Emergency Medicine
- Irish Association for Emergency Medicine
- Advanced Trauma Life Support
- Resuscitation Council UK
- Trauma Surveillance
- Radiopedia

- Advanced Life Support Group
- Emergency Medicine Journal
- Librerie Mediche
- Instant Anatomy
- Patient.co.uk
Anatomy: Forearm and Hand

A 82 year old woman is brought to the ED by her son. She complains of numbness in her fingers, her son was concerned this may have been a stroke. On examination you note loss of sensation to the skin over the palmar surface of the medial one and a half digits. This area is supplied by which of the following nerves:

a. The superficial branch of the radial nerve
b. The palmar cutaneous branch of the median nerve
c. The palmar cutaneous branch of the ulnar nerve
d. The superficial branch of the ulnar nerve
e. The palmar digital branch of the median nerve
Anatomy: Forearm and Hand

A 52-year-old woman is brought to the ED complaining of pain, and swelling in her right hand. She reports a recent fall in which she landed on her hand. She expresses a lot of pain on the skin over the palmar surface of the median nerve and ulnar nerves. This area is in the lower arm of the forearm.

The superficial branch of the median nerve:
- The palmar cutaneous branch of the median nerve
- The sensory branch of the palmar cutaneous branch of the median nerve:
  - The sensory branch of the palmar cutaneous branch of the median nerve:
    - The sensory branch of the palmar cutaneous branch of the median nerve:
      - The sensory branch of the palmar cutaneous branch of the median nerve:
        - The sensory branch of the palmar cutaneous branch of the median nerve:
          - The sensory branch of the palmar cutaneous branch of the median nerve:

Answer:

The sensory branch of the ulnar nerve supplies the skin over the palmar surface of the median nerve and ulnar nerves.

Notes:

- The sensory branch of the median nerve branches from the ulnar nerve, supplies the skin over the palmar surface of the median nerve, and ulnar nerves.
- The sensory branch of the median nerve branches from the ulnar nerve, supplies the skin over the palmar surface of the median nerve, and ulnar nerves.
- The sensory branch of the median nerve branches from the ulnar nerve, supplies the skin over the palmar surface of the median nerve, and ulnar nerves.

**Resources:**
- The Finger College of Emergency Medicine
- The American Academy of Orthopaedic Surgeons
- The American Medical Association
- The American College of Surgeons
- The American Academy of Family Physicians
Anatomy: Forearm and Hand

Question 12 of 102

You have been asked to review a patient in the Minor Injuries Unit. The 32 year old sustained a laceration to the forearm during a fight. He has lost sensation over the medial dorsum of the hand and the dorsum of the medial one and a half digits. This area is supplied by which of the following nerves:

a. The superficial branch of the radial nerve
b. The deep branch of the radial nerve
c. The dorsal cutaneous branch of the ulnar nerve
d. The superficial branch of the ulnar nerve
e. The digital branch of the median nerve

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

Question 13 of 102

A 56 year old illustrator presents to the ED with a 3 day history of right wrist pain. He is concerned as this is affecting his work. On examination you note crepitations on flexion and extension of the wrist, you suspect an arthritis to be responsible. The wrist joint is formed by articulations between which of the following bones:

- a. Distal radius, distal ulna and scaphoid
- b. Distal radius, scaphoid, lunate and triquetrum
- c. Distal radius, distal ulna and pisiform
- d. Distal radius, triquetrum and trapezoid
- e. Distal radius, scaphoid and hamate

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

A 56-year-old illustrator presents to the ED with a 3-day history of right wrist pain. He is concerned as this is affecting his work. On examination you note crepitations on flexion and extension of the wrist, you suspect an arthritis to be responsible. The wrist joint is formed by articulations between which of the following bones:

a) Distal radius, scaphoid and lunate
b) Distal radius, scaphoid, lunate and triquetrum

c) Distal radius, distal ulna and pisiform
d) Distal radius, triquetrum and trapezoid
e) Distal radius, scaphoid and hamate

Answer

The wrist joint is a synovial condylar joint occurring between the distal end of the radius and the articular disc overlying the distal end of the ulna and the scaphoid, lunate and triquetrum.

Notes

<table>
<thead>
<tr>
<th>Joint</th>
<th>Wrist joint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Synovial condylar joint</td>
</tr>
<tr>
<td>Articulations</td>
<td>Distal end of the radius and articular disc with scaphoid, lunate and triquetrum</td>
</tr>
<tr>
<td>Stabilizing factors</td>
<td>Joint capsule, palmar radiocarpal, palmar scaphocapitate and dorsal radiocarpal ligaments, radial and ulnar collateral ligaments of the wrist joint</td>
</tr>
<tr>
<td>Movements</td>
<td>Flexion and extension, abduction and adduction</td>
</tr>
</tbody>
</table>

The wrist joint is a synovial condylar joint occurring between the distal end of the radius and the articular disc overlying the distal end of the ulna and the scaphoid, lunate and triquetrum.

The capsule of the wrist joint is reinforced by palmar radiocarpal, palmar scaphocapitate and dorsal radiocarpal ligaments. The radial and ulnar collateral ligaments of the wrist joint reinforce the medial and lateral sides of the wrist joint.

The wrist joint allows movement around two axes: the hand can be abducted and adducted, and flexed and extended at the wrist joint.

<table>
<thead>
<tr>
<th>Movement</th>
<th>Muscles Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion</td>
<td>Flexor carpi radialis, flexor carpi ulnaris, flexor digitorum profundus, flexor digitorum superficialis, palmaris longus</td>
</tr>
<tr>
<td>Extension</td>
<td>Extensor carpi radialis longus and brevis, extensor carpi ulnaris, extensor digitorum</td>
</tr>
<tr>
<td>Abduction</td>
<td>Flexor carpi radialis, extensor carpi radialis longus and brevis</td>
</tr>
<tr>
<td>Adduction</td>
<td>Flexor carpi ulnaris, extensor carpi ulnaris</td>
</tr>
</tbody>
</table>

Modified by FRCEM Success. Original by Henry Von Tylec Cartter (Public domain) via Wikimedia Commons
Anatomy: Forearm and Hand

You are part of the trauma team caring for a 18 year old horse rider who fell when jumping a fence. She is complaining of pain in her neck. Whilst awaiting imaging your consultant asks you to perform a brief neurological assessment. She is tender over the C7 and T1 vertebrae. The C7 dermatome is best tested at which of the following landmarks:

a. Dorsum of middle finger
b. Dorsum of little finger
c. Dorsum of thumb
d. Medial antecubital fossa
e. Lateral antecubital fossa
Anatomy: Forearm and Hand

Quarter 3. Unit 2.2

You are part of the trauma team caring for a 18 year old horse rider who fell when jumping a fence. She is complaining of pain in her neck. Whilst awaiting imaging your consultant asks you to perform a brief neurological assessment. She is tender over the C7 and T1 vertebrae. The C7 dermatome is best tested at which of the following landmarks:

- a) Dorsum of middle finger
- b) Dorsum of little finger
- c) Dorsum of thumb
- d) Medial antebrachial fossa
- e) Lateral antebrachial fossa

Answer

The C7 dermatome is best tested on the dorsal surface of the proximal phalanx of the middle finger.

Notes

<table>
<thead>
<tr>
<th>Dermatome</th>
<th>Landmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2</td>
<td>Occipital Protuberance</td>
</tr>
<tr>
<td>C3</td>
<td>Supraclavicular fossa</td>
</tr>
<tr>
<td>C4</td>
<td>Axillarubular joint</td>
</tr>
<tr>
<td>C5</td>
<td>Lateral Antecubital Fossa</td>
</tr>
<tr>
<td>C6</td>
<td>Thumb</td>
</tr>
<tr>
<td>C7</td>
<td>Middle Finger</td>
</tr>
<tr>
<td>C8</td>
<td>Little Finger</td>
</tr>
<tr>
<td>T1</td>
<td>Medial Antecubital Fossa</td>
</tr>
<tr>
<td>T2</td>
<td>Apex of Anulus</td>
</tr>
</tbody>
</table>

- The C2 dermatome is best tested at least one cm lateral to the occipital protuberance at the base of the skull. Alternatively, it can be located at least 3 cm behind the ear.
- The C3 dermatome is best tested in the supraclavicular fossa, at the midclavicular line.
- The C4 dermatome is best tested over the antecubital fossa joint.
- The C5 dermatome is best tested on the lateral (radial) side of the antecubital fossa just proximal to the elbow.
- The C6 dermatome is best tested on the dorsal surface of the proximal phalanx of the thumb.
- The C7 dermatome is best tested on the dorsal surface of the proximal phalanx of the middle finger.
- The C8 dermatome is best tested on the dorsal surface of the proximal phalanx of the little finger.
- The T1 dermatome is best tested on the medial (ulnar) side of the antecubital fossa, just proximal to the medial epicondyle of the humerus.
- The T2 dermatome is best tested at the apex of the axilla.
Anatomy: Forearm and Hand

A 42 year old construction worker has sustained a penetrating injury to his left forearm. On examination, he is unable to form the 'ok' sign between his thumb and index finger due to weak flexion of the distal interphalangeal joints of these fingers. He is able to touch the pad of his little finger with his thumb. Which of the following nerves has most likely been affected:

a. Recurrent branch of median nerve
b. Anterior interosseous nerve
c. Posterior interosseous nerve
d. Palmar digital branch of the median nerve
e. Deep branch of the ulnar nerve
Anatomy: Forearm and Hand

Question 16 of 102

A 71 year old lady attends ED complaining of pain in her arm following a fall. Imaging demonstrates a midshaft humerus fracture. An injury of the radial nerve in the spiral groove would typically demonstrate which of the following physical signs:

- Weakness of forearm extension
- Weakness of thumb abduction and extension
- Weakness of thumb opposition
- Weakness of forearm pronation
- Weakness of abduction and adduction of the fingers
# Anatomy: Pearson's Hand

## Bones

<table>
<thead>
<tr>
<th>Bone</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radius</td>
<td>Long bone of the forearm</td>
</tr>
<tr>
<td>Ulna</td>
<td>Long bone of the forearm</td>
</tr>
<tr>
<td>Metacarpals</td>
<td>Bones of the palm</td>
</tr>
<tr>
<td>Phalanges</td>
<td>Bones of the fingers</td>
</tr>
</tbody>
</table>

## Muscles

- **Flexor carpi ulnaris**: flexes the wrist and everts the hand.
- **Extensor carpi ulnaris**: extends the wrist and holds the hand in a neutral position.
- **Abductor pollicis longus**: involved in the thumb's abduction.
- **Abductor pollicis brevis**: involved in the thumb's abduction.
- **Opponens pollicis**: involved in the thumb's opposition.
- **Flexor pollicis brevis**: involved in the thumb's flexion.

## Arteries

- **Radial artery**: supplies the hand and fingers.
- **Ulnar artery**: supplies the hand and fingers.

## Veins

- **Radial vein**: accompanies the radial artery.
- **Ulnar vein**: accompanies the ulnar artery.

## Nerves

- **Median nerve**: supplies sensory and motor function to the hand.
- **Ulnar nerve**: supplies sensory and motor function to the hand.
- **Radial nerve**: supplies sensory and motor function to the hand.

## Ligaments

- **Scapholunate ligament**: stabilizes the wrist joint.
- **Radiocarpal ligament**: stabilizes the wrist joint.
- **Carpometacarpal ligament**: stabilizes the wrist joint.

## Joint Movements

- **Wrist**: flexion, extension, ulnar deviation, and radial deviation.
- **Fingers**: flexion, extension, abduction, adduction, and opposition.

## Temperature

- Normal body temperature: 98.6°F (37°C)
Anatomy: Forearm and Hand

Question 17 of 102

You have been asked to review a 32 year old pastry chef. She sustained a laceration to her left thenar eminence whilst working. Which of the following muscles is part of the thenar eminence:

- a) Extensor pollicis brevis
- b) Extensor pollicis longus
- c) Adductor pollicis
- d) Abductor pollicis longus
- e) Abductor pollicis brevis

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

Question 17 of 102

You have been asked to review a 32 year old pastry chef. She sustained a laceration to her left thenar eminence whilst working. Which of the following muscles is part of the thenar eminence:

a) Extensor pollicis brevis
b) Extensor pollicis longus
c) Adductor pollicis
d) Abductor pollicis longus
e) Abductor pollicis brevis

Answer

The thenar eminence consists of the opponens pollicis, the abductor pollicis brevis and the flexor pollicis brevis. The adductor pollicis is an intrinsic hand muscle, but not part of the thenar eminence. The extensor pollicis longus and brevis, and the abductor pollicis longus are found in the posterior forearm.

Notes

The thenar eminence consists of the opponens pollicis, the abductor pollicis brevis and the flexor pollicis brevis. The thenar muscles are all innervated by the median nerve.

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Action</th>
<th>Innervation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opponens pollicis (blue)</td>
<td>Medially rotates thumb</td>
<td>Median nerve</td>
</tr>
<tr>
<td>Abductor pollicis brevis (green)</td>
<td>Abducts thumb at MCPJ</td>
<td>Median nerve</td>
</tr>
<tr>
<td>Flexor pollicis brevis (red)</td>
<td>Flexes thumb at MCPJ</td>
<td>Median nerve</td>
</tr>
</tbody>
</table>

Modified by FRCEM Success. Original by By OpenStax [CC BY 4.0](http://creativecommons.org/licenses/by/4.0), via Wikimedia Commons
Anatomy: Forearm and Hand

Question 18 of 102

A 20 year old woman presents to ED with a painful swollen digit. Three days ago she attended with a dog bite that had penetrated the common flexor synovial sheath of the forearm. Which of the following digits is the most likely to be involved with spread of infection from this location:

- a) Thumb
- b) Index finger
- c) Middle finger
- d) Ring finger
- e) Little finger

< Previous  Next >  See Answer

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Something wrong?
Anatomy: Forearm and Hand

Question 1 of 2

A 20 year old woman presents to ED with a painful swollen digit. Three days ago she attended with a dog bite that had penetrated the common flexor synovial sheath of the forearm. Which of the following digits is the most likely to be involved with spread of infection from this location:

a) Thumb  ✗
b) Index finger
c) Middle finger
d) Ring finger
e) Little finger  ✔

Answer

The synovial sheath of the little finger is usually continuous with the common flexor sheath of the forearm, unlike the middle three fingers which have separate synovial sheaths. The synovial sheath of the thumb is continuous with the synovial sheath of the flexor pollicis longus.

Notes

Tenosynovitis can be due to an infection of the synovial sheaths of the digits. Infections may occur in the digital synovial sheath for example after a puncture wound to a finger.

Infection in the middle three fingers is usually contained as they have separate synovial sheaths.

The synovial sheath of the little finger is usually continuous with the common flexor sheath (the ulnar bursa) and thus infection may spread to this sheath and from here to the midpalmar space.

Infections in the thumb may spread to the midpalmar space via the continuous synovial sheath of the flexor pollicis longus, also known as the radial bursa.

By Henry Vanlyke Carter (Public domain), via Wikimedia Commons
Anatomy: Forearm and Hand

Question 19 of 102

You have been asked to give a tutorial to a group of medical students about upper limb neurology. You decide to cover the sensory supply to the upper limb. The skin over the medial half of the palm is supplied by which of the following nerves:

- **a** The superficial branch of the radial nerve
- **b** The palmar cutaneous branch of the median nerve
- **c** The palmar cutaneous branch of the ulnar nerve
- **d** The superficial branch of the ulnar nerve
- **e** The palmar digital branch of the median nerve

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

Question 20 of 102

A 54 year old lady presents to ED having injured her left arm. She is complaining of weak hand grip of her left hand. The patient is unable to hold onto a piece of paper between her thumb and her index finger without flexing the distal joint of her thumb. Weakness of which of the following muscles causes this sign to appear:

- Flexor pollicis brevis
- Flexor pollicis longus
- Adductor pollicis
- Lumbricals
- Opponens pollicis
- Abductor pollicis brevis

< Previous  Next  >  See Answer

Something wrong?
Anatomy: Forearm and Hand

A 18 year patient old presents to ED having cut herself on the distal crease of her wrist. An image of her hand at rest is shown below. Paralysis to which of the following muscles is most likely responsible for this deformity:

![Hand Image]

By Mcstroboter [Own work] [CC BY 3.0 (http://creativecommons.org/licenses/by/3.0)], via Wikimedia Commons

- **a** Hypothear muscles
- **b** Interossei and medial two lumbricals
- **c** Flexor digitorum profundus
- **d** Extensor digitorum
- **e** Extensor digit minimi

**Resources**
- The Royal College of Emergency Medicine
- Irish Association for Emergency Medicine
- Advanced Trauma Life Support
- Resuscitation Council (UK)
- TeachMeAnatomy
- Trauma.org
- Radiopaedia
- Advanced Life Support Group
- Emergency Medicine Journal
- Lifesystemsline
- Instant Anatomy
- Patient.co.uk
Acupuncture: Forearm and Hand

Introduction

Acupuncture is a traditional Chinese medical practice that involves inserting fine needles into specific points on the body to treat various conditions. The forearm and hand are common areas treated with acupuncture due to their numerous acupuncture points that are believed to influence different bodily functions, such as pain relief, blood circulation, and energy flow.

The forearm and hand are rich in acupuncture points that can be targeted to address a variety of health issues. For instance, these points can be used to alleviate pain in the elbow, wrist, and fingers, as well as to improve hand and foot function.

In this article, we will explore the acupuncture points associated with the forearm and hand, their functions, and how they can be used to treat various health conditions.

Acupuncture Points

The diagram below illustrates the acupuncture points associated with the forearm and hand. Each point is labeled with its traditional name and its corresponding function. The points are organized by area, starting from the wrist and moving up to the elbow.

[Diagram showing acupuncture points on the forearm and hand]

- **Point 1**: located on the wrist, close to the radial side of the wrist bone. This point is used to treat wrist pain and improve circulation.
- **Point 2**: located on the palm, near the base of the thumb. This point is used to treat hand pain and improve grip strength.
- **Point 3**: located on the forearm, near the elbow. This point is used to treat elbow pain and improve mobility.

The points are interconnected, and stimulating them can have a comprehensive effect on the body. For example, stimulating the wrist point can help improve blood circulation and relieve pain in the hand, while stimulating the elbow point can help improve flexibility and strength in the arm.

Contraindications

While acupuncture is generally safe, certain precautions must be taken when stimulating the forearm and hand points. It is recommended to consult with a qualified acupuncturist who can provide personalized advice.

- Avoid stimulating points that are already inflamed or infected.
- Be cautious when stimulating points on the hand, as there is a risk of injury to the surrounding nerves and blood vessels.
- Avoid stimulating points on the wrist in patients with wrist fractures or sprains.

In conclusion, acupuncture can be an effective treatment option for various health conditions affecting the forearm and hand. By stimulating specific acupuncture points, patients can experience relief from pain, improved mobility, and enhanced circulation. It is always advisable to consult with a licensed acupuncturist to ensure safe and effective treatment.

[Additional text regarding the benefits and limitations of acupuncture, as well as tips for self-administration]

[Additional text regarding the history and development of acupuncture, as well as the future prospects of the practice]

[Additional text regarding the role of research and education in advancing acupuncture as a medical practice]
Anatomy: Forearm and Hand

Question 22 of 102

A 54 year old woman presents to ED having sustained a laceration to the palm of her hand while gardening. She is unable to touch the pad of her little finger with her thumb, but sensation is intact. Which of the following nerves has most likely been injured:

- **a** Anterior interosseous nerve
- **b** Recurrent branch of the median nerve
- **c** Deep branch of the ulnar nerve
- **d** Superficial branch of the ulnar nerve
- **e** Deep branch of the radial nerve

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

Question 23 of 102

A 34 year old man presents to ED having sustained a laceration to the fingernail of his little finger whilst opening a tin. You note the laceration extends through his nailbed, and your consultant asks you to perform a ring block in order to suture the wound. Which of the following nerves would need to be anaesthetised for painless wound closure:

a. Superficial branch of the ulnar nerve
b. Palmar digital branch of the median nerve
c. Recurrent branch of the median nerve
d. Superficial branch of the radial nerve
e. Palmar cutaneous branch of the ulnar nerve
Anatomy: Forearm and Hand

Question 24 of 102

A 65 year old woman presents to the ED complaining of paresthesia in the left arm. On examination you note she has no sensation over the lateral aspect of the forearm. The skin over the lateral aspect of the forearm is supplied by which of the following nerves:

a. The lateral cutaneous nerve of the forearm, branch of the musculocutaneous nerve
b. The lateral cutaneous nerve of the forearm, branch of the radial nerve
c. The lateral cutaneous nerve of the forearm, branch of the ulnar nerve
d. The lateral cutaneous nerve of the forearm, branch of the median nerve
e. The lateral cutaneous nerve of the forearm, from the brachial plexus

< Previous  Next >  See Answer

Question Navigator

1. Answered
2. Answered
3. Answered
4. Answered
5. Answered
6. Answered
7. Answered
8. Answered
9. Answered
10. Answered
11. Answered
12. Answered

Something wrong?
Anatomy: Forearm and Hand

A 45-year-old woman presents to the ED complaining of pain in her left arm. Clinical examination reveals numbness and weakness in the palmar aspect of the hand. The area over the lateral aspect of the forearm is supplied by branches of the following nerve:

A) The lateral cutaneous nerve of the forearm, branch of the thoracodorsal nerve
B) The lateral cutaneous nerve of the forearm, branch of the radial nerve
C) The lateral cutaneous nerve of the forearm, branch of the median nerve
D) The lateral cutaneous nerve of the forearm, branch of the ulnar nerve

Answer:
The lateral cutaneous nerve of the forearm, branch of the superficial radial nerve, supplies the skin over the lateral aspect of the forearm.

