ANATOMY OF THE FOREARM & HAND

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Bones of the Forearm

Radius

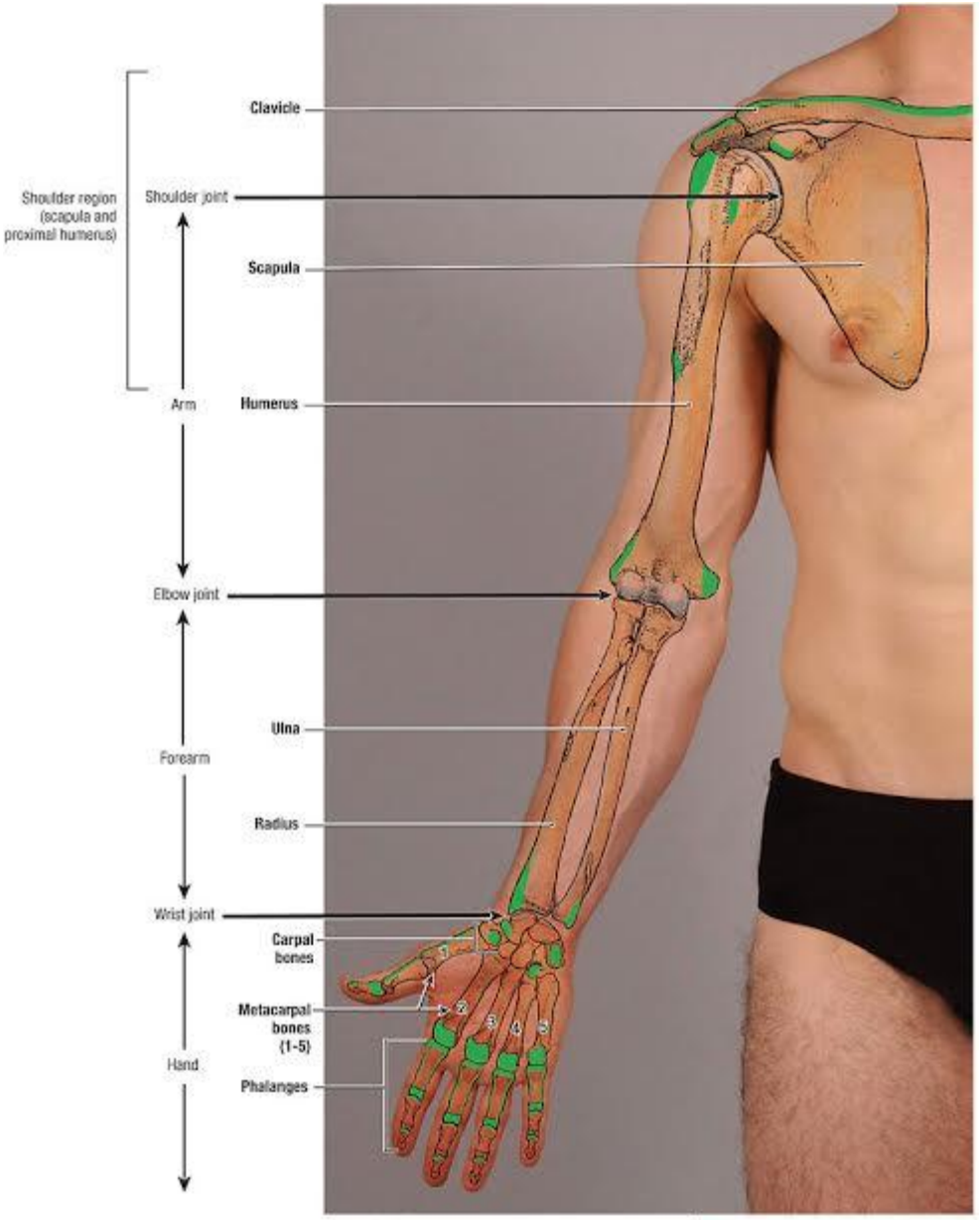
The radius is the lateral bone of the forearm . Its proximal end articulates with the humerus at the elbow joint and with the ulna at the proximal radioulnar joint. Its distal end articulates with the scaphoid and lunate bones of the hand at the wrist joint and with the ulna at the distal radioulnar joint.

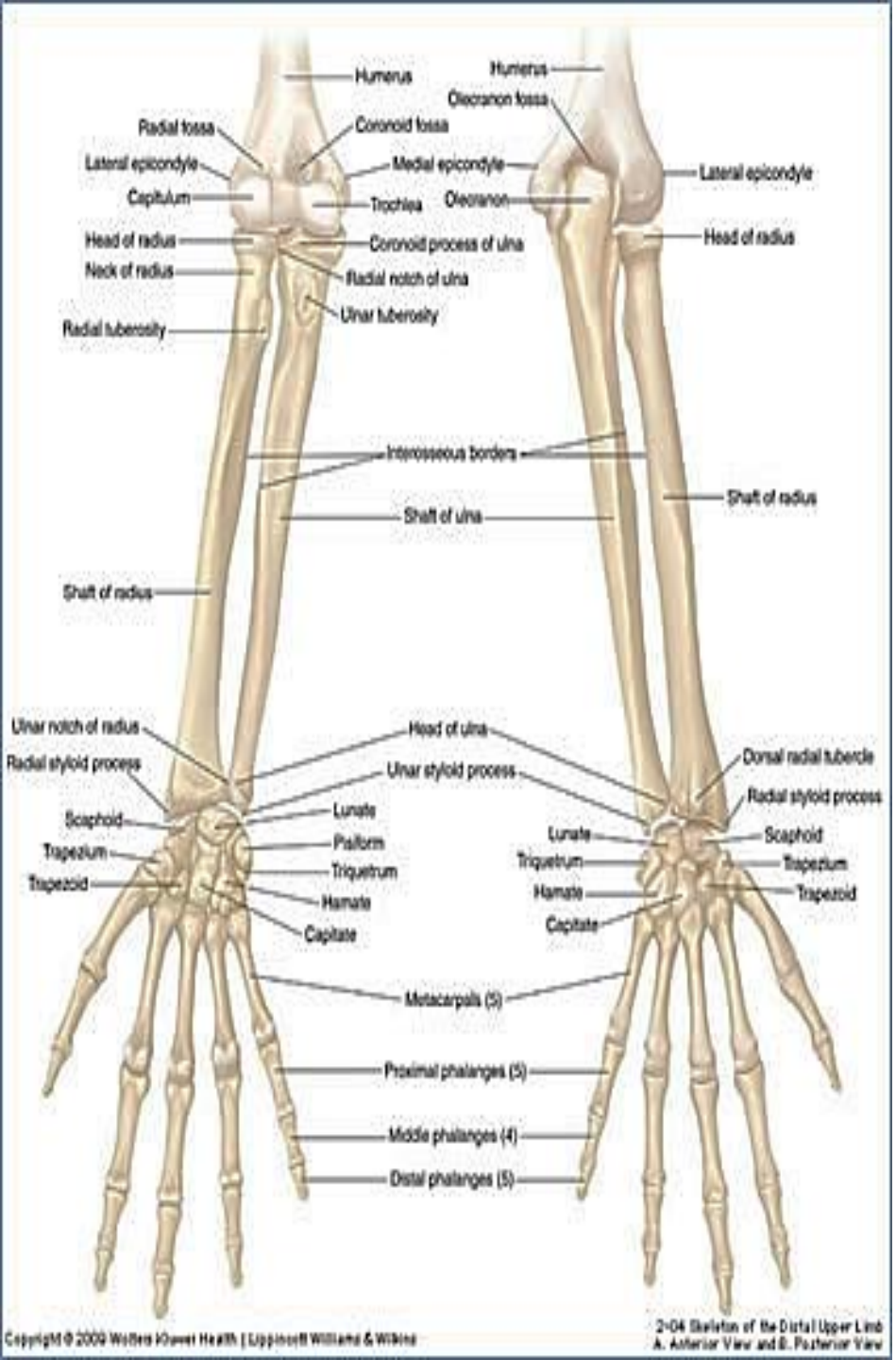
At the proximal end of the radius is the small circular **head**. The upper surface of the head is concave and articulates with the convex capitulum of the humerus.

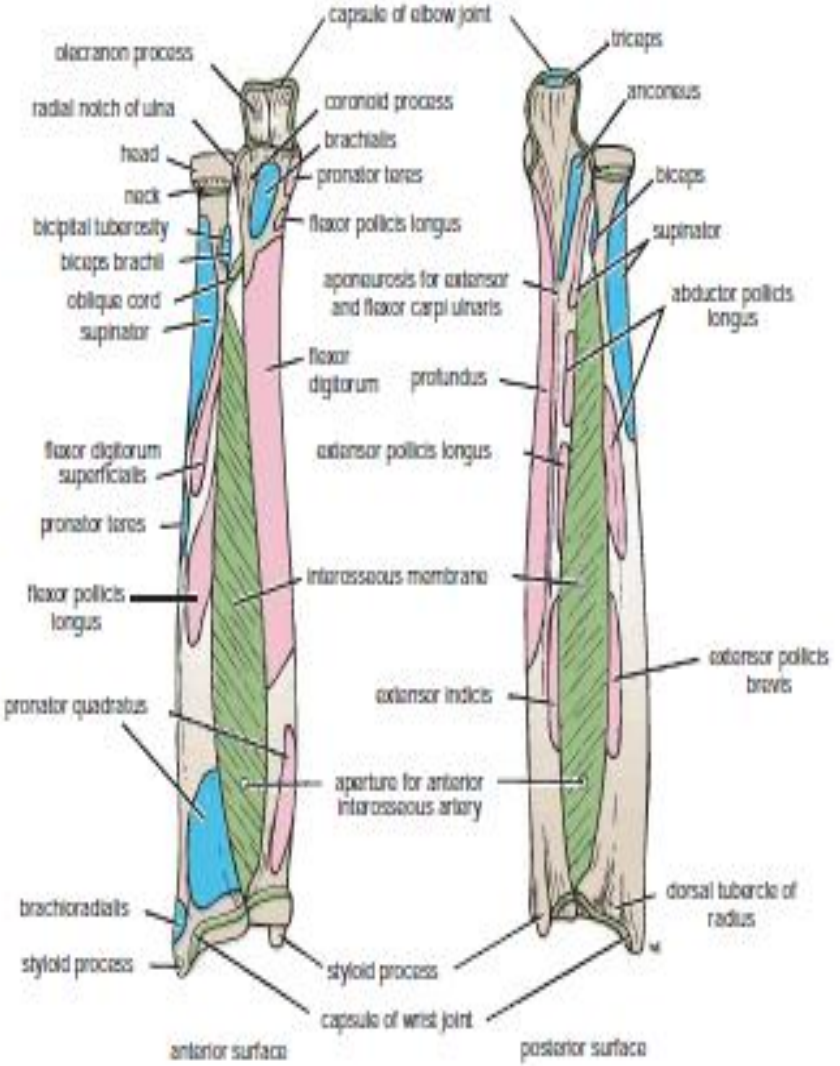
The circumference of the head articulates with the radial notch of the ulna. Below the head, the bone is constricted to form the **neck.** Below the neck is the **bicipital tuberosity** for the insertion of the biceps muscle.

The shaft of the radius, is wider below than above. It has a sharp **interosseous border** medially for the attachment of the interosseous membrane that binds the radius and ulna together. The **pronator tubercle,** for the insertion of the pronator teres muscle, lies halfway down on its lateral side.

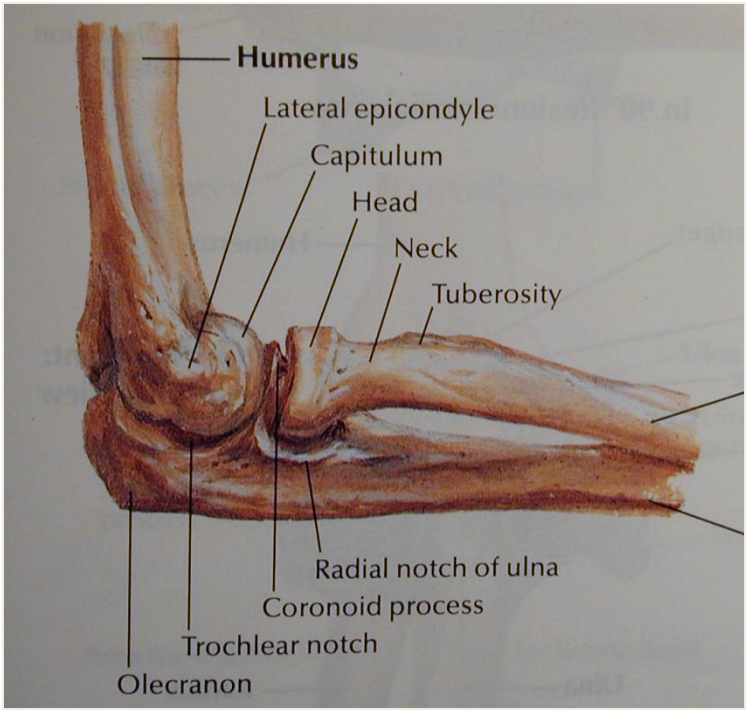
At the distal end of the radius is the **styloid process;** this projects distally from its lateral margin (On the medial surface is the **ulnar notch,** which articulates with the round head of the ulna. The inferior articular surface articulates with the scaphoid and lunate bones. On the posterior aspect of the distal end is a small tubercle, the **dorsal tubercle,** which is grooved on its medial side by the tendon of the extensor pollicis longus.

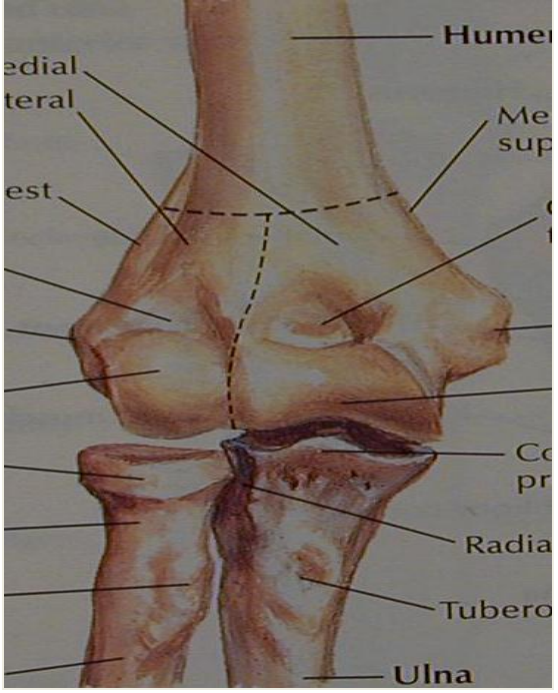

Clavicle
Shoulder region (scapula and proximal humerus)
Shoulder joint
Scapula
Arm
Humerus
Elbow joint
Ulna
Forearm
Radius
Wrist joint
Carpal bones
Metacarpal bones (1-5)
Hand
Phalanges
1
2
3
4
5
A. Anterior View
Palpable features of upper limb bones

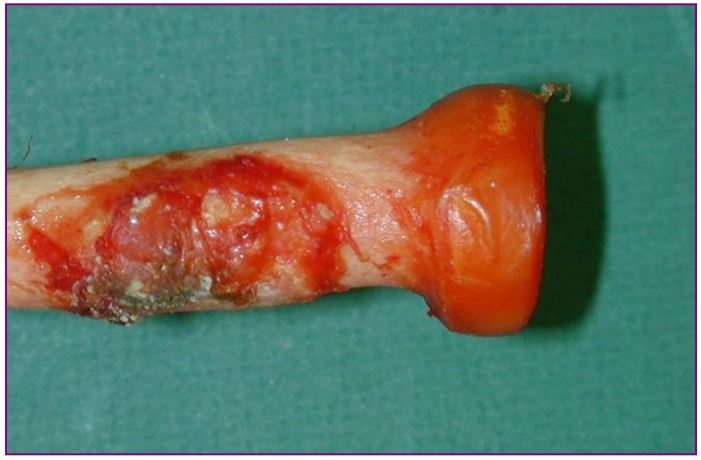


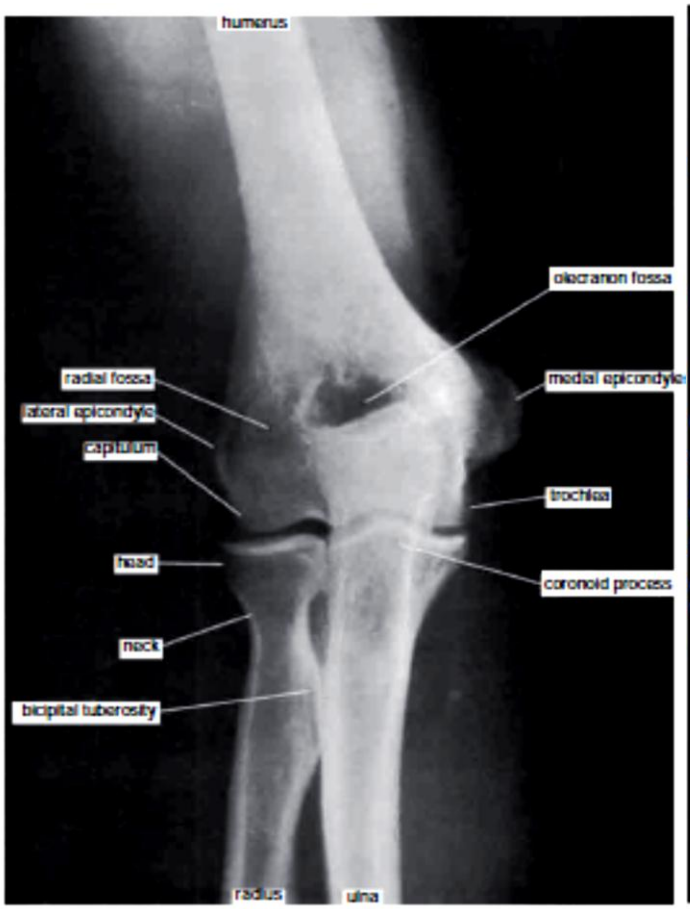


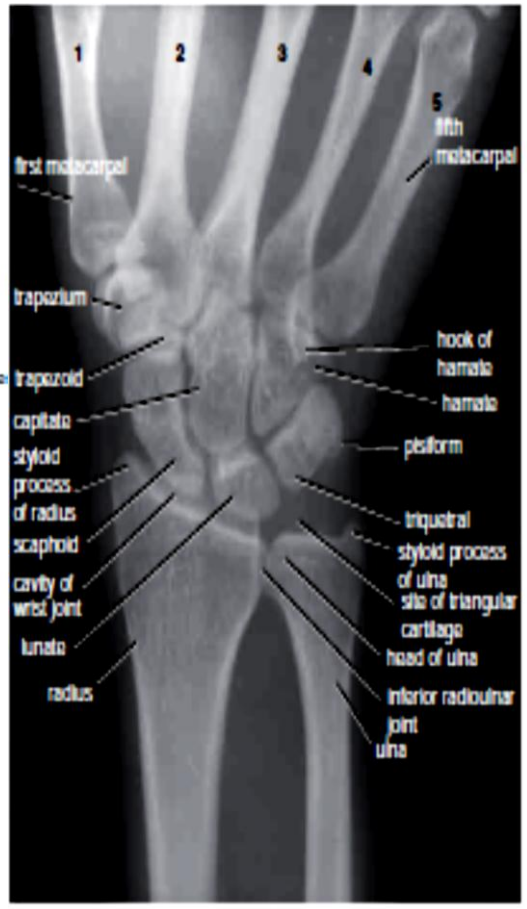
Important muscular and ligamentous attachments to the radius and the ulna.


Humerus
Lateral epicondyle
Capitulum
Head
Neck
Tuberosity
Radial notch of ulna
Coronoid process
Trochlear notch
Olecranon


Ulna




humerus
olecranon fossa
radial fossa
medial epicondyle
lateral epicondyle
capitulum
trochlea
head
coronoid process
neck
bicipital tuberosity
radius
ulna


1
2
3
4
5
first metacarpal
fifth metacarpal
trapezium
trapezoid
capitate
styloid process of radius
scaphoid
cavity of wrist joint
lunate
radius
hook of hamate
hamate
pisiform
triquetral
styloid process of ulna
site of triangular cartilage
head of ulna
inferior radioulnar joint
ulna


humerus
lateral supracondylar ridge
head of radius
bicipital tuberosity
neck
lateral epicondyle
olecranon process of ulna
coronoid process

Ulna

The ulna is the medial bone of the forearm. Its proximal end articulates with the humerus at the elbow joint and with the head of the radius at the proximal radioulnar joint. Its distal end articulates with the radius at the distal radioulnar joint, but it is excluded from the wrist joint by the articular disc.

The proximal end of the ulna is large and is known as the **olecranon process** ; this forms the prominence of the elbow. It has a notch on its anterior surface, the **trochlear notch,** which articulates with the trochlea of the humerus. Below the trochlear notch is the triangular **coronoid process,** which has on its lateral surface the **radial notch** for articulation with the head of the radius.

