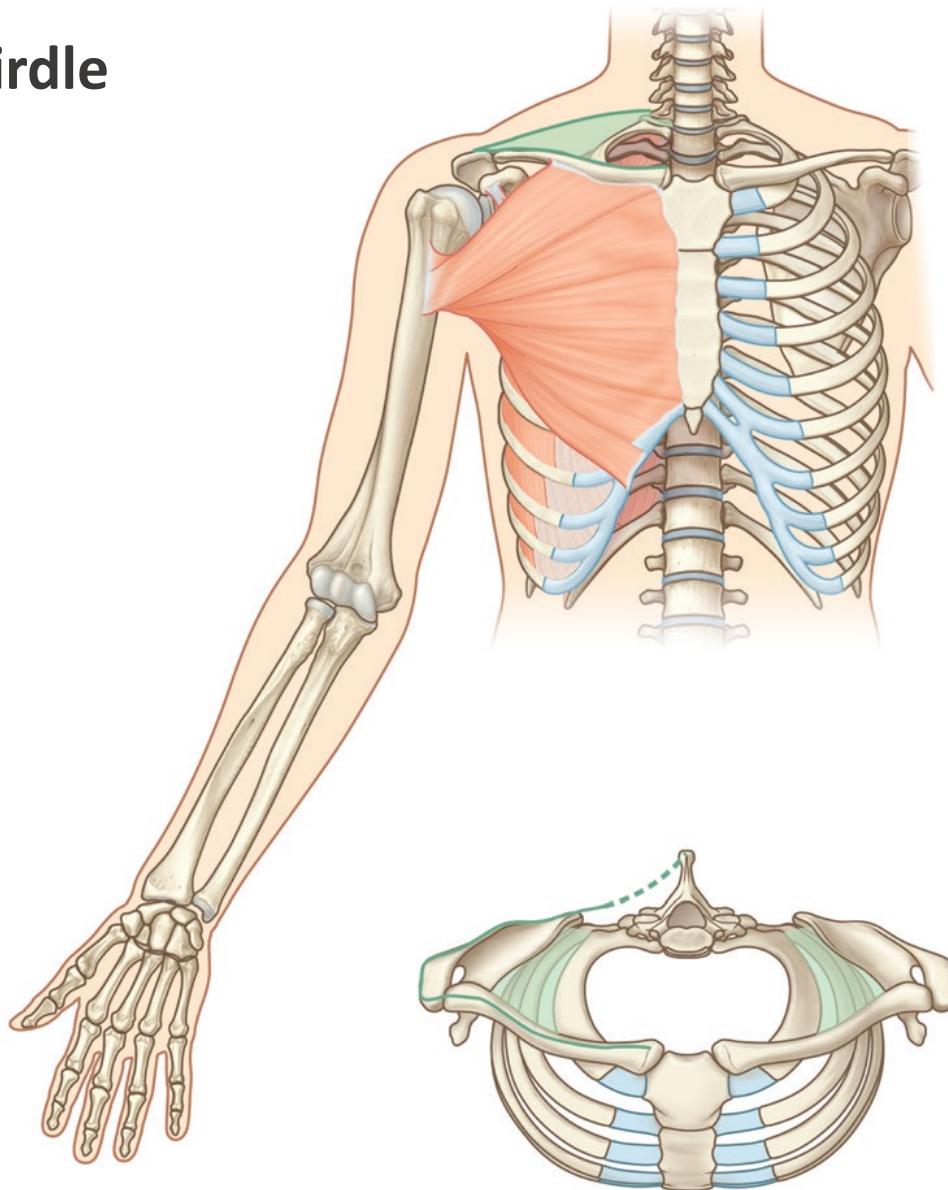


Upper limb1

Prof. MUDr. Jiří Ferda, Ph.D.

Parts of upper limb

- ♦ Pectoral girdle
- ♦ shoulder
- ♦ arm
- ♦ elbow
- ♦ forearm
- ♦ wrist
- ♦ hand