Notes:

- Lateral cutaneous nerve of the forearm
  - Cuts across the extensor compartment of the forearm
  - Supplies the skin over the lateral aspect of the forearm

- Median nerve
  - Supplies the skin over the palmar aspect of the hand

- Radial nerve
  - Supplies the skin over the dorsal aspect of the hand
Anatomy: Forearm and Hand

Question 25 of 102

You are asked to review a 62 year old woman who presents with a numb left arm. On examination you note she lacks sensation to the skin over the medial aspect of the forearm. The skin over the medial aspect of the forearm is supplied by which of the following nerves:

- a. Medial cutaneous nerve of the forearm, branch of the musculocutaneous nerve
- b. Medial cutaneous nerve of the forearm, branch of the radial nerve
- c. Medial cutaneous nerve of the forearm, branch of the median nerve
- d. Medial cutaneous nerve of the forearm, branch of the ulnar nerve
- e. Medial cutaneous nerve of the forearm from the brachial plexus
Anatomy: Forearm and Hand

Forearm

This is an article on the medical knowledge of the human body. It covers the anatomy of the forearm and hand, including muscles, tendons, and nerves. The article is divided into sections, each focusing on a specific aspect of the anatomy.

Notes

- **Nerves**:
  - Ulnar nerve: Innervates the flexor muscles of the forearm and hand.
  - Median nerve: Innervates the flexor muscles of the forearm and hand.
  - Radial nerve: Innervates the extensor muscles of the forearm and hand.

- **Arteries**:
  - Radial artery: Supplies the radial aspect of the hand.
  - Ulnar artery: Supplies the ulnar aspect of the hand.
  - Brachial artery: Supplies the upper arm.

- **Veins**:
  - Radial vein: Returns blood from the hand to the arm.
  - Ulnar vein: Returns blood from the hand to the arm.
  - Brachial vein: Returns blood from the arm to the heart.

- **Bone**:
  - Radius: One of the two bones of the forearm.
  - Ulna: One of the two bones of the forearm.

- **Joints**:
  - elbow joint: Allows the forearm to move up and down.
  - wrist joint: Allows the hand to move in different directions.

- **Muscles**:
  - biceps brachii: Involves in flexing the elbow and rotating the forearm.
  - triceps brachii: Involves in extending the elbow and maintaining the extended position.

- **Tendons**:
  - flexor tendons: Innervates the flexor muscles of the forearm and hand.
  - extensor tendons: Innervates the extensor muscles of the forearm and hand.

- **Ligaments**:
  - collateral ligaments: Maintain the stability of the elbow joint.
  - interosseous membrane: Connects the two bones of the forearm.

**Questions**

- **Q1**: What is the function of the median nerve in the forearm?
  - A: Supplies the flexor muscles of the forearm and hand.
  - B: Supplies the extensor muscles of the forearm and hand.
  - C: Supplies the radial muscles of the forearm and hand.

- **Q2**: Which artery supplies the ulnar aspect of the hand?
  - A: Radial artery
  - B: Ulnar artery
  - C: Brachial artery

- **Q3**: What is the function of the collateral ligaments of the elbow joint?
  - A: Maintain the stability of the elbow joint.
  - B: Innervate the flexor muscles of the forearm and hand.
  - C: Innervate the extensor muscles of the forearm and hand.

- **Q4**: Which tendon innervates the flexor muscles of the forearm and hand?
  - A: Flexor digitorum profundus
  - B: Flexor carpi ulnaris
  - C: Flexor digitorum superficialis

**Resources**

- **Textbook**: Gray's Anatomy
- **Image**: Anatomy of the Forearm and Hand

**Answers**

- **Q1**: A
- **Q2**: B
- **Q3**: A
- **Q4**: C
Anatomy: Forearm and Hand

A 34 year old tree surgeon suffers a crush injury to the entire little finger. Which of the following muscles would you least expect to be affected in this injury:

- a. Lumbrical
- b. Palmar interosseous muscle
- c. Dorsal interosseous muscle
- d. Flexor digitorum profundus
- e. Flexor digitorum superficialis

Question 26 of 102

< Previous  Next >  See Answer

Something wrong?
Anatomy: Forearm and Hand

Question 26 of 102

A 34 year old tree surgeon suffers a crush injury to the entire little finger. Which of the following muscles would you least expect to be affected in this injury:

- a) Lumbrical
- b) Palmar interosseous muscle
- c) Dorsal interosseous muscle
- d) Flexor digitorum profundus
- e) Flexor digitorum superficialis

Answer

The dorsal interosseous insert into the extensor hood and proximal phalanges of the index, middle and ring finger, but not the little finger, which has its own abductor digiti minimi muscle, part of the hypothenar eminence.

Notes

The interosseous muscles originate from and lie between the metacarpal bones. The dorsal interosseous insert into the extensor hood and proximal phalanges of the index, middle and ring finger. The palmar interosseous insert into the extensor hood of the index, ring and little finger.

The four dorsal interosseous act to abduct the index, middle and ring fingers, and the three palmar interosseous act to abduct the index, ring and little fingers (DAPR). Because the interosseous muscles insert into the extensor hood, they also contribute to the complex flexion and extension movements of the interphalangeal joints of the digits.

The interosseous muscles are all innervated by the ulnar nerve.

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Action</th>
<th>Innervation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dorsal interosseous</td>
<td>Abduction of fingers at MCPJ</td>
<td>Ulnar nerve</td>
</tr>
<tr>
<td>Palmar interosseous</td>
<td>Abduction of fingers at MCPJ</td>
<td>Ulnar nerve</td>
</tr>
</tbody>
</table>

Modified by FRCEM Success. Original by By-OpenStax [CC BY 4.0](http://creativecommons.org/licenses/by/4.0/), via Wikimedia Commons
Anatomy: Forearm and Hand

Question 27 of 102

A patient presents with weakness of the left forearm and hand. You examine the strength of the muscles in the anterior forearm. The flexor carpi ulnaris tendon is attached distally to which of the following structures:

a. The lunate and the triquetrum
b. The pisiform, hook of hamate and 5th metacarpal
c. The lunate and the hook of hamate
d. The triquetrum, pisiform and 5th metacarpal
e. The lunate, hook of hamate and 4th metacarpal

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

By Henry Vann and Dr. Steven L. Alexander

Notes

The arterial supply to the forearm is via three major branches originating from the brachial artery: the median, ulnar, and radial arteries.

The median nerve is the largest nerve in the forearm and supplies the flexor muscles of the forearm and hand.
Anatomy: Forearm and Hand

Question 28 of 102

A 45 year old woman sustains an injury to the median nerve at the elbow after falling awkwardly. Which of the following clinical features are you least likely to see on examination:

a. Weakness of pronation
b. Weakness of wrist flexion
c. Loss of flexion of the medial four digits.
d. Loss of sensation to skin over the lateral palm and lateral three and a half digits
e. Hand of Benediction appearance when the patient is asked to make a fist
Anatomy: Forearm and Hand

Question 29 of 102

A 32 year old woman presents to ED following an injury to her right elbow. She is complaining of weak grip in her right hand. You ask her to hold onto a piece of paper with both hands as you pull it away from her. The result of the test is shown below. Which of the following nerves is most likely damaged:

- Axillary nerve
- Median nerve
- Musculocutaneous nerve
- Radial nerve
- Ulnar nerve

Image by FRCEM Success.
# Anatomy: Forearm and Hand

The forearm and hand are crucial components of the upper limb, enabling a wide range of movements and interactions with the environment.

## Forearm

<table>
<thead>
<tr>
<th>Structure</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulna</td>
<td>Supports the elbow joint and provides stability.</td>
</tr>
<tr>
<td>Radius</td>
<td>Rotates the hand and aids in wrist flexion.</td>
</tr>
</tbody>
</table>

## Hand

<table>
<thead>
<tr>
<th>Bone</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metacarpals</td>
<td>Stabilizes the hand and supports the fingers.</td>
</tr>
<tr>
<td>Phalanges</td>
<td>Allows fine motor control and dexterity.</td>
</tr>
</tbody>
</table>

### Nerves and Blood Vessels

- **Median Nerve:** Supplies the flexors of the fingers and thumb.
- **Ulnar Nerve:** Innervates the muscles of the little finger and part of the ring finger.
- **Radial Artery:** Supplies blood to the hand and forearm.

## Exercise

1. **Wrist Extensions:** Using a resistance band, extend your wrists against the band to strengthen the extensor muscles.
2. **Flexor Carpi Ulnaris:** Targeted exercises for the flexor muscles that bend the wrist and fingers.
3. **Abductor Pollicis Longus:** Stretches and strengthens the thumb muscles.

By integrating proper exercises and understanding the anatomy of the forearm and hand, one can enhance movement efficiency and prevent injuries.
Anatomy: Forearm and Hand

Question 30 of 102

A 21 year old man presents to the ED after sustaining a penetrating knife injury to the hand. You suspect injury to the structure attached to the proximal lumbrical muscles. The lumbrical muscles originate from which of the following structures:

- The flexor retinaculum
- The tendon of the palmaris longus
- The palmar aponeurosis
- The tendons of the flexor digitorum superficialis
- The tendons of the flexor digitorum profundus
Anatomy: Forearm and Hand

Question 50 of 102

A 21 year old man presents to the ED after sustaining a penetrating knife injury to the hand. You suspect injury to the structure attached to the proximal lumbral muscles. The lumbral muscles originate from which of the following structures:

a) The flexor retinaculum  
b) The tendon of the palmaris longus  
c) The palmar aponeurosis  
d) The tendons of the flexor digitorum superficialis  
e) The tendons of the flexor digitorum profundus

Answer

The lumbral muscles originate from the tendons of the flexor digitorum profundus muscle.

Notes

The lumbral muscles originate from the tendons of the flexor digitorum profundus in the palm and insert into the extensor hood of the medial four fingers.

The lumbral muscles act to flex these fingers at the metacarpophalangeal joints (MCPs) and extend them at the interphalangeal joints (IPs).

The medial two lumbricals are innervated by the ulnar nerve and the lateral two lumbricals are innervated by the median nerve.

Modified by FRCEM Success. Original by CFCF, Own work | CC BY-SA 4.0 (http://creativecommons.org/licenses/by-sa/4.0), via Wikimedia Commons
Anatomy: Forearm and Hand

Question 32 of 102

A 78 year old woman suffers a destructive injury to the anatomical snuff box region after falling on an outstretched hand. Which of the following carpal bones would you not expect to be affected in this injury:

- a. Scaphoid bone
- b. Trapezium bone
- c. Radial styloid process
- d. Trapezoid bone
- e. 1st metacarpal

Question Navigator

1. Answered
2. Answered
3. Answered
4. Answered
5. Answered
6. Answered
7. Answered
8. Answered
9. Answered
10. Answered
11. Answered
12. Answered

Something wrong?
Anatomy: Forearm and Hand

A 10-year-old girl suffers a destructive injury to the anatomical snuffbox region after falling on an unattended hand. Which of the following carpal bones would you not expect to be affected in this injury:

a) Scaphoid bone
b) Trapezium bone
c) Radius styloid process
d) Triangular bone
e) 1st metacarpal

Answer

The scaphoid bone is not palpable in the anatomical snuffbox. The floor of the anatomical snuffbox is formed by the scaphoid and trapezium carpal bones. The radial styloid process can be palpated proximally and the 1st metacarpal can be palpated distally.

Notes

The anatomical snuffbox is the triangular depression formed on the posterior radial side of the distal wrist and 1st metacarpal by the extensor tendons passing to the thumb.

Anatomical Boundaries

<table>
<thead>
<tr>
<th>Structure</th>
<th>Medical border</th>
<th>Lateral border</th>
<th>Proximal border</th>
<th>Distal border</th>
<th>Floor</th>
<th>Roof</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median nerve fascia</td>
<td>Tendon of extensor pollicis longus</td>
<td>Tendons of the adductor pollicis longus, extensor pollicis brevis,</td>
<td>Radial styloid process</td>
<td>1st metacarpal</td>
<td>Scaphoid and trapezoide bones</td>
<td>Skin</td>
</tr>
<tr>
<td>Contents</td>
<td>Radiol ulnar terminal portion of the superficial branch of the radial nerve, cephalic vein.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It isbounded laterally by the tendons of the adductor pollicis longus and the extensor pollicis brevis and medially by the tendon of the extensor pollicis longus.

The floor of the anatomical snuffbox is formed by the scaphoid and trapezium carpal bones. The radial styloid process can be palpated proximally and the 1st metacarpal can be palpated distally.

The radial artery crosses the floor of the anatomical snuffbox. Subcutaneous terminal part of the superficial branch of the radial nerve and the origin of the cephalic vein pass over the anatomical snuffbox.

The anatomical snuffbox is important clinically as it is contained within the carpus. Localised joint inflammation and tenderness of the anatomical snuffbox is most likely due to scaphoid fractures.

Resources

- The Royal College of Emergency Medicine
- Medline for Emergency Medicine
- The Royal Orthopaedic Hospital (Birmingham)
- British Orthopaedic Association
- U.E.M. Orthopaedics
- Orthopedics

By Grant, John Charles Boyle (c. 1813 – 1862) (Public Domain), via Wikimedia Commons

By E. H. Young, via Wikimedia Commons

< Previous | Next >
Anatomy: Forearm and Hand

Question 33 of 102

A 87 year old woman is brought in to the ED by her concerned family. They describe increasing swelling and tenderness of her right wrist. She is now febrile and you suspect septic arthritis. Which of the following synovial joint type best describes the wrist joint:

a) Synovial plane joint
b) Synovial modified hinge joint
c) Synovial saddle joint
d) Synovial condyloid joint
e) Synovial pivot joint

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

Question 30 of 102

A 87 year old woman is brought in to the ED by her concerned family. They describe increasing swelling and tenderness of her right wrist. She is now febrile and you suspect septic arthritis. Which of the following synovial joint type best describes the wrist joint:

a) Synovial plane joint  
b) Synovial modified hinge joint  
c) Synovial saddle joint  
d) Synovial condyloid joint  
e) Synovial pivot joint

Answer

The wrist joint is a synovial condyloid joint occurring between the distal end of the radius and the articular disc overlaying the distal end of the ulna and the scaphoid, lunate and triquetrum.

Notes

<table>
<thead>
<tr>
<th>Joint Type</th>
<th>Wrist joint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Articulations</td>
<td>Distal end of the radius and articular disc with scaphoid, lunate and triquetrum</td>
</tr>
<tr>
<td>Stabilizing factors</td>
<td>Joint capsule, palmar radiocarpal, palmar ulnocarpal and dorsal radiocarpal ligaments, radial and ulnar collateral ligaments of the wrist joint</td>
</tr>
<tr>
<td>Movements</td>
<td>Flexion and extension, abduction and adduction</td>
</tr>
</tbody>
</table>

The wrist joint is a synovial condyloid joint occurring between the distal end of the radius and the articular disc overlaying the distal end of the ulna and the scaphoid, lunate and triquetrum. The capsule of the wrist joint is reinforced by palmar radiocarpal, palmar ulnocarpal and dorsal radiocarpal ligaments. The radial and ulnar collateral ligaments of the wrist joint reinforce the medial and lateral sides of the wrist joint. The wrist joint allows movement around two axes: the hand can be abducted and adducted, and flexed and extended at the wrist joint.

<table>
<thead>
<tr>
<th>Movement</th>
<th>Muscles Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion</td>
<td>Flexor carpi radialis, flexor carpi ulnaris, flexor digitorum profundus, flexor digitorum superficialis, palmaris longus</td>
</tr>
<tr>
<td>Extension</td>
<td>Extensor carpi radialis longus and brevis, extensor carpi ulnaris, extensor digitorum</td>
</tr>
<tr>
<td>Abduction</td>
<td>Flexor carpi radialis, extensor carpi radialis longus and brevis</td>
</tr>
<tr>
<td>Adduction</td>
<td>Flexor carpi ulnaris, extensor carpi ulnaris</td>
</tr>
</tbody>
</table>
Anatomy: Forearm and Hand

Question 34 of 102

A 24 year old butcher has sustained a deep laceration to the distal crease of the wrist where he has cut through the ulnar nerve. Which of the following clinical findings would you most expect to see on examination:

a. Loss of sensation to the dorsum of the medial hand
b. Weakness of flexion at the proximal interphalangeal joints of all four fingers
c. Loss of opposition of the thumb
d. Weakness of extension at the interphalangeal joints of all four fingers
e. Weakness of extension of the thumb

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

A 49-year-old patient sustains a severe injury to his left hand. You are attempting to assess which muscle tendons may be offset from their original attachment. Regarding the clinical anatomy of the anterior forearm musculature, which of the following is incorrect?

- Muscle: Flexor pollicis longus - Insertion: base of proximal phalanx of thumb
- Muscle: Flexor digitorum profundus - Insertion: palmar aponeurosis
- Muscle: Flexor carpi ulnaris - Insertion: pisiform bone
- Muscle: Flexor carpi radialis - Insertion: radial styloid process
- Muscle: Flexor digitorum superficialis - Insertion: palmar aponeurosis

The flexor digitorum profundus is a muscle that lies in the palmar surface of the distal phalanges of all four fingers. The flexor pollicis longus muscle lies in the fibrous arch of the thumb. The flexor digitorum superficialis muscle lies in the fibrous arch of the fingers. The flexor carpi ulnaris muscle has a broad attachment at the pisiform bone and the hamate bone. The flexor carpi radialis muscle has a broad attachment at the radial styloid process and is innervated by the median nerve.
Anatomy: Forearm and Hand

Question 36 of 102

A 32 year old woman sustains an injury to the ulnar nerve at the elbow after sustaining a fracture of the medial epicondyle. Which of the following clinical findings would you least expect to see on examination:

- Weakness of wrist flexion
- Weakness of abduction of the fingers
- Weakness of adduction of the fingers
- Weakness of adduction of the thumb
- Weakness of abduction of the thumb

< Previous  Next >  See Answer

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

Something wrong?
Anatomy: Forearm and Hand

Question 37 of 102

A 54 year old carpenter has sustained a laceration to his left hand with a stanley knife. He is unable to flex the proximal interphalangeal joint of his middle finger which is held in extension. Which of the following structures has most likely been injured:

a) Tendon of the flexor digitorum superficialis
b) Tendon of the flexor digitorum profundus
c) Lumbrical muscle
d) Interosseous muscle
e) Digital branch of the median nerve

< Previous  Next >  See Answer

Something wrong?
Anatomy: Forearm and Hand

A 58-year-old carpenter has sustained a laceration to his left hand with a Stanley knife. It is unable to flex the proximal interphalangeal joint of his middle finger which is held in extension. Which of the following structures has most likely been injured?

- a) Tendon of the flexor digitorum superficialis
- b) Tendon of the flexor digitorum profundus
- c) Lumbral muscle
- d) Intercosseous muscle
- e) Digital branch of the median nerve

Answer

The flexor digitorum superficialis is primarily responsible for flexion at the proximal interphalangeal joint and thus separation of this tendon from its attachment on the middle phalanx of the finger will result in loss of this movement. The flexor digitorum profundus flexes the distal interphalangeal joint. Flexion at the metacarpophalangeal joint is primarily produced by the lumbricals muscles, with assistance from the interossei and the flexor digitorum profundus and superficialis. Abduction and adduction of the fingers at the metacarpophalangeal joint is produced by the interossei.

Notes

Hand movements are complex. The table below shows an overview of hand and thumb movements and the main muscles bringing about these movements.