The **shaft** of the ulna tapers from above down . It has a sharp **interosseous border** laterally for the attachment of the interosseous membrane. The posterior border is rounded and subcutaneous and can be easily palpated throughout its length. Below the radial notch is the **supinator crest** that gives origin to the supinator muscle.At the distal end of the ulna is the small rounded **head,** which has projecting from its medial aspect styloid process

TABLE 9.6 Muscles of the Anterior Fascial Compartment of the Forearm

Muscle	Origin	Insertion	Nerve Supply	Nerve Roots*	Action
Pronator Teres					
Humeral head	Medial epicondyle of humerus	Lateral aspect of shaft of radius	Median nerve	C6, 7	Pronation and flexion of forearm
Ulnar head	Medial border of coronoid process of ulna				
Flexor carpi radialis	Medial epicondyle of humerus	Bases of second and third metacarpal bones	Median nerve	C6, 7	Flexes and abducts hand at wrist joint
Palmaris longus	Medial epicondyle of humerus	Flexor retinaculum and palmar aponeurosis	Median nerve	C7, 8	Flexes hand
Flexor Carpi Ulnaris					
Humeral head	Medial epicondyle of humerus	Pisiform bone, hook of the hamate, base at fifth metacarpal bone	Ulnar nerve	C8; T1	Flexes and adducts hand at wrist joint
Ulnar head	Medial aspect of olecranon process and posterior border of ulna				
Flexor Digitorum Superficialis					
Humeroulnar head	Medial epicondyle of humerus; medial border of coronoid process of ulna	Middle phalanx of medial four fingers	Median nerve	C7, 8; T1	Flexes middle phalanx of fingers and assists in flexing proximal phalanx and hand
Radial head	Oblique line on anterior surface of shaft of radius				
Flexor pollicis longus	Anterior surface of shaft of radius	Distal phalanx of thumb	Anterior interosseous branch of median nerve	C8; T1	Flexes distal phalanx of thumb
Flexor digitorum profundus	Anteromedial surface of shaft of ulna	Distal phalanges of medial four fingers	Ulnar (medial half) and median (lateral half) nerves	C8; T1	Flexes distal phalanx of fingers; then assists in flexion of middle and proximal phalanges and wrist
Pronator quadratus	Anterior surface of shaft of ulna	Anterior surface of shaft of radius	Anterior interosseous branch of median nerve	C8; T1	Pronates forearm

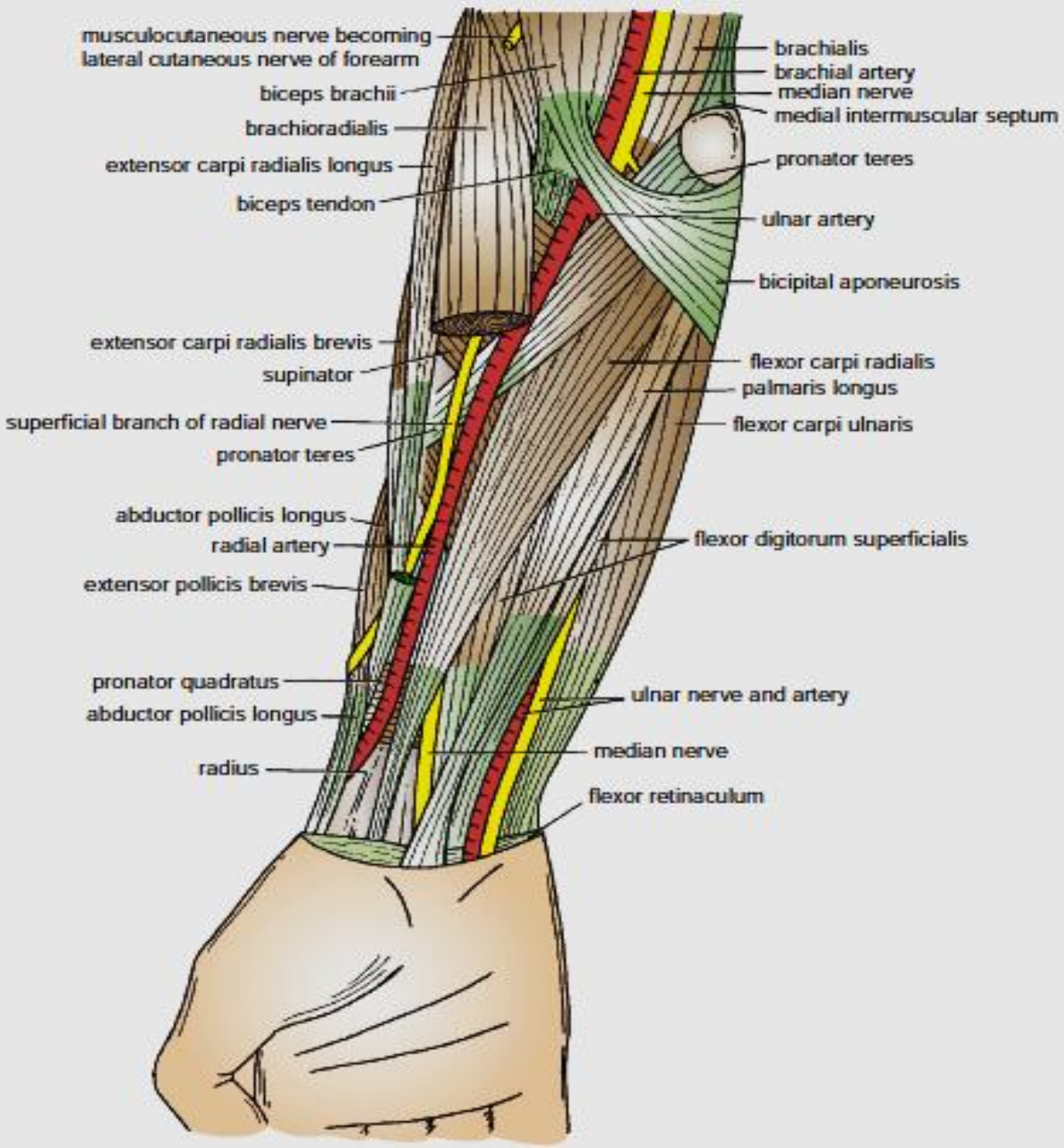


FIGURE 9.58 Anterior view of the forearm. The middle portion of the brachioradialis muscle has been removed to display the superficial branch of the radial nerve and the radial artery.

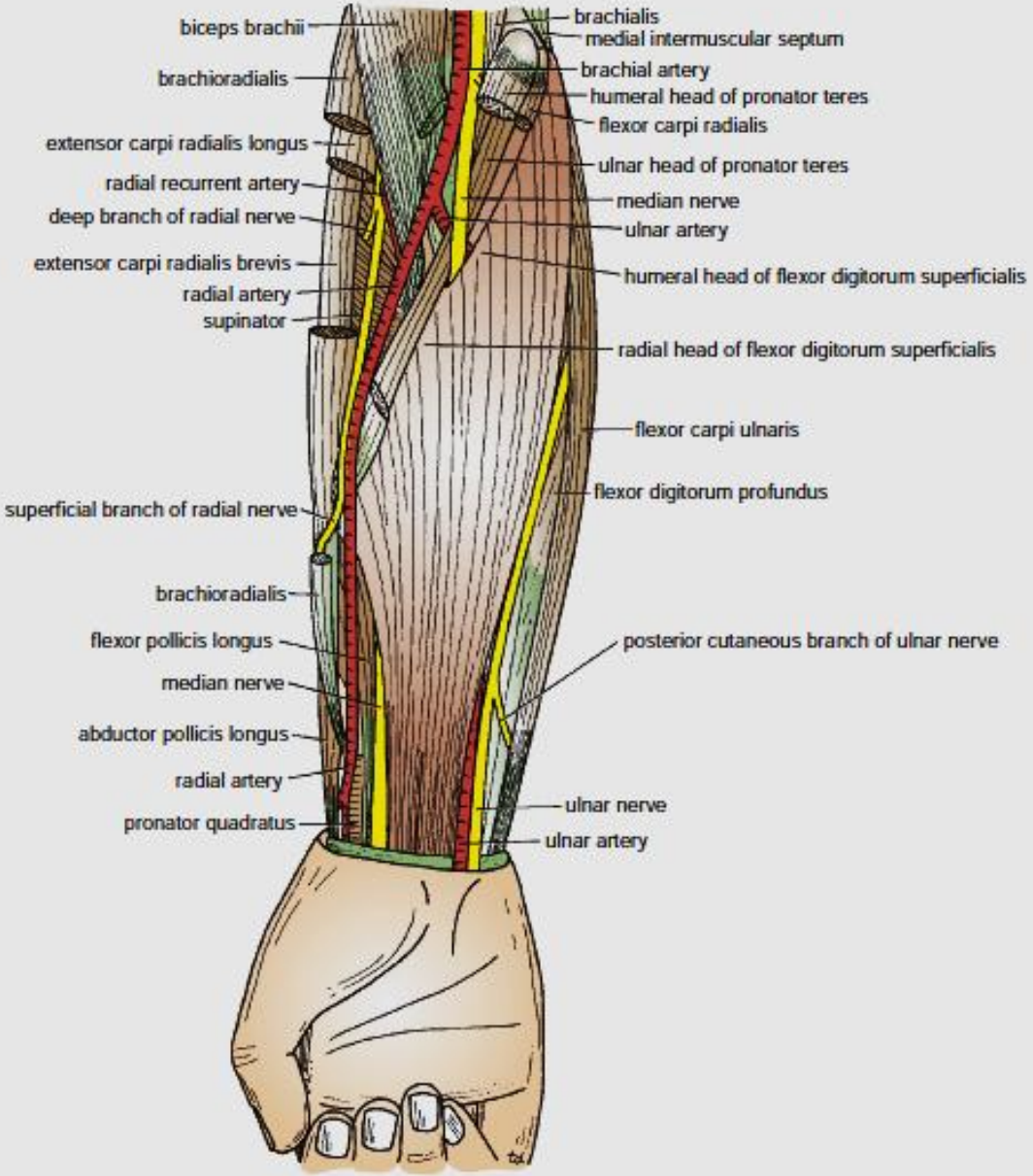


FIGURE 9.60 Anterior view of the forearm. Most of the superficial muscles have been removed to display the flexor digitorum superficialis, median nerve, superficial branch of the radial nerve, and radial artery. Note that the ulnar head of the pronator teres separates the median nerve from the ulnar artery.

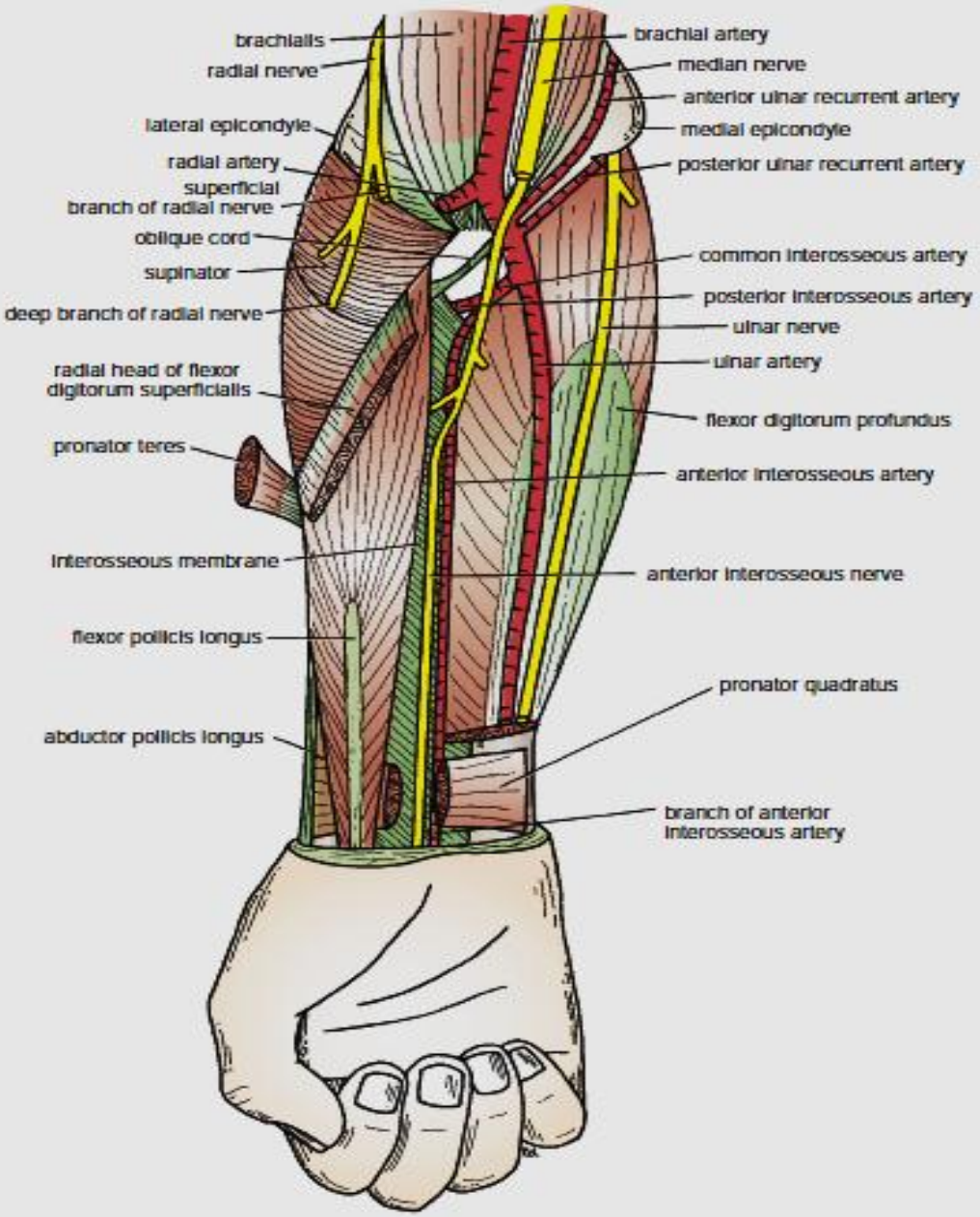


FIGURE 9.61 Anterior view of the forearm showing the deep structures.

TABLE 9.7 Muscles of the Lateral Fascial Compartment of the Forearm

Muscle	Origin	Insertion	Nerve Supply	Nerve Roots[a]	Action
Brachioradialis	Lateral supracondylar ridge of humerus	Base of styloid process of radius	Radial nerve	C5, 6, 7	Flexes forearm at elbow joint; rotates forearm to the midprone position
Extensor carpi radialis longus	Lateral supracondylar ridge of humerus	Posterior surface of base of second metacarpal bone	Radial nerve	C6, 7	Extends and abducts hand at wrist joint

TABLE 9.8 Muscles of the Posterior Fascial Compartment of the Forearm

Muscle	Origin	Insertion	Nerve Supply	Nerve Roots[a]	Action
Extensor carpi radialis brevis	Lateral epicondyle of humerus	Posterior surface of base of third metacarpal bone	Deep branch of radial nerve	**C7**, 8	Extends and abducts hand at wrist joint
Extensor digitorum	Lateral epicondyle of humerus	Middle and distal phalanges of medial four fingers	Deep branch of radial nerve	**C7**, 8	Extends fingers and hand (see text for details)
Extensor digiti minimi	Lateral epicondyle of humerus	Extensor expansion of little finger	Deep branch of radial nerve	**C7**, 8	Extends metacarpal phalangeal joint of little finger
Extensor carpi ulnaris	Lateral epicondyle of humerus	Base of 5th metacarpal bone	Deep branch of radial nerve	C7, **8**	Extends and adducts hand at wrist joint
Anconeus	Lateral epicondyle of humerus	Lateral surface of olecranon process of ulna	Radial nerve	C7, 8; T1	Extends elbow joint
Supinator	Lateral epicondyle of humerus, anular ligament of proximal radioulnar joint, and ulna	Neck and shaft of radius	Deep branch of radial nerve	C5, 6	Supination of forearm
Abductor pollicis longus	Posterior surface of shafts of radius and ulna	Base of first metacarpal bone	Deep branch of radial nerve	C7, **8**	Abducts and extends thumb
Extensor pollicis brevis	Posterior surface of shaft of radius	Base of proximal phalanx of thumb	Deep branch of radial nerve	C7, **8**	Extends metacarpophalangeal joints of thumb
Extensor pollicis longus	Posterior surface of shaft of ulna	Base of distal phalanx of thumb	Deep branch of radial nerve	C7, **8**	Extends distal phalanx of thumb
Extensor indicis	Posterior surface of shaft of ulna	Extensor expansion of index finger	Deep branch of radial nerve	C7, **8**	Extends metacarpophalangeal joint of index finger

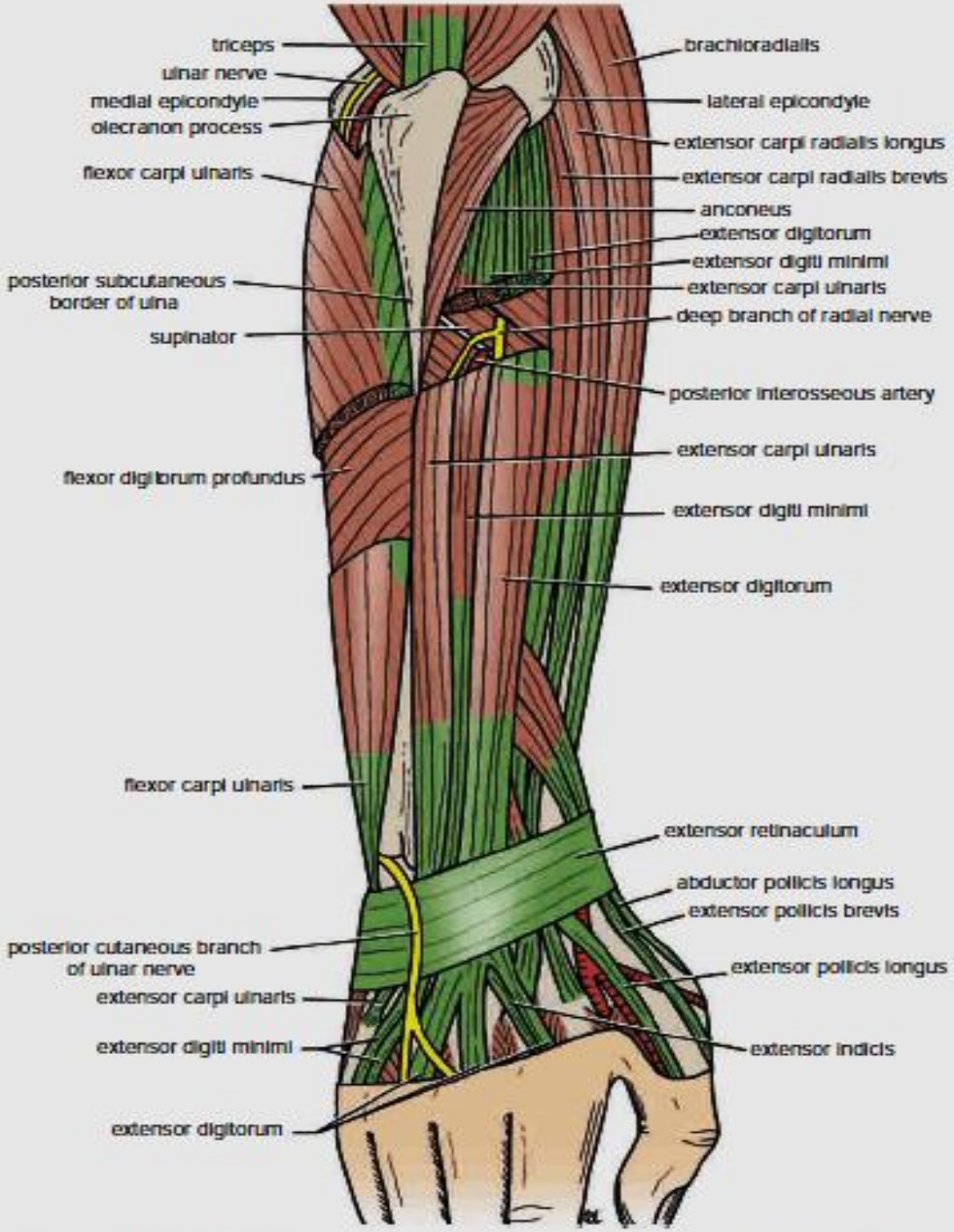


FIGURE 9.64 Posterior view of the forearm. Parts of the extensor digitorum, extensor digiti minimi, and extensor carpi ulnaris have been removed to show the deep branch of the radial nerve and the posterior interosseous artery.

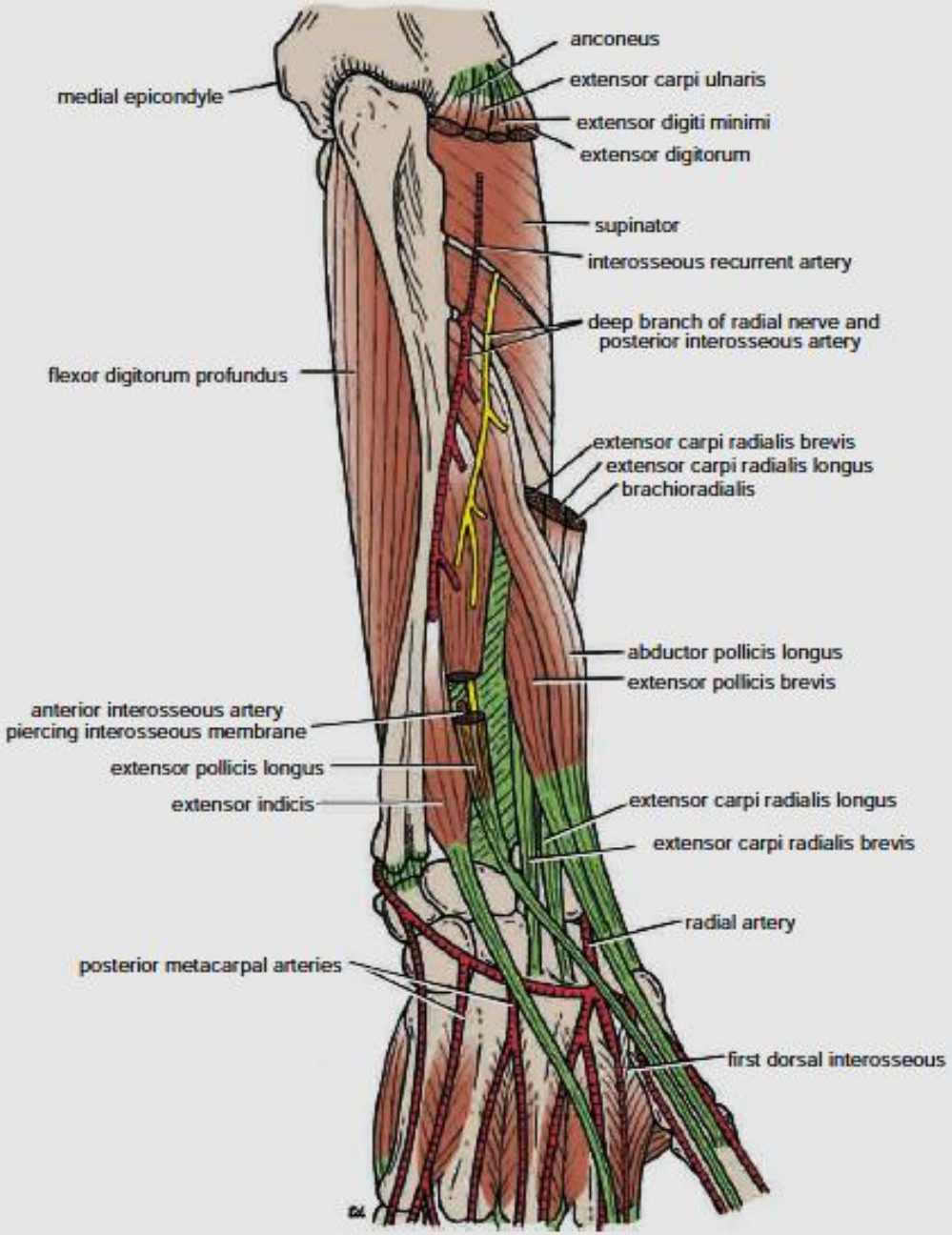


FIGURE 9.65 Posterior view of the forearm. The superficial muscles have been removed to display the deep structures.