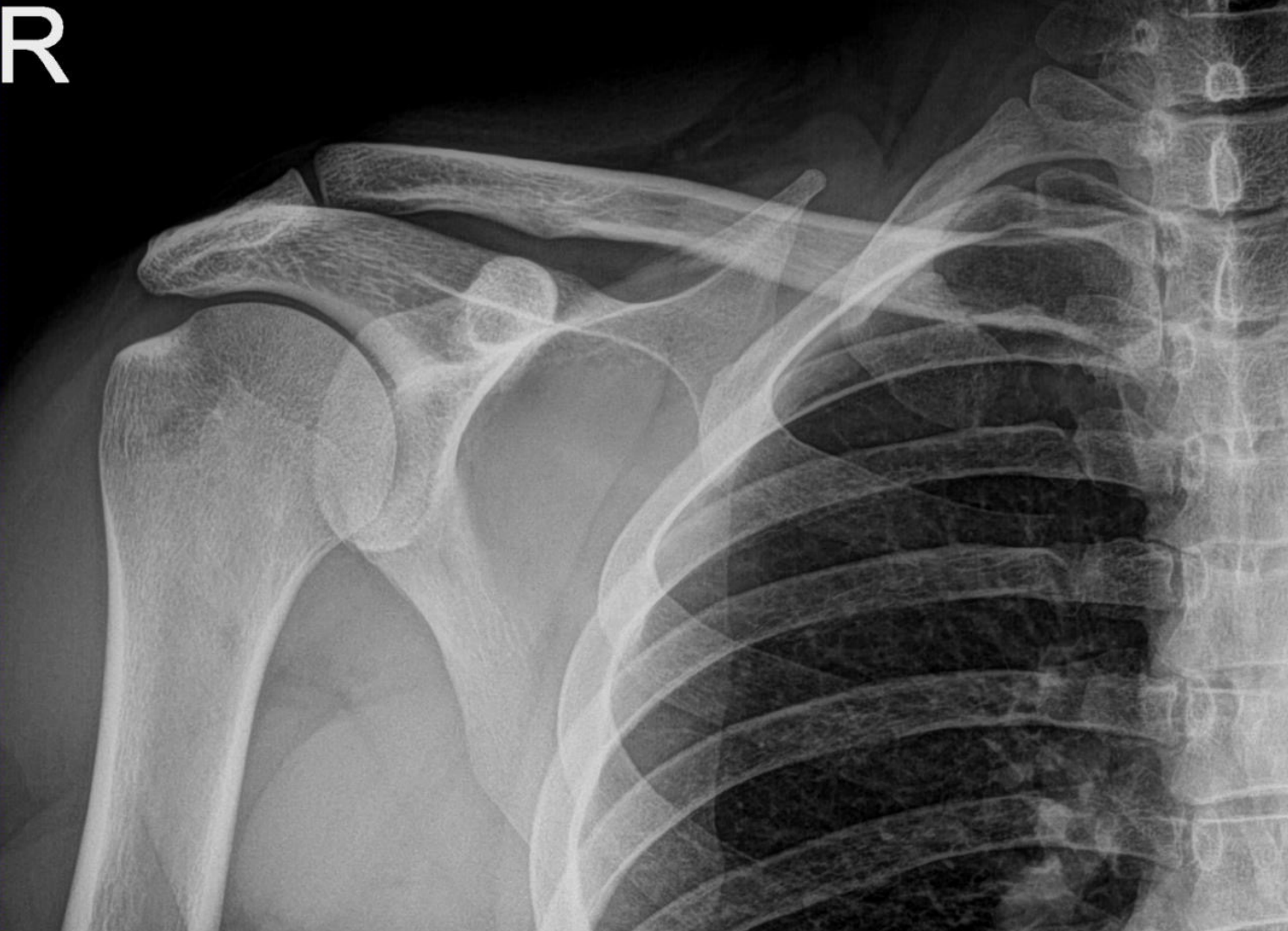


- ♦ Axilla
- ♦ Cubital fossa
- ♦ Carpal tunnel

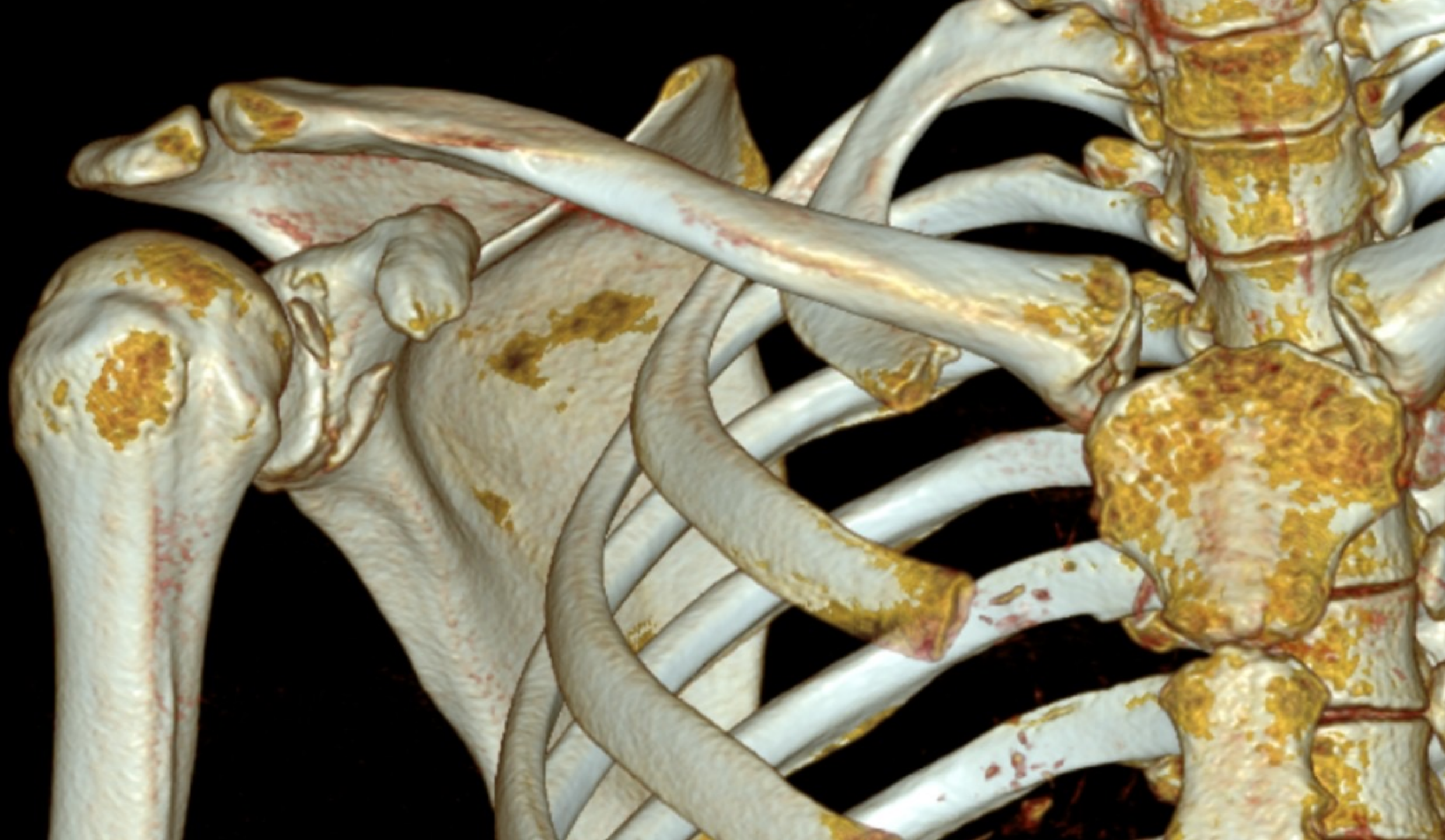


X-ray

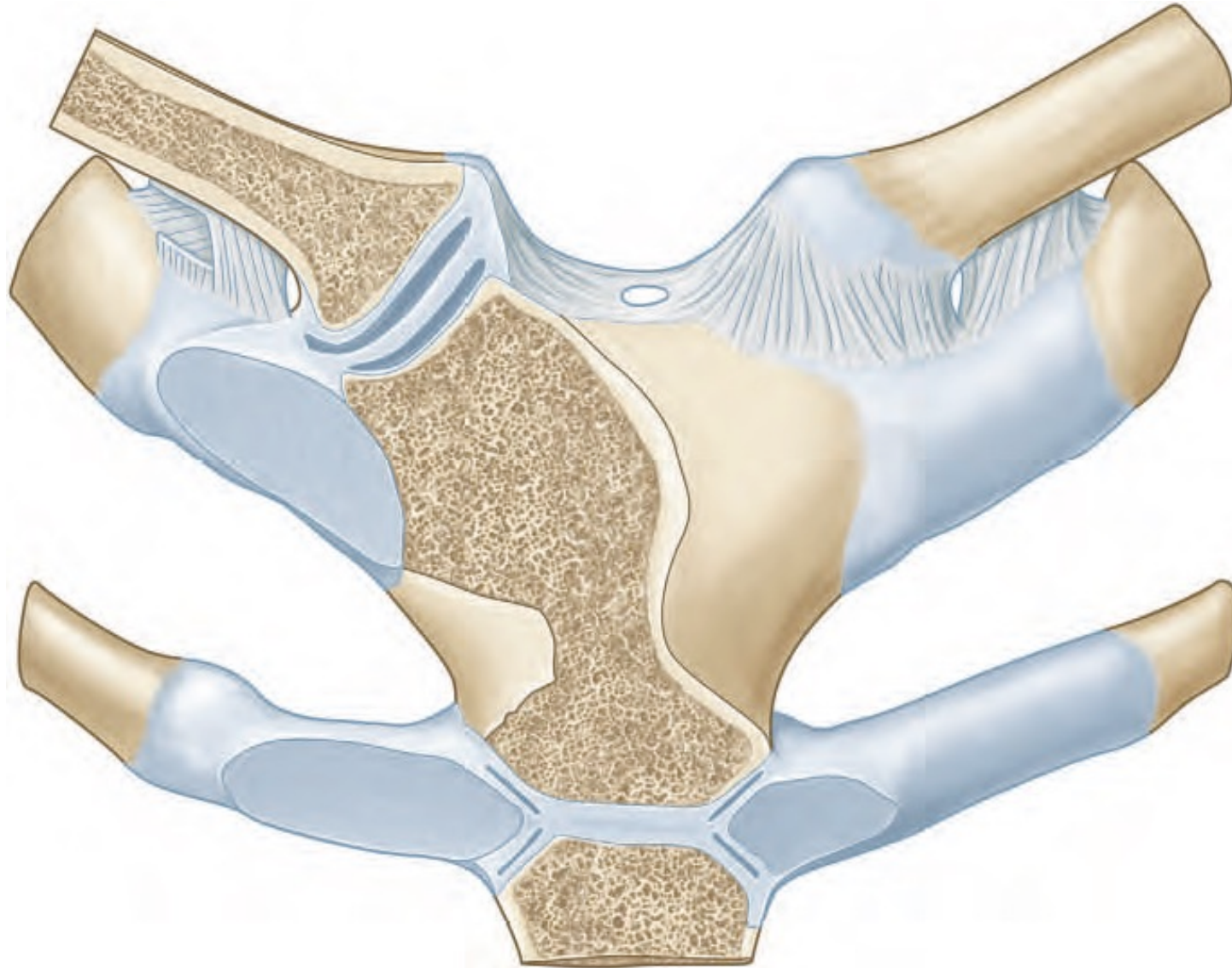
R



- ♣ Clavicula
- ♣ Scapula
- ♣ Cavitas glenoidalis
- ♣ Acromion
- ♣ Processus coracoideus
- ♣ Facies articularis humeri
- ♣ Collum anatomicum
- ♣ Collum chirurgicum
- ♣ Tuberculum majus
- ♣ Tuberculum minus