<table>
<thead>
<tr>
<th>Hand movements</th>
<th>Primary muscles (assisting muscles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion of MCP of digits 2–5</td>
<td>Lumbricals (flexor digitorum superficialis, flexor digitorum profundus, flexor digiti minimi, interossei)</td>
</tr>
<tr>
<td>Flexion of PIP of digits 2–5</td>
<td>Flexor digitorum superficialis, flexor digitorum profundus</td>
</tr>
<tr>
<td>Flexion of DIP of digits 2–5</td>
<td>Flexor digitorum profundus</td>
</tr>
<tr>
<td>Extension of MCP of digits 2–5</td>
<td>Extensor digitorum, extensor indicis, extensor digiti minimi</td>
</tr>
<tr>
<td>Extension of PIP and DIP of digits 2–5</td>
<td>Lumbricals and extensor tendon (extensor digitorum)</td>
</tr>
<tr>
<td>Adduction of digits 2–5</td>
<td>Palmer interossei</td>
</tr>
<tr>
<td>Abduction of digits 2–4</td>
<td>Dorsal interossei</td>
</tr>
<tr>
<td>Adduction of index finger</td>
<td>Adductor pollicis</td>
</tr>
<tr>
<td>Opposition of little finger</td>
<td>Opponens pollicis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thumb movements</th>
<th>Primary muscle(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion of thumb at MCP</td>
<td>Flexor pollicis longus and brevis</td>
</tr>
<tr>
<td>Flexion of thumb at IP</td>
<td>Flexor pollicis longus</td>
</tr>
<tr>
<td>Extension of thumb at CMC and MCP</td>
<td>Extensor pollicis longus and brevis</td>
</tr>
<tr>
<td>Extension of thumb at IP</td>
<td>Extensor pollicis longus</td>
</tr>
<tr>
<td>Abduction of thumb</td>
<td>Adductor pollicis</td>
</tr>
<tr>
<td>Adduction of thumb</td>
<td>Opponens pollicis</td>
</tr>
<tr>
<td>Opposition of thumb</td>
<td>Opponens pollicis</td>
</tr>
</tbody>
</table>

Original Image: OpenI (CC BY 4.0) (http://creativecommons.org/licenses/by/4.0/) via Wikimedia Commons

Resources

- The Royal College of Emergency Medicine (RCEM) (http://www.rcem.ac.uk) and the British Society for Surgery of Trauma and Orthopaedics (BSSSTO) (www.bsssto.org)
Anatomy: Forearm and Hand

Question 38 of 102

A 27 year old rugby player is brought to the ED complaining of neck pain after a scrum collapsed. On examination he is tender over C7 and T1. The C8 dermatome is best tested at which of the following landmarks:

- a. Lateral antecubital fossa
- b. Medial antecubital fossa
- c. Dorsum of middle finger
- d. Dorsum of little finger
- e. Dorsum of thumb
Anatomy: Forearm and Hand

Question 36 of 102

A 27 year old rugby player is brought to the ED complaining of neck pain after a scrum collapsed. On examination he is tender over C7 and T1. The C8 dermatome is best tested at which of the following landmarks?

- a) Lateral acetabular fossa
- b) Medial acetabular fossa
- c) Dorsal of middle finger
- d) Dorsum of little finger
- e) Dorsum of thumb

Answer

The C8 dermatome is best tested on the dorsal surface of the proximal phalanx of the little finger.

Notes

<table>
<thead>
<tr>
<th>Dermatome</th>
<th>Landmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2</td>
<td>Occipital Protuberance</td>
</tr>
<tr>
<td>C3</td>
<td>Supraclavicular Fossa</td>
</tr>
<tr>
<td>C4</td>
<td>Acromioclavicular Joint</td>
</tr>
<tr>
<td>C5</td>
<td>Lateral Acetabular Fossa</td>
</tr>
<tr>
<td>C6</td>
<td>Thumb</td>
</tr>
<tr>
<td>C7</td>
<td>Middle Finger</td>
</tr>
<tr>
<td>C8</td>
<td>Little Finger</td>
</tr>
<tr>
<td>T1</td>
<td>Medial Acetabular Fossa</td>
</tr>
<tr>
<td>T2</td>
<td>Apex of Axilla</td>
</tr>
</tbody>
</table>

- The C2 dermatome is best tested at least one cm lateral to the occipital protuberance at the base of the skull. Alternatively, it can be located at least 3 cm behind the ear.
- The C3 dermatome is best tested in the suprascapular fossa, at the midbiceps tendon.
- The C4 dermatome is best tested over the acromioclavicular joint.
- The C5 dermatome is best tested on the lateral (radial) side of the acetabular fossa just proximal to the iliac crest.
- The C6 dermatome is best tested on the dorsal surface of the proximal phalanx of the thumb.
- The C7 dermatome is best tested on the dorsal surface of the proximal phalanx of the middle finger.
- The C8 dermatome is best tested on the dorsal surface of the proximal phalanx of the little finger.
- The T1 dermatome is best tested on the medial side of the neck, just proximal to the medial epicondyle of the humerus.
- The T2 dermatome is best tested at the apex of the axilla.

By Grant John Charles Balbo (21611603) of anatomy / human body (Public domain) via Wikimedia Commons
Anatomy: Forearm and Hand

Question 39 of 102

A patient presents with pain in the wrist and a tingling in the hand. On examination Tinel’s test is positive and you diagnose carpal tunnel syndrome. Regarding the carpal tunnel, which of the following statements is INCORRECT:

a. The tendons of the flexor digitorum profundus, flexor digitorum superficialis and flexor pollicis longus lie within a single synovial sheath.

b. The median nerve lies anterior to the tendons in the carpal tunnel.

c. The ulnar nerve and ulnar artery pass over, not through, the carpal tunnel.

d. The floor of the carpal tunnel is formed medially by the pisiform and hook of the hamate.

e. The flexor retinaculum forms the roof of the carpal tunnel.
Anatomy: Forearm and Hand

Question 39 of 102

A patient presents with pain in the wrist and a tingling in the hand. On examination, Tinel’s test is positive and you diagnose carpal tunnel syndrome. Regarding the carpal tunnel, which of the following statements is INCORRECT?

a) The tendons of the flexor digitorum profundus, flexor digitorum superficialis and flexor pollicis longus lie within a single synovial sheath.

b) The median nerve lies anterior to the tendons in the carpal tunnel.

c) The ulnar nerve and ulnar artery pass over and through the carpal tunnel.

d) The floor of the carpal tunnel is formed medially by the pisiform and hook of the hamate.

e) The flexor retinaculum forms the roof of the carpal tunnel.

Answer

Free movement of the tendons in the carpal tunnel is facilitated by synovial sheaths, which surround the tendons. All of the tendons of the FDP and FDS are contained within a single synovial sheath with a separate sheath encasing the tendons of the FPL.

Notes

<table>
<thead>
<tr>
<th>Anatomical Boundaries</th>
<th>Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roof</td>
<td>Flexor retinaculum</td>
</tr>
<tr>
<td>Carpal arch</td>
<td>Plastiform and hook of the hamate medially, tubercles of the scaphoid and trapezium laterally</td>
</tr>
<tr>
<td>Contents</td>
<td>Four tendons of flexor digitorum profundus, four tendons of flexor digitorum superficialis, tendon of flexor pollicis longus, median nerve</td>
</tr>
</tbody>
</table>

The carpal tunnel is formed by a deep carpal arch and a superficial flexor retinaculum. The base of the carpal tunnel is formed medially by the pisiform and the hook of the hamate and laterally by the tubercles of the scaphoid and trapezium. The flexor retinaculum is a thickened band of fibrous connective tissue on the volar aspect of the hand, which bridges the gap between these carpal bones and forms the roof of the carpal tunnel.

The following structures pass through the carpal tunnel:

- the four tendons of the flexor digitorum profundus (FDP)
- the four tendons of the flexor digitorum superficialis (FDS)
- the tendon of the flexor pollicis longus (FPL)
- the median nerve.

Free movement of the tendons in the carpal tunnel is facilitated by synovial sheaths, which surround the tendons. All of the tendons of the FDP and FDS are contained within a single synovial sheath with a separate sheath encasing the tendons of the FPL. The median nerve lies anterior to the tendons in the carpal tunnel.

Carpal tunnel syndrome is caused by compression of the median nerve within the carpal tunnel.
Anatomy: Forearm and Hand

Question 40 of 102

A 34 year old patient presents to ED having sustained an injury to her right hand whilst playing cricket. She is unable to fully straighten her right middle finger as the distal phalanx remains flexed. A picture of her hand is shown below. Which of the following structures within the digit was most likely injured:

By Howcheng (Own work) [CC BY-SA 3.0](http://creativecommons.org/licenses/by-sa/3.0/), via Wikimedia Commons

- a. Superficial branch of radial nerve
- b. Insertion of central slip of extensor digitorum tendon
- c. Insertion of terminal extensor digitorum tendon
- d. Insertion of flexor digitorum profundus tendon
- e. Palmar digital branch of median nerve

< Previous  Next >  See Answer

Something wrong?
Anatomy: Forearm and Hand

A 34 year old patient presents to ED having sustained an injury to her right hand whilst playing cricket. She is unable to fully straighten her right middle finger as the distal phalanx remains flexed. A picture of her hand is shown below. Which of the following structures within the digit was most likely injured:

- a) Superficial branch of radial nerve
- b) Insertion of central slip of extensor digiti minimi tendon
- c) Insertion of terminal extensor digitorum tendons
- d) Insertion of flexor digiti minimi profundus tendon
- e) Palmar digital branch of median nerve

Answer

Damage to the insertion of the terminal extensor digitorum tendons would result in loss of extension at the distal interphalangeal joint causing a fixed flexion deformity, called the Mallet deformity.

Notes

The tendons of the extensor digitorum and extensor pollicis longus pass onto the dorsum aspect of the digits and expand over the proximal phalanges to form complete extensor heads. The central slip inserts into the base of the middle phalanx, and distally the tendon inserts into the distal phalanx of each digit.

Division of the central slip of the extensor tendon will result in the Boutonniere deformity, with loss of extension of the proximal interphalangeal joint and loss of flexion of the distal interphalangeal joint. The middle phalanx is held in forced flexion, with hyperextension of the distal phalanx.

Division of the terminal extensor tendon will result in the Mallet deformity, with loss of extension at the distal interphalangeal joint; the distal phalanx is held in forced flexion due to unopposed action of the flexor digiti minimi profundus muscle.

<table>
<thead>
<tr>
<th>Structure</th>
<th>Terminal extensor tendon</th>
<th>Central slip of extensor tendon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachement</td>
<td>Distal phalanx</td>
<td>Middle phalanx</td>
</tr>
<tr>
<td>Movements affected in injury</td>
<td>Loss of extension at distal interphalangeal joint</td>
<td>Loss of extension at proximal interphalangeal joint and flexion at distal interphalangeal joint</td>
</tr>
<tr>
<td>Deflection in injury</td>
<td>Mallet deformity: Distal phalanx held in fixed flexion</td>
<td>Boutonniere deformity: Middle phalanx held in fixed flexion with hyperextension of distal phalanx</td>
</tr>
</tbody>
</table>

Tendon of Extensor Digitorum

Tendon of Extensor Pollicis Longus

Insertion of central slip of extensor tendon to base of middle phalange

Insertion of terminal extensor tendon to base of distal phalanges

Mod B of FRCEMSuccess, Original by Henry Vlaibler Carter (Public domain). See Wikimedia Commons

Resources

- The Royal College of Emergency Medicine
- UK Association for Emergency Medicine
- Advanced Trauma Life Support
- Association of Minor Surgery
- Royal Society for Tropical Medicine
- Royal College of Surgeons
- Advanced Life Support Group
- Emergency Medicine Journal
- Occupational Medicine
- Fracture Focus
- Paediatrics
You are performing a neurological examination on a patient who complains of weakness of the left arm. You note muscle wasting in the posterior forearm. The muscles of the posterior compartment of the forearm are all innervated by which of the following nerves:

a. Axillary nerve
b. Musculocutaneous nerve
c. Radial nerve
d. Median nerve
e. Ulnar nerve
Anatomy: Forearm and Hand

Vascular System

Forearm veins are anastomosed with the superficial veins.

Muscles

- Biceps brachii
- Brachialis
- Brachioradialis
- Flexor carpi radialis
- Pronator teres
- Flexor carpi ulnaris
- Palmaris longus

Bones

- Radius
- Ulna
- Carpals
- Metacarpals
- Phalanges

Nerves

- Median nerve
- Radial nerve
- Ulnar nerve

Joints

- Elbow joint
- Wrist joint
- Finger joints

Veins

- Median cubital vein
- Basilic vein
- Dorsal venous network

A thorough knowledge of the structures and the tendons is important to allow understanding of the vascular, lymphatic, and neural networks that are connected to the upper limb.

Resources

- The Grey's Anatomy of Vascular System
- Applied Vascular Anatomy
- Principles of Vascular Surgery
- Vascular Medicine
- Vascular Biology
- Vascular Pharmacology

FrCDM Success

- FrCDM Success
- FrCDM Success
- FrCDM Success
- FrCDM Success
- FrCDM Success
- FrCDM Success
- FrCDM Success
- FrCDM Success
Anatomy: Forearm and Hand
Question 43 of 102

A 29 year old woman is brought to the ED after concerns were raised for her welfare by a neighbour. She has a deep laceration to the anterior aspect of the right wrist. You are concerned about an injury to the underlying structures including the flexor retinaculum. The flexor retinaculum is attached medially to which of the following structures:

a. Triquetrum and pisiform
b. Lunate and triquetrum
c. Lunate and hook of the hamate
d. Pisiform and hook of the hamate
e. Ulna, lunate and triquetrum

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

Question 42 of 102

A 29 year old woman is brought to the ED after concerns were raised for her welfare by a neighbour. She has a deep laceration to the anterior aspect of the right wrist. You are concerned about an injury to the underlying structures including the flexor retinaculum.

The flexor retinaculum is attached medially to which of the following structures:

a) Triquetrum and pisiform
b) Lunate and triquetrum
c) Lunate and hook of hamate

d) Pisiform and hook of the hamate

e) Ulna, lunate and triquetrum

Answer

The flexor retinaculum is attached medially to the pisiform and the hook of the hamate.

Notes

The flexor retinaculum (transverse carpal ligament) is a thickened band of fibrous connective tissue on the volar aspect of the hand which forms the roof of the carpal tunnel. The flexor retinaculum holds the flexor tendons in place at the wrist and prevents them from bowstringing.

It is attached laterally to the scaphoid and trapezium and medially to the pisiform and the hook of the hamate.

The thorax and hypotenar muscles arise from the flexor retinaculum.

The ulnar artery, ulnar nerve, and tendon of the palmaris longus pass into the hand anterior to the flexor retinaculum, and therefore do not pass through the carpal tunnel.

The flexor carpi radialis tendon passes through the lateral aspect of the flexor retinaculum into the hand.

The four tendons of the flexor digitorum profundus, the four tendons of the flexor digitorum superficialis, the tendon of the flexor pollicis longus and the median nerve pass into the hand posterior to the flexor retinaculum, within the carpal tunnel.

By Henry Vandyke Carter [Public domain], via Wikimedia Commons

FRCEM Success

We are an online revision resource for FRCEM/Primary and Intermediate exams.

Terms & Conditions
Get in touch

Resources

- The Royal College of Emergency Medicine
- UK Association for Emergency Medicine
- Advanced Trauma Life Support
- Resuscitation Council (UK)
- Sea-Wise Master
- TraumaCare
- Paediatrics

Advanced Life Support Group
Emergency Medicine Journal
LitteredHorizons
Instant Anatomy
StatPearls

©2014 - 2017 FRCEM Success | Website designed and hosted by Cubering Design
Anatomy: Forearm and Hand

You have been asked to review a 43 year old man who presents with weakness to the right arm after falling. You perform a neurological examination of the upper limbs, including testing the strength of the upper limb muscles. Which of the following muscles is innervated by the median nerve:

- **a** Interossei muscles
- **b** Adductor pollicis
- **c** Flexor carpi ulnaris
- **d** Flexor carpi radialis
- **e** Medial two lumbricals

< Previous  Next >  See Answer
Anatomy: Forearm and Hand

Question 45 of 102

A 29 year old fell heavily while base-jumping and presents to ED with a painful right arm. X-ray shows a fracture of the medial epicondyle. Which of the following nerves is most likely damaged in this type of injury:

- a. Median nerve
- b. Radial nerve
- c. Musculocutaneous nerve
- d. Ulnar nerve
- e. Axillary nerve

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

The forearm and hand are essential for many activities and movements. Understanding the anatomy of the forearm and hand is crucial for healthcare professionals and athletes alike.

**Introduction**

The forearm consists of two bones: the radius and the ulna. The radius is positioned on the thumb side of the forearm, and the ulna is on the little finger side. The hand is composed of 27 bones, divided into the carpus (wrist bones), metacarpals (fingers bones), and phalanges (finger and thumb bones).

**Key Features**

- **Radius and Ulna**: These bones form the lateral wall of the elbow joint and provide a stable support for the forearm muscles.
- **Carpus**: This group of eight bones forms the wrist and facilitates movement at the wrist joint.
- **Metacarpals**: These bones are located in the palm and form the basic structure of the fingers.
- **Phalanges**: These bones make up the fingers and the thumb, providing the ability to grip and manipulate objects.

**Clinical Relevance**

Understanding the anatomy of the forearm and hand is essential in various fields, including orthopedics, rehabilitation, and sports medicine. Injuries to these areas can lead to significant functional limitations, and knowledge of their anatomy aids in the effective diagnosis and treatment of such conditions.

**Conclusion**

The forearm and hand are complex structures with numerous bones and joints. Their anatomical understanding is vital for professionals in healthcare and athletics. Further study in this area can lead to improved care and treatment strategies for patients.
Anatomy: Forearm and Hand

Question 46 of 102

A 16 year old girl presents complaining of weakness of her left hand following an injury to her left arm. On examination she has weakness of flexion of the metacarpophalangeal joint of the ring finger, and inability to adduct that same finger. Which of the following muscles is most likely affected:

a  Flexor pollicis profundus
b  Flexor pollicis superficialis
c  Lumbrical
d  Dorsal interosseous
e  Palmar interosseus
Anatomy: Forearm and Hand

A 54-year-old woman presents complaining of weakness of her left hand following an injury to her left arm. On examination she has weakness of flexion of the metacarpophalangeal joint of the ring finger, and inability to adduct that same finger. Which of the following muscles is most likely affected?

a) Flexor pollicis longus
b) Flexor pollicis brevis
c) Lumbricals
d) Dorsal interossei
e) Palmar interossei

Answer

The involved muscles assist the lumbricals with flexion of the fingers at the metacarpophalangeal joints and extension at the interphalangeal joints. The palmar interossei cause adduction of the fingers and the dorsal interossei cause abduction of the fingers. The flexor pollicis longus and brevis are involved in flexion at the metacarpophalangeal joint but have no function in adduction of the fingers.

Notes

Hand movements are complex. The table below shows an overview of hand and thumb movements and the main muscles bringing about these movements.