Clinical notes

Fractures of the Radius and Ulna

Fractures of the head of the radius can occur from falls on the outstretched hand.

Fractures of the neck of the radius occur in young children from falls on the outstretched hand.

Fractures of the shafts of the radius and ulna may or may not occur together. To restore the normal movements of pronation and supination, the normal anatomic relationship of the radius, ulna, and interosseous membrane must be regained. A fracture of one forearm bone may be associated with a dislocation of the other bone.

Monteggia's fracture, for example, the shaft of the ulna is fractured and dislocation of the radial head.

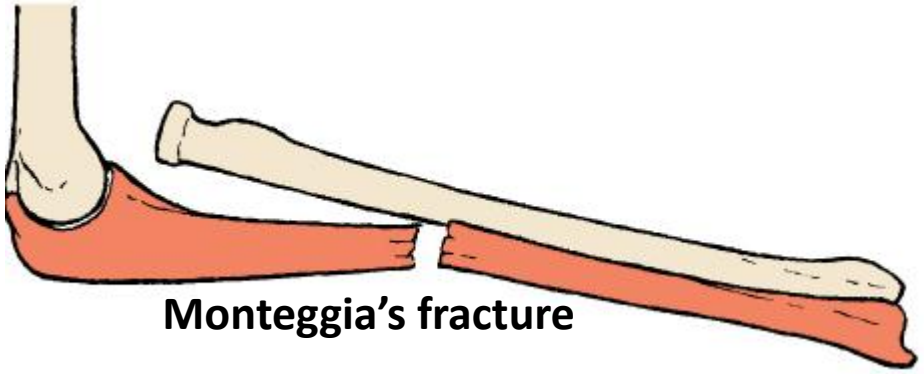
Galeazzi's fracture, the proximal third of the radius is fractured and the distal end of the ulna is dislocated at the distal radioulnar joint.

Fractures of the olecranon process can result from a fall on the flexed elbow or from a direct blow. Depending on the location, the bony fragment may be displaced by the pull of the triceps muscle, which is inserted on the olecranon process

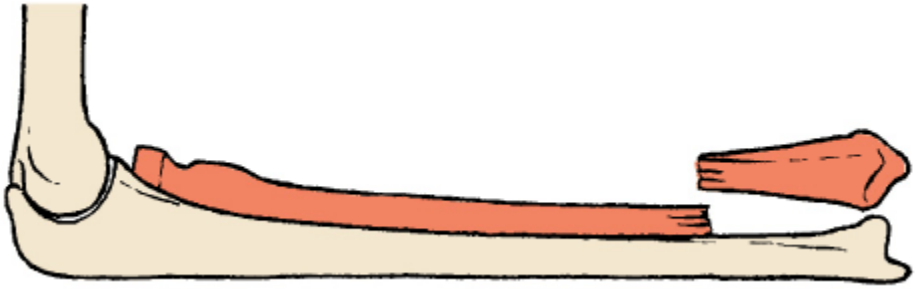
Colles' fracture is a fracture of the distal end of the radius resulting from a fall on the outstretched hand. It commonly occurs in patients older than 50 years. The force drives the distal fragment posteriorly and superiorly "dinner-fork deformity".

Smith's fracture is a fracture of the distal end of the radius and occurs from a fall on the back of the hand. It is a reversed Colles' fracture because the distal fragment is displaced anteriorly.

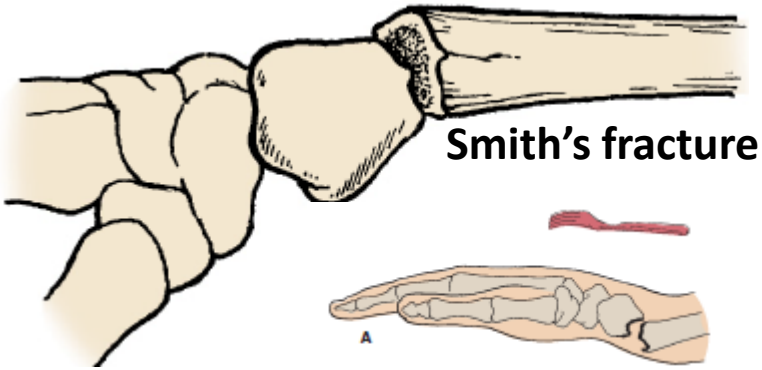
Olecranon Bursitis A small subcutaneous bursa is present over the olecranon process of the ulna, and repeated trauma often produces chronic bursitis.



Monteggia's fracture



Galeazzi's fracture,



Smith's fracture

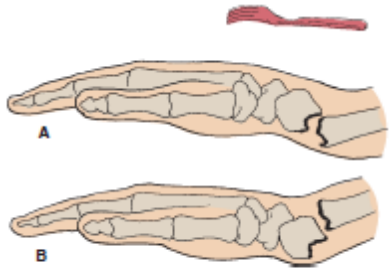
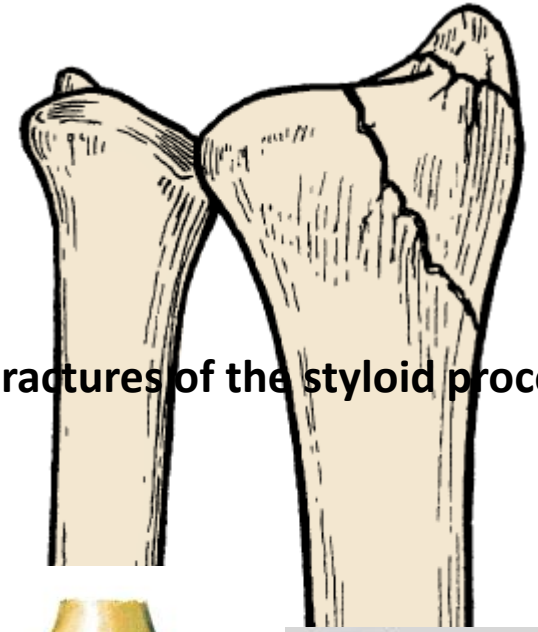
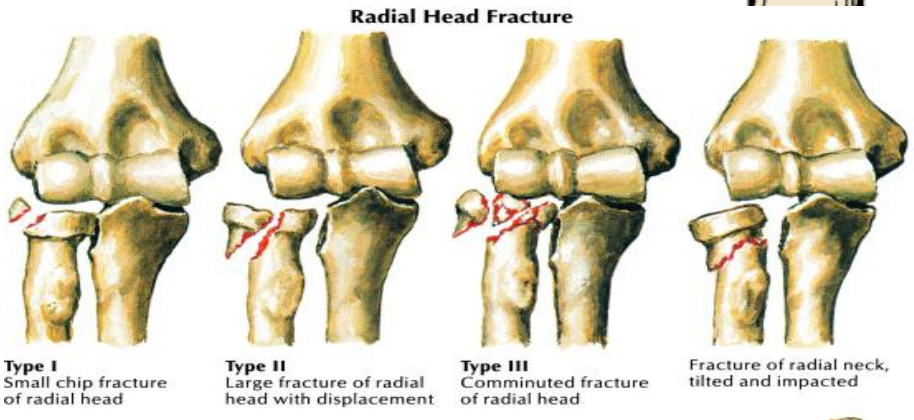
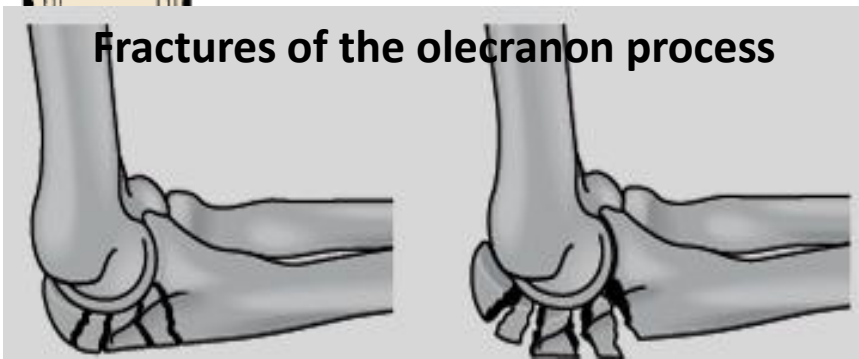


FIGURE 9.50 Fractures of the distal end of the radius. A. Colles' fracture. B. Smith's fracture.



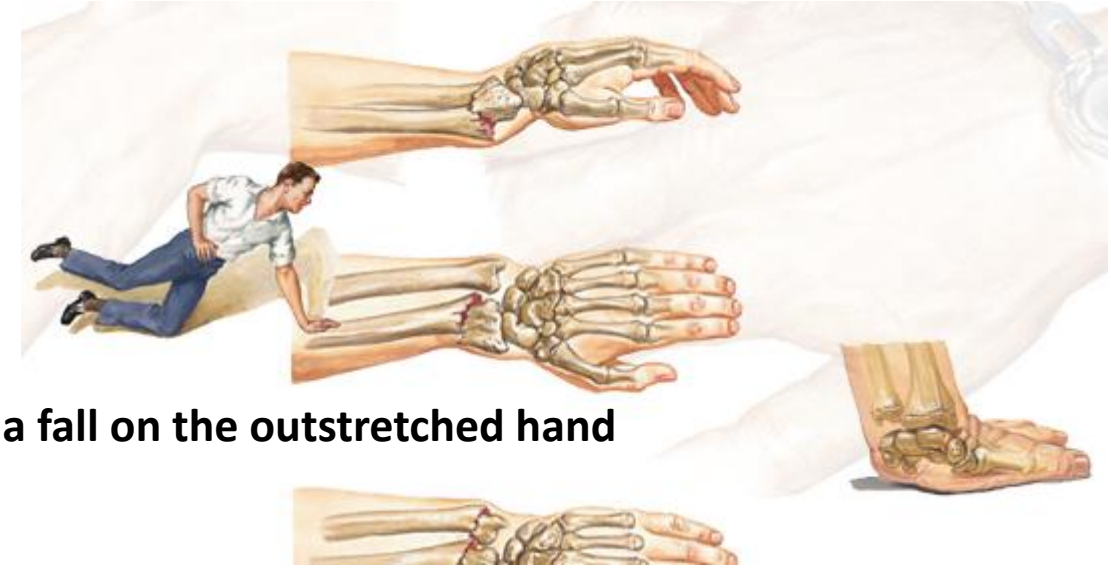
Fractures of the styloid process





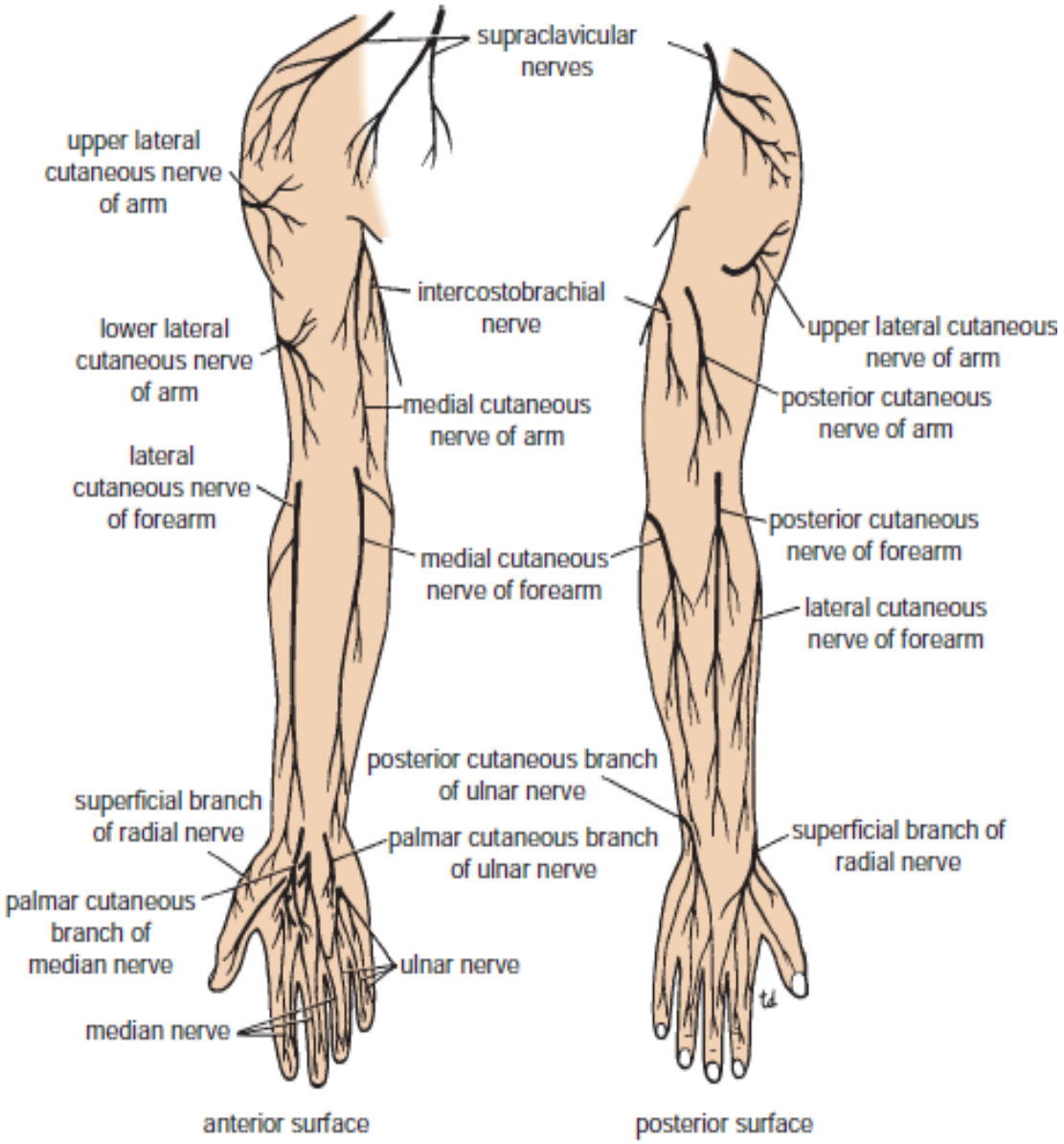
Fractures of the olecranon process

Fractures of both radius& ulna



a fall on the outstretched hand

The **sensory nerve supply** to the skin of the forearm is from the anterior and posterior branches of the lateral cutaneous nerve of the forearm, a continuation of the musculocutaneous nerve, and from the anterior and posterior Branches of the medial cutaneous nerve of the forearm . A narrow strip of skin down the middle of the posterior surface of the forearm is supplied by the posterior cutaneous nerve of the forearm.



Lymphatic Draing

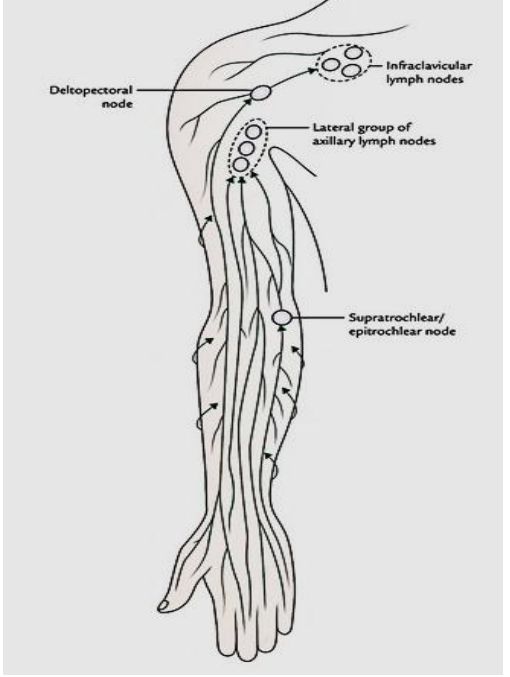
- The **superficial lymph vessels** from the thumb and lateral fingers and the lateral areas of the hand and forearm follow the cephalic vein to the infraclavicular group of nodes .

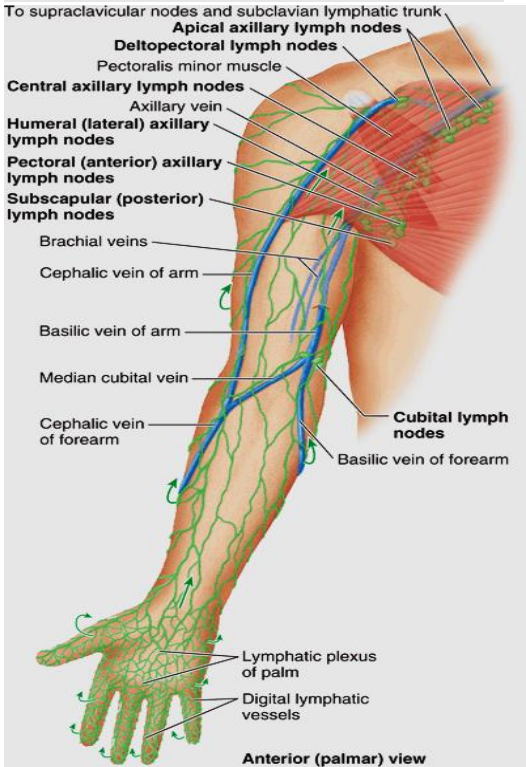
- Those from the medial fingers and the medial areas of the hand and the forearm follow the basilic vein to the cubital fossa.

- Here, some of the the vessels drain into the **supratrochlear lymph node.**

- whereas others bypass the node and accompany the basilic vein to the axilla, where they drain into the lateral group of axillary nodes.

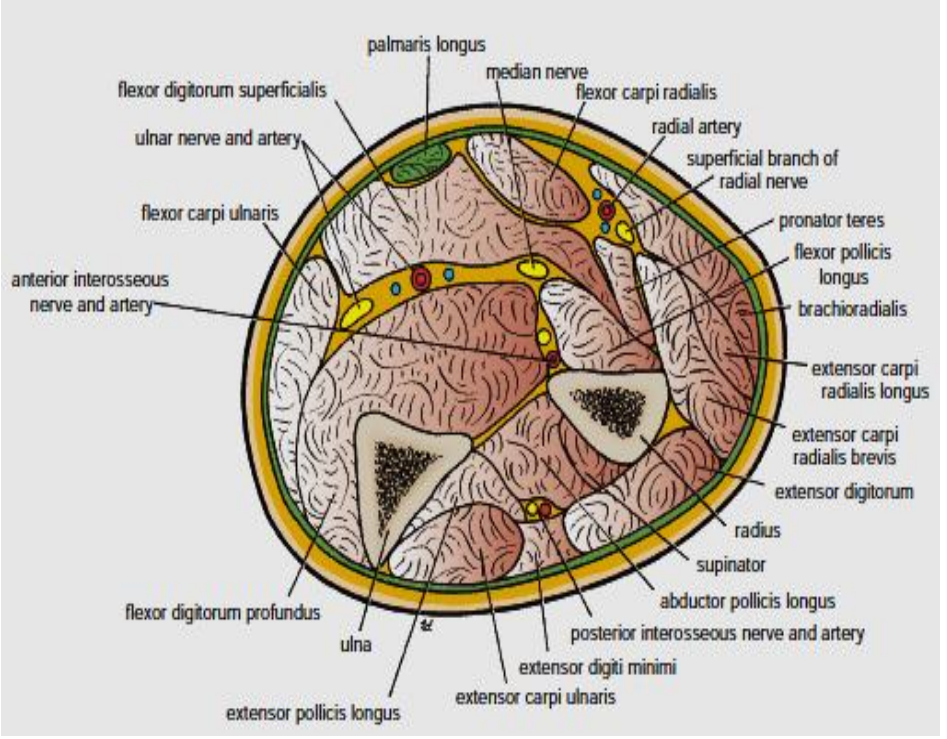
- The efferent vessels from the supratrochlear node also drain into the lateral axillary nodes.