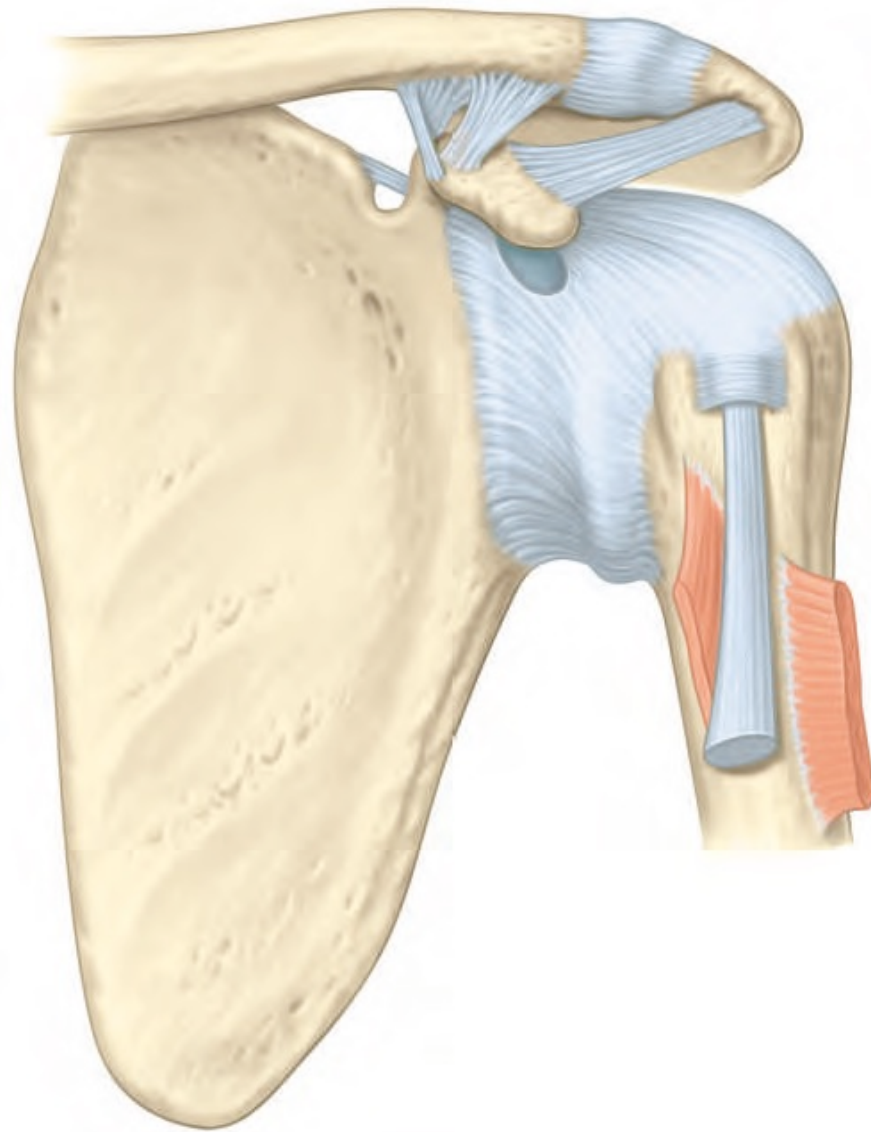


Art. sternoclavicularis



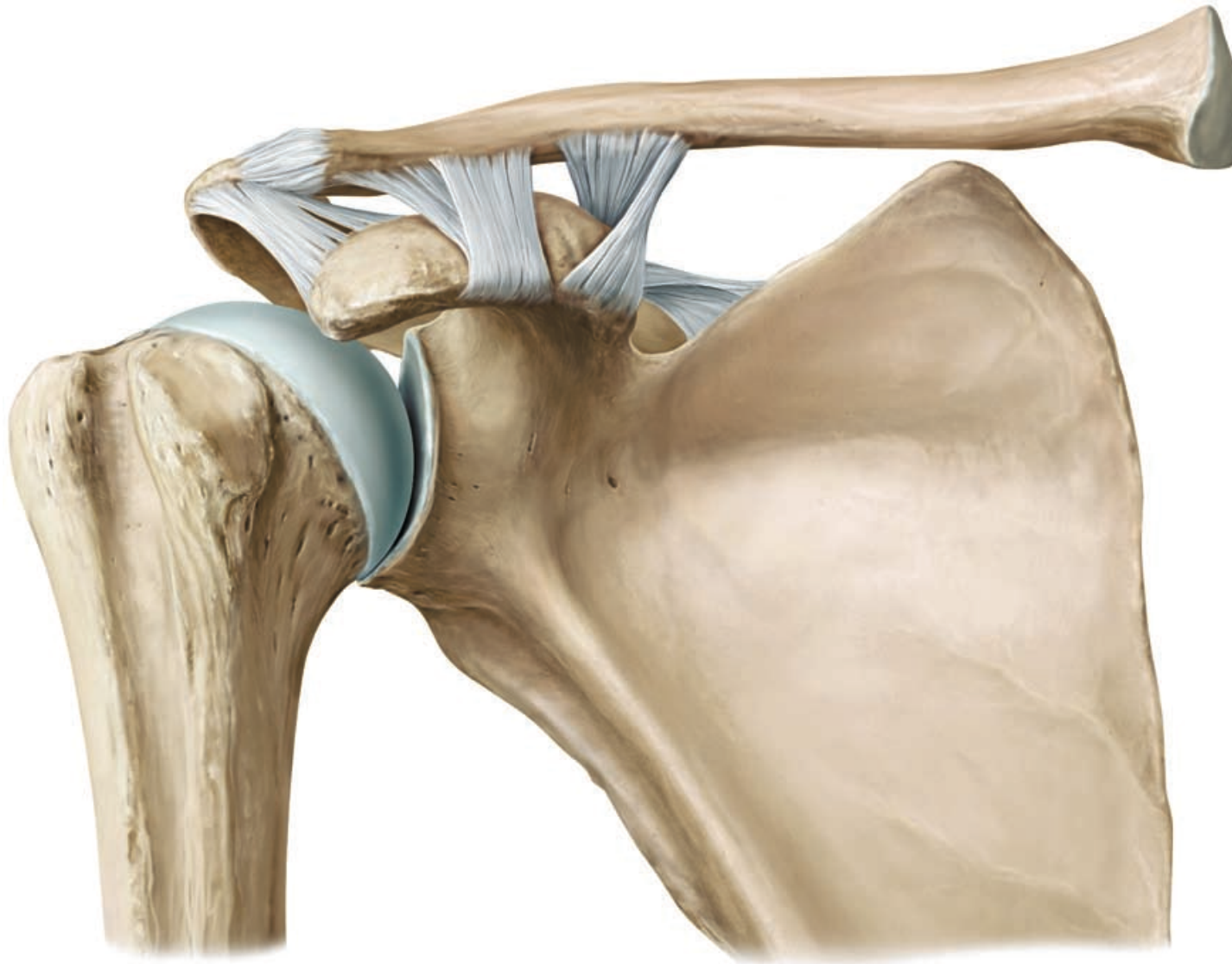
- ♦ **Facies articulares**
- ♦ **Discus**
- ♦ **Capsula**
- ♦ **Lig. costoclaviculare**
- ♦ **Lig. sternoclaviculare anterius**
- ♦ **Lig. interclaviculare**