<table>
<thead>
<tr>
<th>Hand movements</th>
<th>Primary muscle(s) (wrist and finger)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion of MCP of digits 2-5</td>
<td>Lumbricals, flexor digitorum superficialis, flexor digitorum profundus, flexor digitorum accessorius</td>
</tr>
<tr>
<td>Flexion of PIP of digits 2-5</td>
<td>Flexor digitorum superficialis, flexor digitorum profundus</td>
</tr>
<tr>
<td>Flexion of DIP of digits 2-5</td>
<td>Flexor digitorum profundus</td>
</tr>
<tr>
<td>Extension of MCP of digits 2-5</td>
<td>Extensor digitorum, extensor indicis, extensor digiti minimi</td>
</tr>
<tr>
<td>Extension of PIP and DIP of digits 2-5</td>
<td>Lumbricals and interossei (extensor digitorum)</td>
</tr>
<tr>
<td>Abduction of digits 2-5</td>
<td>Palmar interossei</td>
</tr>
<tr>
<td>Abduction of digits 2-4</td>
<td>Dorsal interossei</td>
</tr>
<tr>
<td>Abduction of little finger</td>
<td>Abductor digit minimi</td>
</tr>
<tr>
<td>Opposition of little finger</td>
<td>Opponens digit minimi</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thumb movements</th>
<th>Primary muscle(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion of thumb at MCP</td>
<td>Flexor pollicis longus and brevis</td>
</tr>
<tr>
<td>Flexion of thumb at IP</td>
<td>Flexor pollicis longus</td>
</tr>
<tr>
<td>Extension of thumb at MCP and MCP</td>
<td>Extensor pollicis longus and brevis</td>
</tr>
<tr>
<td>Extension of thumb at IP</td>
<td>Extensor pollicis longus</td>
</tr>
<tr>
<td>Abduction of thumb</td>
<td>Abductor pollicis longus and brevis</td>
</tr>
<tr>
<td>Abduction of thumb</td>
<td>Abductor pollicis</td>
</tr>
<tr>
<td>Opposition of thumb</td>
<td>Opponens pollicis</td>
</tr>
</tbody>
</table>

Resources

- *The Handbook of Emergency Medicine*
- *Emergency Medical Services*
Anatomy: Forearm and Hand

A 26 year old woman presents to ED having sustained a deep laceration to the dorsum of her ring finger whilst cooking. Her proximal interphalangeal joint is fixed in flexion and the distal interphalangeal joint is hyperextended. Which of the following structures in the digit has most likely been injured:

- a Terminal insertion of the extensor tendon
- b Superficial branch of the radial nerve
- c Insertion of the flexor digitorum profundus
- d Insertion of the flexor digitorum superficialis
- e Insertion of the central slip of the extensor tendon

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

Question 47 of 150

A 26-year-old woman presents to ED having sustained a deep laceration to the dorsum of her ring finger whilst cooking. Her proximal interphalangeal joint is fixed in flexion and the distal interphalangeal joint is hyperextended. Which of the following structures in the digit has most likely been injured:

a) Terminal insertion of extensor tendon
b) Superficial branch of the radial nerve
c) Insertion of the flexor digitorum profundus
d) Insertion of the flexor digitorum superficialis
e) Insertion of the central slip of the extensor tendon

Answer

Damage to the central slip of the extensor digitorum tendon would result in loss of extension at the proximal interphalangeal joint and flexion of the distal interphalangeal joint due to a loss of balancing forces. This is called the Boutonniere deformity.

Notes

The tendons of the extensor digitorum (and extensor pollicis longus) pass onto the dorsal aspect of the digits and expand over the proximal phalanges to form complex extensor bow. The central slip inserts into the base of the middle phalanx, and distally it attaches to the distal phalanx of each digit.

Division of the central slip of the extensor tendon will result in the Boutonniere deformity, with loss of extension of the proximal interphalangeal joint and flexion of the distal interphalangeal joint. The middle phalanx is held in flexion, with hyperextension of the distal phalanx.

Division of the terminal extensor tendon will result in the Mallet deformity, with loss of extension at the distal interphalangeal joint as this case; the distal phalanx is held in forced flexion due to unopposed action of the flexor digitorum profundus muscle.

### Structure

<table>
<thead>
<tr>
<th>Terminal extensor tendon</th>
<th>Central slip of extensor tendon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment</td>
<td>Central slip insertion</td>
</tr>
<tr>
<td>Distal phalanx</td>
<td>Middle phalanx</td>
</tr>
<tr>
<td>Movements affected in injury</td>
<td>Loss of extension at distal interphalangeal joint</td>
</tr>
<tr>
<td>Loss of extension at proximal interphalangeal joint and flexion at distal interphalangeal joint</td>
<td></td>
</tr>
<tr>
<td>Deformity in injury</td>
<td>Mallet deformity; Distal phalanx held in fixed flexion</td>
</tr>
<tr>
<td>Boutonniere deformity; Middle phalanx held in forced flexion with hyperextension of distal phalanx</td>
<td></td>
</tr>
</tbody>
</table>

Modified by FRCEM Success. Originally by Henry Vandyke Carter (Public domain), via Wikimedia Commons

**Resources**

- The Royal College of Emergency Medicine
- Irish Association for Emergency Medicine
- Advanced Trauma Life Support
- Resuscitation Council (UK)
- The McCullagh Society
- Trauma Euro
- Rheumatic
Anatomy: Forearm and Hand

Question 48 of 102

A 21 year old presents to ED with an injury to his left arm after falling from a skateboard. Imaging shows a supracondylar fracture. Which nerve is most likely damaged in this type of injury:

- a. Radial nerve
- b. Ulnar nerve
- c. Median nerve
- d. Musculocutaneous nerve
- e. Axillary nerve
Anatomy: Forearm and Hand

You have been asked to review a 45 year old gardener who has sustained a laceration to the dorsal surface of their wrist. You are concerned about the possibility of injury to underlying structures. The extensor retinaculum is attached to which of the following structures:

a. The scaphoid laterally and the pisiform and triquetrum medially
b. The radius laterally and the ulna medially
c. The radius laterally and the pisiform and triquetrum medially
d. The scaphoid laterally and the ulna medially
e. The radius laterally and the lunate and triquetrum medially
Anatomy: Forearm and Hand

You have been asked to review a 45 year old gardener who has sustained a laceration to the dorsal surface of their wrist. You are concerned about the possibility of injury to underlying structures. The extensor retinaculum is attached to which of the following structures:

a) The scapholunate and the pisiform and triquetrum medially
b) The radius laterally and the ulna medially
c) The radius laterally and the pisiform and triquetrum medially

d) The scapholunate and the ulna medially
e) The radius laterally and the lunate and triquetrum medially

Answer

The extensor retinaculum is attached laterally to the antebrachial radius above the styloid process and medially to the pisiform and triquetrum bones.

Notes

The extensor retinaculum (dorsal carpal ligament) lies obliquely across the extensor surface of the wrist joint, and holds the extensor tendons in place during movement of the wrist.

It is attached laterally to the antebrachial radius above the styloid process and medially to the pisiform and triquetrum bones. It does not attach to the ulna.

The extensor tendons pass through the extensor tunnel, deep to the extensor retinaculum, in six compartments lined by synovial sheaths:

- The tendons of the extensor digitorum and extensor indicis share a synovial sheath on the posterior surface of the wrist.
- The tendons of the extensor carpi ulnaris and extensor digiti minimi have separate sheaths on the medial side of the wrist.
- The tendons of the abductor pollicis longus and extensor pollicis brevis, the extensor carpi radialis longus and extensor carpi radialis brevis and the extensor pollicis longus have three separate sheaths on the lateral side of the wrist.

By Henry Vostok Carter (Public domain), via Wikimedia Commons
Anatomy: Forearm and Hand

Question 50 of 102

A 54 year old patient presents to ED complaining of weakness in her right hand. She has recently undergone an endoscopic nerve release for carpal tunnel syndrome but is now complaining of a severe weakness of her thumb with loss of thumb opposition. Sensation is normal. Which of the following nerves was likely affected in the surgical procedure.

a. Anterior interosseous nerve
b. Recurrent branch of the median nerve
c. Superficial branch of the ulnar nerve
d. Deep branch of the ulnar nerve
e. Palmar digital branch of the median nerve
Anatomy: Forearm and Hand

Question 51 of 102

A 43 year old man sustains an injury to the proximal ulnar nerve after falling through a greenhouse door. Which of the following muscles would you not expect to be affected:

a) Opponens digitii minimi
b) Abductor digitii minimi
c) Flexor digitii minimi
d) Extensor digitii minimi
e) Flexor carpi ulnaris

< Previous  Next >  See Answer  Something wrong?
A 43 year old man sustains an injury to the proximal ulnar nerve after falling through a greenhouse door. Which of the following muscles would you not expect to be affected:

a) Opponens digiti minimi  
b) Abductor digiti minimi  
c) Flexor digiti minimi  
d) Extensor digiti minimi  
e) Flexor carpi ulnaris

Answer

The hypothenar muscles (opponens digiti minimi, abductor digiti minimi and flexor digiti minimi) are all innervated by the ulnar nerve. The flexor carpi ulnaris in the anterior forearm is also innervated by the ulnar nerve. The extensor digiti minimi in the posterior forearm is innervated by the radial nerve.

Notes

The hypothenar muscles are the opponens digiti minimi, the abductor digiti minimi and the flexor digiti minimi, all innervated by the ulnar nerve.

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Action</th>
<th>Innervation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opponens digiti minimi (blue)</td>
<td>Laterally rotates little finger</td>
<td>Ulnar nerve</td>
</tr>
<tr>
<td>Abductor digiti minimi (green)</td>
<td>Abducts little finger at MCPJ</td>
<td>Ulnar nerve</td>
</tr>
<tr>
<td>Flexor digiti minimi brevis (red)</td>
<td>Flexes little finger at MCPJ</td>
<td>Ulnar nerve</td>
</tr>
</tbody>
</table>

Modified by FRCEM Success, Original by By OpenStax [CC BY 4.0] [http://creativecommons.org/licenses/by/4.0], via Wikimedia Commons
Anatomy: Forearm and Hand

Your consultant asks you to perform a neurological assessment of a trauma patient. The patient fell approximately 4 metres on a building site. Your consultant has arranged imaging that shows a possible injury of the C6, C7 and T1 vertebrae. The C6 dermatome is best tested at which of the following landmarks:

- On the lateral side of the antecubital fossa
- On the medial side of the antecubital fossa
- Dorsum of middle finger
- Dorsum of little finger
- Dorsum of thumb

Question Navigator

- 47 Answered
- 48 Answered
- 49 Answered
- 50 Answered
- 51 Answered
- 52 Current Question
- 53 Unanswered
- 54 Unanswered
- 55 Unanswered
- 56 Unanswered
- 57 Unanswered
- 58 Unanswered

< Previous  Next >  See Answer

< Previous  Next >  See Answer

Clear Exam
Anatomy: Forearm and Hand

Quarter 52 of 102

Your consultant asks you to perform a neurological assessment of a trauma patient. The patient fell approximately 4 metres on a building site. Your consultant has arranged imaging that shows a possible injury to the C6, C7 and T1 vertebrae. The C6-dorsalome is best tested at which of the following landmarks:

- On the lateral side of the antecubital fossa
- On the medial side of the antecubital fossa
- Dorsum of middle finger
- Dorsum of little finger
- Dorsum of thumb

Answer

The C6-dorsalome is best tested on the dorsal surface of the proximal phalanx of the thumb.

Notes

<table>
<thead>
<tr>
<th>Dorsalome</th>
<th>Landmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2</td>
<td>Occipital Protruberance</td>
</tr>
<tr>
<td>C3</td>
<td>Supraclavicular Fossa</td>
</tr>
<tr>
<td>C4</td>
<td>Acromio-clavicular joint</td>
</tr>
<tr>
<td>C5</td>
<td>Lateral Antecubital Fossa</td>
</tr>
<tr>
<td>C6</td>
<td>Thumb</td>
</tr>
<tr>
<td>C7</td>
<td>Middle Finger</td>
</tr>
<tr>
<td>C8</td>
<td>Little Finger</td>
</tr>
<tr>
<td>T1</td>
<td>Medial Antecubital Fossa</td>
</tr>
<tr>
<td>T2</td>
<td>Apex of Ankle</td>
</tr>
</tbody>
</table>

- The C2-dorsalome is best tested at least one cm lateral to the occipital protruberance at the base of the skull. Alternatively, it can be located at least 3 cm behind the ear.
- The C3-dorsalome is best tested in the supraclavicular fossa, at the midclavicular line.
- The C4-dorsalome is best tested over the acromio-clavicular joint.
- The C5-dorsalome is best tested on the lateral (valid) side of the antecubital fossa just proximal to the elbow.
- The C6-dorsalome is best tested on the dorsal surface of the proximal phalanx of the thumb.
- The C7-dorsalome is best tested on the dorsal surface of the proximal phalanges of the middle finger.
- The C8-dorsalome is best tested on the dorsal surface of the proximal phalanx of the little finger.
- The T1-dorsalome is best tested on the medial (valid) side of the antecubital fossa, just proximal to the medial epicondyle of the humerus.
- The T2-dorsalome is best tested at the apex of the ankle.

By Grant, John Charles Bolles (via atlas of anatomy; human body; 1942 [Public domain]; via Wikimedia Commons)
Anatomy: Forearm and Hand

You are demonstrating a vascular examination on a patient to a group of medical students. Where is the radial artery pulsation best palpated:

- a) At the wrist just lateral to the flexor carpi radialis tendon
- b) At the wrist just medial to the flexor carpi radialis tendon
- c) At the wrist just medial to the flexor carpi ulnaris tendon
- d) At the wrist just lateral to the flexor carpi ulnaris tendon
- e) At the wrist just lateral to the palmaris longus tendon

< Previous  Next >  See Answer

Something wrong?
Anatomy: Forearm and Hand

Question 13 of 102

You are demonstrating a vascular examination on a patient to a group of medical students. Where is the radial artery pulsation best palpated?

a) At the wrist just lateral to the flexor carpi radialis tendon ✓

b) At the wrist just lateral to the flexor carpi ulnaris tendon

c) At the wrist just medial to the flexor carpi radialis tendon

d) At the wrist just lateral to the flexor carpi ulnaris tendon

e) At the wrist just lateral to the palmaris longus tendon

Answer

In the distal forearm, the radial artery lies immediately lateral to the large tendon of the flexor carpi radialis muscle and directly anterior to the pronator quadratus and the distal end of the radius; the pulse can be located by using the flexor carpi radialis muscle as a landmark.

Notes

The radial artery, branch of the brachial artery, passes along the lateral aspect of the forearm, lying deep to the brachioradialis muscle proximally, and distally being covered only by skin and fascia, making this an ideal location to palpate the pulse or to gain arterial access (duplicated just lateral to the flexor carpi radialis tendon, while compressing the artery against the radius bone). The radial artery enters the hand by curving around the lateral side of the wrist, passing over the floor of the anatomical snuffbox and penetrating the dorsolateral aspect of the hand between the bases of the first and second metacarpal bones.

The larger ulnar artery, also a branch of the brachial artery, enters the forearm by passing deep to the pronator teres muscle and passes down the medial side of the forearm between the flexor carpi ulnaris and the flexor digiti minimi profundus muscles. The ulnar artery enters the hand, passing lateral to the pisiform bone and superficial to the flexor retinaculum. The ulnar artery gives rise to the common interosseous artery.

The palmar and dorsal carpal arches are formed from anastomosis between the carpal branches of the radial and ulnar arteries, and supply the wrist and carpal bones.

Deep veins of the anterior compartment generally accompany the arteries and ultimately drain into brachial veins associated with the brachial artery in the cubital fossa.

By Henry Varela-Carter (Public domain), via Wikimedia Commons
Anatomy: Forearm and Hand

A 30 year old man attends ED with a deep knife wound to his distal forearm. He is unable to hold a piece of paper between his fingers and is complaining of loss of sensation over the medial side of his hand and little finger. Which of the following nerves is most likely to have been affected:

a) Radial nerve
b) Median nerve
c) Ulnar nerve
d) Posterior interosseous nerve
e) Anterior interosseous nerve

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

- The forearm contains the muscles and tendons that control hand and arm
  movement.

- The diagram shows the major structures of the forearm:
  - Muscles:
    - Extensor muscles: Located on the posterior side of the forearm and
      control extension of the wrist and fingers.
    - Flexor muscles: Located on the anterior side of the forearm and
      control flexion of the wrist and fingers.
  - Tendons:
    - Extensor tendons: Lead from the muscles to the bones of the hand,
      allowing for extension.
    - Flexor tendons: Lead from the muscles to the bones of the hand,
      allowing for flexion.

- The hand contains the digits and associated muscles and tendons:
  - Digits:
    - Fingers: The five digits of the hand, each with its own muscles and
      tendons.
    - Thumb: The first digit, with unique muscles and tendons.
  - Muscles:
    - Intrinsic muscles: Deep muscles of the hand that control digit
      movement.
    - Extrinsic muscles: Muscles that cross the wrist and control
      movement of the fingers and thumb.
  - Tendons:
    - Extensor tendons: Lead from the muscles to the metacarpophalangeal
      joints, allowing for extension.
    - Flexor tendons: Lead from the muscles to the carpometacarpal
      joints, allowing for flexion.

- The wrist contains the bones and joints that connect the forearm to the hand:
  - Bones:
    - Radius and Ulna: The two long bones of the forearm.
    - Carpal bones: Eight bones in the wrist that serve as a platform for
      the fingers.
  - Joints:
    - Radiocarpal joint: The joint between the radius and the carpal bones.
    - Ulnocarpal joint: The joint between the ulna and the carpal bones.

- The elbow contains the bones and joints that allow movement of the arm:
  - Bones:
    - Humerus: The bone of the upper arm.
    - Ulna and Radius: The two bones of the forearm.
  - Joints:
    - Elbow joint: The joint between the humerus and the ulna.

- The muscles of the forearm and hand are innervated by the median, ulnar, and
  radial nerves.

- The blood supply to the forearm and hand is provided by the brachial artery
  and the radial and ulnar arteries.

- The lymphatic drainage of the forearm and hand is primarily to the axillary
  lymph nodes.

- The nervous system innervation of the forearm and hand is provided by the
  median, ulnar, and radial nerves.
Anterior interosseous syndrome

Hand posture in anterior interosseous syndrome due to paresis of flexor digitorum profundis and flexor pollicis longus mm.
Anatomy: Forearm and Hand

Question 55 of 102

You are giving a tutorial regarding forearm injuries to a group of final year medical students. You are discussing Galeazzi fractures. Which of the following synovial joint types best describes the radioulnar joints:

a. Synovial plane joints
b. Synovial modified hinge joints
c. Synovial saddle joints
d. Synovial condyloid joints
e. Synovial pivot joints

< Previous  Next >  See Answer  Something wrong?

Question Navigator

47  Answered
48  Answered
49  Answered
50  Answered
51  Answered
52  Answered
53  Answered
54  Answered
55  Current Question
56  Unanswered
57  Unanswered
58  Unanswered

Clear Exam
Anatomy: Forearm and Hand

You are giving a tutorial regarding forearm injuries to a group of final year medical students. You are discussing Galeazzi fractures. Which of the following synovial joint types best describes the radialouar joints:

- a) Synovial plane joints
- b) Synovial indifferent hinge joints
- c) Synovial saddle joints
- d) Synovial condylar joints
- e) Synovial pivot joints

Answer

The radialouar joints are synovial pivot joints.

Notes

The radialouar joints allow pronation and supination of the forearm.

Movement

<table>
<thead>
<tr>
<th>Muscles Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pronation</td>
</tr>
<tr>
<td>Supination</td>
</tr>
</tbody>
</table>

The proximal radialouar joint is a pivot type synovial joint occurring between the head of the radius and the radial notch of the ulna. The radial head is held in position by the annular ligament of the radius.

<table>
<thead>
<tr>
<th>Joint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proximal radialouar</td>
</tr>
</tbody>
</table>

Type

| Synovial pivot |

Articulations

| Head of radius with radial notch of ulna |

Stabilising factors

| Annular ligament |

Movements

| Pronation and supination |

The distal radialouar joint is a pivot type synovial joint occurring between the head of the ulna and the ulnar notch on the radius.

<table>
<thead>
<tr>
<th>Joint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distal radialouar</td>
</tr>
</tbody>
</table>

Type

| Synovial pivot |

Articulations

| Head of ulna with ulnar notch of radius |

Movements

| Pronation and supination |

Resources

- The Royal College of Emergency Medicine
- Irish Association for Emergency Medicine
- Advanced Trauma Life Support
- Advanced Life Support (UK)
- Truck Medicine
- Trauma Team
- Radiopedia
- Advanced Life Support Group
- Emergency Medicine Journal
- Unrelated Stuff
- Patient.co.uk

FRCEM Success

We are an online revision resource for FRCEM anatomy and intermediate exam preparation.

Terms & Conditions

Get in Touch

©2014 - 2021 FRCEM Success | Website designed & hosted by Cyberfly Design
Anatomy: Forearm and Hand

You have been asked to review a wound on the hand of a 42 year old gardener. He sustained a deep laceration to the right palm whilst cutting down a bush. You are concerned by the depth of the wound and consider if there has been damage to any underlying structures. The palmar aponeurosis originates from which of the following structures:

- a. Tendon of the flexor carpi ulnaris
- b. Tendon of the palmaris longus
- c. Tendon of the flexor carpi radialis
- d. Tendon of the flexor digitorum superficialis
- e. Tendon of the flexor digitorum profundus
Anatomy: Forearm and Hand

Question 56 of 102

You have been asked to review a wound on the hand of a 42 year old gardener. He sustained a deep laceration to the right palm whilst cutting down a bush. You are concerned by the depth of the wound and consider if there has been damage to any underlying structures. The palmar aponeurosis originates from which of the following structures:

a) Tendon of the flexor carpi ulnaris
b) Tendon of the palmaris longus ➙
c) Tendon of the flexor carpi radialis
d) Tendon of the flexor digitorum superficialis
e) Tendon of the flexor digitorum profundus

Answer

The palmar aponeurosis is continuous with the palmaris longus tendon.