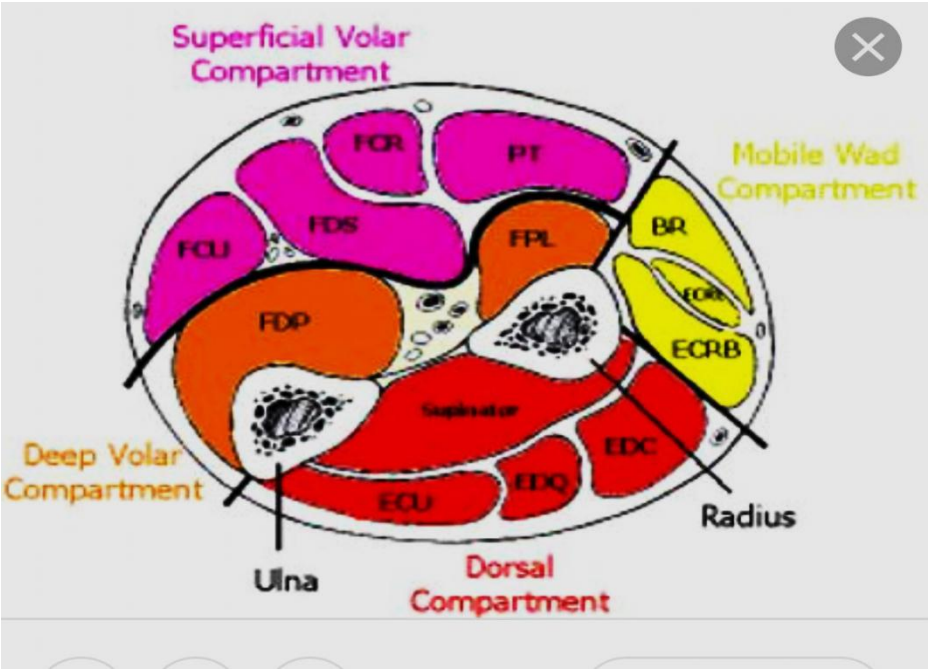




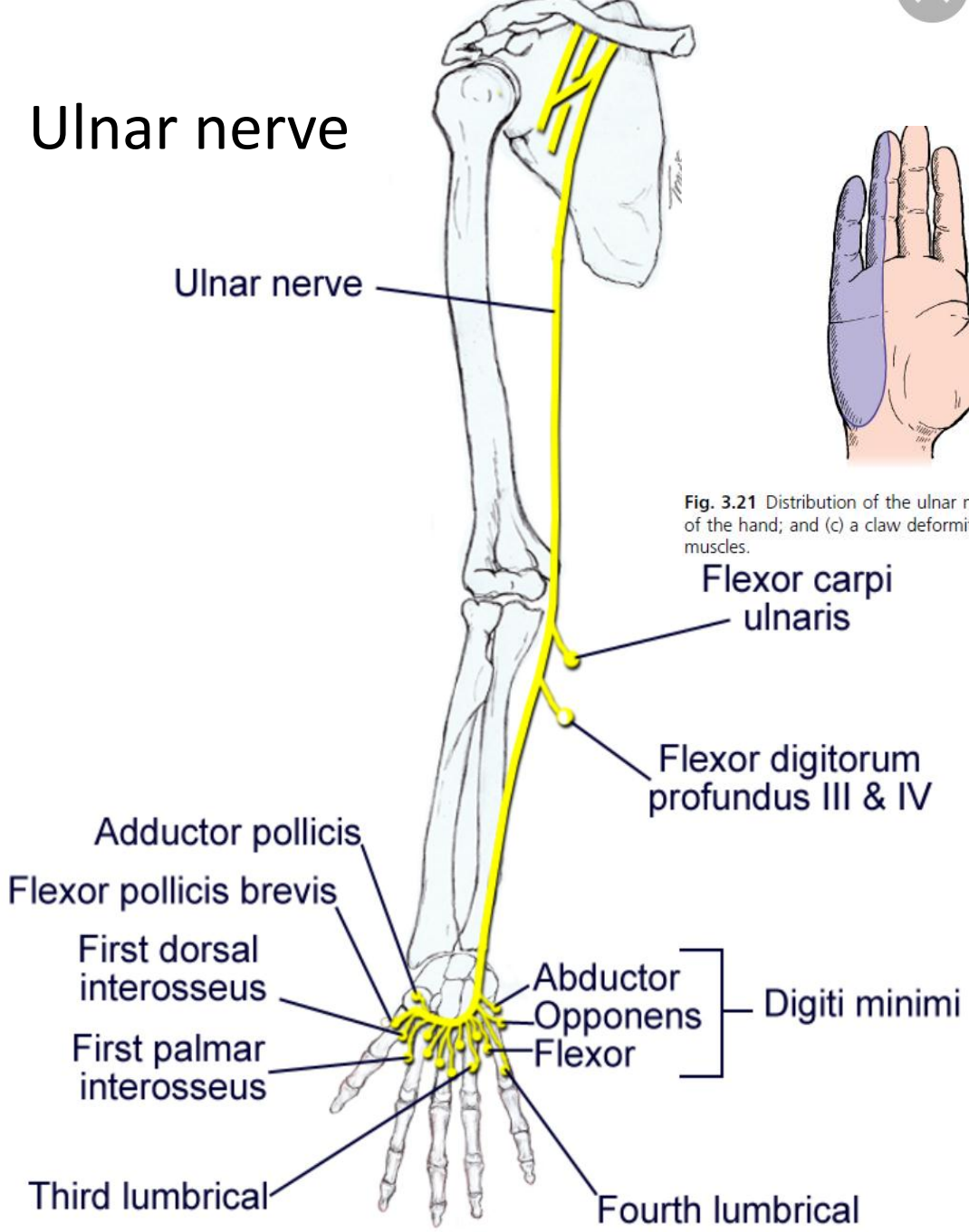
Compartments of the forearm

The forearm is enclosed in a sheath of deep fascia, which is attached to the periosteum of the posterior subcutaneous border of the ulna . This fascial sheath, together with the interosseous membrane and fibrous intermuscular septa, divides the forearm into several compartments, each having its own muscles, nerves, and blood supply. There is very little room within each compartment, and any edema can cause secondary vascular compression of the blood vessels, and therefore causing a condition known as Compartment Syndrome .





Ulnar nerve



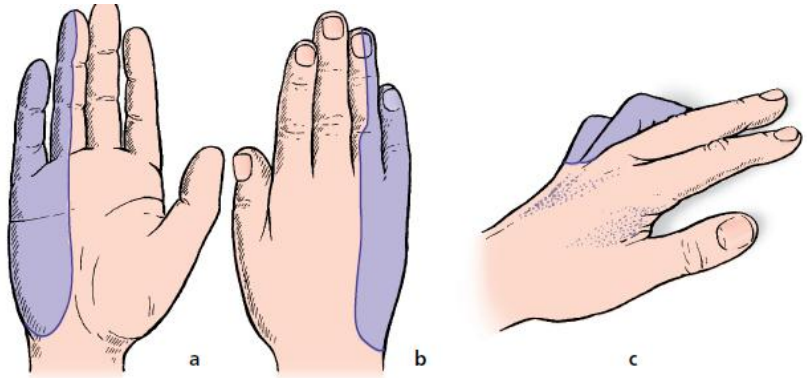
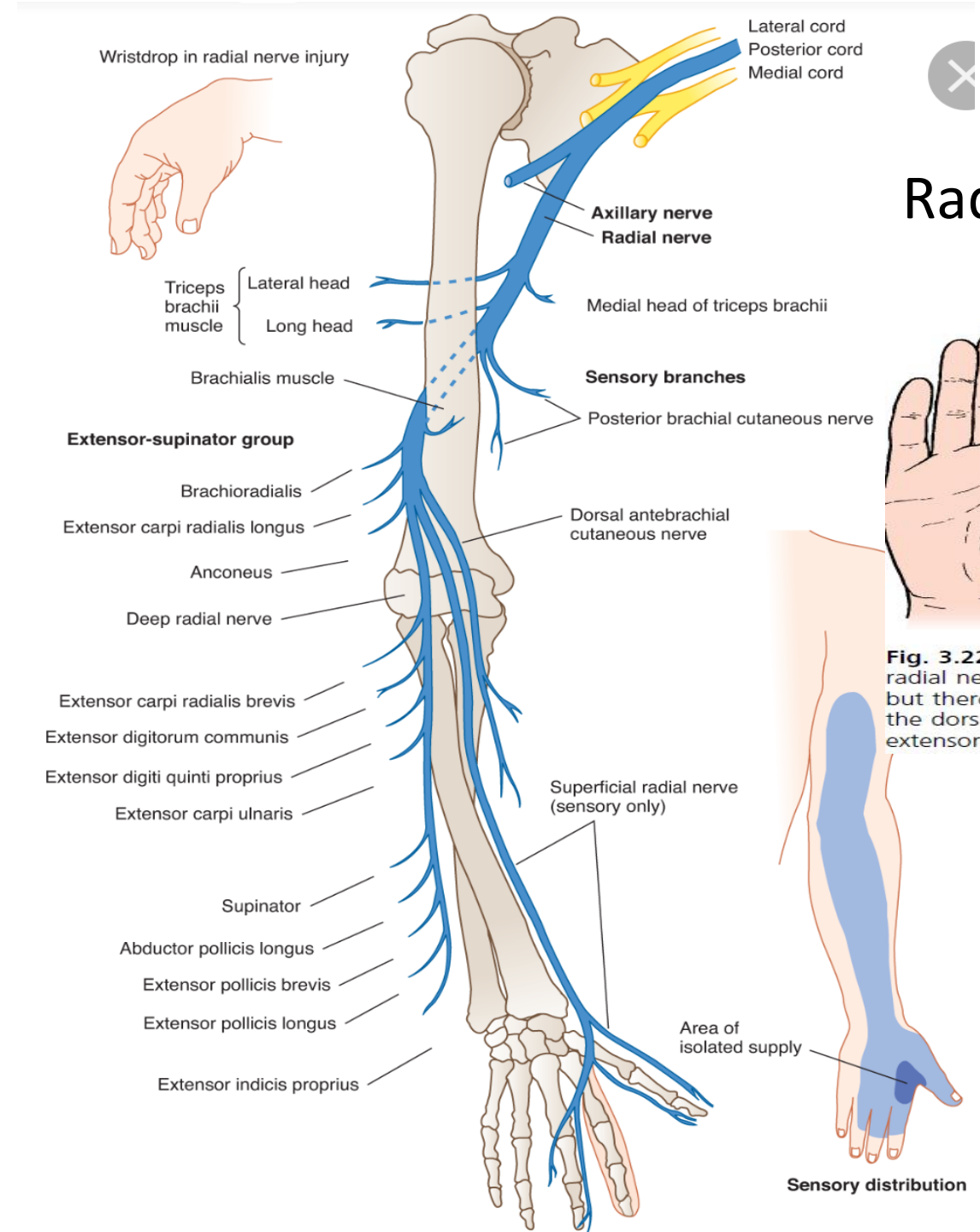


Fig. 3.21 Distribution of the ulnar nerve. Damage to the nerve produces diminished sensibility in: (a) the palm; (b) the dorsum of the hand; and (c) a claw deformity in the little and ring fingers because of damage to their interossei and lumbrical muscles.

Radial nerve



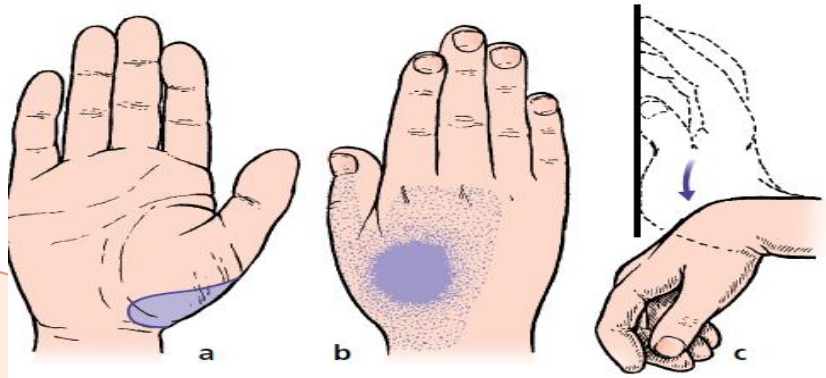
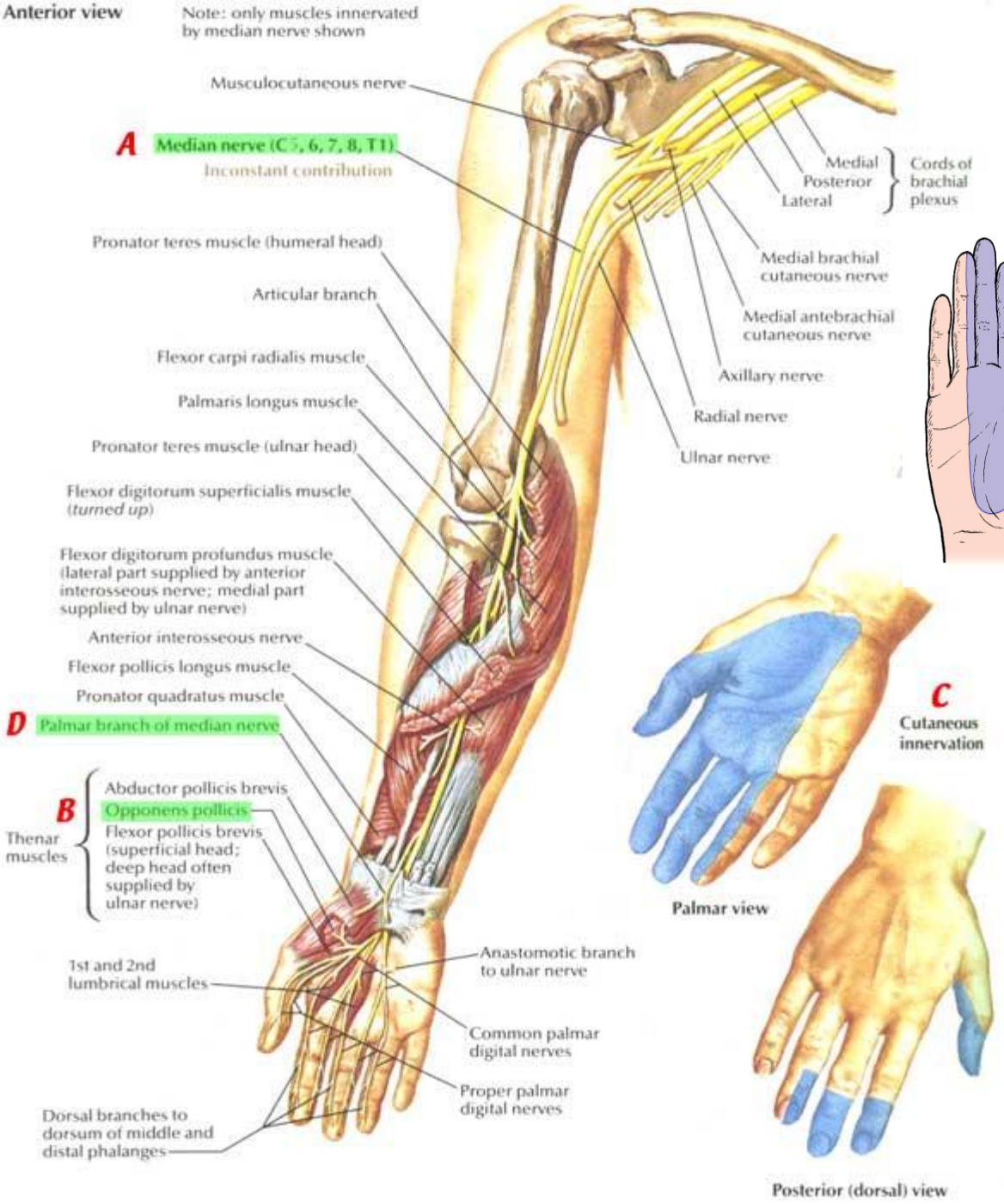


Fig. 3.22 Distribution of the radial nerve. Damage to the radial nerve produces no loss of sensibility in the palm (a) but there may be a small area of diminished sensibility on the dorsum (b) and there will be paralysis of the wrist extensors (wrist drop) (c).

Median nerve



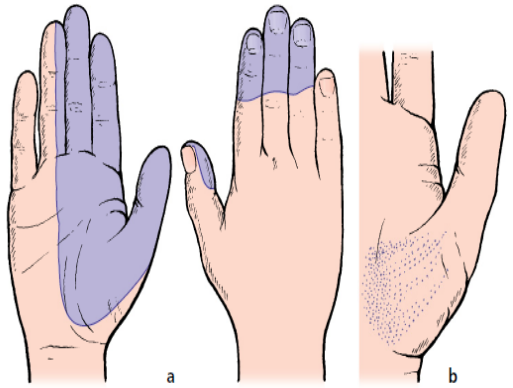


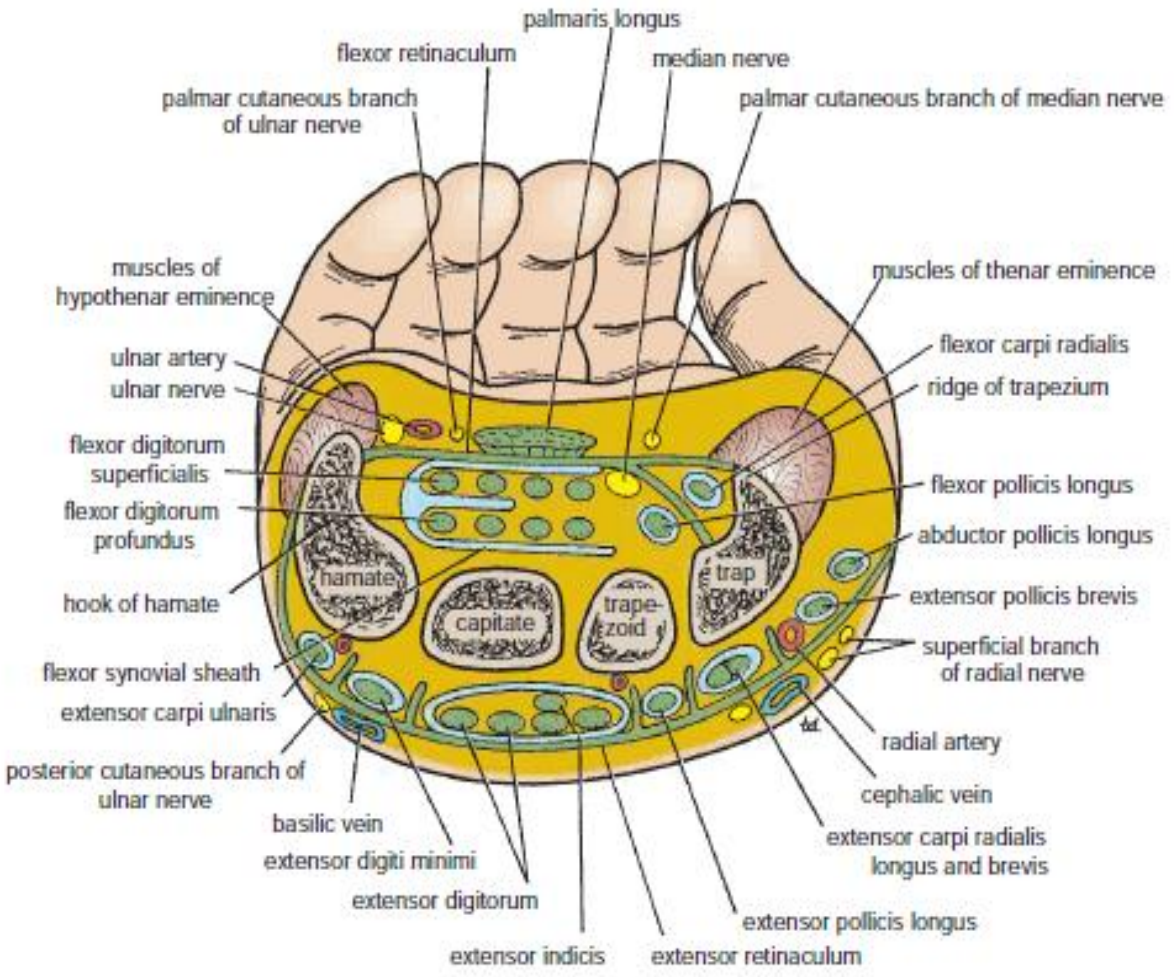
Fig. 3.20 Distribution of the median nerve. Damage to the median nerve produces (a) diminished sensibility in the palm; (b) weakness and wasting of the thenar eminence. Note: If the nerve is compressed ir the carpal tunnel the palm is spared.

The interosseous membrane :- It is a strong membrane that unites the shafts of the radius and the ulna; it is attached to their interosseous borders and provides attachment for neighboring muscles.

The flexor retinaculum :- It is a thickening of deep fascia that holds the long flexor tendons in position at the wrist. It stretches across the front of the wrist and converts the concave anterior surface of the hand into an osteofascial tunnel, the **carpal tunnel**, for the passage of the median nerve and the flexor tendons of the thumb and fingers.

The extensor retinaculum :-

It is a thickening of deep fascia that stretches across the back of the wrist and holds the long extensor tendons in position. It converts the grooves on the posterior surface of the distal ends of the radius and ulna into six separate tunnels for the passage of the long extensor tendons.



Bones of the Hand

There are eight carpal bones, made up of two rows of four.

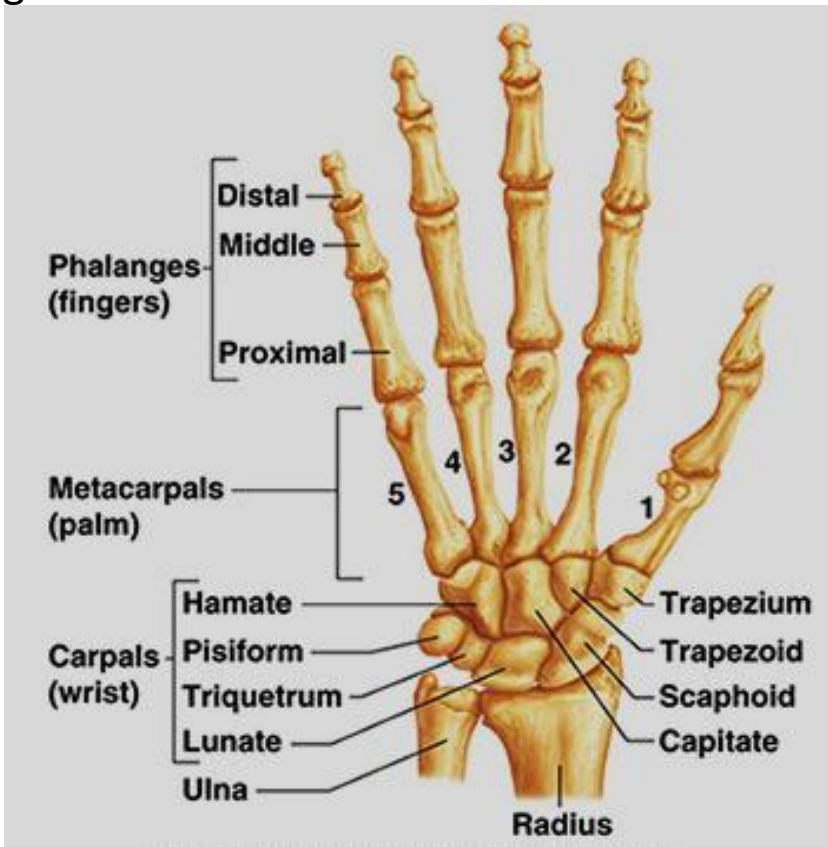
- The **proximal row** consists of (from lateral to medial) the:-
  scaphoid, lunate, triquetral, and **pisiform** bones.