Art. acromioclavicularis



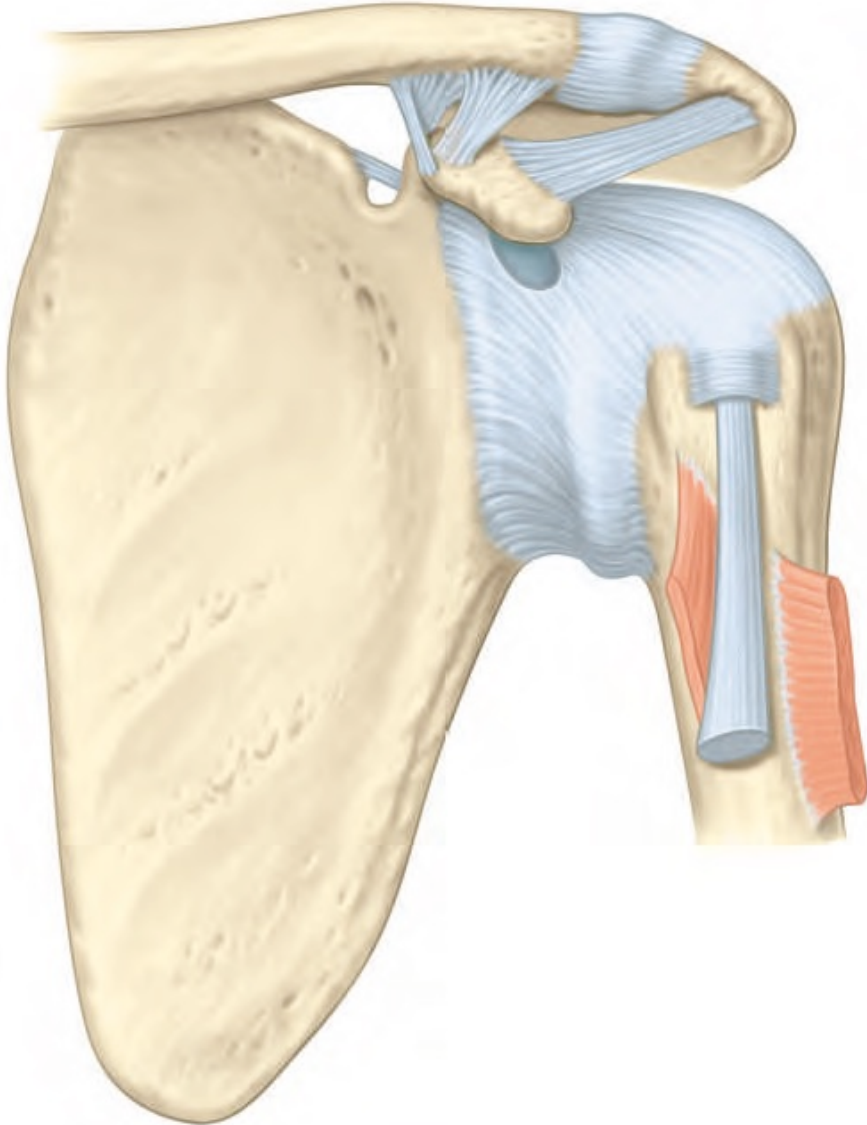
- ♦ Lig. acromioclavicularare
- ♦ Lig. trapezoideum
- ♦ Lig. conoideum
- ♦ Lig. transversum scapulae superius
- ♦ Lig. acromioclavicularare
- ♦ Lig. aromiocracoideum
 - ♦ Fornix art. glenohumeralis

Art. glenohumeralis



- ♦ Lig. acromioclaviculare
- ♦ Lig. trapezoideum
- ♦ Lig. conoideum
- ♦ Lig. transversum scapulae superius
- ♦ Lig. acromioclaviculare
- ♦ Lig. aromiocracoideum
 - ♦ Fornix art. glenohumeralis

Art. glenohumeralis



- ♦ **Lig. coracohumerale**
- ♦ **Lig. glenohumerale superius**
- ♦ **Lig. glenohumerale inferius**
- ♦ **Lig. transversum humeri**
- ♦ **M. biceps brachii, caput longum**
- ♦ **M. deltoideus**
- ♦ **M. pectoralis major**
- ♦ **M. latissimus dorsi**



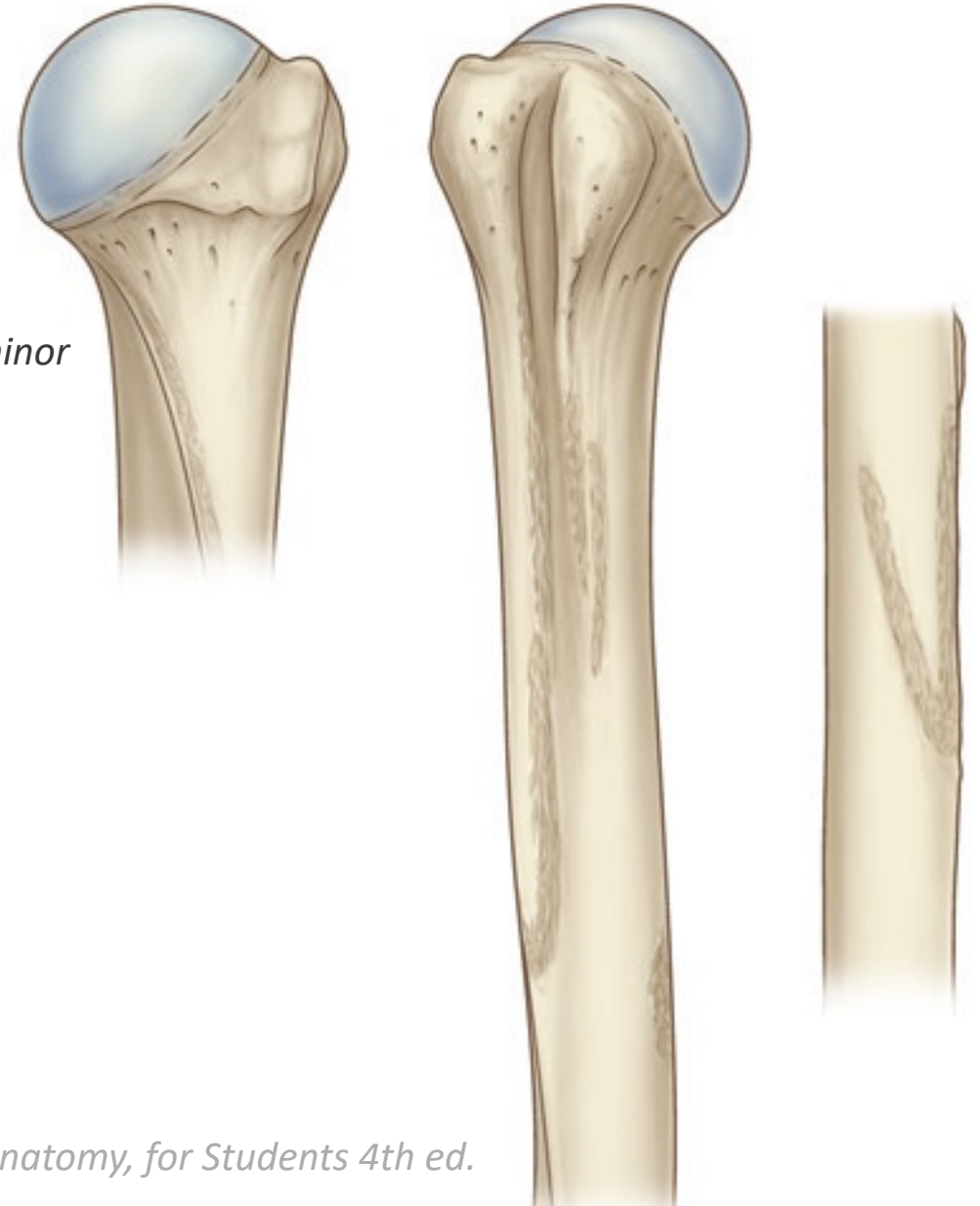
Thieme Atlas of Anatomy vol. 1.