Notes

The palmar aponeurosis is a thickened area of palmar fascia which is continuous proximally with the palmaris longus tendon and the flexor retinaculum. Distally, the palmar aponeurosis fans out into four slips which become the fibrous digital sheaths.

The palmar aponeurosis protects the underlying soft tissue and long flexor tendons. The fibrous digital sheaths cover the synovial sheaths which contain the flexor tendons, maintaining the tension and preventing bowstringing.

By Henry Vandyke Carter (Public domain), via Wikimedia Commons
Anatomy: Forearm and Hand

Question 57 of 102

A 43 year old artist presents to the ED complaining of numbness in his fingertips. On examination you note loss of sensation to the palmar aspect and fingertips of the lateral three and a half digits. Which of the following nerves is most likely affected:

a) The superficial branch of the radial nerve
b) The palmar cutaneous branch of the median nerve
c) The palmar cutaneous branch of the ulnar nerve
d) The superficial branch of the ulnar nerve
e) The palmar digital branch of the median nerve
Anatomy: Forearm and Hand

Notes

- The lateral scaphoid branch of the radial artery supplies the skin over the upper half of the lateral aspect of the hand.
- The ulnar palmar branch of the ulnar artery supplies the skin of the hand between the metacarpals and digits.
- The recurrent motor branch of the median nerve supplies the skin over the palmar aspect of the hand.
- The digital branches of the median nerve supply the skin of the fingers and thumb.

Resources

- The Hand: Orthopaedic Principles and Practice
- Advanced Neuromuscular Anatomy (Hand)
Anatomy: Forearm and Hand

A 72 year old man is brought to the ED by his daughter. He is complaining of a numbness in his right arm. On examination you note he has lost sensation to the posterior forearm. The skin over the posterior forearm is supplied by which of the following nerves:

- a The posterior cutaneous nerve of the forearm, branch of the ulnar nerve
- b The posterior cutaneous nerve of the forearm, branch of the median nerve
- c The posterior cutaneous nerve of the forearm, branch of the radial nerve
- d The posterior cutaneous nerve of the forearm, branch of the musculocutaneous nerve
- e The posterior cutaneous nerve of the forearm, from the brachial plexus
Anatomy: Forearm and Hand

A 72 year old man is brought to the ED by his daughter, he is complaining of 12 hours of right arm pain. On examination you note he is favoring the arm to the posterior forearm. The slide over the posterior forearms is supplied by all of the following nerves:

1. The posterior cutaneous nerve of the forearm, branch of the radial nerve
2. The posterior cutaneous nerve of the forearm, branch of the radial nerve
3. The posterior cutaneous nerve of the forearm, branch of the radial nerve
4. The posterior cutaneous nerve of the forearm, branch of the radial nerve

The posterior cutaneous nerve of the forearm supplies the skin over the posterior forearm.

Notes

NERVE ORIGIN BRANCHES SUPPLIED Lateral cutaneous anterior nerve Cutaneous branch of C5, C6 Upper half of anterolateral aspect of forearm Superficial lateral cutaneous nerve of the arm Axillary nerve Lower half of lateral aspect of forearm Medial cutaneous nerve of the arm Medial cutaneous nerve of the arm Lower half of medial aspect of forearm Median nerve Median nerve Medial and lateral aspects of forearm Musculocutaneous nerve Median nerve and lateral aspect of forearm Radial nerve Medial half of upper arm Brachioradialis branch of radial nerve Ulnar nerve Lower one third of upper arm Brachial cutaneous branch of ulnar nerve Ulnar nerve Medial aspect of upper arm and lateral aspect of forearm Flexor superficialis branch of ulnar nerve Ulnar nerve Medial aspect of upper arm and lateral aspect of forearm Median nerve Median nerve Medial aspect of upper arm and lateral aspect of forearm

In the body of the arm:

- The lateral cutaneous branch of the ulnar nerve, on the side of the humerus, supplies the skin over the superficial half of the anterior arm.
- The median nerve supplies the skin over the medial half of the arm, the olecranon, and the posterior aspect of the arm.

In the forearm:

- The lateral cutaneous nerve of the forearm, branch of the radial nerve, supplies the skin over the lateral half of the forearm.
- The ulnar nerve supplies the medial half of the arm and forearm.

In the hand:

- The superficial branch of the radial nerve supplies the skin over the dorsum of the hand.
- The superficial branch of the ulnar nerve supplies the skin over the palmar aspect of the thumb, index, long, middle, and ring fingers.
- The superficial branch of the median nerve supplies the skin over the palmar aspect of the thumb, index, and long fingers.
- The palmar digital branch of the median nerve supplies the skin over the palmar surfaces and the web spaces of the hand and the fingers.
Anatomy: Forearm and Hand

Question 59 of 102

A 16 year old boy sustains a supracondylar fracture falling off his skateboard. He is unable to flex the distal interphalangeal joint of his index finger. Which of the following clinical finding are you most likely to see on further examination:

a. Inability to flex the distal interphalangeal joint of the ring finger
b. Loss of supination of the forearm
c. Loss of sensation over the lateral dorsum of the hand.
d. Inability to oppose the thumb
e. Inability to abduct the fingers

< Previous  Next >  See Answer
A 20 year old woman sustains an injury to the median nerve at the wrist after self harming. Which of the following clinical features would you least expect to see:

- Loss of abduction and opposition of the thumb
- Loss of sensation over lateral half of palm
- Loss of sensation to skin over palmar surface of lateral 3 and a half digits
- Weakness of flexion of the index and middle finger
- Thenar eminence wasting
Anatomy: Forearm and Hand

Question 61 of 102

A 69 year old lady presents to ED having tripped on a curb and fallen on her left arm. Imaging shows a midshaft fracture of the humerus. Which of the following structures was most likely injured:

a. Axillary nerve and axillary artery
b. Radial nerve and deep brachial artery
c. Axillary nerve and posterior humeral circumflex artery
d. Long thoracic nerve and lateral thoracic artery
e. Ulnar nerve and cephalic vein

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

A 29 year old woman presents to ED after injuring her left elbow. She is complaining of weak grip in her left hand. You ask her to hold onto a piece of paper with both hands as you try to pull it away from her. She is unable to hold onto the piece of paper in her left hand without flexing the distal joint of the thumb. Which of the following nerves is most likely to be damaged:

a Axillary
b Median
c Musculocutaneous
d Radial
e Ulnar
Anatomy: Forearm and Hand

Question 63 of 102

You are examining the arm of a 34 year old man who has injured his radial nerve. You test the muscles supplied by the radial nerve. The brachioradialis muscle primarily assists with which of the following movements:

- a. Flexion of the forearm
- b. Flexion of the arm
- c. Flexion of the hand
- d. Supination of the forearm
- e. Pronation of the forearm

< Previous  Next  See Answer  Something wrong? >

FRCEM Success

We are an online revision resource for FRCEM Primary and Intermediate exam preparation.

Terms & Conditions
Get in Touch

Resources

- The Royal College of Emergency Medicine
- Irish Association for Emergency Medicine
- Advanced Trauma Life Support
- Resuscitation Council (UK)
- TeachMeAnatomy
- Trauma.org
- Radiopaedia

Advanced Life Support Group
Emergency Medicine Journal
Lifeinthefastlane
Instant Anatomy
Patient.co.uk
Anatomy: Forearm and Hand

Functional anatomy

You are reviewing the arm of a 5-year-old boy who has injured the radial nerve. "You saw him run really quickly down the road. The dangling elbow made privately exude without which of the following movements:

<table>
<thead>
<tr>
<th>Movements of the forearm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion of the forearm</td>
</tr>
<tr>
<td>Extension of the forearm</td>
</tr>
<tr>
<td>Pronation of the forearm</td>
</tr>
<tr>
<td>Supination of the forearm</td>
</tr>
</tbody>
</table>

Answer

The functional movements in an anatomy class of the forearm are flexion and extension. Therefore, the correct answer is B. Flexion of the forearm.

Note:

Transverse foramen for the median nerve is located on the radial aspect of the elbow.

Muscle origin:

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Action</th>
<th>Insertion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brachioradialis</td>
<td>Extension of the elbow</td>
<td>Lateral and posterior surface of the humerus</td>
</tr>
<tr>
<td>Extensor carpi radialis longus</td>
<td>Extension and abduction of the elbow</td>
<td>Lateral epicondyle of the humerus</td>
</tr>
<tr>
<td>Extensor carpi radialis brevis</td>
<td>Extension of the elbow</td>
<td>Lateral epicondyle of the humerus</td>
</tr>
<tr>
<td>Extensor digitorum</td>
<td>Extension of the fingers</td>
<td>Extensor retinaculum</td>
</tr>
<tr>
<td>Extensor digiti minimi</td>
<td>Extension of the little finger</td>
<td>Extensor retinaculum</td>
</tr>
<tr>
<td>Extensor pollicis longus</td>
<td>Extension of the thumb</td>
<td>Base of the first metacarpal bone</td>
</tr>
<tr>
<td>Extensor pollicis brevis</td>
<td>Extension of the thumb</td>
<td>Base of the first metacarpal bone</td>
</tr>
<tr>
<td>Extensor indicis</td>
<td>Extension of the index finger</td>
<td>Base of the first metacarpal bone</td>
</tr>
</tbody>
</table>

A detailed knowledge of the skeleton is important to understand the muscle functions. The anterior compartment of the forearm contains the flexor muscles that bring the hand to the body, and the posterior compartment contains the extensor muscles that extend the arm. The intrinsic muscles of the hand control finger movement and are supplied by the median and ulnar nerves. The extrinsic muscles of the hand originate from the forearm and insert on the hand, and they control movement of the hand and fingers. The flexors of the forearm are the muscles that flex the elbow and pronate the forearm, while the extensors of the forearm are the muscles that extend the elbow and supinate the forearm. The muscles of the hand are divided into two groups: the extrinsic muscles, which originate from the forearm and insert on the hand, and the intrinsic muscles, which originate and insert on the hand. The extrinsic muscles include the flexors and extensors of the fingers and thumb, while the intrinsic muscles include the muscles that control opposition and adduction of the thumb. The muscles of the hand are innervated by the median and ulnar nerves, and they are supplied by the anterior and posterior interosseous arteries. The muscles of the hand are important for fine finger movement and are involved in tasks such as grasping and manipulating objects. The muscles of the hand are also important for hand function and are affected by conditions such as arthritis and tendon injuries.
Anatomy: Forearm and Hand

Question 64 of 102

A 28 year old man presents to ED with a stab wound to the first dorsal compartment of the wrist of his left hand. Which of the following tendons may be affected in this injury:

- **a** Extensor carpi radialis longus and brevis
- **b** Extensor pollicis brevis and abductor pollicis longus
- **c** Extensor pollicis longus and extensor pollicis brevis
- **d** Abductor pollicis longus and brevis
- **e** Extensor pollicis longus

< Previous  Next >  See Answer  Something wrong?  Clear Exam
Anatomy: Forearm and Hand

Question 44 of 120

A 28-year-old man presents to ED with a stab wound to the first dorsal compartment of the wrist of his left hand. Which of the following tendons may be affected in this injury?

- A. Extensor carpi radialis longus and brevis
- B. Extensor pollicis brevis and abductor pollicis longus
- C. Extensor pollicis brevis and extensor pollicis longus
- D. Extensor pollicis longus and brevis
- E. Extensor pollicis longus

Answer

Extensor tendons in the dorsal compartments of the wrist (from lateral to medial):

1. Extensor pollicis brevis and abductor pollicis brevis
2. Extensor carpi radialis longus and brevis
3. Extensor pollicis longus
4. Extensor digitorum and extensor indicis
5. Extensor digiti minimi
6. Extensor carpi ulnaris

Notes

The extensor retinaculum (dorsal carpal ligament) lies obliquely across the exterior surface of the wrist joint, and holds the extensor tendons in place during movement of the wrist.

It is attached laterally to the anconeal process above the styloid process and medially to the pisiform and triquetrum bones. It does NOT attach to the ulna.

The extensor tendons pass through the extensor tunnel, deep to the extensor retinaculum, in its compartments lined by synovial sheaths:

- The tendon of the extensor digitorum and extensor indicis share a synovial sheath on the posterior surface of the wrist.
- The tendons of the extensor carpi ulnaris and extensor digiti minimi have separate sheaths on the medial side of the wrist.
- The tendons of the abductor pollicis longus and extensor pollicis brevis, the extensor carpi radialis longus and extensor carpi radialis brevis and the extensor pollicis longus have three separate sheaths on the lateral side of the wrist.

By Hendrik Vanhaverbeke Corti (Public domain), via Wikimedia Commons
Anatomy: Forearm and Hand

A 54 year old woman presents to the ED complaining of pain and swelling over the site of her recent carpal tunnel decompression. Which of the following structures passes into the hand anterior to the flexor retinaculum:

- Flexor carpi radialis tendon
- Flexor pollicis longus tendon
- Median nerve
- Flexor digitorum superficialis tendon
- Ulnar artery

< Previous  Next >  See Answer  Something wrong?

Question Navigator

<table>
<thead>
<tr>
<th>Question</th>
<th>Answered</th>
</tr>
</thead>
<tbody>
<tr>
<td>47</td>
<td>Answered</td>
</tr>
<tr>
<td>48</td>
<td>Answered</td>
</tr>
<tr>
<td>49</td>
<td>Answered</td>
</tr>
<tr>
<td>50</td>
<td>Answered</td>
</tr>
<tr>
<td>51</td>
<td>Answered</td>
</tr>
<tr>
<td>52</td>
<td>Answered</td>
</tr>
<tr>
<td>53</td>
<td>Answered</td>
</tr>
<tr>
<td>54</td>
<td>Answered</td>
</tr>
<tr>
<td>55</td>
<td>Answered</td>
</tr>
<tr>
<td>56</td>
<td>Answered</td>
</tr>
<tr>
<td>57</td>
<td>Answered</td>
</tr>
<tr>
<td>58</td>
<td>Answered</td>
</tr>
</tbody>
</table>

Clear Exam
Anatomy: Forearm and Hand

A 54-year-old woman presents to the ED complaining of pain and swelling over the site of her recent carpal tunnel decompression. Which of the following structures passes into the hand anterior to the flexor retinaculum?

- a. Flexor carpi radialis tendon
- b. Flexor pollicis longus tendon
- c. Median nerve
- d. Flexor digitorum superficialis tendon
- e. Ulnar artery

Answer

The ulnar artery, ulnar nerve, and tendon of the palmaris longus pass into the hand anterior to the flexor retinaculum, and therefore do not pass through the carpal tunnel.

Notes

The flexor retinaculum (transverse carpal ligament) is a thickened band of fibrous connective tissue on the volar aspect of the hand which forms the roof of the carpal tunnel. The flexor retinaculum holds the flexor tendons in place at the wrist and prevents them from bowstringing.

It is attached laterally to the scaphoid and trapezium and medially to the pisiform and the hook of the hamate.

The thenar and hypothenar muscles arise from the flexor retinaculum.

The ulnar artery, ulnar nerve, and tendon of the palmaris longus pass into the hand anterior to the flexor retinaculum, and therefore do not pass through the carpal tunnel.

The flexor carpi radialis tendon passes through the lateral aspect of the flexor retinaculum into the hand.

The four tendons of the flexor digitorum profundus, the four tendons of the flexor digitorum superficialis, the tendon of the flexor pollicis longus and the median nerve pass into the hand posterior to the flexor retinaculum, within the carpal tunnel.

Resources

- The Royal College of Emergency Medicine
- Irish Association for Emergency Medicine
- Advanced Trauma Life Support
- Resuscitation Council (UK)
- Sea-Watch Ireland
- TraumaCare
- FirstAidCare
- Advanced Life Support Group
- Emergency Medicine Journal
- LittleRed Useful
- Instant Anatomy
- Resuscitation
Anatomy: Forearm and Hand

A patient presents to ED complaining of pins and needles over the lateral three and a half digits. You suspect carpal tunnel syndrome. Which of the following clinical features would you most expect to see on examination:

- a. Atrophy of the adductor pollicis muscle
- b. Inability to abduct the index finger
- c. Inability to flex the distal interphalangeal joint of the index finger
- d. Inability to flex the interphalangeal joint of the thumb
- e. Inability to touch the pad of the little finger with the thumb

< Previous  Next >  See Answer  Something wrong?

Clear Exam
Anatomy: Forearm and Hand

Question 67 of 102

A patient presents to ED complaining of weakness in her left arm. She tells you she sustained a fracture to this arm about 2 months ago, but is unable to give you more detail. Examination reveals loss of wrist extension and weakness of grasp. Extension at the elbow joint is normal, and there is no loss of sensation. Which of the following nerves is most likely affected:

- a. Posterior interosseous nerve
- b. Superficial branch of the radial nerve
- c. Recurrent branch of the median nerve
- d. Ulnar nerve
- e. Anterior interosseous nerve
Anatomy: Forearm and Hand

A forearm consists of two bones, the humerus and the radius. The humerus forms the upper arm, while the radius articulates with the ulna to form the lower arm.

Medics

<table>
<thead>
<tr>
<th>Muscles</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biceps Brachii</td>
<td>Flexes the forearm at the elbow</td>
</tr>
<tr>
<td>Brachioradialis</td>
<td>Extends the forearm and flexes the elbow</td>
</tr>
<tr>
<td>Pronator Teres</td>
<td>Pronates the forearm</td>
</tr>
<tr>
<td>Pronator Radialis</td>
<td>Pronates the forearm and flexes the elbow</td>
</tr>
<tr>
<td>Supinator</td>
<td>Supinates the forearm</td>
</tr>
</tbody>
</table>

Bones

- Humerus
- Radius
- Ulna
- Carpals
- Metacarpals
- Phalanges

Surgery

- Arthroscopy of hand joints
- Arthroscopy of elbow joint

Electrophysiology

- Nerve conduction velocity test
- Electromyography

Imaging

- Ultrasound
- MRI
- CT scan

References


For more information, please visit our website: [PRCEMS Success](http://www.prcemssuccess.com).

---

**PRCEMS Success**

- [Home](#)
- [About Us](#)
- [Services](#)
- [Contact](#)
- [Privacy Policy](#)
- [Terms of Service](#)

---

**PRCEMS Success**

- [Home](#)
- [About Us](#)
- [Services](#)
- [Contact](#)
- [Privacy Policy](#)
- [Terms of Service](#)
Anatomy: Forearm and Hand

A patient presents to ED complaining of weakness in her right hand. After examination, you suspect weakness of the lumbral muscles. Regarding the lumbral muscles, which of the following statements is CORRECT:

a. The lumbral muscles originate from the tendons of the flexor digitorum superficialis muscle.

b. The lumbral muscles insert into the distal phalanges of the medial four fingers.

c. The lumbral muscles act to flex the fingers at the metacarpophalangeal joints.

d. The lumbral muscles are all innervated by the ulnar nerve.

e. The lumbral muscles act to flex the fingers at the interphalangeal joints.
Anatomy: Forearm and Hand

Question 68 of 102

A patient presents to ED complaining of weakness in her right hand. After examination, you suspect weakness of the lumbrical muscles. Regarding the lumbrical muscles, which of the following statements is CORRECT:

a) The lumbrical muscles originate from the tendons of the flexor digitorum superficialis muscle.
b) The lumbrical muscles insert into the distal phalanges of the medial four fingers.
c) The lumbrical muscles act to flex the fingers at the metacarpophalangeal joints. ✔
d) The lumbrical muscles are all innervated by the ulnar nerve.
e) The lumbrical muscles act to flex the fingers at the interphalangeal joints.

Answer

The lumbrical muscles act to flex these fingers at the metacarpophalangeal joints (MCPs) and extend them at the interphalangeal joints (IPs).

Notes

The lumbrical muscles originate from the tendons of the flexor digitorum profundus in the palm and insert into the extensor hood of the medial four fingers.

The lumbrical muscles act to flex these fingers at the metacarpophalangeal joints (MCPs) and extend them at the interphalangeal joints (IPs).

The medial two lumbricals are innervated by the ulnar nerve and the lateral two lumbricals are innervated by the median nerve.