- The **distal row** consists of (from lateral to medial) the:-
  trapezium, trapezoid, capitate, and **hamate** bones.

Together, the bones of the carpus present on their anterior surface a concavity, to the lateral and medial edges of which is attached a strong membranous band called the **flexor retinaculum.**

In this manner, an osteofascial tunnel the **carpal tunnel** is formed for the passage of the median nerve and the flexor tendons of the fingers.

The bones of the hand are cartilaginous at birth. The capitate begins to ossify during the first year, and the others begin to ossify at intervals thereafter until the 12th year, when all the bones are ossified.



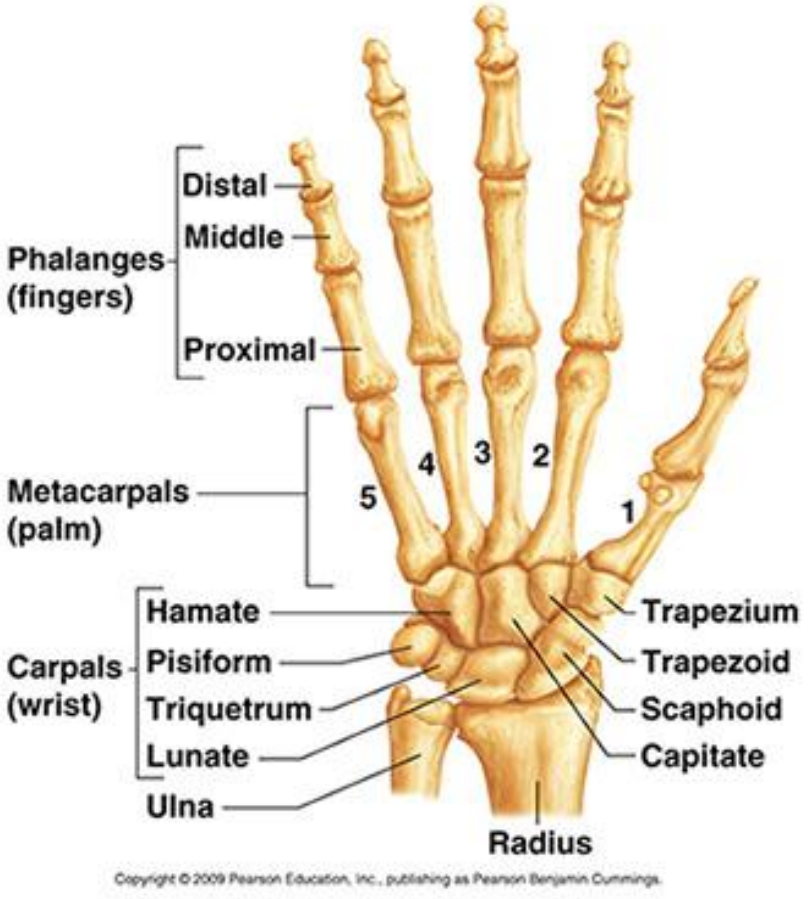
The Metacarpals and Phalanges

There are five metacarpal bones, each of which has:-
a **base,** a **shaft,** and a **head**

The first metacarpal bone of the thumb is the shortest and most mobile. It does not lie in the same plane as the others but occupies a more anterior position. It is also rotated medially through a right angle so that its extensor surface is directed laterally and not backward.

The bases of the metacarpal bones articulate with the distal row of the carpal bones the heads which form the **knuckles** articulate with the proximal phalanges . The shaft of each metacarpal bone is slightly concave forward and is triangular in transverse section. Its surfaces are posterior lateral, and medial.

There are three phalanges for each of the fingers but only two for the thumb.
The important muscles attached to the bones of the hand and fingers are shown below



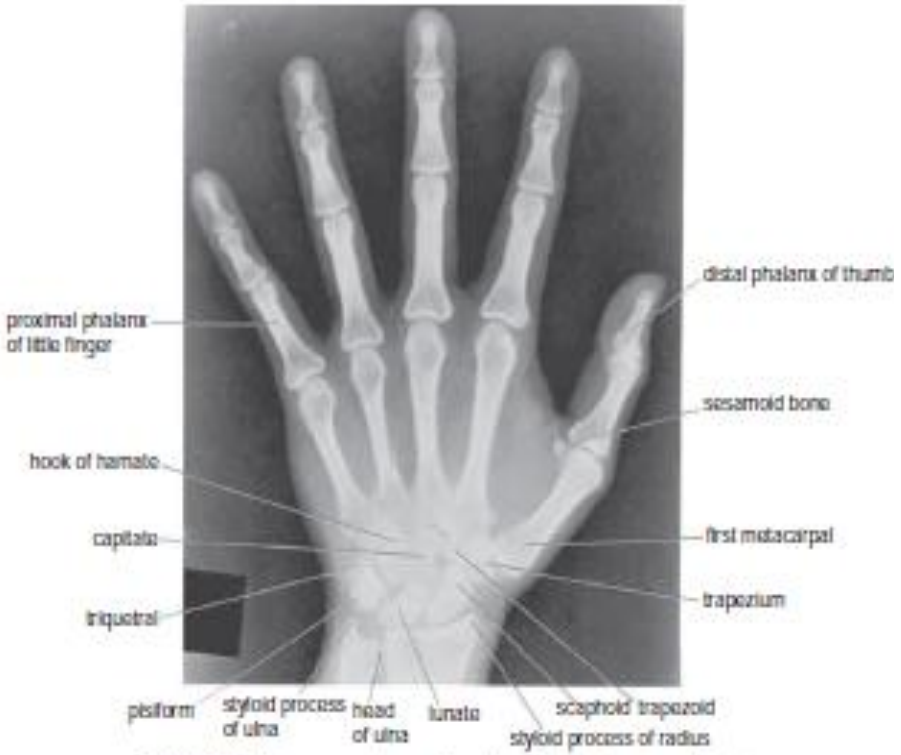


FIGURE 9.89 Posteroanterior radiograph of an adult wrist and hand.

FIGURE 9.90 Posteroanterior radiograph of the wrist with the forearm pronated.

TABLE 9.9 Small Muscles of the Hand

Muscle	Origin	Insertion	Nerve Supply	Nerve Roots[a]	Action
Palmaris brevis	Flexor retinaculum, palmar aponeurosis	Skin of palm	Superficial branch of ulnar nerve	C8; **T1**	Corrugates skin to improve grip of palm
Lumbricals (4)	Tendons of flexor digitorum profundus	Extensor expansion of medial four fingers	1st and 2nd, (i.e., lateral two) median nerve; 3rd and 4th deep branch of ulnar nerve	C8; **T1**	Flex metacarpophalangeal joints and extend interphalangeal joints of fingers except thumb
Interossei (8)					
Palmar (4)	First arises from base of 1st metacarpal; remaining three from anterior surface of shafts of 2nd, 4th, and 5th metacarpals	Proximal phalanges of thumb and index, ring, and little fingers and dorsal extensor expansion of each finger (Fig. 9.69)	Deep branch of ulnar nerve	C8; **T1**	Palmar interossei adduct fingers toward center of third finger
Dorsal (4)	Contiguous sides of shafts of metacarpal bones	Proximal phalanges of index, middle, and ring fingers and dorsal extensor expansion (Fig. 9.69)	Deep branch of ulnar nerve	C8; **T1**	Dorsal interossei abduct fingers from center of third finger; both palmar and dorsal flex metacarpophalangeal joints and extend interphalangeal joints

(continued)

TABLE 9.9 Small Muscles of the Hand (continued)

Muscle	Origin	Insertion	Nerve Supply	Nerve Roots*	Action
Short Muscles of Thumb					
Abductor pollicis brevis	Scaphoid, trapezium, flexor retinaculum	Base of proximal phalanx of thumb	Median nerve	**C8**; T1	Abduction of thumb
Flexor pollicis brevis	Flexor retinaculum	Base of proximal phalanx of thumb	Median nerve	C8; T1	Flexes metacarpophalangeal joint of thumb
Opponens pollicis	Flexor retinaculum	Shaft of metacarpal bone of thumb	Median nerve	**C8**; T1	Pulls thumb medially and forward across palm
Adductor pollicis	Oblique head; 2nd and 3rd metacarpal bones; transverse head; 3rd metacarpal bone	Base of proximal phalanx of thumb	Deep branch of ulnar nerve	C8; T1	Adduction of thumb
Short Muscles of Little Finger					
Abductor digiti minimi	Pisiform bone	Base of proximal phalanx of little finger	Deep branch of ulnar nerve	C8; T1	Abducts little finger
Flexor digiti minimi	Flexor retinaculum	Base of proximal phalanx of little finger	Deep branch of ulnar nerve	C8; T1	Flexes little finger
Opponens digiti minimi	Flexor retinaculum	Medial border fifth metacarpal bone	Deep branch of ulnar nerve	C8; T1	Pulls 5th metacarpal forward as in cupping the palm

*The predominant nerve root supply is indicated by boldface type.

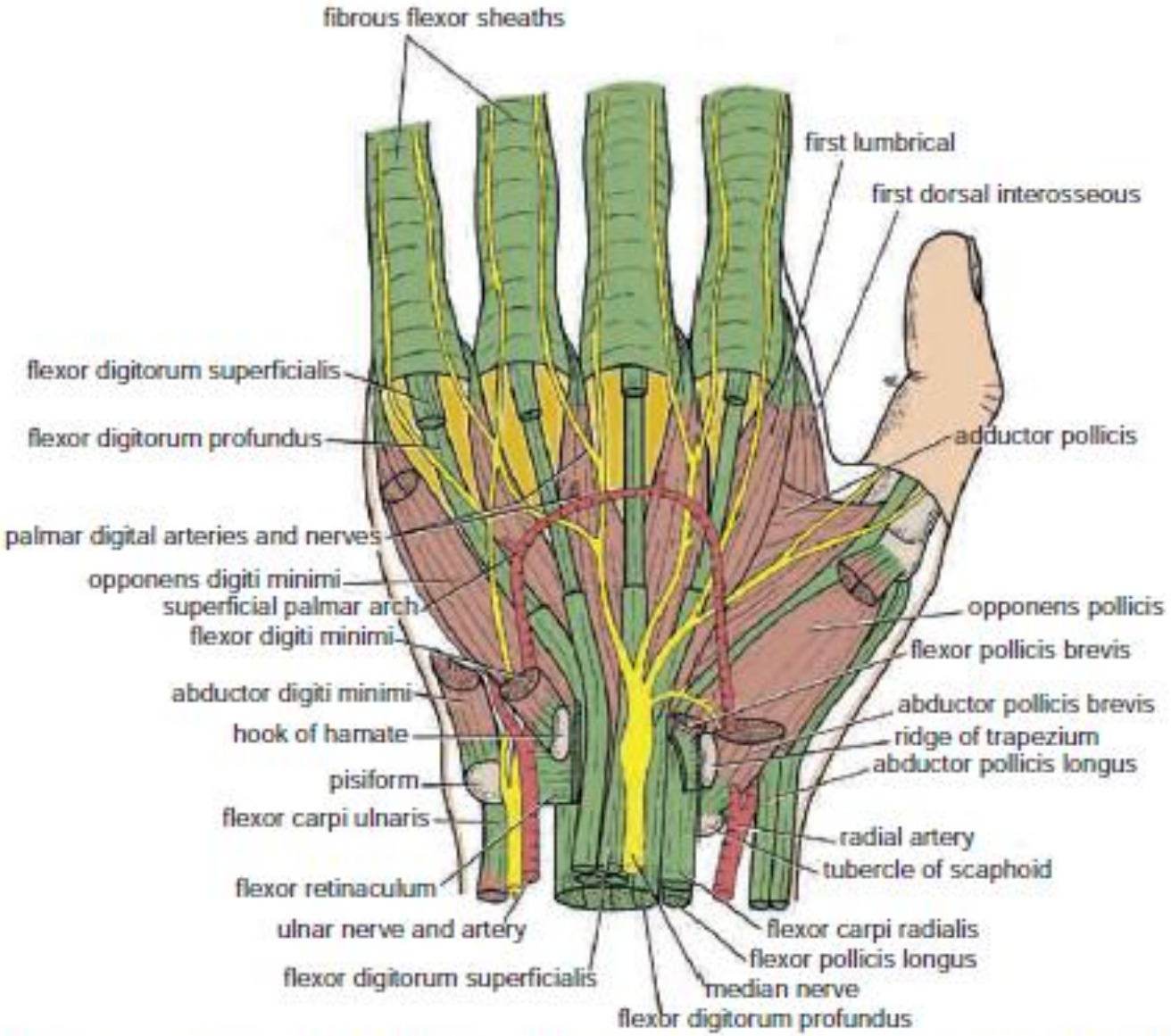


FIGURE 9.62 Anterior view of the palm of the hand. The palmar aponeurosis and the greater part of the flexor retinaculum have been removed to display the superficial palmar arch, the median nerve, and the long flexor tendons. Segments of the tendons of the flexor digitorum superficialis have been removed to show the underlying tendons of the flexor digitorum profundus.

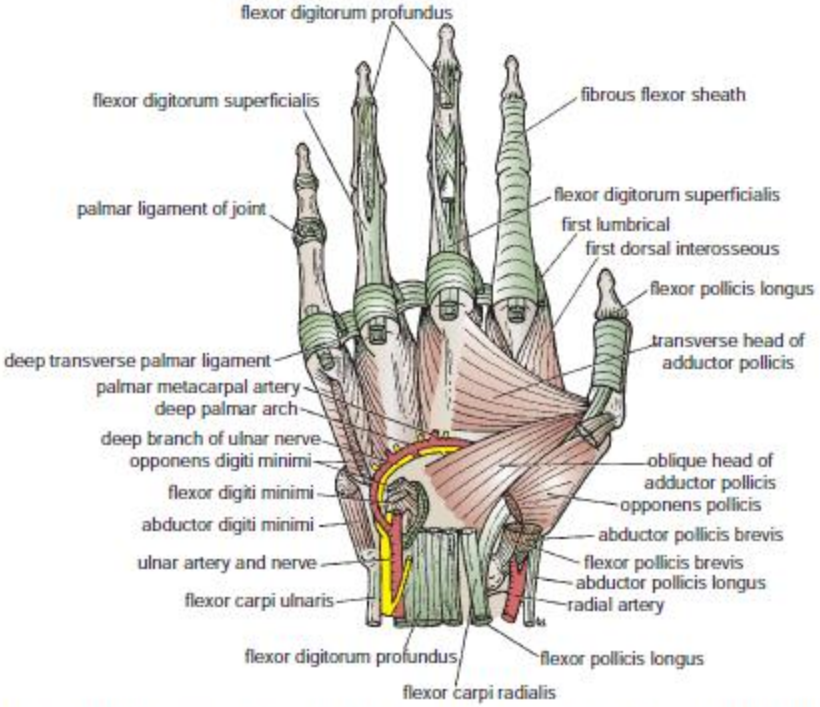


FIGURE 9.67 Anterior view of the palm of the hand. The long flexor tendons have been removed from the palm, but their method of insertion into the fingers is shown.

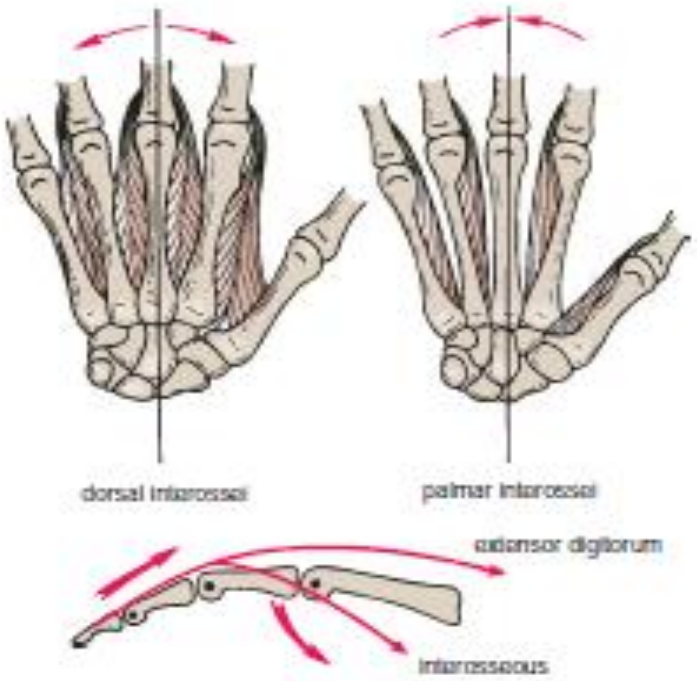


FIGURE 9.69 Origins and insertion of the palmar and the dorsal interossei muscles. The actions of these muscles are also shown.

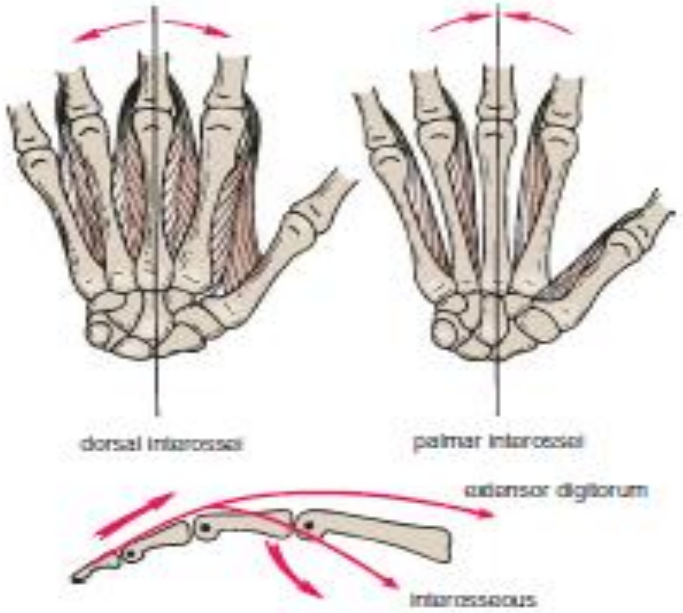
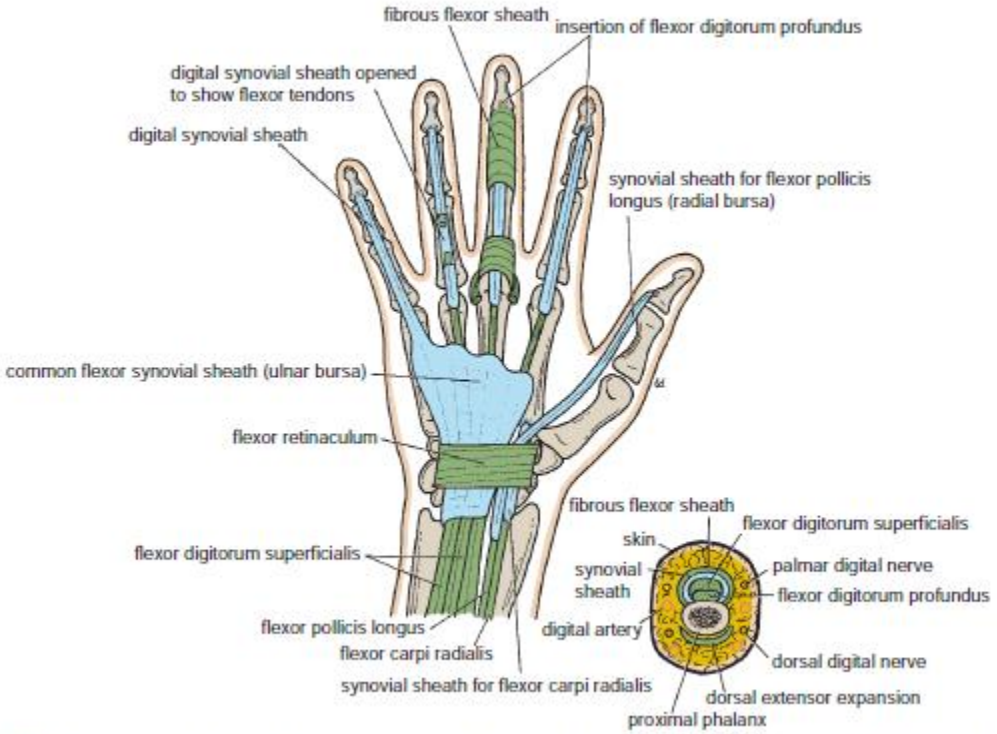
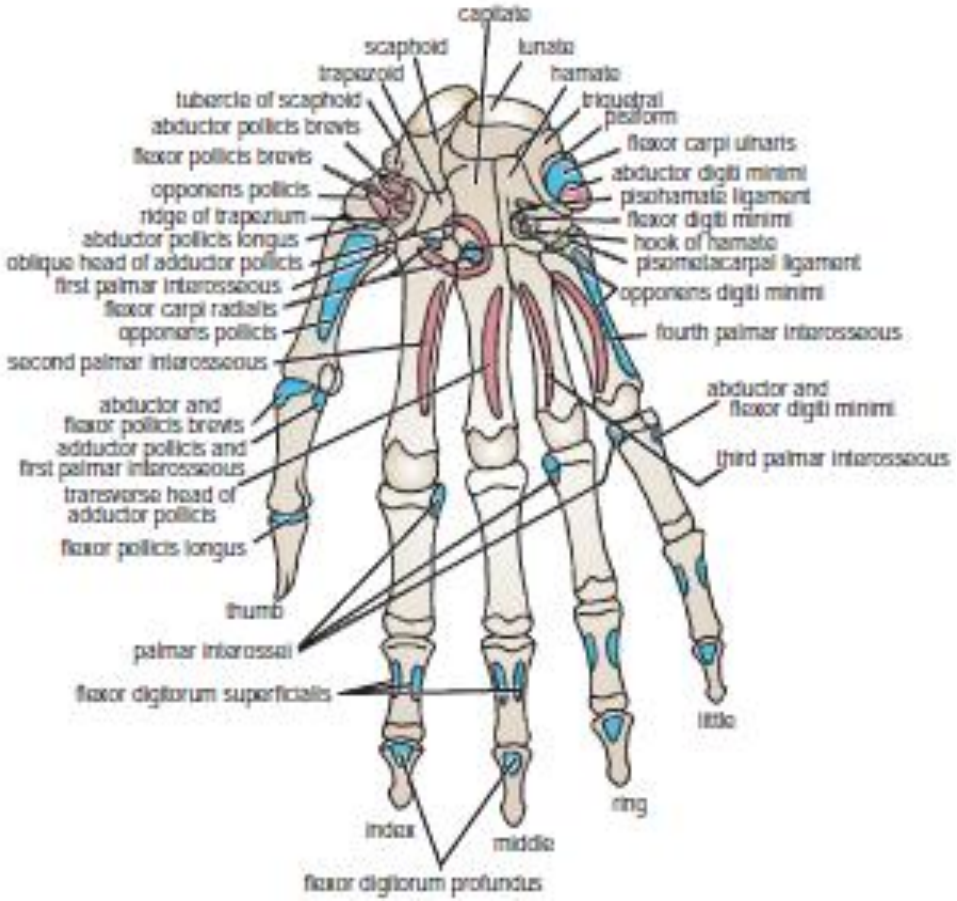