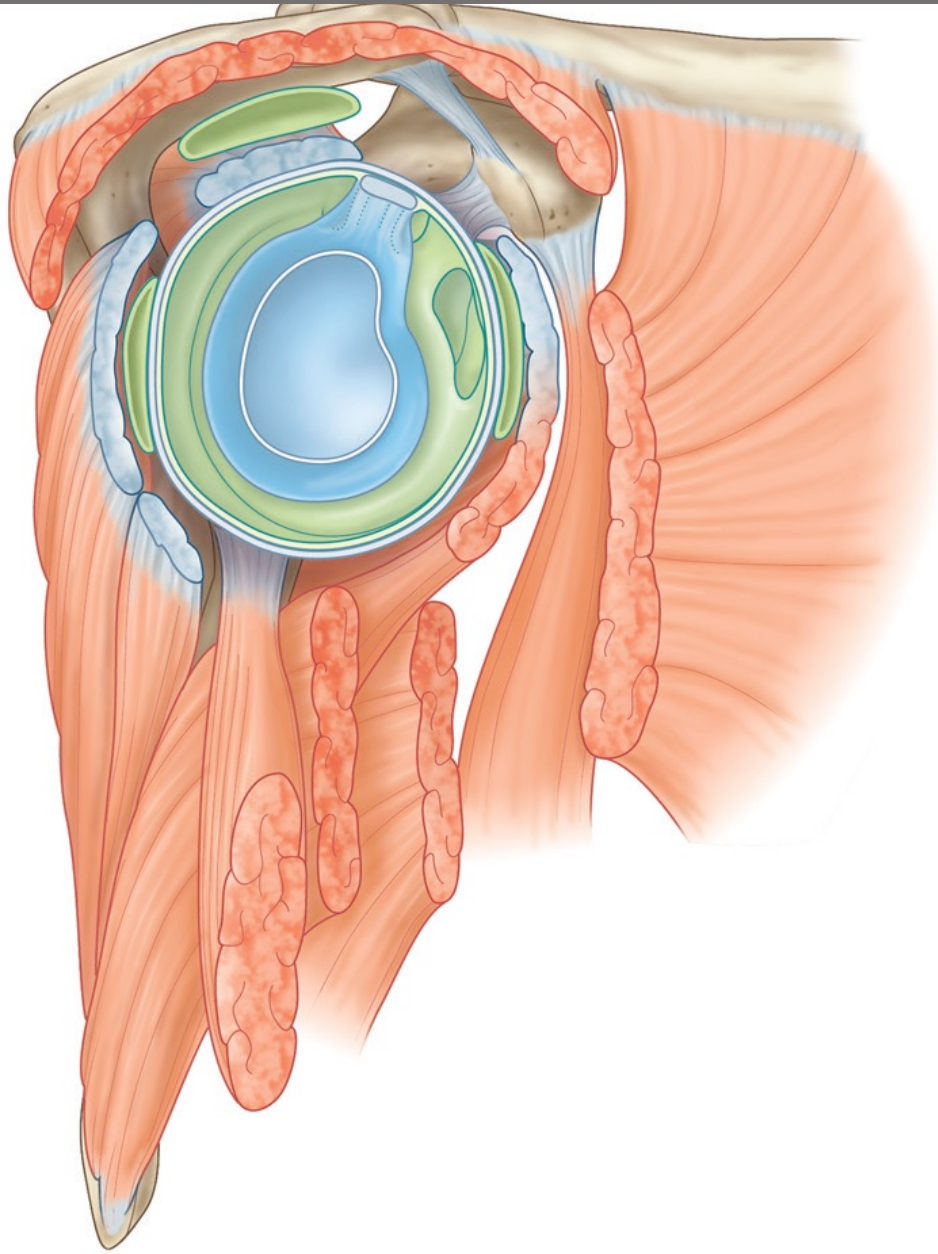


Proximal humerus

- ♦ **Facies articularis**
- ♦ **Collum anatomicum**
- ♦ **Collum chirurgicum**
- ♦ **Tuberculum majus** *m. supraspinatus, M. infraspinatus, M. teres minor*
- ♦ **Tuberculum minus** *m. subscapularis*
- ♦ **Sulcus intertubercularis**
 - ♦ *tendo capitis longi m. bicipitis brachii*
 - ♦ *m. latissimus dorsi*
- ♦ **Crista tuberculi majoris** *m. pectoralis major*
- ♦ **Crista tuberculi minoris** *m. teres major*
- ♦ **Tuberositas m. deltoidei** *m. deltoideus*
- ♦ **Tuberositas m. coracobrachialis** *m. coracobrachialis*