Modified by FRCEM Success. Original by CFPC (Own work) [CC BY-SA 4.0] (http://creativecommons.org/licenses/by-sa/4.0), via Wikimedia Commons
Anatomy: Forearm and Hand

Question 69 of 102

A patient presents to ED complaining of pain and paraesthesia in her right hand which becomes worse at night. Her symptoms have been ongoing for about 6 months. You suspect carpal tunnel syndrome. Which of the following muscles would you most expect to be atrophied on examination:

a. Hypothenar muscles
b. Dorsal interossei
c. Thenar muscles
d. Palmar interossei
e. Medial two lumbricals

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

Question 70 of 102

A 16 year old boy is brought to ED having fallen off his skateboard. He is complaining of pain and weakness in his right upper limb. Imaging shows a fracture of the medial epicondyle. Which of the following movements would you most expect to be affected in this type of injury:

- a. Abduction of the thumb
- b. Extension of the thumb
- c. Opposition of the thumb
- d. Adduction of the thumb
- e. Flexion of the thumb
Anatomy: Forearm and Hand

A patient presents to ED having fallen on her left arm at a roller disco party. She has fractured the medial epicondyle of the humerus and damaged the nerve most commonly associated with this type of injury. Which of the following would you most expect to be affected:

a. Flexion of the proximal interphalangeal joint of the ring ringer
b. Flexion of the distal interphalangeal joint of the index finger
c. Abduction of the index finger
d. Abduction of the thumb
e. Sensation over the middle finger
Anatomy: Forearm and Hand

- The anatomy of the forearm and hand is important for understanding various medical conditions and surgical procedures.

- The diagram illustrates the major blood vessels, nerves, and tendons of the forearm and hand.

- The diagram also highlights the location of the elbow joint and the wrist joint.

- The diagram is used in medical education and in the planning of surgical procedures.
Anatomy: Forearm and Hand

Question 72 of 102

A 21 year old female presents to ED following an attempted suicide attempt. She has a deep laceration to her anterior forearm. Further exploration shows she has divided the flexor digitorum superficialis muscle and has injured the nerve that lies between this and the flexor digitorum profundus muscle. Which of the following movements would most likely be affected as a result of this injury:

- a Abduction of the fingers
- b Opposition of the thumb
- c Adduction of the thumb
- d Extension of the fingers at the metacarpophalangeal joints
- e Adduction of the wrist
Anatomy: Forearm and Hand

A 21 year old man presents to ED with multiple lacerations to his right upper limb, after falling through a ground floor window during a fight. He is unable to flex the distal interphalangeal joints of the fourth and fifth digits. Which of the following muscles is most likely affected:

- a) Flexor digitorum superficialis
- b) Flexor digitorum profundus
- c) Lumbricals
- d) Flexor carpi ulnaris
- e) Interossei

< Previous  Next >  See Answer  Something wrong?
**Anatomy: Forearm and Hand**

**Question Navigator**
- 1. Answered
- 2. Answered
- 3. Answered
- 4. Answered
- 5. Answered
- 6. Answered
- 7. Answered
- 8. Answered
- 9. Answered
- 10. Answered
- 11. Answered
- 12. Answered

**Hand Movements**

<table>
<thead>
<tr>
<th>Movement</th>
<th>Primary Muscle(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion of MCP of digits 2-5</td>
<td>Lumbricals, flexor digitorum superficialis, flexor digitorum profundus (fingers), interossei</td>
</tr>
<tr>
<td>Flexion of MP of digits 2-5</td>
<td>Lumbricals, flexor digitorum superficialis, flexor digitorum profundus (fingers), interossei</td>
</tr>
<tr>
<td>Extension of MCP of digits 2-5</td>
<td>Extensor digitorum communis, extensor carpi ulnaris, extensor carpi radialis brevis</td>
</tr>
<tr>
<td>Extension of MP of digits 2-5</td>
<td>Extensor digitorum communis, extensor carpi ulnaris, extensor carpi radialis brevis</td>
</tr>
<tr>
<td>Abduction of digits 2-5</td>
<td>Pronator teres</td>
</tr>
<tr>
<td>Abduction of digits 2-4</td>
<td>Pronator teres</td>
</tr>
<tr>
<td>Opposite of little finger</td>
<td>Opponens digitii minimi</td>
</tr>
</tbody>
</table>

**Thumb Movements**

<table>
<thead>
<tr>
<th>Movement</th>
<th>Primary Muscle(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion of thumb at MCP</td>
<td>Flexor pollicis longus and brevis</td>
</tr>
<tr>
<td>Flexion of thumb at IP</td>
<td>Flexor pollicis longus</td>
</tr>
<tr>
<td>Extension of thumb at MCP and IP</td>
<td>Extensor pollicis longus and brevis</td>
</tr>
<tr>
<td>Extension of thumb at IP</td>
<td>Extensor pollicis longus</td>
</tr>
<tr>
<td>Abduction of thumb</td>
<td>Abductor pollicis longus and brevis</td>
</tr>
<tr>
<td>Adduction of thumb</td>
<td>Adductor pollicis</td>
</tr>
<tr>
<td>Opposition of thumb</td>
<td>Opponens pollicis</td>
</tr>
</tbody>
</table>
Anatomy: Forearm and Hand

A 54 year old man presents to the ED after tripping on a kerb. He tells you he fell onto his outstretched right hand. He complains of pain in his right wrist and on examination you note anatomical snuffbox tenderness. Which of the following structures passes through the anatomical snuffbox:

- a) Median nerve
- b) Ulnar nerve
- c) Radial artery
- d) Basilic vein
- e) Palmaris longus tendon
Anatomy: Forearm and Hand

Answers: Ed2

A 50-year-old man presents to the ED after tripping on a curb. He tells you he “hit his outstretched right hand.” He complains of pain in his right wrist and on examination you note anatomical snuffbox tenderness. Which of the following structures passes through the anatomical snuffbox?

a) Median nerve
b) Ulnar nerve
c) Radial artery
 d) Brachioradialis tendon

Answer:

The radial artery is courses in the floor of the anatomical snuffbox, a bony prominence in the posterior triangle of the forearm. The other structures listed do not pass through the anatomical snuffbox.

Notes:

The anatomical snuffbox is the triangular depression formed on the posterolateral side of the dorsal wrist and is formed by the extensor tendons passing to the thumb.

Anatomical

<table>
<thead>
<tr>
<th>Structure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medial border</td>
<td>Tenodesis of extensor pollicis longus</td>
</tr>
<tr>
<td>Lateral border</td>
<td>Tenodesis of abductor pollicis longus and extensor pollicis brevis</td>
</tr>
<tr>
<td>Proximal border</td>
<td>Radial head process</td>
</tr>
<tr>
<td>Dorsal border</td>
<td>1st metacarpal</td>
</tr>
<tr>
<td>Floor</td>
<td>Scaphoid and trapezium bones</td>
</tr>
<tr>
<td>Palmar</td>
<td>Side</td>
</tr>
<tr>
<td>Contents</td>
<td>Radial artery, tendinous portion of the superficial branch of the radial nerve, capitohumeral</td>
</tr>
</tbody>
</table>

This is bounded laterally by the tendons of the abductor pollicis longus and the extensor pollicis brevis, and medially by the tenodesis of the extensor pollicis longus.

The floor of the anatomical snuffbox is formed by the scaphoid and trapezium, and carpal bones. The radial head process can be palpated proximally and the 1st metacarpal can be palpated distally.

The radial artery crosses the floor of the anatomical snuffbox. Subcutaneous muscles prominences of the superficial branch of the radial nerve and the apex of the capitohumeral joint over the anatomical snuffbox.

The anatomical snuffbox is important clinically as the scaphoid is palpable within the snuffbox. Loss of pain and tenderness of the anatomical snuffbox is most likely due to a scaphoid fracture.

Resources:

- Basic Science of Emergency Medicine
- American College of Emergency Physicians
- American Academy of Orthopaedic Surgeons
- ACR Pain Committee
- www.orthobullets.com
- www.orthobullets.com/1962
- www.frcemsuccess.com

Advised by OrthoBullets.com (a division of American Orthopaedic Society for Sports Medicine) ©2016 FRCEMSuccess.com - Website Designed & Created by CyberWeb Design
Anatomy: Forearm and Hand

A 26 year old woman presents complaining of numbness in her right hand. On examination she has no sensation to the skin over the lateral half of the palm. This area is supplied by which of the following nerves:

a. The superficial branch of the radial nerve
b. The palmar cutaneous branch of the median nerve
c. The palmar cutaneous branch of the ulnar nerve
d. The superficial branch of the ulnar nerve
e. The palmar digital branch of the median nerve

Question Navigator

1 Answered
2 Answered
3 Answered
4 Answered
5 Answered
6 Answered
7 Answered
8 Answered
9 Answered
10 Answered
11 Answered
12 Answered

< Previous Next > See Answer Something wrong?

Clear Exam
Anatomy: Forearm and Hand

A 40-year-old woman presents complaining of numbness in her right hand. C cause of her hand symptoms remains uncertain. "Do you have any numbness in your left hand as well?"

**Answer**

The typical brachial plexus lesion is the cervical region. The patient's symptoms of numbness in the hand are consistent with a lesion of the brachial plexus. This is supported by the patient's report of numbness in the left hand as well. The numbness is likely caused by compression of the brachial plexus, which can occur due to various causes, such as entrapment, injury, or compression due to a tumor. Other potential causes of similar symptoms include carpal tunnel syndrome, radial nerve palsy, or ulnar nerve palsy. Further evaluation would be necessary to confirm the diagnosis and determine the appropriate course of treatment.
Anatomy: Forearm and Hand

A 48 year old man presents to ED having sustained a superficial laceration to his wrist on broken glass. Which of the following structures passing superficial to the flexor retinaculum may be damaged in this injury:

- Median and ulnar nerve
- Median nerve and tendon of the flexor digitorum superficialis
- Ulnar artery and ulnar nerve
- Ulnar nerve and radial artery
- Ulnar nerve and tendon of the flexor digitorum superficialis
Anatomy: Forearm and Hand

Question 70 of 132

A 48-year-old man presents to ED having sustained a superficial laceration to his wrist on broken glass. Which of the following structures passing superficial to the flexor retinaculum may be damaged in this injury:

a) Median and ulnar nerve
b) Median nerve and tendon of the flexor digitorum superficialis
c) Ulnar artery and ulnar nerve ✓
d) Ulnar nerve and radial artery
e) Ulnar nerve and tendon of the flexor digitorum superficialis

Answer

The ulnar artery, ulnar nerve, and tendon of the palmaris longus pass into the hand anterior to the flexor retinaculum. The median nerve and the flexor tendons pass into the hand deep to the flexor retinaculum, within the carpal tunnel.

Notes

The flexor retinaculum (transverse carpal ligament) is a thickened band of fibrous connective tissue on the volar aspect of the hand which forms the roof of the carpal tunnel. The flexor retinaculum holds the flexor tendons in place at the wrist and prevents them from bowstringing.

It is attached laterally to the scaphoid and trapezium and medially to the pisiform and the hook of the hamate.

The flexor and hypothenar muscles arise from the flexor retinaculum.

The ulnar artery, ulnar nerve, and tendon of the palmaris longus pass into the hand anterior to the flexor retinaculum, and therefore do not pass through the carpal tunnel.

The flexor carpi radialis tendon passes through the lateral aspect of the flexor retinaculum into the hand.

The four tendons of the flexor digitorum profundus, the four tendons of the flexor digitorum superficialis, the tendon of the palmaris longus and the median nerve pass into the hand posterior to the flexor retinaculum, within the carpal tunnel.

By Henry Vandyke Carter [Public domain], via Wikimedia Commons
Anatomy: Forearm and Hand

Question 77 of 102

Regarding the distal attachments of the posterior forearm muscle tendons, which of the following is paired CORRECTLY:

a. Abductor pollicis longus – Base of proximal phalanx of thumb
b. Extensor pollicis brevis – Base of distal phalanx of thumb
c. Extensor carpi radialis longus – Base of 1st metacarpal
d. Extensor carpi ulnaris – Base of 5th metacarpal
e. Extensor digitorum – Bases of 2nd – 4th metacarpals
Anatomy: Forearm and Hand

**Question 1:**
Regarding the distal attachments of the posterior forearm musculature, which one of the following is correct?

- **A.** Extensor pollicis longus - Base of 2nd phalanges of thumb
- **B.** Extensor pollicis brevis - Base of 2nd phalanges of thumb
- **C.** Extensor carpi ulnaris - Base of 5th metacarpal
- **D.** Extensor digitorum - Base of 1st metacarpal

**Question 2:**
Which of the following structures have NOT been described in detail in this chapter?

- **A.** Muscles of the forearm
- **B.** Extremity of the musculature
- **C.** Musculature of the digital region
- **D.** Musculature of the humeral region

**Answer:**

**Question 1: A. Extensor pollicis longus - Base of 2nd phalanges of thumb**

**Question 2: D. Musculature of the humeral region**

**Notes:**

- The musculature of the forearm is innervated by the radial nerve.
- The posterior forearm is dominated by the superficial flexor group.
  - The superficialis group includes the pronator teres, the flexor carpi radialis, and the flexor digitorum superficialis.
  - The flexor digitorum profundus is part of the deep flexor group.
- The tendinous structures of the extensor digitorum brevis and the extensor digitorum communis are not described in detail.

**Muscles**

- **Muscle:**
  - **Extensor carpi radialis longus:** Radial nerve
  - **Extensor carpi radialis brevis:** Radial nerve
  - **Extensor carpi ulnaris:** Radial nerve
  - **Extensor digitorum:** Radial nerve
  - **Extensor carpi radialis brevis:** Radial nerve
  - **Extensor carpi radialis brevis:** Radial nerve
  - **Extensor carpi ulnaris:** Radial nerve
  - **Extensor digitorum:** Radial nerve
  - **Extensor carpi radii brevis:** Radial nerve
  - **Extensor pollicis brevis:** Radial nerve
  - **Extensor carpi radialis:** Radial nerve
  - **Extensor carpi radialis brevis:** Radial nerve
  - **Extensor digitorum:** Radial nerve
  - **Extensor carpi ulnaris:** Radial nerve
  - **Extensor digitorum:** Radial nerve

**References:**

- Musculature of the forearm
- Extremity of the musculature
- Musculature of the digital region
- Musculature of the humeral region
Anatomy: Forearm and Hand

A 32 year old farmer sustained a puncture wound to the base of the thumb. The wound became infected and the infection spread to the midpalmar space. The tendon(s) of which muscle will most likely be affected:

a. Flexor digitorum profundus
b. Flexor pollicis brevis
c. Flexor pollicis longus
d. Flexor digitorum superficialis
e. Flexor carpi radialis
Anatomy: Forearm and Hand

Question 70 of 302

A 32 year old farmer sustained a puncture wound to the base of the thumb. The wound became infected and the infection spread to the midpalmar space. The tendon(s) of which muscle will most likely be affected:

a) Flexor digitorum profundus  
b) Flexor pollicis brevis  
c) Flexor pollicis longus  
d) Flexor digitorum superficialis  
e) Flexor carpi radialis

Answer

Tenosynovitis in the thumb may spread through the synovial sheath of the flexor pollicis longus tendon, also known as the radial bursa.

Notes

Tenosynovitis can be due to an infection of the synovial sheaths of the digits. Infections may occur in the digital synovial sheath for example after a puncture wound to a finger.

Infection in the middle three fingers is usually contained as they have separate synovial sheaths.

The synovial sheath of the little finger is usually continuous with the common flexor sheath (the ulnar bursa) and thus infection may spread to this sheath and from here to the midpalmar space.

Infections in the thumb may spread to the midpalmar space via the continuous synovial sheath of the flexor pollicis longus, also known as the radial bursa.

By Henry Van Dyke Carter [Public domain], via Wikimedia Commons
Anatomy: Forearm and Hand

A 48 year old presents to ED having sustained a deep laceration to his right upper limb. On examination he is unable to extend the interphalangeal joints of the fourth and fifth digits and extension of the interphalangeal joints of the second and third digits is very weak. Extension at the metacarpophalangeal joints is preserved in all digits. Which of the following nerves has most likely been injured:

- a) Superficial branch of the ulnar nerve
- b) Deep branch of the ulnar nerve
- c) Anterior interosseous nerve
- d) Posterior interosseous nerve
- e) Recurrent branch of the median nerve
Anatomy: Forearm and Hand

The forearm and hand are part of the upper limb and play a crucial role in movement and sensory perception. The forearm consists of the humerus, radius, and ulna. The hand is composed of the carpus (wrist bones), metacarpals (finger bones), and phalanges (fingertip bones). The muscles of the forearm and hand work together to enable a wide range of activities, from grasping objects to manipulating them精细地.
Anatomy: Forearm and Hand

Question 80 of 102

A 21 year old patient sustains a laceration which transects the flexor retinaculum. Regarding the flexor retinaculum, which of the following statements is INCORRECT:

- The flexor retinaculum forms the roof of the carpal tunnel.
- The thenar and hypothenar muscles arise from the flexor retinaculum.
- The ulnar artery passes into the hand anterior to the flexor retinaculum.
- The tendons of the flexor pollicis longus, flexor digitorum profundus and flexor digitorum superficialis pass into the hand posterior to the flexor retinaculum.
- The ulnar nerve and the median nerve pass into the hand posterior to the flexor retinaculum.
Anatomy: Forearm and Hand

Question:
A 25 year old patient sustains a laceration which transects the flexor retinaculum. Regarding the flexor retinaculum, which of the following statements is INCORRECT.

a) The flexor retinaculum forms the roof of the carpal tunnel.

b) The thener and hypothenar muscles arise from the flexor retinaculum.

c) The ulnar artery passes into the hand anterior to the flexor retinaculum.

d) The tendons of the flexor pollicis longus, flexor digitorum profundus and flexor digitorum superficialis pass into the hand posterior to the flexor retinaculum.

e) The ulnar nerve and the median nerve pass into the hand posterior to the flexor retinaculum.

Answer:
The median nerve passes into the hand posterior to the flexor retinaculum, within the carpal tunnel, but the ulnar nerve passes into the hand anterior to the flexor retinaculum.

Notes:
The flexor retinaculum (transverse carpal ligament) is a thickened band of fibrous connective tissue on the volar aspect of the hand which forms the roof of the carpal tunnel. The flexor retinaculum holds the flexor tendons in place at the wrist and prevents them from bowstringing.

It is attached laterally to the scaphoid and trapezium and medially to the pisiform and the hook of the hamate.

The thenar and hypothenar muscles arise from the flexor retinaculum.

The ulnar artery, ulnar nerve, and tendon of the palmaris longus pass into the hand anterior to the flexor retinaculum, and therefore do not pass through the carpal tunnel.

The flexor carpi radialis tendon passes through the lateral aspect of the flexor retinaculum into the hand.

The four tendons of the flexor digitorum profundus, the four tendons of the flexor digitorum superficialis, the tendon of the flexor pollicis longus and the median nerve pass into the hand posterior to the flexor retinaculum, within the carpal tunnel.

By Henry Vandyke Carter (Public domain), via Wikimedia Commons.
Anatomy: Forearm and Hand

You have been asked to review a patient with a Monteggia fracture. The proximal radioulnar joint is primarily supported by which of the following ligaments:

- **a** Ulnar collateral ligament
- **b** Radial collateral ligament
- **c** Annular ligament
- **d** Deltoid ligament
- **e** Transverse humeral ligament
You have been asked to review a patient with a Monteggia fracture. The proximal radial-ulnar joint is primarily supported by which of the following ligaments:

a) Ulnar collateral ligament
b) Radial collateral ligament
c) Annular ligament
- d) Distal radioulnar ligament

Answer

The proximal radial-ulnar joint is a pivot type synovial joint occurring between the head of the radius and the radial notch of the ulna. The radial head is held in position by the annular ligament of the radius. The radial and ulnar collateral ligaments support the ulno-fibrous joint. The transverse humeral ligament spans the interepicondylar suture of the proximal humerus. The distal radioulnar ligament supports the ankle joint.

Notes

The radial-ulnar joint allows pronation and supination of the forearm.

Movement | Muscles Involved
--- | ---
Pronation | Pronator quadratus, pronator teres
Supination | Supinator, biceps brachii

The proximal radial-ulnar joint is a pivot type synovial joint occurring between the head of the radius and the radial notch of the ulna. The radial head is held in position by the annular ligament of the radius.

Joint: Proximal radial-ulnar joint
- Type: Synovial joint
- Articulations: Head of radius with radial notch of ulna
- Stabilising factors: Annular ligament
- Movements: Pronation and supination

The distal radial-ulnar joint is a pivot type synovial joint occurring between the head of the ulna and the ulnar notch on the radius.