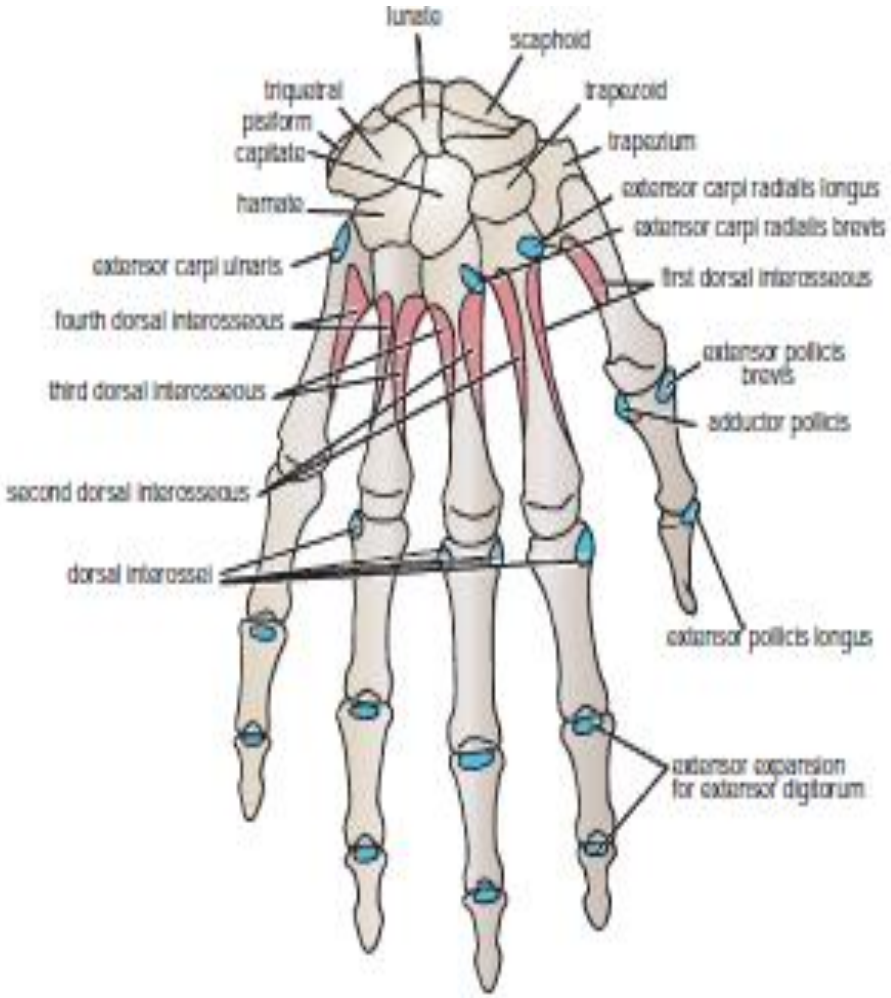
FIGURE 9.69 Origins and insertion of the palmar and the dorsal interossei muscles. The actions of these muscles are also shown.



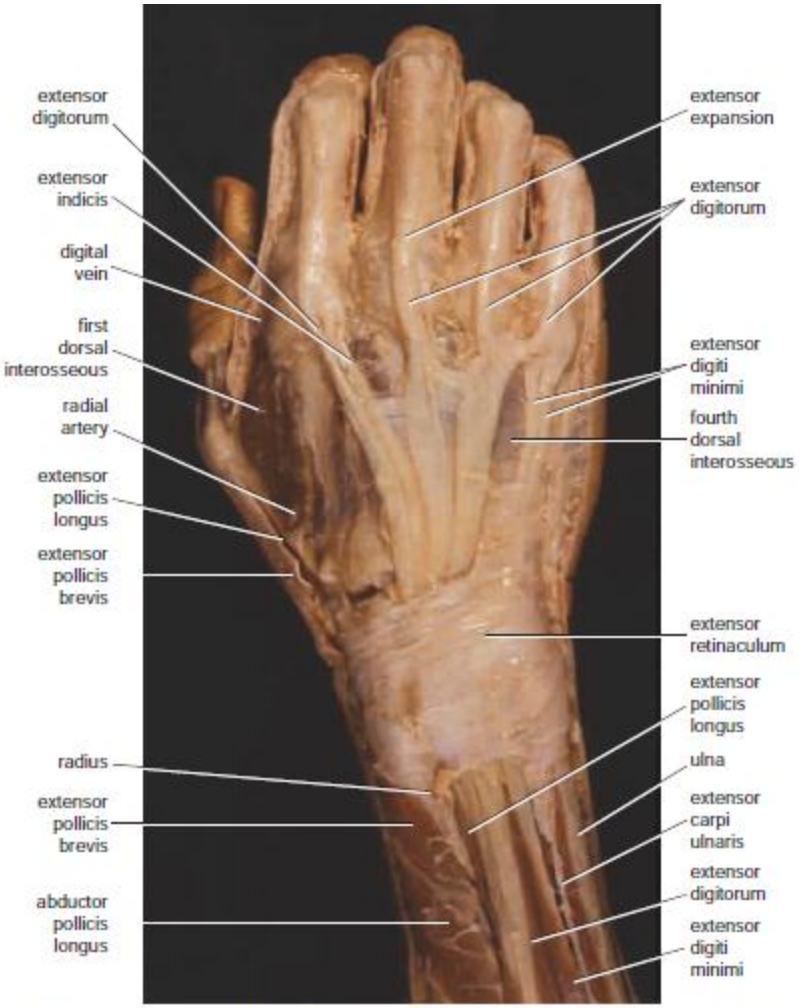
URE 9.66 Anterior view of the palm of the hand showing the flexor synovial sheaths. Cross section of a finger is also



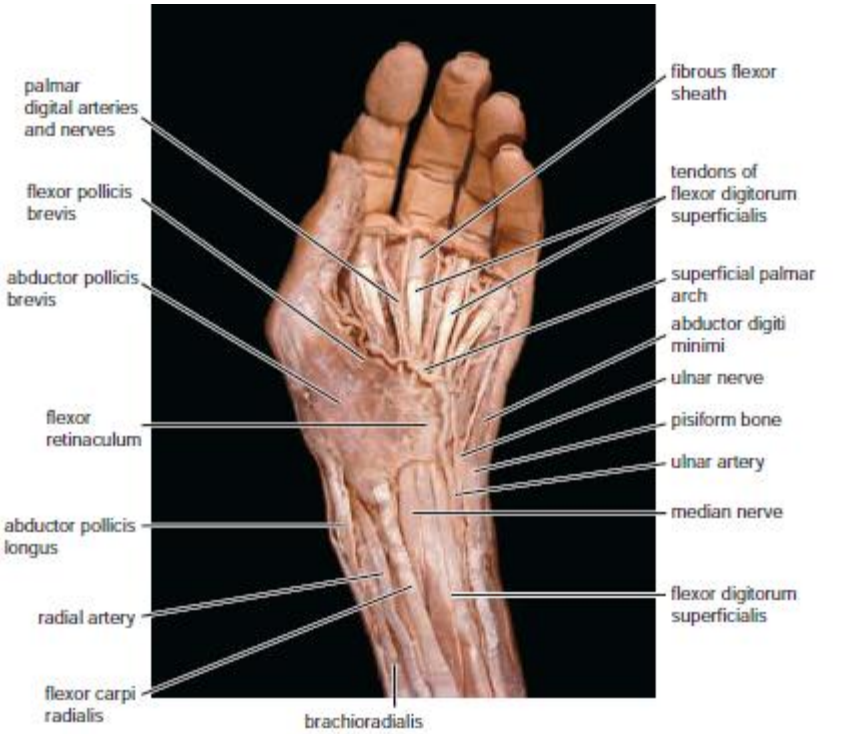
Important muscular attachments to the anterior surfaces of the bones of the hand.



Important muscular attachments to the posterior surfaces of the bones of the hand.



Dissection of the dorsal surface of the right hand showing the long extensor tendons and the extensor retinaculum.



RE 9.59 Dissection of the front of the left forearm and hand showing the superficial structures.

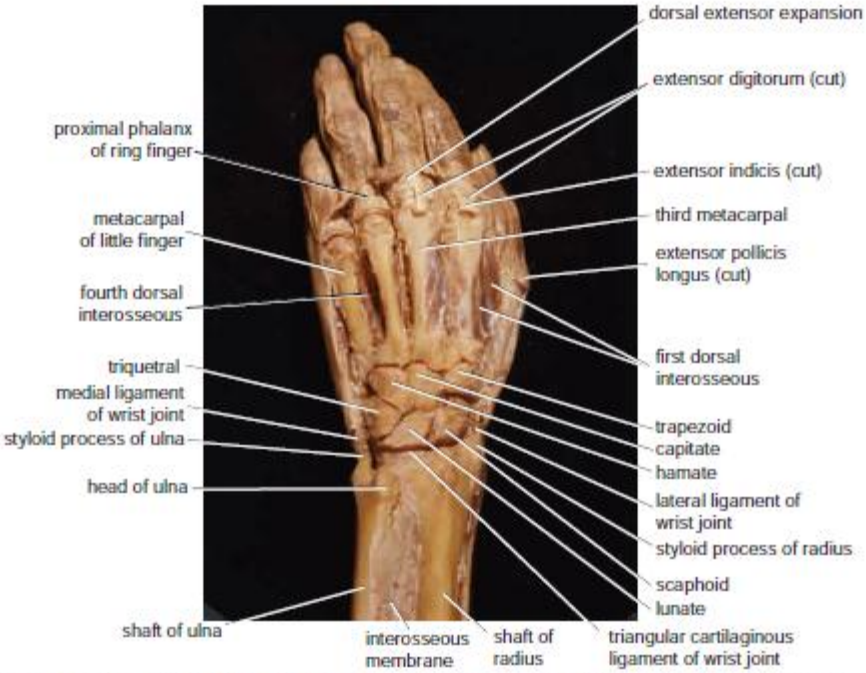


FIGURE 9.74 Dissection of the dorsal surface of the left hand and distal end of the forearm. Note the carpal bones and the intercarpal joints; note also the wrist (radiocarpal) joint.

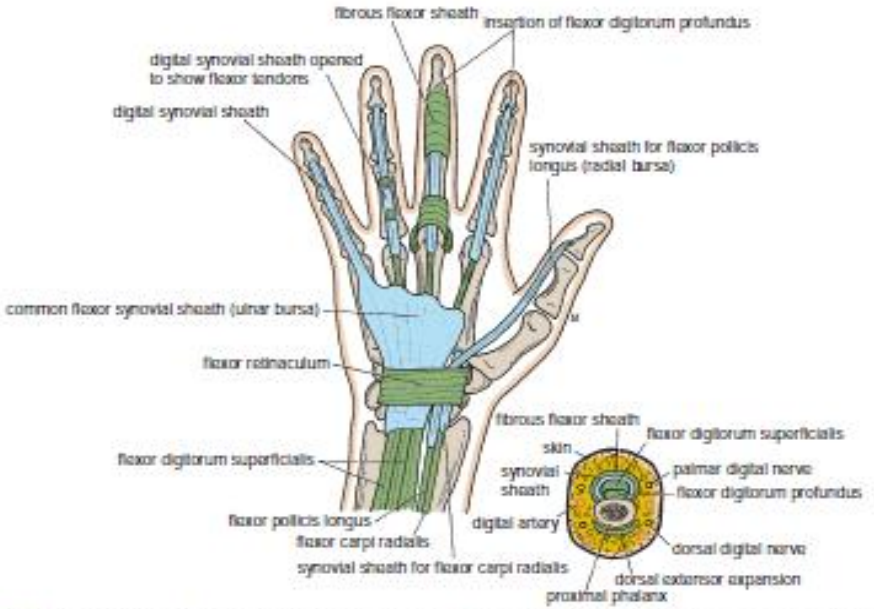


FIGURE 9.66 Anterior view of the palm of the hand showing the flexor synovial sheaths. Cross section of a finger is also shown.

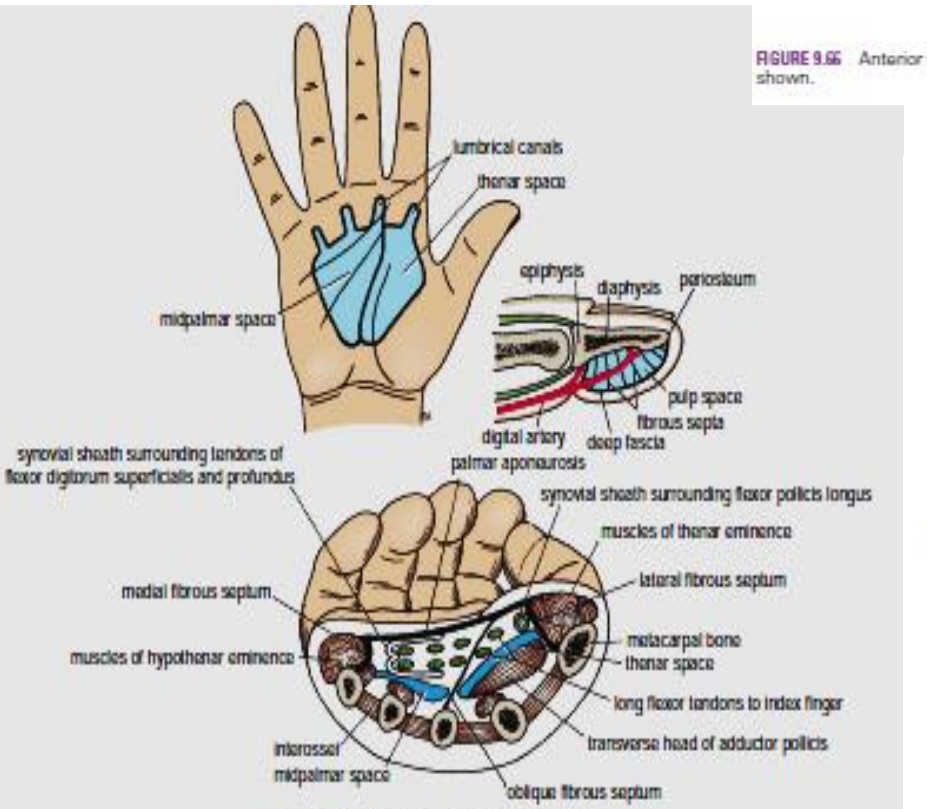


FIGURE 9.70 Palmar and pulp fascial spaces.

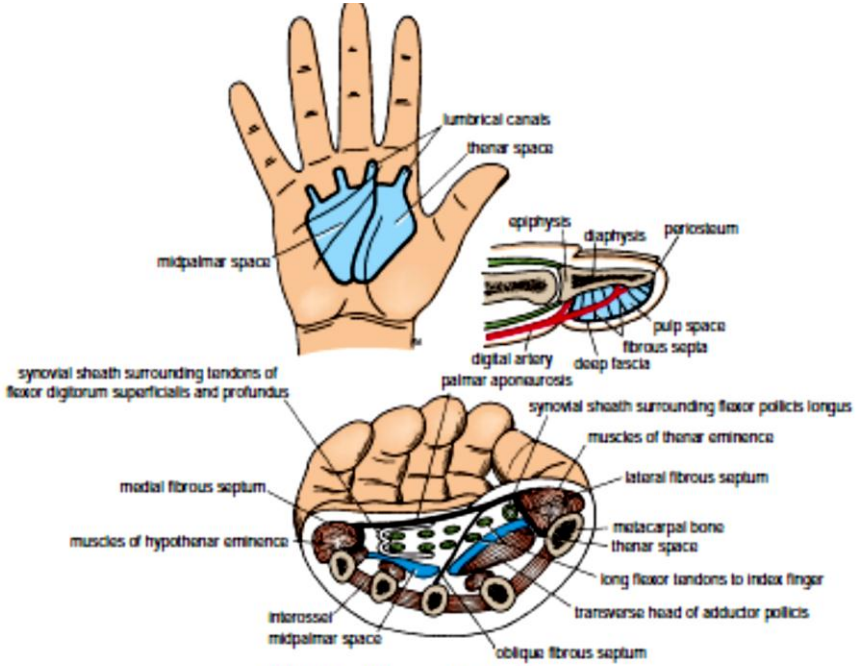


FIGURE 9.70 Palmar and pulp fascial spaces.

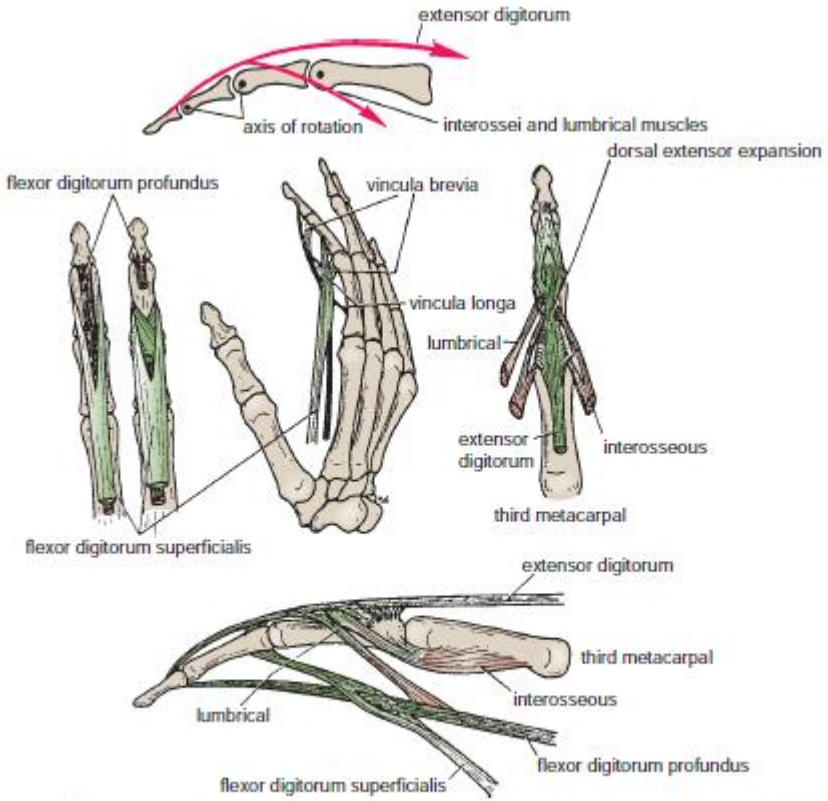


FIGURE 9.63 Insertions of long flexor and extensor tendons in the fingers. Insertions of the lumbrical and interossei muscles are also shown. The uppermost figure illustrates the action of the lumbrical and interossei muscles in flexing the metacarpophalangeal joints and extending the interphalangeal joints.

The Palmar Aponeurosis

The palmar aponeurosis is triangular and occupies the central area of the palm. The apex of is attached to the distal border of the flexor retinaculum and receives the insertion of the palmaris longus tendon. The base of the aponeurosis divides at the bases of the fingers into four slips. Each slip divides into two bands, one passing superficially to the skin and the other passing deeply to the root of the finger; here each deep band divides into two, which diverge around the flexor tendons and finally fuse with the fibrous flexor sheath and the deep transverse ligaments.

The medial and lateral borders of the palmar aponeurosis are continuous with the thinner deep fascia covering the hypothenar and thenar muscles. From each of these borders, fibrous septa pass posteriorly into the palm And take part in the formation of the palmar fascial spaces.

The function of the palmar aponeurosis is to give firm attachment to the overlying skin and so improve the grip and to protect the underlying tendons.

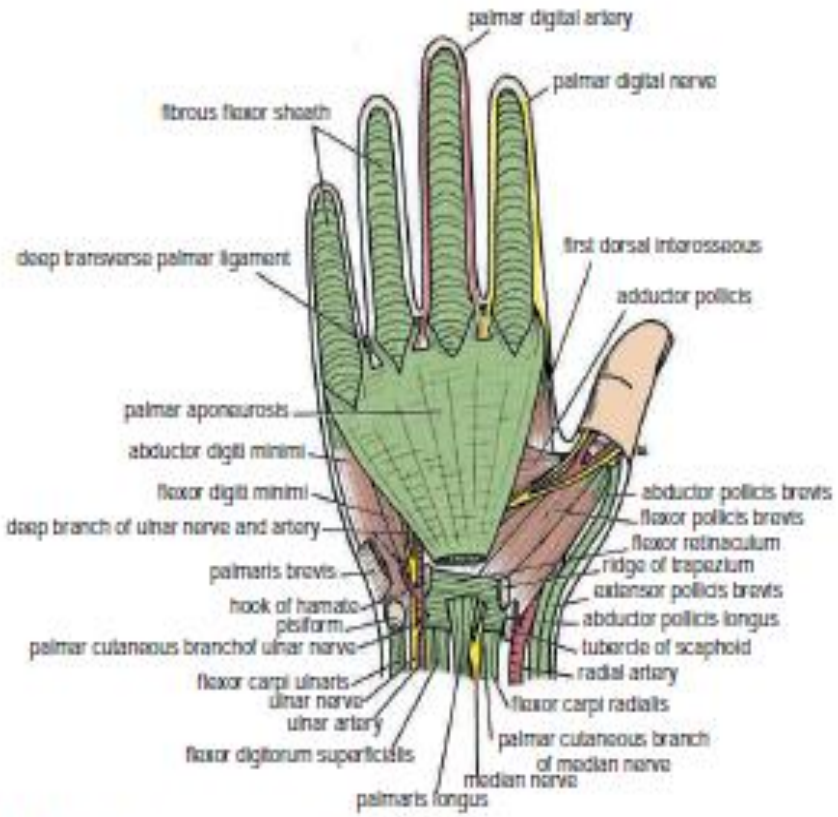


FIGURE 9.55 Anterior view of the palm of the hand. The palmar aponeurosis has been left in position.