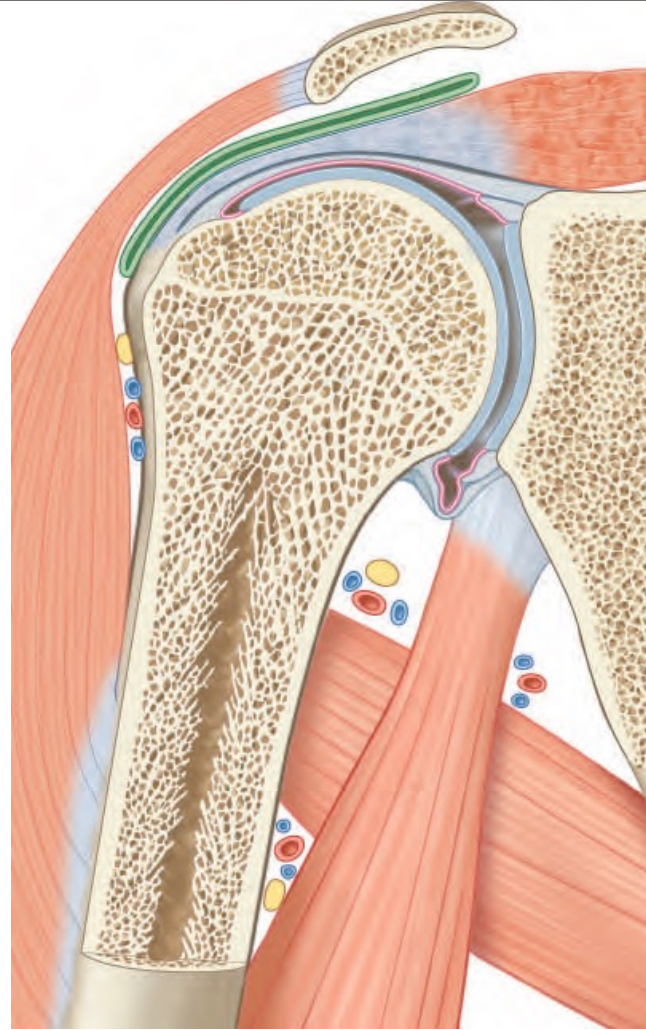
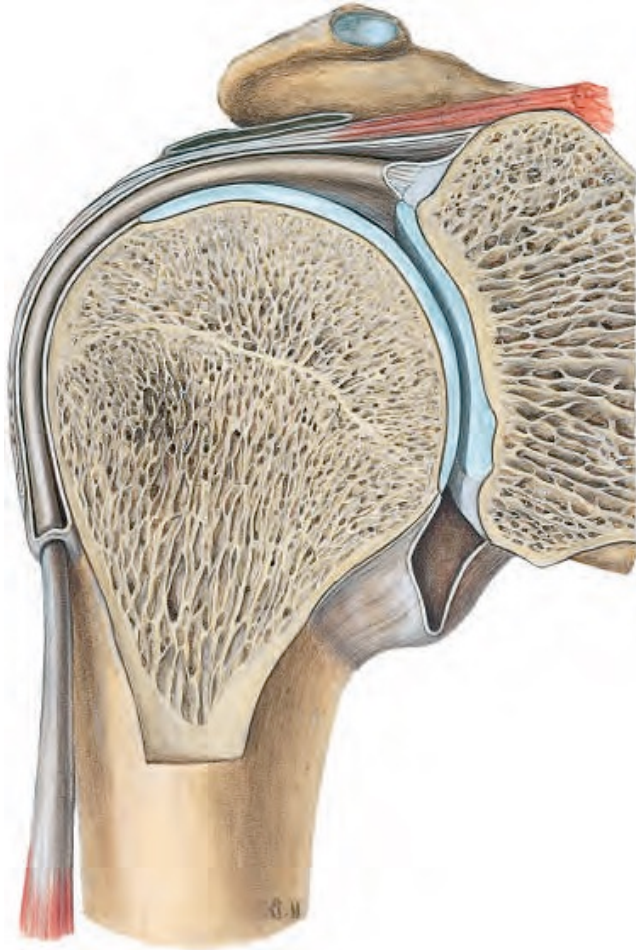


Art. glenohumeralis



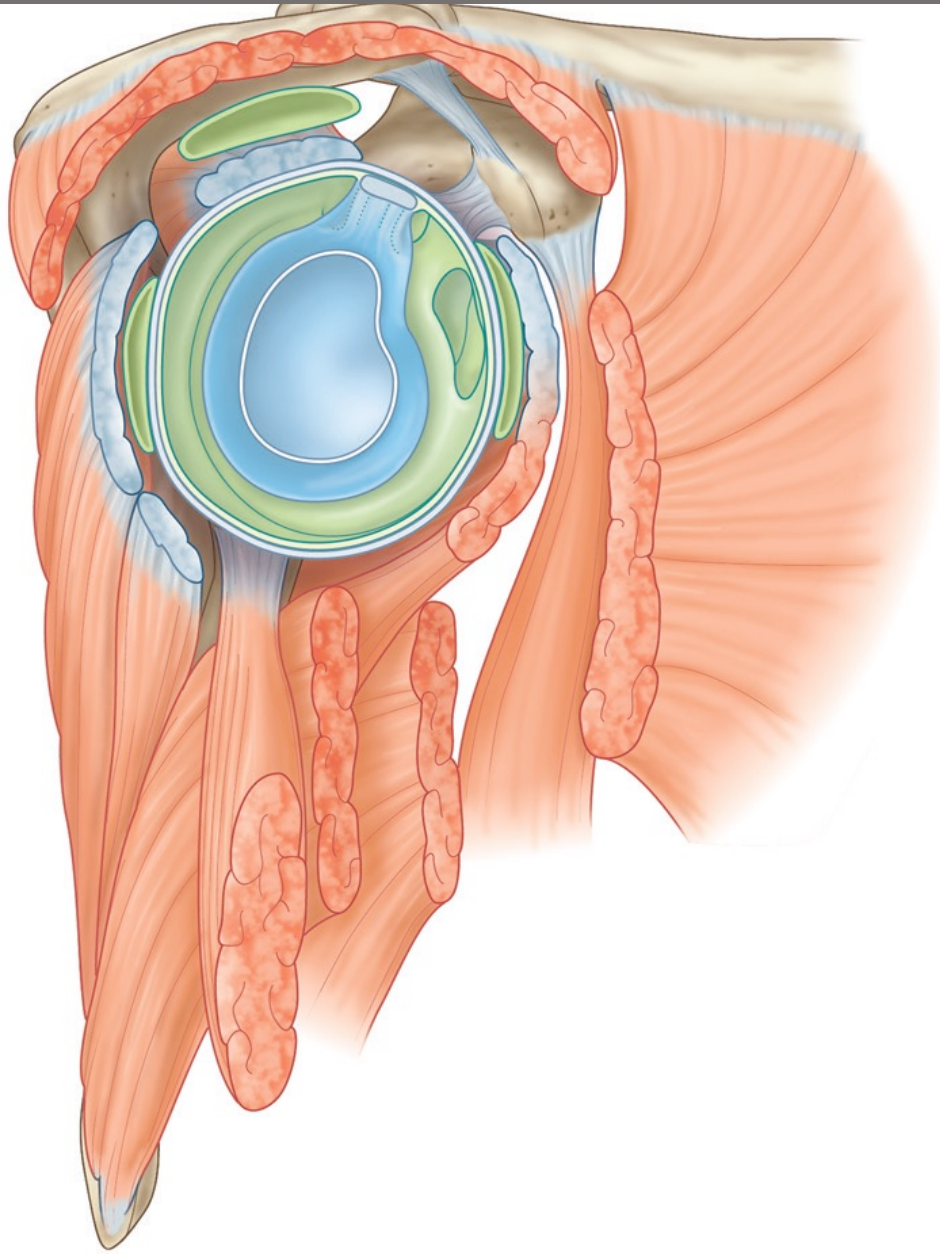
- ♦ Cavitas glenoidalis
- ♦ Labrum glenoidale
- ♦ Tendo m. bicipitis (caput longum)
- ♦ Capsula articularis
- ♦ **Musculi**
 - ♦ *M. deltoideus*
 - ♦ *M. pectoralis major*
 - ♦ *M. latissimus dorsi*
 - ♦ *M. teres major*
 - ♦ *M. biceps brachii* - caput breve
 - ♦ *M. triceps brachii* - caput longum
 - ♦ *M. supraspinatus*
 - ♦ *M. infraspinatus*
 - ♦ *M. teres minor*
 - ♦ *M. subscapularis*
- ♦ **Bursae subtendineae**