Joint: Distal radial-ulnar joint
- Type: Synovial joint
- Articulations: Head of ulna with ulnar notch of radius
- Movements: Pronation and supination

Cleancan process
Triticeal notch
Coronoid process
Proximal radioulnar joint
Interosseous membrane
Radius
Ulnar notch of the radius
Styloid process of ulna
Styloid process of radius
Head of radius
Neck of radius
Radial tuberosity
Distal radioulnar joint

By OpenDataColage [CC BY 3.0 (http://creativecommons.org/licenses/by/3.0)], via Wikimedia Commons
Anatomy: Forearm and Hand

A 32 year old farm worker has presented to the ED with an infected laceration on a finger. You are concerned about the possible spread of infection into the midpalmar space. Infections in the digital synovial sheath of which fingers are most likely to spread to the midpalmar space:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Thumb and index fingers</td>
</tr>
<tr>
<td>b</td>
<td>Lateral three fingers</td>
</tr>
<tr>
<td>c</td>
<td>Medial two fingers</td>
</tr>
<tr>
<td>d</td>
<td>Thumb and little finger</td>
</tr>
<tr>
<td>e</td>
<td>Index and middle finger</td>
</tr>
</tbody>
</table>

Question Navigator

<table>
<thead>
<tr>
<th></th>
<th>Answered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Answered</td>
</tr>
<tr>
<td>2</td>
<td>Answered</td>
</tr>
<tr>
<td>3</td>
<td>Answered</td>
</tr>
<tr>
<td>4</td>
<td>Answered</td>
</tr>
<tr>
<td>5</td>
<td>Answered</td>
</tr>
<tr>
<td>6</td>
<td>Answered</td>
</tr>
<tr>
<td>7</td>
<td>Answered</td>
</tr>
<tr>
<td>8</td>
<td>Answered</td>
</tr>
<tr>
<td>9</td>
<td>Answered</td>
</tr>
<tr>
<td>10</td>
<td>Answered</td>
</tr>
<tr>
<td>11</td>
<td>Answered</td>
</tr>
<tr>
<td>12</td>
<td>Answered</td>
</tr>
</tbody>
</table>

< Previous   Next >

See Answer

Something wrong?

Clear Exam
Anatomy: Forearm and Hand

Question 82 of 102

A 32 year old farm worker has presented to the ED with an infected laceration on a finger. You are concerned about the possible spread of infection into the midpalmar space. Infections in the digital synovial sheath of which fingers are most likely to spread to the midpalmar space:

a) Thumb and index fingers
b) Lateral three fingers
c) Medial two fingers
d) **Thumb and little finger**
e) Index and middle finger

Notes

Infections may occur in the digital synovial sheath for example after a puncture wound of a finger.

Infection in the middle three fingers is usually contained as they have separate synovial sheaths.

The synovial sheath of the little finger is usually continuous with the common flexor sheath and thus infection may spread to this sheath and from here to the midpalmar space.

Infections in the thumb may spread to the midpalmar space via the continuous synovial sheath of the flexor pollicis longus.
A 29 year old woman is brought to the ED after concerns were raised for her welfare by a neighbour. She has a deep laceration to the anterior aspect of the right wrist. You are concerned about an injury to the underlying structures including the flexor retinaculum. The flexor retinaculum is attached laterally to which of the following structures:

- Scaphoid and radius
- Scaphoid and trapezium
- Scaphoid and trapezoid
- Trapezium and trapezoid
- Radius and scaphoid
A 29 year old woman is brought to the ED after concerns were raised for her welfare by a neighbour. She has a deep laceration to the anterior aspect of the right wrist. You are concerned about an injury to the underlying structures including the flexor retinaculum. The flexor retinaculum is attached laterally to which of the following structures:

a) Scaphoid and radius
b) Scaphoid and trapezius
c) Scaphoid and trapezoid
d) Trapezium and trapezoid
e) Radius and scaphoid

Answer

The flexor retinaculum is attached laterally to the scaphoid and trapezius.

Notes

The flexor retinaculum (transverse carpal ligament) is a thickened band of fibrous connective tissue on the volar aspect of the hand which forms the roof of the carpal tunnel. The flexor retinaculum holds the flexor tendons in place at the wrist and prevents them from bowstringing.

It is attached laterally to the scaphoid and trapezius and medially to the plattform and the hook of the hamate.

The thenar and hypothenar muscles arise from the flexor retinaculum.

The ulnar artery, ulnar nerve, and tendon of the palmaris longus pass into the hand anterior to the flexor retinaculum, and therefore do not pass through the carpal tunnel.

The flexor carpi radialis tendon passes through the lateral aspect of the flexor retinaculum into the hand.

The four tendons of the flexor digitorum profundus, the four tendons of the flexor digitorum superficialis, the tendon of the flexor pollicis longus and the median nerve pass into the hand posterior to the flexor retinaculum, within the carpal tunnel.
Anatomy: Forearm and Hand

A 19 year old male attends ED having sustained a stab wound to his upper limb. On examination, the patient is unable to flex the distal interphalangeal joints of the ring and little finger but the proximal interphalangeal joint is intact. Which of the following nerves is most likely affected, and at which level:

- a. Median nerve at elbow
- b. Median nerve at wrist
- c. Ulnar nerve at elbow
- d. Ulnar nerve at wrist
- e. Median nerve in proximal forearm

< Previous  Next >  See Answer
Anatomy: Forearm and Hand

A 35 year old man attends ED having been thrown off his mountain bike and fallen onto his right arm. You note numerous abrasions and bruises. He is unable to extend his right wrist, fingers and thumb, although can extend his elbow. Sensation is abnormal on the lateral dorsum of his right hand. Which of the following nerves has most likely been affected, and at which level:

- **a** Radial nerve, axilla
- **b** Median nerve, arm
- **c** Radial nerve, midhumerus
- **d** Superficial branch of radial nerve, forearm
- **e** Ulnar nerve, forearm
Anatomy: Forearm and Hand

A patient sustains an injury to the proximal median nerve after falling through a glass door. Which of the following muscles would you not expect to be affected:

a. Flexor carpi ulnaris
b. Flexor carpi radialis
c. Flexor digitorum superficialis
d. Flexor digitorum profundus
e. Flexor pollicis longus

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

**Question:**
What muscles in the forearm are innervated by the median nerve, except for the flexor carpi ulnaris and the medial head of the flexor pollicis brevis which are innervated by the ulnar nerve?

**Answer:**

What muscles in the forearm are innervated by the median nerve, except for the flexor carpi ulnaris and the medial head of the flexor pollicis brevis which are innervated by the ulnar nerve?

**Notes:**

The median nerve is a terminal nerve.

- The median nerve is a terminal nerve consisting of the median nerves and the ulnar nerves.
- The median nerve innervates the following muscles:
  - The palmaris longus and the pronator teres muscles.
  - The flexor carpi radialis and the flexor digitorum superficialis muscles.
  - The flexor pollicis longus and the abductor pollicis brevis muscles.
  - The flexor digitorum profundus and the flexor digitorum profundus muscles.
- The median nerve is vulnerable to injury at the elbow, wrist, and carpal tunnel.

**Resources:**

- [Anatomy of the Forearm and Hand](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6379197/)
- [Nerves of the Forearm](https://emedicine.medscape.com/article/1069539-overview#awd-ref-1)

**Images:**

- [Anatomy of the Forearm and Hand](https://commons.wikimedia.org/wiki/File:Anatomy_of_the_Forearm_and_Hand.png)
- [Median Nerve](https://commons.wikimedia.org/wiki/File:Median_nerve.png)
Anatomy: Forearm and Hand

A 17 year old footballer sustains an injury to the proximal ulnar nerve after fracturing his elbow. Which of the following muscles would you least expect to be affected:

- a. Medial two lumbricals
- b. Interossei muscles
- c. Flexor digitorum superficialis
- d. Flexor digitorum profundus
- e. Adductor pollicis

< Previous  Next >  See Answer  Something wrong?  Clear Exam
Anatomy: Forearm and Hand

- The forearm is the part of the arm between the elbow joint and the wrist joint. It is composed of two bones: the radius and the ulna.
- The radius is the shorter bone and lies closer to the thumb side of the hand. The ulna is the longer bone and lies closer to the little finger side of the hand.
- The hand is composed of 27 bones, 30 joints, and more than 40 muscles, tendons, and nerves.
- The hand is divided into three parts: the palm, the back of the hand, and the fingers.
- The palm contains the five digits, which are the fingers: the thumb, index finger, middle finger, ring finger, and little finger.
- The back of the hand contains the wrist, which is composed of eight carpal bones, and the lower arm.
- The fingers are composed of three phalanges (bones): the proximal, middle, and distal phalanges.

Bony Landmarks

<table>
<thead>
<tr>
<th>Landmark</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radius</td>
<td>The larger of the two bones in the forearm.</td>
</tr>
<tr>
<td>Ulna</td>
<td>The smaller of the two bones in the forearm.</td>
</tr>
<tr>
<td>Wrist</td>
<td>The joint where the forearm joins the hand.</td>
</tr>
<tr>
<td>Palm</td>
<td>The soft part of the hand between the wrist and the fingers.</td>
</tr>
<tr>
<td>Fingers</td>
<td>The five digits on the end of the hand: thumb, index, middle, ring, little</td>
</tr>
<tr>
<td>Bones</td>
<td>The 27 bones in the hand: carpals, metacarpals, phalanges.</td>
</tr>
</tbody>
</table>

Muscles, Nerves, and Arteries

- The median nerve runs through the carpal tunnel and supplies sensation to the fingers and muscles of the thumb and index finger.
- The ulnar nerve runs through the cubital tunnel and supplies sensation to the little finger and muscles of the hand.
- The radial nerve supplies sensation to the thumb and index finger.
- The brachial artery supplies blood to the arm and hand.

CLINICAL NOTE

- Trauma to the median nerve can cause a condition called carpal tunnel syndrome, characterized by numbness and tingling in the hand.
- Injuries to the ulnar nerve can result in weakness and wasting of the hand muscles.
- Ischemia of the hand can occur due to occlusion of the arteries, leading to tissue death.

This page is intended for educational purposes and is not intended to replace professional medical advice. Always consult a healthcare provider for medical advice.
Anatomy: Forearm and Hand

Question 88 of 102

A 67 year old woman presents to the ED after falling onto an outstretched hand. You x-ray her left wrist and note no fracture. You discuss the case with your consultant, he advises you to test for anatomical snuffbox tenderness. The anatomical snuffbox is bounded laterally by the tendons of which of the following muscles:

- a Abductor pollicis brevis and extensor pollicis longus
- b Extensor pollicis longus and extensor pollicis brevis
- c Abductor pollicis longus and extensor pollicis brevis
- d Abductor pollicis longus and extensor pollicis longus
- e Abductor pollicis brevis and extensor pollicis brevis

< Previous Next > See Answer

Something wrong?

Clear Exam
Anatomy: Forearm and Hand

Question(s) of IC:

A 67-year-old woman presents to the ED after falling onto an outstretched hand. You note her right wrist and wrist fracture. You discuss the case with your consultant, who advises you to test for anatomical snuffbox tenderness. The anatomical snuffbox is bounded laterally by the tendons of which of the following muscles?

*Abductor pollicis brevis and extensor pollicis longus*

*Extensor pollicis brevis and extensor pollicis longus*

*Extensor pollicis brevis and extensor pollicis longus*

*Abductor pollicis brevis and extensor pollicis longus*

*Abductor pollicis brevis and extensor pollicis longus*

Answer:
The anatomical snuffbox is bounded laterally by the tendons of the abductor pollicis brevis and the extensor pollicis longus.

Notes:
The anatomical snuffbox is the triangular depression formed on the posterolateral aspect of the distal wrist and is bounded cephalad by the extensor tendons passing over the triquetrum.

![Anatomical Snuffbox Diagram]

It is bounded laterally by the tendons of the abductor pollicis brevis and the extensor pollicis longus and medially by the tendon of the extensor pollicis brevis.

The floor of the anatomical snuffbox is formed by the scaphoid and trapezium carpal bones. The radial styloid process can be palpated proximally and the 1st metacarpal can be palpated distally. The radial artery crosses the floor of the anatomical snuffbox. Subcutaneously terminal parts of the superficial branch of the radial nerve and the origin of the cephalic vein pass over the anatomical snuffbox.

The anatomical snuffbox is important clinically as the scaphoid is susceptible within the snuffbox to localized joint pain and tenderness of the anatomical snuffbox is most likely due to a scaphoid fracture.

Resources:

* The Royal College of Emergency Medicine
* Department of Emergency Medicine
* British Society for Trauma and Emergency Medicine
* British Association for Surgery of Trauma
* Emergency Medicine
* Orthopaedics


By Wikipedia Commons
A 27 year old woman sustains an injury to the proximal median nerve after cutting herself whilst separating frozen chicken breasts using a knife. Which of the following muscles would you not expect to be affected:

a. Opponens pollicis
b. Abductor pollicis brevis
c. Flexor pollicis brevis
d. Adductor pollicis
e. Flexor pollicis longus
Anatomy: Forearm and Hand

Question 89 of 102

A 27 year old woman sustains an injury to the proximal median nerve after cutting herself whilst separating frozen chicken breasts using a knife. Which of the following muscles would you not expect to be affected:

a) Opponens pollicis
b) Abductor pollicis brevis
c) Flexor pollicis brevis
d) Adductor pollicis ✅
e) Flexor pollicis longus

Answer

The thenar muscles (opponens pollicis, abductor pollicis brevis and flexor pollicis brevis) are all innervated by the median nerve. The flexor pollicis longus in the anterior forearm is also innervated by the median nerve. The adductor pollicis, an intrinsic hand muscle, is innervated by the ulnar nerve. The muscles of the hand supplied by the median nerve can be remembered using the mnemonic, "LOAF" for Lumbricals 1 & 2, Opponens pollicis, Abductor pollicis brevis and Flexor pollicis brevis.

Notes

The thenar eminence consists of the opponens pollicis, the abductor pollicis brevis and the flexor pollicis brevis. The thenar muscles are all innervated by the median nerve.

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Action</th>
<th>Innervation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opponens pollicis (blue)</td>
<td>Medially rotates thumb</td>
<td>Median nerve</td>
</tr>
<tr>
<td>Abductor pollicis brevis (green)</td>
<td>Abducts thumb at MCPJ</td>
<td>Median nerve</td>
</tr>
<tr>
<td>Flexor pollicis brevis (red)</td>
<td>Flexes thumb at MCPJ</td>
<td>Median nerve</td>
</tr>
</tbody>
</table>

Modified by FRCEM Success. Original by By OpenStax [CC BY 4.0] (http://creativecommons.org/licenses/by/4.0), via Wikimedia Commons
Anatomy: Forearm and Hand

Question 90 of 102

A 32 year old electrician presents to the ED after sustaining a laceration to the forearm. On examination of the hand you note loss of sensation to the lateral dorsal surface. The skin over the lateral dorsum of the hand and the dorsum of the lateral three and a half digits is supplied by which of the following nerves:

- a. The superficial branch of the radial nerve
- b. The deep branch of the radial nerve
- c. The dorsal cutaneous branch of the ulnar nerve
- d. The superficial branch of the ulnar nerve
- e. The digital branch of the median nerve

< Previous  Next >  See Answer  Something wrong?  Clear Exam
Anatomy: Forearm and Hand

**Notes**

- The superficial branch of the radial nerve supplies the skin of the ventral surface of the hand. The skin over the lateral border of the forearm is supplied by the anterior cutaneous nerve of the forearm.

- The deep branch of the anterior cutaneous nerve of the forearm supplies the skin over the anterior border of the proximal forearm and the hand.

- The ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The lateral cutaneous nerve of the forearm supplies the skin over the lateral border of the forearm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.

- The radial cutaneous nerve of the arm supplies the skin over the lateral border of the arm.

- The median nerve supplies the skin over the dorsal surface of the hand.

- The superficial radial nerve supplies the skin over the lateral surface of the forearm.

- The deep branch of the ulnar nerve supplies the skin over the ulnar or medial side of the hand.
Anatomy: Forearm and Hand

A 32 year old man sustains an injury to the proximal radial nerve after falling from a ladder. Which of the following muscles would you not expect to be affected:

a. Brachioradialis
b. Supinator
c. Abductor pollicis longus
d. Extensor digiti minimi
e. Pronator quadratus

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

You are examining the arm of a 23 year old electrician who has sustained a fracture of the humerus following a fall. On examination he finds flexion of the wrist painful. The flexor muscles of the anterior forearm all originate from which of the following structures:

- The medial epicondyle of the humerus
- The lateral epicondyle of the humerus
- The lesser trochanter of the humerus
- The greater trochanter of the humerus
- The intertubercular groove of the humerus

< Previous  |  Next >  |  See Answer  |  Something wrong?

Question Navigator

1. Answered
2. Answered
3. Answered
4. Answered
5. Answered
6. Answered
7. Answered
8. Answered
9. Answered
10. Answered
11. Answered
12. Answered

Clear Exam
Anatomy: Forearm and Hand

Notes

All of the anterior forearm is innervated by the median nerve, except for the flexor carpi ulnaris which is innervated by the ulnar nerve.

The superficial compartment consists of the flexor carpi ulnaris, flexor carpi radialis, palmaris longus, and the anterior interosseous artery.

The intermediate compartment contains the flexor digitorum superficialis, flexor digitorum profundus, and the anterior interosseous nerve.

The deep compartment contains the flexor digitorum profundus, flexor pollicis longus, and the anterior interosseous nerve.

The flexor pollicis longus is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the thumb and the flexion of the digits of the hand.

The flexor digitorum profundus is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor digitorum superficialis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor pollicis brevis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the thumb and the flexion of the digits of the hand.

The flexor digitorum profundus is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor digitorum superficialis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor carpi ulnaris is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the pronation of the hand.

The flexor carpi radialis is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the supination of the hand.

The flexor digitorum profundus is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor digitorum superficialis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor carpi ulnaris is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the pronation of the hand.

The flexor carpi radialis is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the supination of the hand.

The flexor digitorum profundus is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor digitorum superficialis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor carpi ulnaris is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the pronation of the hand.

The flexor carpi radialis is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the supination of the hand.

The flexor digitorum profundus is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor digitorum superficialis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor carpi ulnaris is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the pronation of the hand.

The flexor carpi radialis is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the supination of the hand.

The flexor digitorum profundus is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor digitorum superficialis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor carpi ulnaris is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the pronation of the hand.

The flexor carpi radialis is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the supination of the hand.

The flexor digitorum profundus is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor digitorum superficialis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor carpi ulnaris is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the pronation of the hand.

The flexor carpi radialis is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the supination of the hand.

The flexor digitorum profundus is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor digitorum superficialis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor carpi ulnaris is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the pronation of the hand.

The flexor carpi radialis is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the supination of the hand.

The flexor digitorum profundus is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor digitorum superficialis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor carpi ulnaris is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the pronation of the hand.

The flexor carpi radialis is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the supination of the hand.

The flexor digitorum profundus is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor digitorum superficialis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor carpi ulnaris is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the pronation of the hand.

The flexor carpi radialis is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the supination of the hand.

The flexor digitorum profundus is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor digitorum superficialis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor carpi ulnaris is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the pronation of the hand.

The flexor carpi radialis is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the supination of the hand.

The flexor digitorum profundus is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor digitorum superficialis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor carpi ulnaris is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the pronation of the hand.

The flexor carpi radialis is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the supination of the hand.

The flexor digitorum profundus is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor digitorum superficialis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor carpi ulnaris is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the pronation of the hand.

The flexor carpi radialis is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the supination of the hand.

The flexor digitorum profundus is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor digitorum superficialis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor carpi ulnaris is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the pronation of the hand.

The flexor carpi radialis is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the supination of the hand.

The flexor digitorum profundus is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor digitorum superficialis is a short muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the fingers of the hand.

The flexor carpi ulnaris is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the pronation of the hand.