Injuries to the Bones of the Hand

Fracture of the scaphoid bone :-

is common in young adults; unless treated effectively, the fragments will not unite, and permanent weakness and pain of the wrist will result, with the subsequent development of osteoarthritis. The fracture line usually goes through the narrowest part of the bone. The blood vessels to the scaphoid enter its proximal and distal ends, a fracture deprives the proximal fragment of its arterial supply, and this fragment undergoes avascular necrosis.
Deep tenderness in the anatomic snuffbox after a fall on the outstretched hand in a young adult makes one suspicious of a fractured scaphoid.

Dislocation of the lunate bone occasionally occurs in young adults who fall on the outstretched hand in a way that causes hyperextension of the wrist joint. Involvement of the median nerve is common.

Fractures of the metacarpal bones can occur as a result of direct violence, such as the clenched fist striking a hard object.The fracture always angulates dorsally. The “boxer’s fracture”commonly produces an oblique fracture of the neck of the fifth and sometimes the fourth metacarpal bones. The distal fragment is commonly displaced proximally, thus shortening the finger posteriorly.

Bennett’s fracture is a fracture of the base of the metacarpal of the thumb caused when violence is applied along the long axis of the thumb or the thumb is forcefully abducted. The fracture is oblique and enters the carpometacarpal joint of the thumb, causing joint instability. Fractures of the phalanges are common and usually follow direct injury.

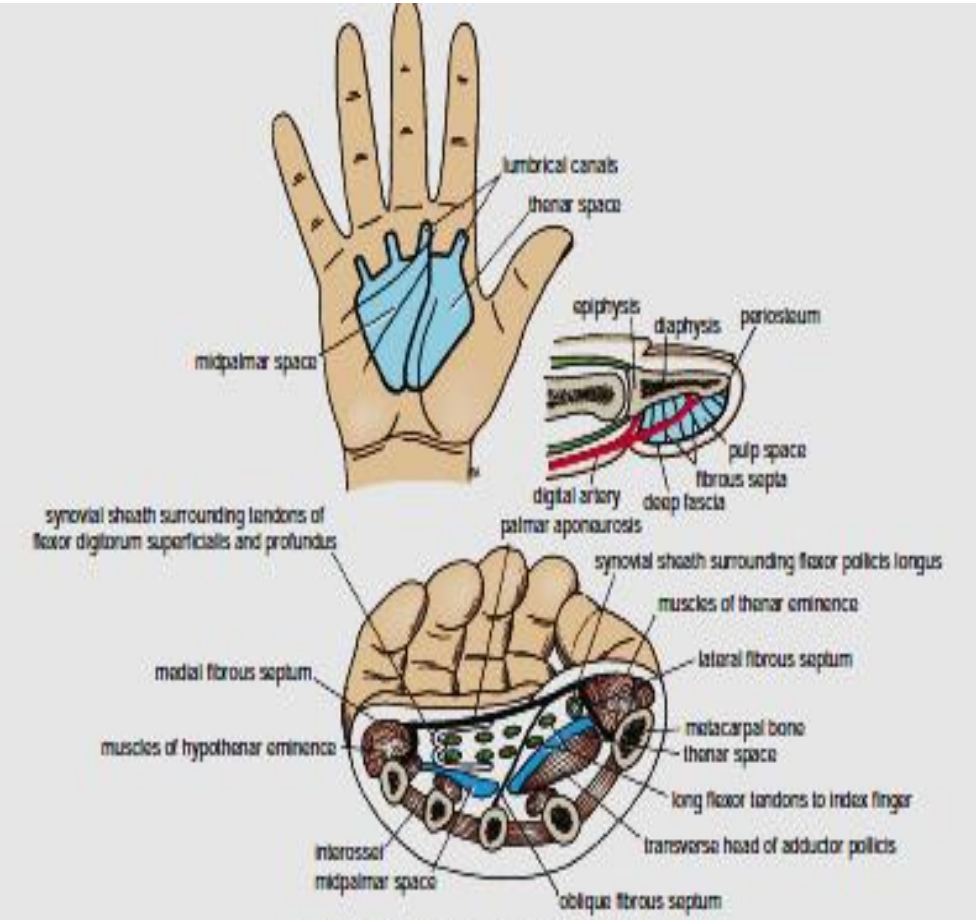


FIGURE 9.70 Palmar and pulp fascial spaces.

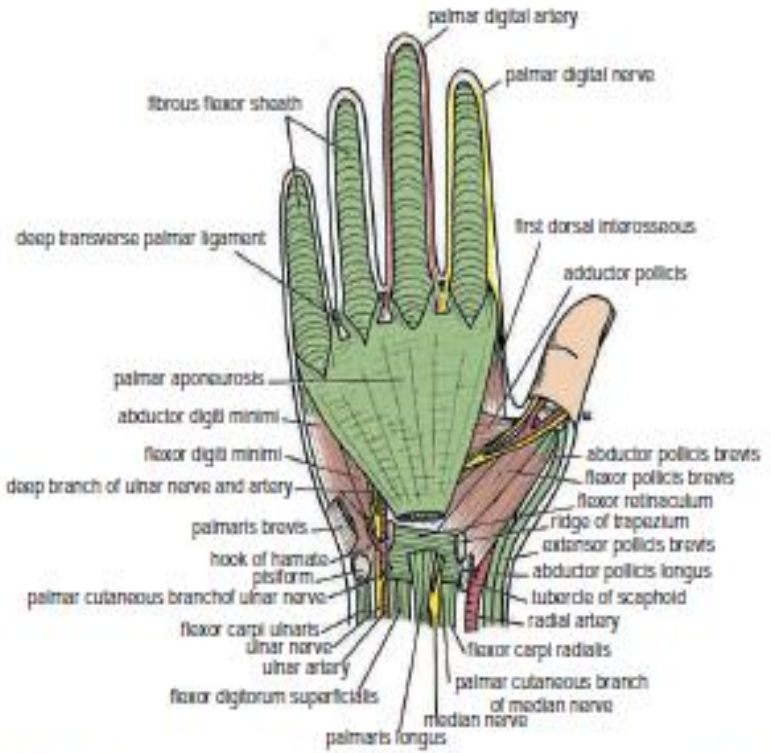
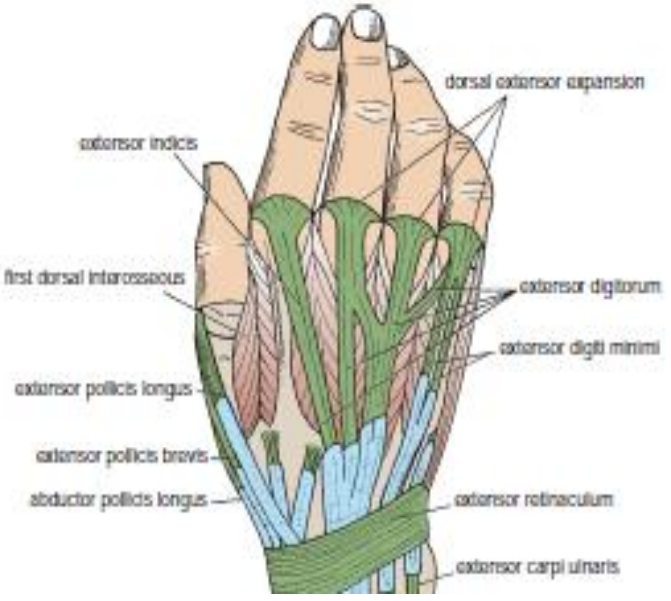
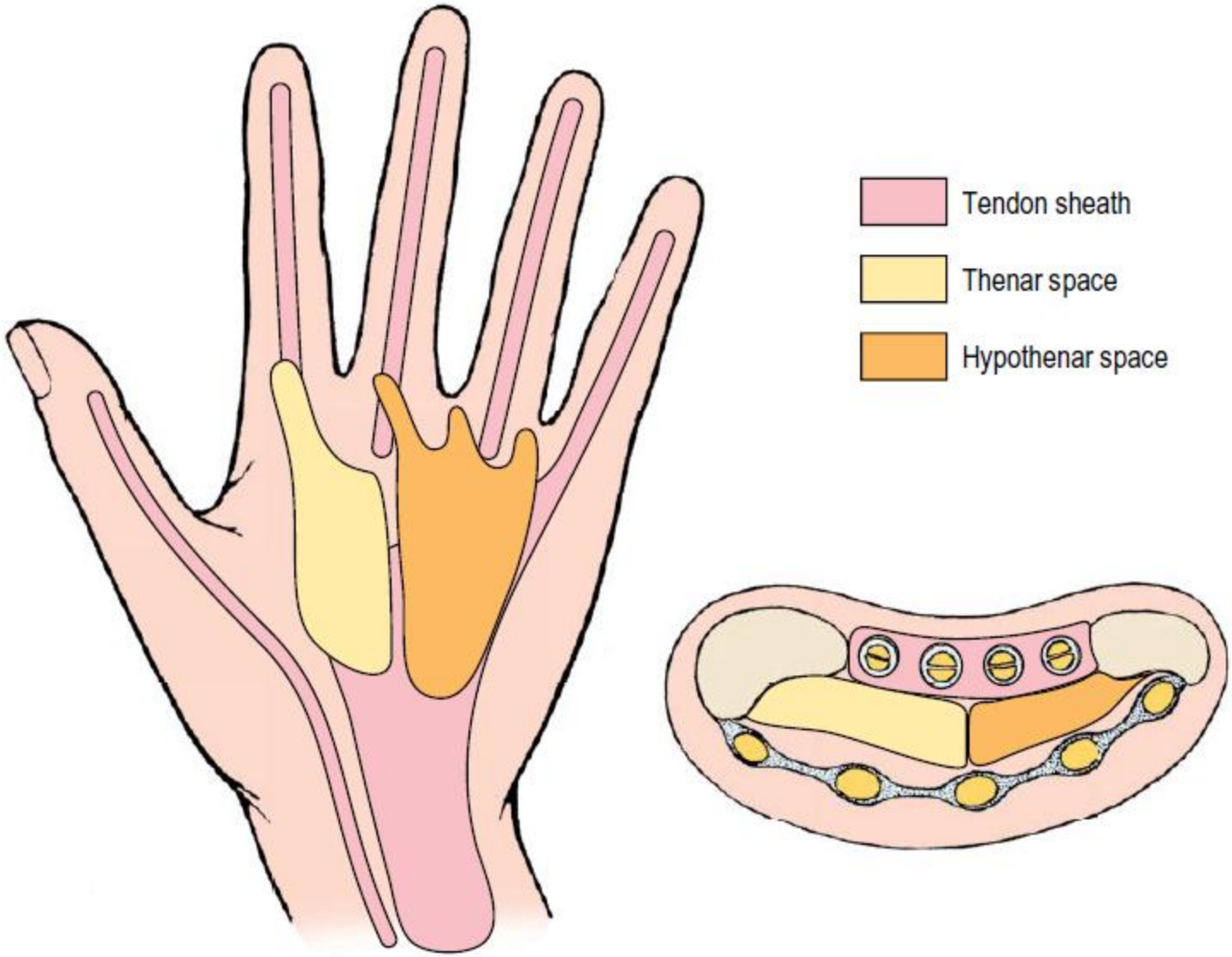


FIGURE 9.55 Anterior view of the palm of the hand. The palmar aponeurosis has been left in position.





Tendon sheaths and deep spaces in the palm and fingers. Infection is confined to these spaces initially.

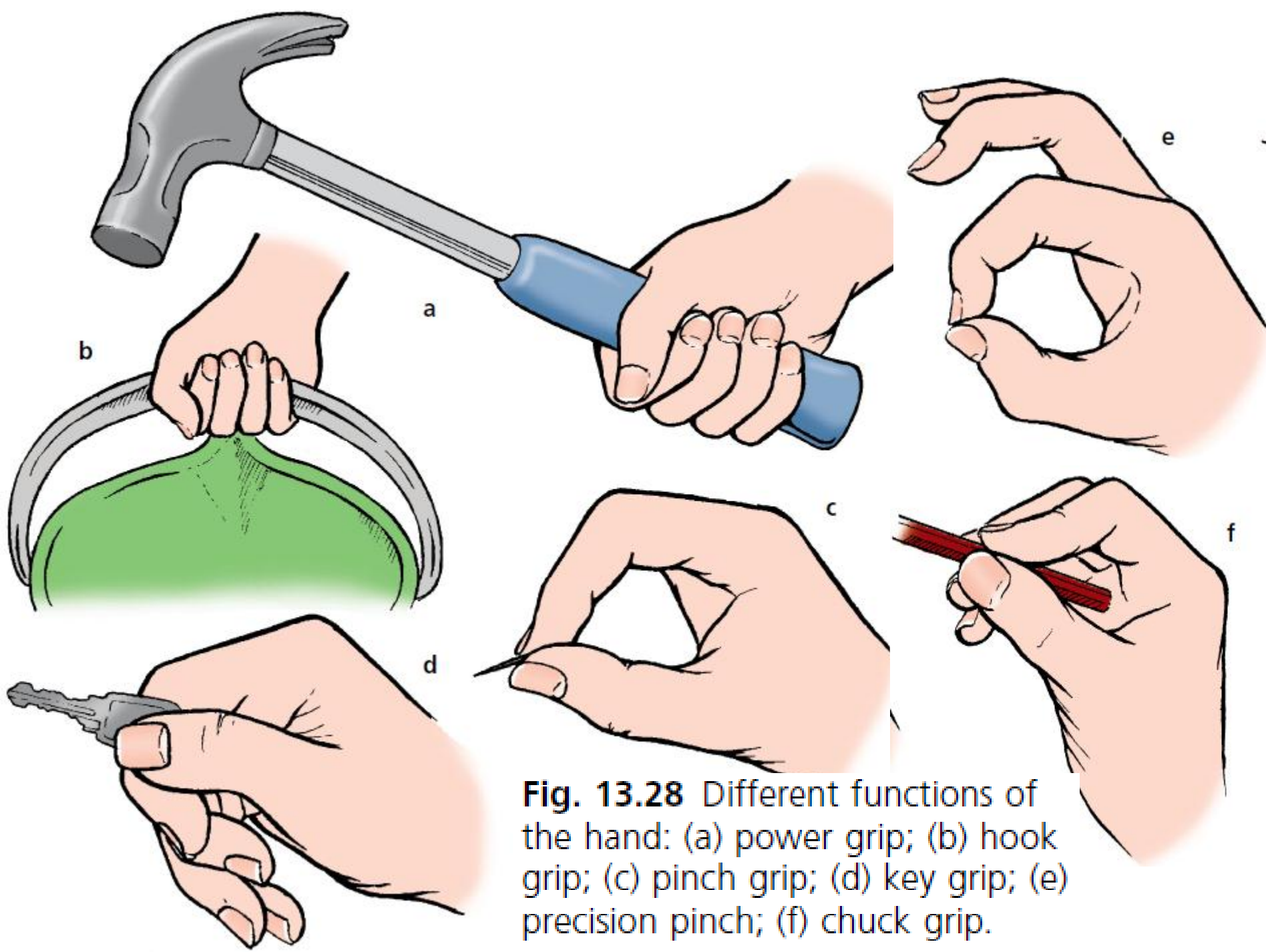
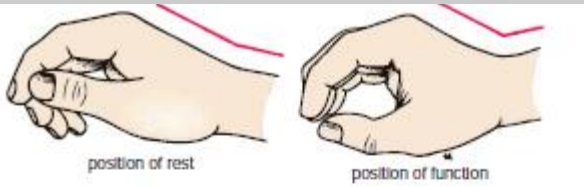
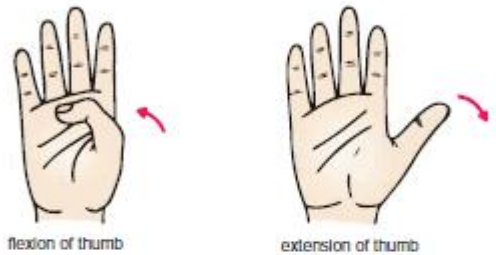
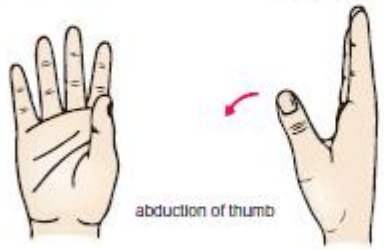


Fig. 13.28 Different functions of the hand: (a) power grip; (b) hook grip; (c) pinch grip; (d) key grip; (e) precision pinch; (f) chuck grip.







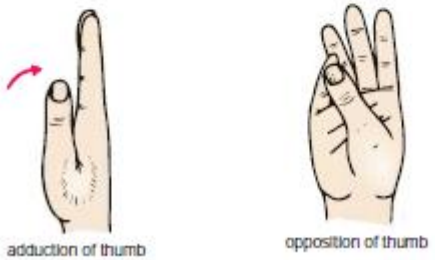


FIGURE 9.76 Various positions of the hand and movements of the thumb.

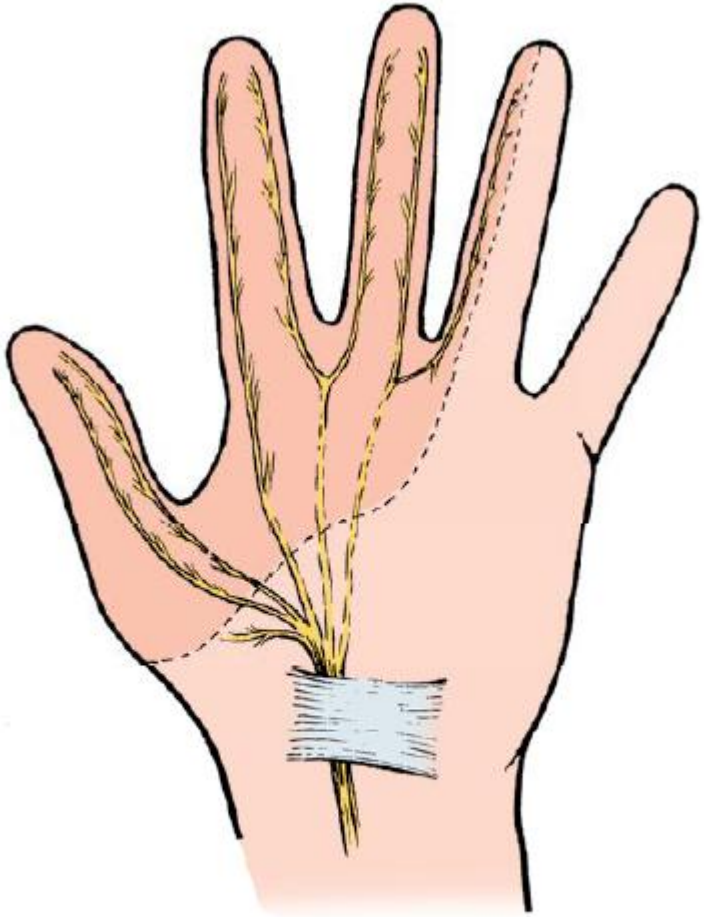


Fig. 23.22 Carpal tunnel syndrome. The median nerve is compressed where it runs beneath the carpal ligament. There may be altered sensibility of the thumb, index, middle and half of the ring finger and wasting of the thenar muscles.

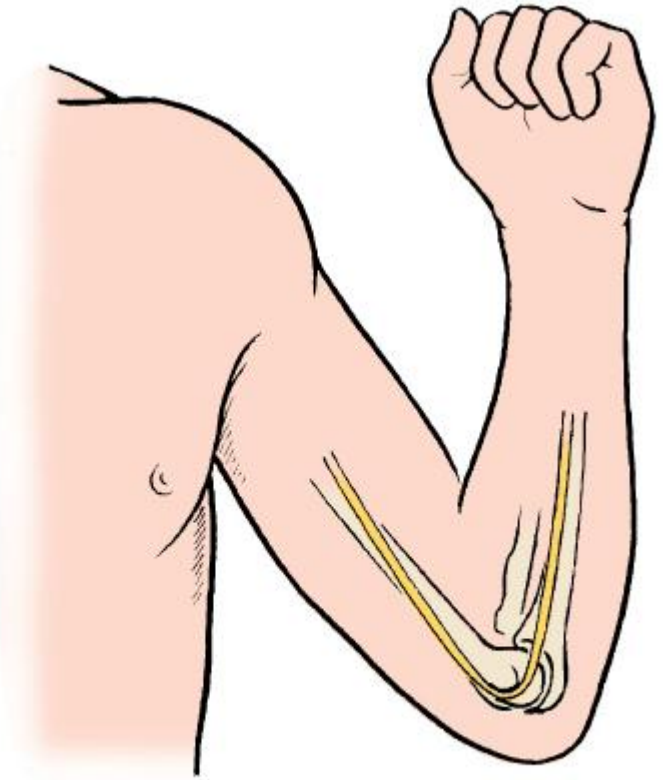


Fig. 23.21 The ulnar nerve runs behind the medial epicondyle and may be irritated after prolonged full flexion.

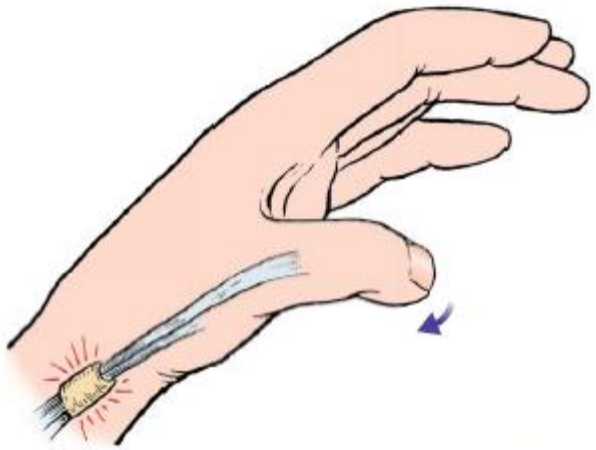


Fig. 23.10 De Quervain's disease. The extensor pollicis brevis and abductor pollicis longus tendons are irritated as they pass beneath a fibrous bridge proximal to the radial styloid.

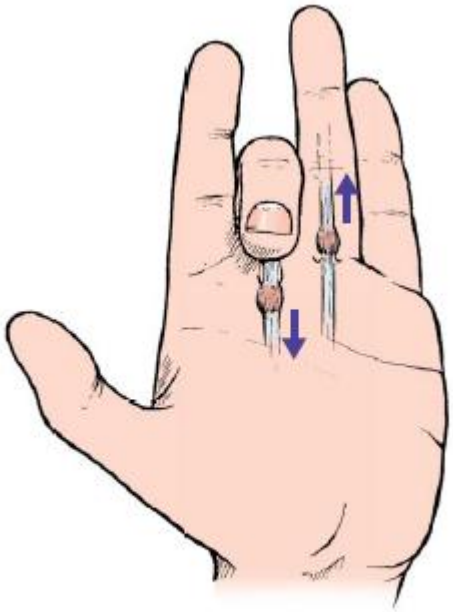


Fig. 23.11 Trigger finger. Triggering is caused by a swelling on the flexor tendon catching as it moves in and out of the opening into the fibrous flexor sheath.

Fig. 23.2 Rheumatoid of the hands with synovial swellings and ulnar deviation.

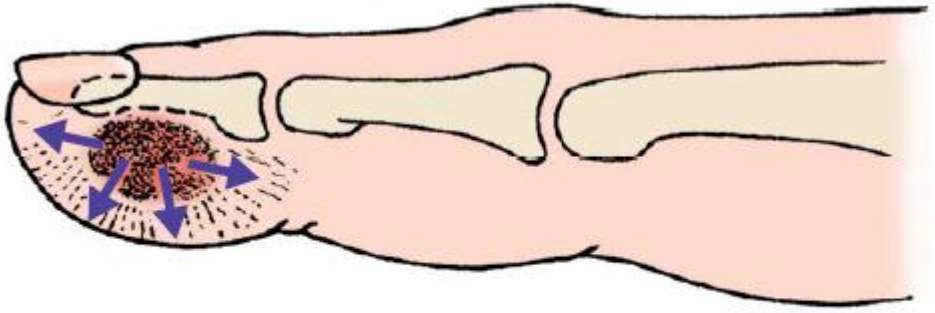


Fig. 23.16 Pulp space infection (whitlow). The spread of pus is limited by fibrous septa and the increased tissue tension causes pain.

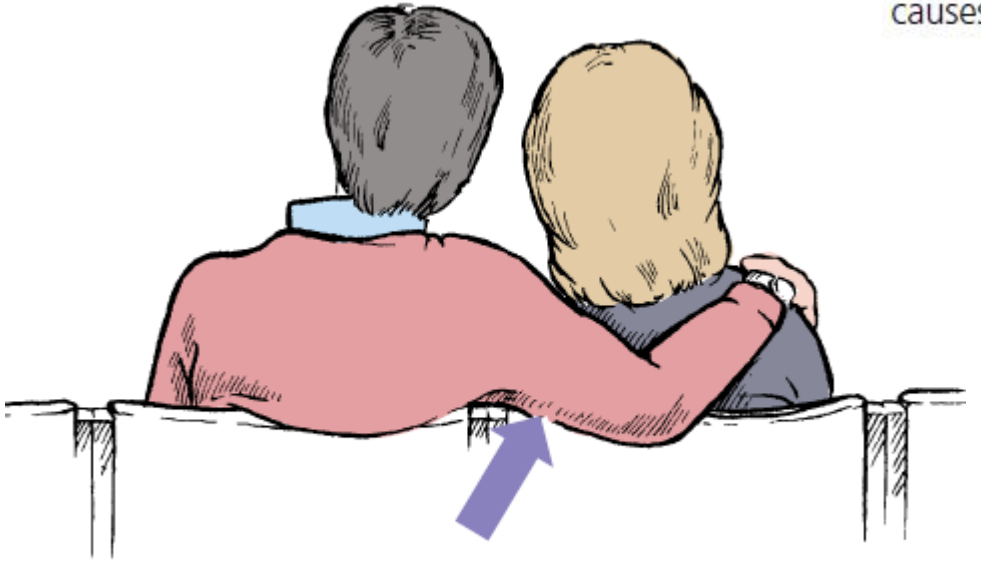
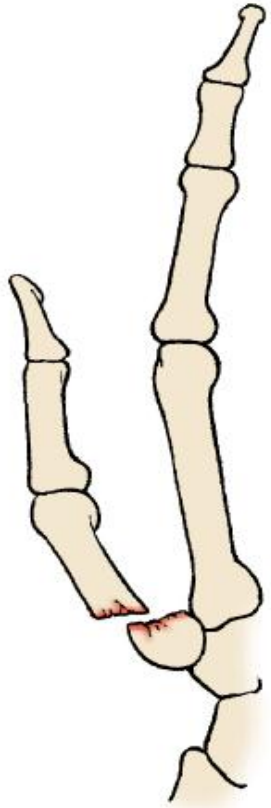
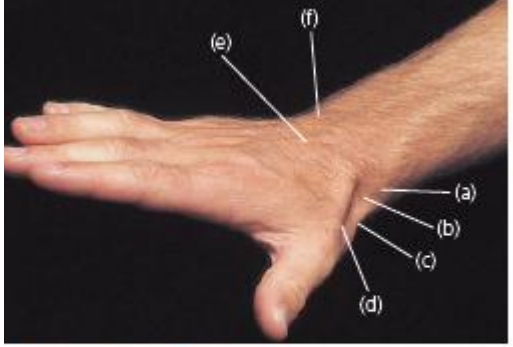


Fig. 23.23 The radial nerve may be compressed by pressure on the back of a chair.



Transverse fracture of the first metacarpal.



.1 Tender points at the wrist **(a)** Tip of the radial loid process; **(b)** anatomical snuffbox, bounded on the dial side by **(c)** the extensor pollicis brevis and on the nar side by **(d)** the extensor pollicis longus; **(e)** the tensor tendons of the fingers; and **(f)** the head of the na.

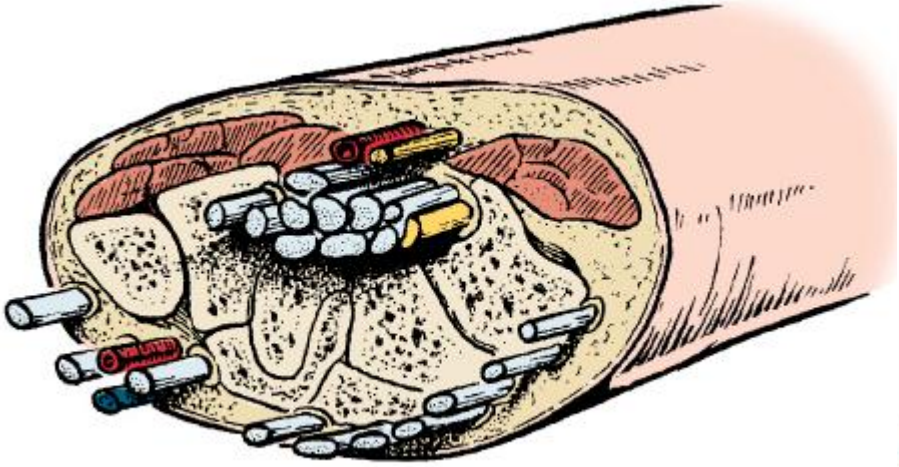
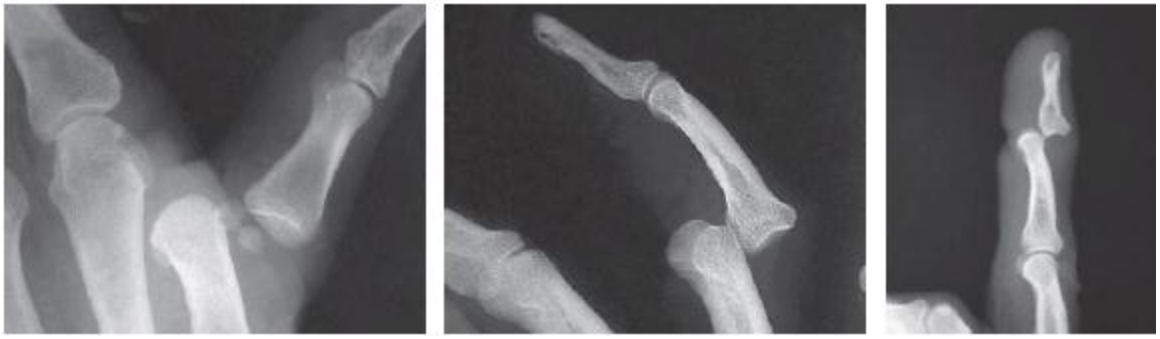
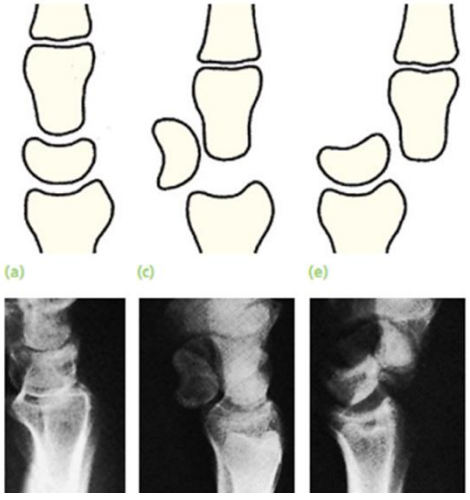
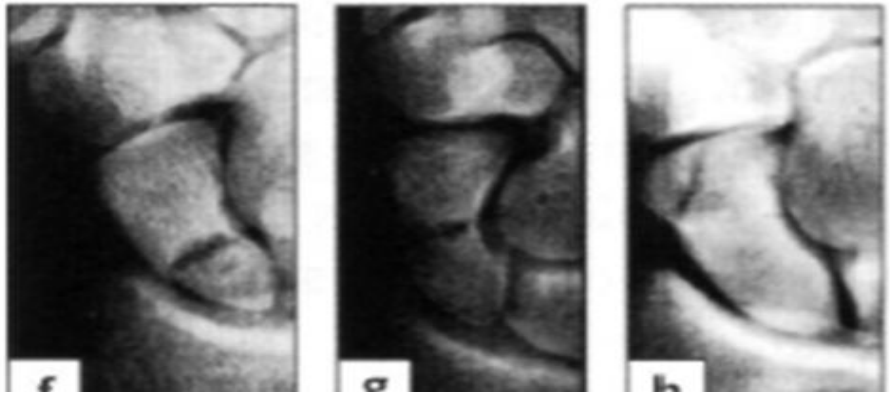


Fig. 13.5 Structures crossing the wrist.

Fig. 13.18 Transverse fracture of the first metacarpal at its base. This is not a Bennett's fracture.




(a)
(c)
(e)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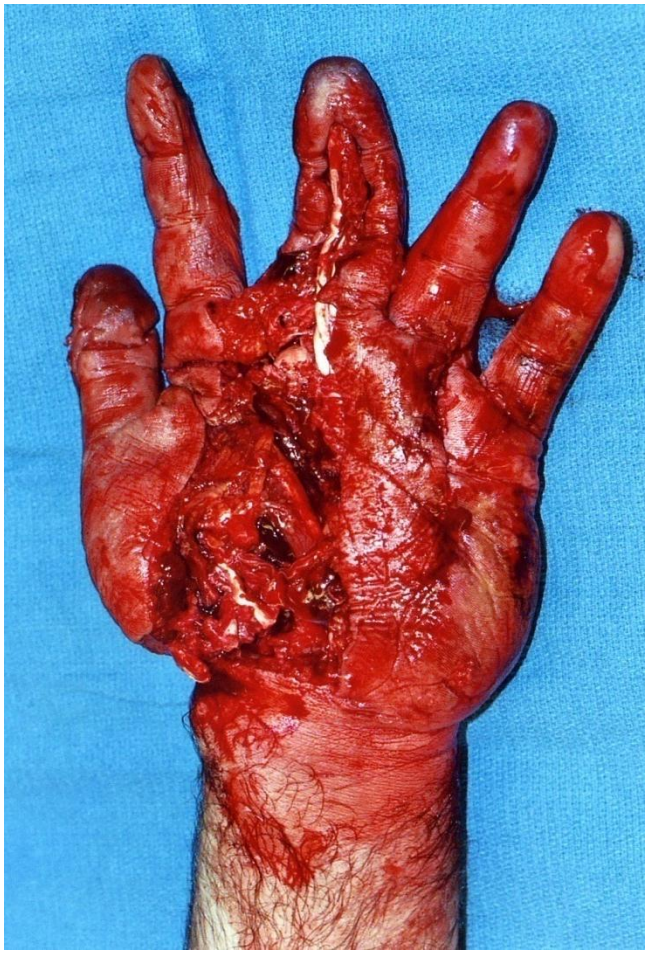


FIGURE 9.80 Ectromelia. (Courtesy of G. Avery.)

FIGURE 9.81 Congenital absence of the radius.

IE 9.82 Partial syndactyly. (Courtesy of L. Thompson.)

FIGURE 9.83 Brachydactyly due to defects of the phalanges. (Courtesy of L. Thompson.)

FIGURE 9.84 Floating thumb. The metacarpal bone of the thumb is absent, but the phalanges are present. (Courtesy of R. Chase.)

FIGURE 9.85 Macrodactyly affecting the thumb and index finger. (Courtesy of R. Naviaser.)

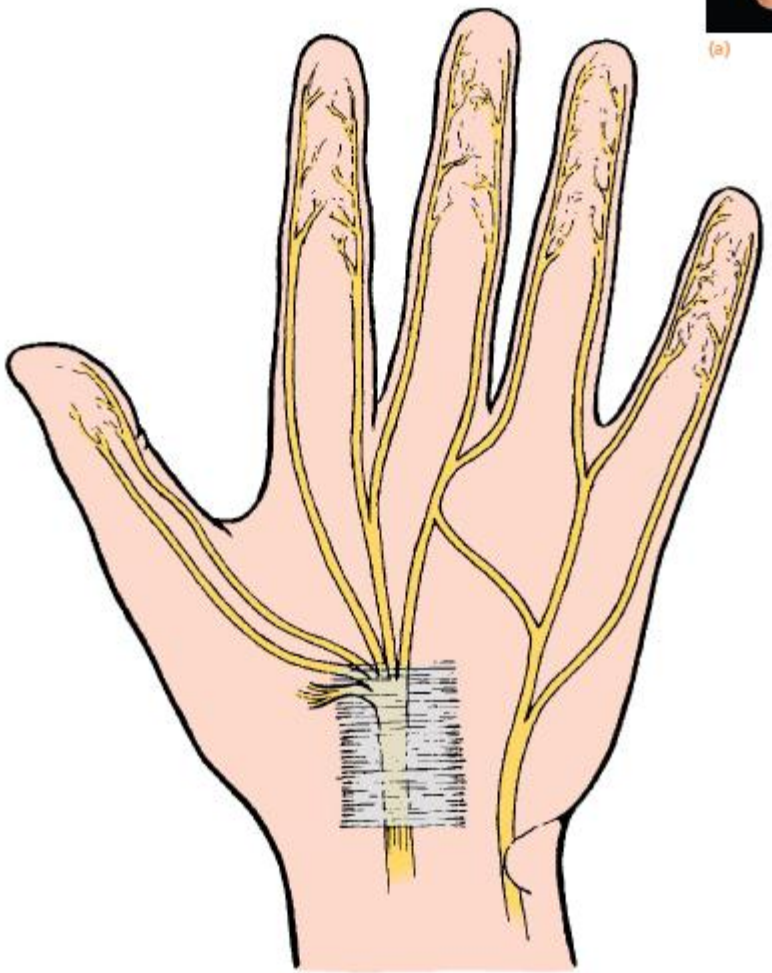
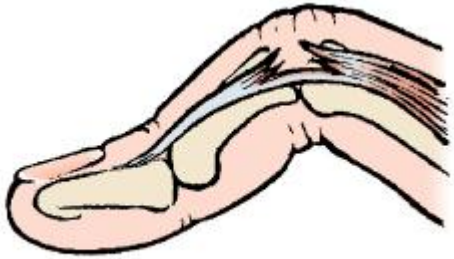


Fig. 13.1 Nerve supply to the palm of the hand. Note the position of the digital nerves and the median and ulnar nerves at the wrist, and the median nerve passing beneath the transverse carpal ligaments.

(a) (b)

15.6 Radial dysplasia (a) Bilateral. (b) X-ray showing that the entire radius is absent.



A boutonnière lesion of the p.i.p. joint.

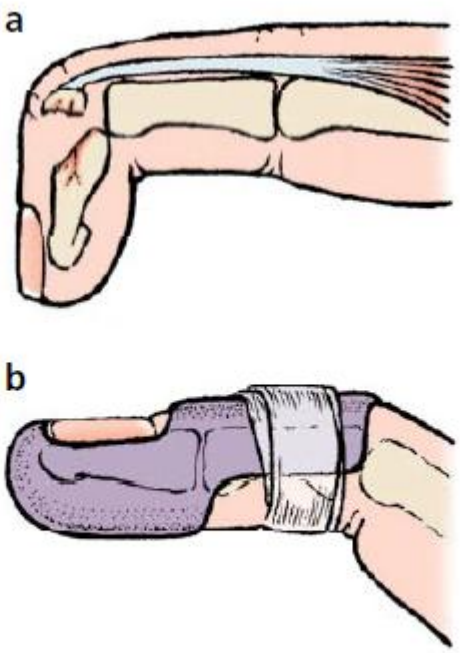
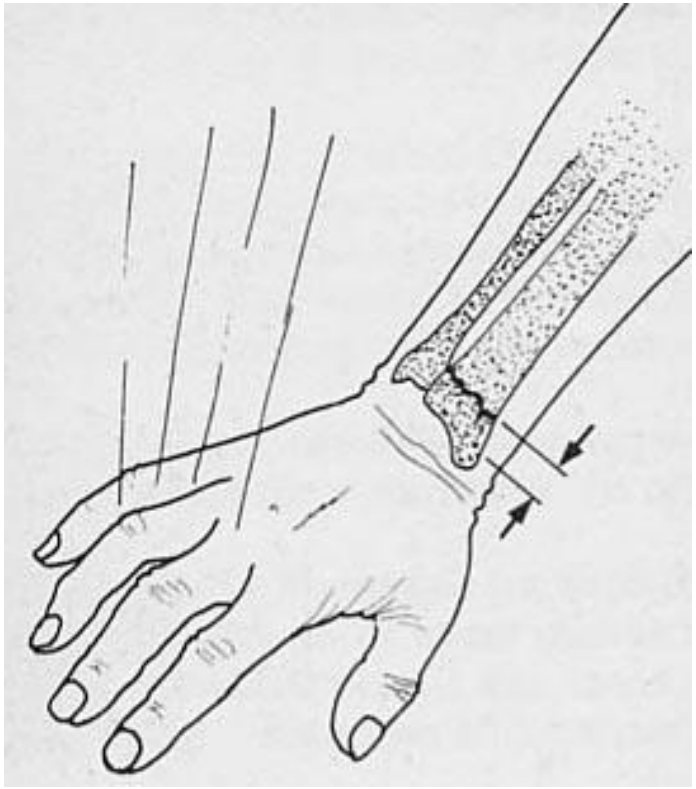
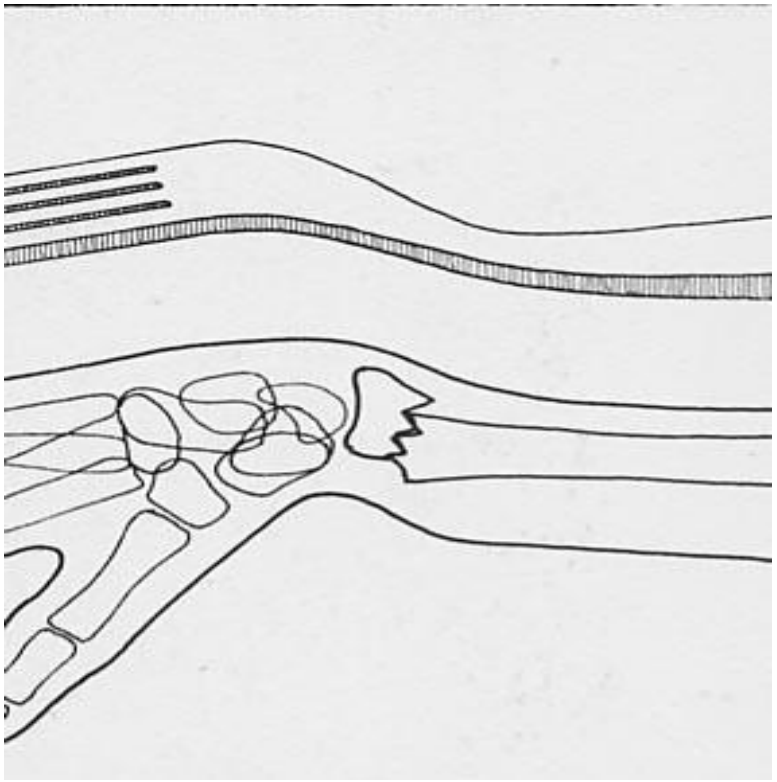


Fig. 13.7 (a) A mallet finger with avulsion of the extensor tendon from the distal phalanx; (b) a mallet finger splint holding the d.i.p. joint extended.

Radiograph of a mallet finger.





THANK YOU

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