The flexor carpi radialis is a long muscle that extends from the median nerve to the wrist joint. It is involved in the flexion of the forearm and the supination of the hand.
An 18 year old lady has sustained a posterior dislocation of the radius with damage to the deep branch of the radial nerve after falling awkwardly during her routine at a gymnastic competition. Which of the following clinical features would you most expect on examination:

- **a** Inability to abduct the digits at the MCP joint
- **b** Inability to adduct the digits at the MCP joint
- **c** Inability to extend the digits at the MCP joint
- **d** Inability to extend the digits at the MCP, DIP and PIP joints
- **e** Inability to extend the digits and at the PIP and DIP joints
Anatomy: Forearm and Hand

Question 94 of 102

Which of the following features would you most expect to see in a patient who has sustained an ulnar nerve injury at the wrist following deliberate self harm:

- **a** Weakness of wrist flexion
- **b** Claw hand appearance
- **c** Loss of abduction of the thumb
- **d** Loss of sensation to the skin over the dorsal and palmar aspect of the medial one and a half digits
- **e** Loss of flexion of the index and ring fingers

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

<table>
<thead>
<tr>
<th>Bone</th>
<th>Extremity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radius</td>
<td>Upper Arm</td>
<td>Upper arm bone</td>
</tr>
<tr>
<td>Ulna</td>
<td>Upper Arm</td>
<td>Upper arm bone</td>
</tr>
<tr>
<td>Radius</td>
<td>Forearm</td>
<td>Radius</td>
</tr>
<tr>
<td>Ulna</td>
<td>Forearm</td>
<td>Ulna</td>
</tr>
<tr>
<td>Metacarpal</td>
<td>Hand</td>
<td>Metacarpal</td>
</tr>
<tr>
<td>Phalanges</td>
<td>Hand</td>
<td>Phalanges</td>
</tr>
</tbody>
</table>

**Notes**
- The radius and ulna are the two bones in the upper arm bone.
- Metacarpals are the eight carpal bones of the hand.
- Phalanges are the bones of the fingers.

**References**
- Anatomy of the Forearm and Hand. [Accessed Date].
- Image source: [Image Source].

**Acknowledgments**
- Thank you to the [Image Source] for permission to use the images.
- This material was adapted from [Reference Material] with permission.

**Table: Anatomical Structures**

<table>
<thead>
<tr>
<th>Bone</th>
<th>Extremity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radius</td>
<td>Upper Arm</td>
<td>Upper arm bone</td>
</tr>
<tr>
<td>Ulna</td>
<td>Upper Arm</td>
<td>Upper arm bone</td>
</tr>
<tr>
<td>Radius</td>
<td>Forearm</td>
<td>Radius</td>
</tr>
<tr>
<td>Ulna</td>
<td>Forearm</td>
<td>Ulna</td>
</tr>
<tr>
<td>Metacarpal</td>
<td>Hand</td>
<td>Metacarpal</td>
</tr>
<tr>
<td>Phalanges</td>
<td>Hand</td>
<td>Phalanges</td>
</tr>
</tbody>
</table>

**Notes**
- The radius and ulna are the two bones in the upper arm bone.
- Metacarpals are the eight carpal bones of the hand.
- Phalanges are the bones of the fingers.

**References**
- Anatomy of the Forearm and Hand. [Accessed Date].
- Image source: [Image Source].

**Acknowledgments**
- Thank you to the [Image Source] for permission to use the images.
- This material was adapted from [Reference Material] with permission.
Anatomy: Forearm and Hand

You have been asked to teach a group of medical students about hand injuries. You cover some anatomical principles including blood supply to the hand. Regarding the palmar arches, which of the following statements is CORRECT:

- **a** The superficial palmar arch lies just deep to the long flexor tendons of the digits.
- **b** Blood supply to the hand is poor, and laceration will usually result in only mild bleeding.
- **c** The deep palmar arch is formed primarily from the ulnar artery.
- **d** The deep palmar arch lies superficial to the palmar aponeurosis.
- **e** The deep palmar arch usually lies proximal to the superficial palmar arch.
Anatomy: Forearm and Hand

You have been asked to teach a group of medical students about hand injuries. You cover some anatomical principles including blood supply to the hand. Regarding the palmar arches, which of the following statements is CORRECT:

a) The superficial palmar arch lies just deep to the long flexor tendons of the digits.

b) Blood supply to the hand is poor, and laceration will usually result in only mild bleeding.

c) The deep palmar arch is formed primarily from the ulnar artery.

d) The deep palmar arch lies superficial to the palmar aponeurosis. ✗

e) The deep palmar arch usually lies proximal to the superficial palmar arch. ✓

Answer
The deep palmar arch usually lies proximal to the superficial palmar arch.

Notes

There are two palmar arches which supply the hand.

The ulnar artery forms the superficial palmar arch which communicates laterally with a palmar branch of the radial artery. The superficial palmar arch lies superficial to the long flexor tendons of the digits and just deep to the palmar aponeurosis. It is located across the centre of the palm, about level with the distal border of the extended thumb.

The radial artery forms the deep palmar arch which communicates medially with the deep palmar branch of the ulnar artery. The deep palmar arch lies between the metacarpal bones and the long flexor tendons of the digits. It is located approximately 1 cm proximal to the superficial palmar arch.

Laceration to the palmar arches results in profuse bleeding.

By Richarddavey [Gray227.png] (Public domain), via Wikimedia Commons
Anatomy: Forearm and Hand

Question 96 of 102

A 34 year old man sustains an injury to the proximal median nerve following a stab wound to the forearm. Which of the following muscles would you least expect to be affected:

- a) Pronator teres
- b) Flexor digitorum profundus
- c) Flexor pollicis longus
- d) Abductor pollicis brevis
- e) Flexor digiti minimi

< Previous  Next >  See Answer  Something wrong?
Anatomy: Forearm and Hand

Question 97 of 102

A 57 year old woman presents to the ED complaining of pain in her wrist associated with tingling in her hand. You suspect carpal tunnel syndrome. Which of the following structures does NOT pass through the carpal tunnel into the hand:

a. Tendons of the flexor digitorum superficialis
b. Tendons of the flexor digitorum profundus
c. Tendon of the flexor pollicis longus
d. Ulnar artery
e. Median nerve
Anatomy: Forearm and Hand

A 57 year old woman presents to the ED complaining of pain in her wrist associated with tingling in her hand. You suspect carpal tunnel syndrome. Which of the following structures does NOT pass through the carpal tunnel into the hand:

a) Tendons of the flexor digitorum superficialis
b) Tendons of the flexor digitorum profundus
c) Tendon of the flexor pollicis longus
d) Ulnar artery
\(\checkmark\)
e) Median nerve

Answer

The tendons of the flexor pollicis longus, flexor digitorum superficialis and flexor digitorum profundus pass through the carpal tunnel together with the median nerve. The ulnar nerve and ulnar artery pass into the hand anterior to the flexor retinaculum and carpal tunnel.

Notes

<table>
<thead>
<tr>
<th>Anatomical Boundaries</th>
<th>Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roof</td>
<td>Flexor retinaculum</td>
</tr>
<tr>
<td>Carpal arch</td>
<td>Pluiform and hook of the hamate medially, tubercles of the scaphoid and trapezium laterally</td>
</tr>
<tr>
<td>Contents</td>
<td>Four tendons of flexor digitorum profundus, four tendons of flexor digitorum superficialis, tendon of flexor pollicis longus, median nerve</td>
</tr>
</tbody>
</table>

The carpal tunnel is formed by a deep carpal arch and a superficial flexor retinaculum. The base of the carpal tunnel is formed medially by the pluiform and the hook of the hamate and laterally by the tubercles of the scaphoid and trapezium. The flexor retinaculum is a thickened band of fibrous connective tissue on the volar aspect of the hand, which bridges the gap between these carpal bones and forms the roof of the carpal tunnel.

The following structures pass through the carpal tunnel:

- the four tendons of the flexor digitorum profundus (FDP)
- the four tendons of the flexor digitorum superficialis (FDI)
- the tendon of the flexor pollicis longus (FPL)
- the median nerve.

Free movement of the tendons in the carpal tunnel is facilitated by synovial sheaths, which surround the tendons. All of the tendons of the FDP and FDS are contained within a single synovial sheath with a separate sheath enclosing the tendon of the FPL. The median nerve lies anterior to the tendons in the carpal tunnel.

Carpal tunnel syndrome is caused by compression of the median nerve within the carpal tunnel.

Modified by FRCEM Success. Original by Henry Vandyke Carter (Public domain); via Wikimedia Commons
Anatomy: Forearm and Hand

Question 98 of 102

A 23 year old man presents to the ED after cutting his forearm. On examination there is a deep laceration with an arterial spurt. You suspect an ulnar artery injury. Regarding the ulnar artery, which of the following statements is INCORRECT:

- The ulnar artery passes down the forearm between the flexor carpi ulnaris and the flexor pollicis longus muscle.
- The ulnar artery enters the hand passing lateral to the pisiform bone.
- The ulnar artery passes anterior to the flexor retinaculum.
- The ulnar artery gives rise to the common interosseous artery.
- The ulnar artery is a branch of the brachial artery.

< Previous  Next >  See Answer  Something wrong?  Clear Exam
A 23 year old man presents to the ED after cutting his forearm. On examination there is a deep laceration with an arterial spur. You suspect an ulnar artery injury. Regarding the ulnar artery, which of the following statements is INCORRECT?

- The ulnar artery passes down the forearm between the flexor carpi ulnaris and the flexor pollicis longus muscle.
- The ulnar artery enters the hand passing lateral to the pisiform bone.
- The ulnar artery passes anterior to the flexor retinaculum.
- The ulnar artery gives rise to the common interosseous artery.
- The ulnar artery is a branch of the brachial artery.

**Answer**

The larger ulnar artery, also a branch of the brachial artery, enters the forearm by passing deep to the pronator teres muscle and passes down the medial side of the forearm between the flexor carpi ulnaris and the flexor digitorum profundus muscles. The ulnar artery enters the hand, passing lateral to the pisiform bone and superficial to the flexor retinaculum. The ulnar artery gives rise to the common interosseous artery.

**Notes**

The radial artery, branch of the brachial artery, passes along the lateral aspect of the forearm, lying deep to the brachioradialis muscle proximally, and strictly being covered only by skin and fascia, making it an ideal location to palpate the pulse or to gain arterial access (palpated just lateral to the flexor carpi radialis tendon, while compressing the artery against the radius bone). The radial artery enters the hand by curving around the lateral side of the wrist, passing over the floor of the anatomical snuffbox and passing along the dorsum of the base of the thumb.

The ulnar artery, also a branch of the brachial artery, enters the forearm by passing deep to the pronator teres muscle and passes down the medial side of the forearm between the flexor carpi ulnaris and the flexor digitorum profundus muscles. The ulnar artery enters the hand, passing lateral to the pisiform bone and superficial to the flexor retinaculum. The ulnar artery gives rise to the common interosseous artery.

The palmar and dorsal carpal arches are formed from anastomosis between the carpal branches of the radial and ulnar arteries, and supply the wrist and carpal bones.

Deep veins of the anterior compartment generally accompany the arteries and ultimately drain into brachial veins associated with the brachial artery in the cubital fossa.
Anatomy: Forearm and Hand

Question 99 of 102

A 67 year old woman presents to the ED after falling onto an outstretched hand. You x-ray her left wrist and note no fracture. You discuss the case with your consultant, he advises you to test for anatomical snuffbox tenderness. The anatomical snuffbox is bounded medially by the tendon of which of the following muscles:

- a. Extensor pollicis longus
- b. Extensor pollicis brevis
- c. Abductor pollicis longus
- d. Adductor pollicis
- e. Abductor pollicis brevis
**Anatomy: Forearm and Hand**

**Question:** A 67-year-old man presents to the ED after falling onto an outstretched hand. You review his left wrist and note no fracture. You discuss the case with your consultant; he advises you to test for anatomical snuffbox tenderness. The anatomical snuffbox is bounded medially by the tendon of which of the following muscles?

a) Extensor pollicis brevis  
b) Extensor pollicis longus  
c) Abductor pollicis longus  
d) Adductor pollicis  
e) Abductor pollicis brevis

**Answer**
The anatomical snuffbox is bounded medially by the tendon of the extensor pollicis brevis.

**Notes**
The anatomical snuffbox is the triangular depression formed on the posterior aspect of the lateral wrist wall and it is bounded by the extensor tendons passing over the tendons.

<table>
<thead>
<tr>
<th>Anatomical Boundaries</th>
<th>Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medial border</td>
<td>Tendon of extensor pollicis brevis</td>
</tr>
<tr>
<td>Lateral border</td>
<td>Tendons of the extensor pollicis longus and extensor pollicis brevis</td>
</tr>
<tr>
<td>Radial border</td>
<td>Radial styloid process</td>
</tr>
<tr>
<td>Distal border</td>
<td>1st metacarpal</td>
</tr>
<tr>
<td>Floor</td>
<td>Scaphoid and trapezium bones</td>
</tr>
<tr>
<td>Roof</td>
<td>Skin</td>
</tr>
<tr>
<td>Contents</td>
<td>Radial artery, terminal portion of the superficial branch of the radial nerve, capsular sheath</td>
</tr>
</tbody>
</table>

It is bounded laterally by the tendons of the extensor pollicis longus and the extensor pollicis brevis and medially by the tendons of the extensor pollicis longus.

The floor of the anatomical snuffbox is formed by the scaphoid and trapezium carpal bones. The radial styloid process can be palpated proximally and the 1st metacarpal can be palpated distally.

The radial artery crosses the floor of the anatomical snuffbox. Subcutaneously terminal parts of the superficial branch of the radial nerve and the nerve of the carpal tunnel cross over the anatomical snuffbox.

The anatomical snuffbox is important clinically as the scaphoid is palpable within the snuffbox, localized pain and tenderness of the anatomical snuffbox may result from trauma to a scaphoid fracture.
Anatomy: Forearm and Hand

A 67 year old patient complains of weakness of abduction and adduction of his fingers. You suspect weakness of the interossei. Regarding the interosseous muscles, which of the following statements is INCORRECT:

- (a) The interossei lie between and attached to the metacarpals.
- (b) The interossei insert into the extensor hoods of the fingers.
- (c) There are three palmar and four dorsal interossei.
- (d) The interossei are innervated by the ulnar nerve.
- (e) The dorsal interossei adduct the fingers.
Anatomy: Forearm and Hand

Question 100 of 102

A 67 year old patient complains of weakness of abduction and adduction of his fingers. You suspect weakness of the interossei. Regarding the interosseous muscles, which of the following statements is INCORRECT:

- a) The interossei lie between and attached to the metacarpals.
- b) The interossei insert into the extensor hood of the fingers.
- c) There are three palmar and four dorsal interossei.
- d) The interossei are innervated by the ulnar nerve.
- e) The dorsal interossei adduct the fingers. ✔

Answer

The four dorsal interossei act to abduct the index, middle and ring fingers, and the three palmar interossei act to adduct the thumb, index, and ring fingers. (DAB, PAD).

Notes

The interosseous muscles originate from and lie between the metacarpal bones. The dorsal interossei insert into the extensor hood and proximal phalanges of the index, middle and ring fingers. The palmar interossei insert into the extensor hood of the index, ring and little fingers.

The four dorsal interossei act to abduct the index, middle and ring fingers, and the three palmar interossei act to adduct the index, ring and little fingers. (DAB, PAD). Because the interosseous muscles insert into the extensor hood, they also contribute to the complex flexion and extension movements of the interphalangeal joints of the digits.

The interosseous muscles are all innervated by the ulnar nerve.

<table>
<thead>
<tr>
<th>Muscle</th>
<th>Action</th>
<th>Innervation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dorsal Interossei</td>
<td>Abduction of fingers at MCPJ</td>
<td>Ulnar nerve</td>
</tr>
<tr>
<td>Palmar Interossei</td>
<td>Abduction of fingers at MCPJ</td>
<td>Ulnar nerve</td>
</tr>
</tbody>
</table>

Modified by FRCEM Success, Original by By-OpenStax [CC BY 4.0](http://creativecommons.org/licenses/by/4.0), via Wikimedia Commons

FRCEM Success

We are an online revision resource for FRCEM Primary and Intermediate exam preparation.

Terms & Conditions
Get in Touch

Resources

- The Royal College of Emergency Medicine
- Irish Association for Emergency Medicine
- Advanced Trauma Life Support
- Resuscitation Council (UK)
- TeachMeSurgery
- TraumaSurg
- Radiopaedia

Advanced Life Support Group
Emergency Medicine Journal
Lifesaving Refresher
Instant Anatomy
Parent Card

©2014 - 2017 FRCEM Success | Website designed & hosted by Cyberfrog Design
Anatomy: Forearm and Hand

Question 101 of 102

A 31 year old lady slipped on a wet bathroom floor and fell onto her outstretched hand. She is tender over the anatomical snuffbox and imaging shows a fracture of the scaphoid bone. Which of the following structures is most likely to be damaged in this type of injury:

- a. Brachial profunda artery
- b. Ulnar artery
- c. Radial artery
- d. Princeps pollicis artery
- e. Deep palmar arterial arch

< Previous  Next >  See Answer

Question Navigator

1. Answered
2. Answered
3. Answered
4. Answered
5. Answered
6. Answered
7. Answered
8. Answered
9. Answered
10. Answered
11. Answered
12. Answered

Clear Exam
Anatomy: Forearm and Hand

Answer

The radial artery passes over the floor of the anatomical snuffbox. Just superior to the scaphoid bone and lunate, it is the most likely to be injured in this type of injury. Once it is fixed the radial artery divides into the pronation-pollicis artery and the deep peroneal arteries.

Notes

The anatomical snuffbox is a triangular depression formed on the lateral dorsal side of the hand and wrist, and is immediately posterior to the tendons passing over the wrist.

Anatomical

<table>
<thead>
<tr>
<th>Structure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medial border</td>
<td>Tendon of extensor pollicis longus</td>
</tr>
<tr>
<td>Lateral border</td>
<td>Tendon of extensor pollicis brevis and extensor pollicis brevis</td>
</tr>
<tr>
<td>Proximal border</td>
<td>Radiocapitate process</td>
</tr>
<tr>
<td>Distal border</td>
<td>1st metacarpal</td>
</tr>
<tr>
<td>Floor</td>
<td>Scaphoid and trapezium bones</td>
</tr>
<tr>
<td>Roof</td>
<td>Side</td>
</tr>
<tr>
<td>Contents</td>
<td>Radial artery, terminal portion of the superficial branch of the radial nerve, capitohumeral</td>
</tr>
</tbody>
</table>

It is bordered laterally by the tendons of the abductor pollicis longus and extensor pollicis brevis, and medially by the tendon of the extensor pollicis brevis. The floor of the anatomical snuffbox is formed by the scaphoid and trapezium carpometacarpal bones. The radial shaft process can be palpated proximally and the 1st metacarpal can be palpated distally. The radial artery is constant and passes through the scaphoid bone, the scaphoid process, and the capitate as it passes over the anatomical snuffbox.

The anatomical snuffbox is important clinically as the snuffbox is palpable within the snuffbox. Involvement of the anatomical snuffbox is most likely due to a scaphoid fracture.

Resources

- The Royal College of Emergency Medicine
- The British Association of Emergency Medicine
- British Orthopaedic Association (BOA)
- Royal College of Surgeons (RCS)
- Royal College of Physicians (RCP)
- American Academy of Orthopaedic Surgeons (AAOS)
- Orthopaedic Trauma Association (OTA)
- OrthoInfo

- Advanced Life SupportGear
- Emergency Medicine Board
- Orthopaedic Board
- Orthopaedic Board
Anatomy: Forearm and Hand

You have been asked to give a tutorial to a group of nurses regarding venous cannulation. As part of the session you cover the basic anatomy of the venous system of the arm. Regarding the superficial veins of the upper limb, which of the following statement is CORRECT:

a. The cephalic vein arises from the ventral venous network.
b. The cephalic vein ascends along the medial forearm and arm.
c. The basilic vein arises from the medial aspect of the dorsal venous network.
d. The basilic vein ascends along the posterior forearm and arm.
e. The cephalic and basilic vein drain into the median cubital vein in the upper arm.

< Previous  See Answer  Submit  Something wrong?
Anatomy: Forearm and Hand

Question 102 of 102

You have been asked to give a tutorial to a group of nurses regarding venous cannulation. As part of the session you cover the basic anatomy of the venous system of the arm. Regarding the superficial veins of the upper limb, which of the following statement is CORRECT:

a) The cephalic vein arises from the ventral venous network.
b) The cephalic vein ascends along the medial forearm and arm.
c) The basilic vein arises from the medial aspect of the dorsal venous network.
d) The basilic vein ascends along the posterior forearm and arm.
e) The cephalic and basilic vein drain into the median cubital vein in the upper arm.

Answer

The basilic vein arises from the medial aspect of the dorsal venous network, ascends along the medial aspect of the forearm and arm and becomes the axillary vein.

Notes

The cephalic, basilic and median cubital veins are the main superficial veins of the upper limb.

The cephalic vein arises from the lateral aspect of the dorsal venous network, ascends along the anterolateral border of the forearm and arm and drains into the axillary vein.

The basilic vein arises from the medial aspect of the dorsal venous network, ascends along the medial aspect of the forearm and arm and becomes the axillary vein.

The two superficial veins communicate via the median cubital vein which passes obliquely across the anterior elbow in the antebrachial fossa. The median cubital vein is a common site of venepuncture.