Art. glenohumeralis

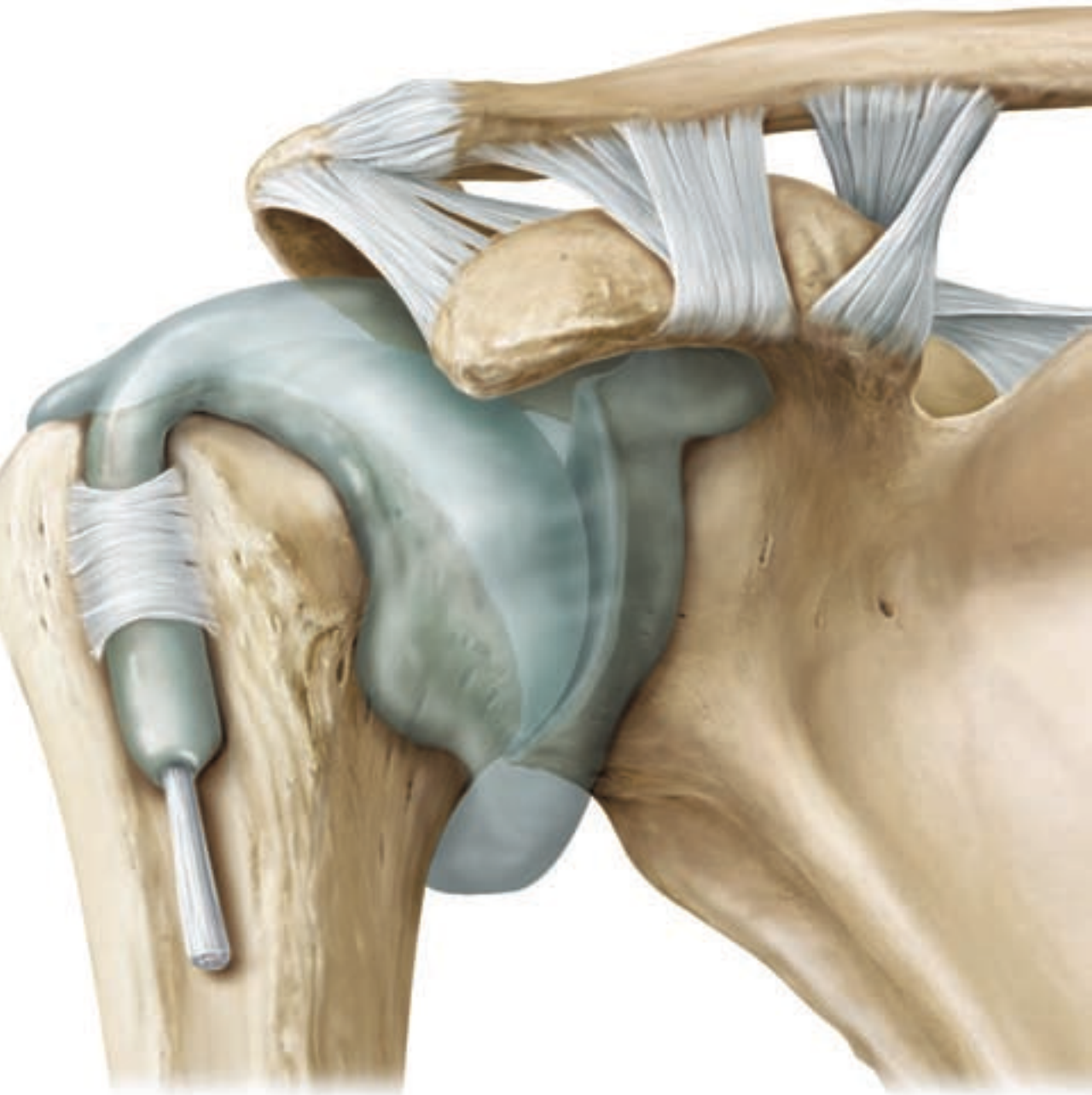


- ♦ Cavitas glenoidalis
- ♦ Labrum glenoidale
- ♦ Tendo m. bicipitis (caput longum)
- ♦ Capsula articularis
- ♦ **Musculi**
 - ♦ *M. deltoideus*
 - ♦ *M. pectoralis major*
 - ♦ *M. latissimus dorsi*
 - ♦ *M. teres major*
 - ♦ *M. biceps brachii* - caput breve
 - ♦ *M. triceps brachii* - caput longum
 - ♦ *M. supraspinatus*
 - ♦ *M. infraspinatus*
 - ♦ *M. teres minor*
 - ♦ *M. subscapularis*
- ♦ **Bursae subtendineae**

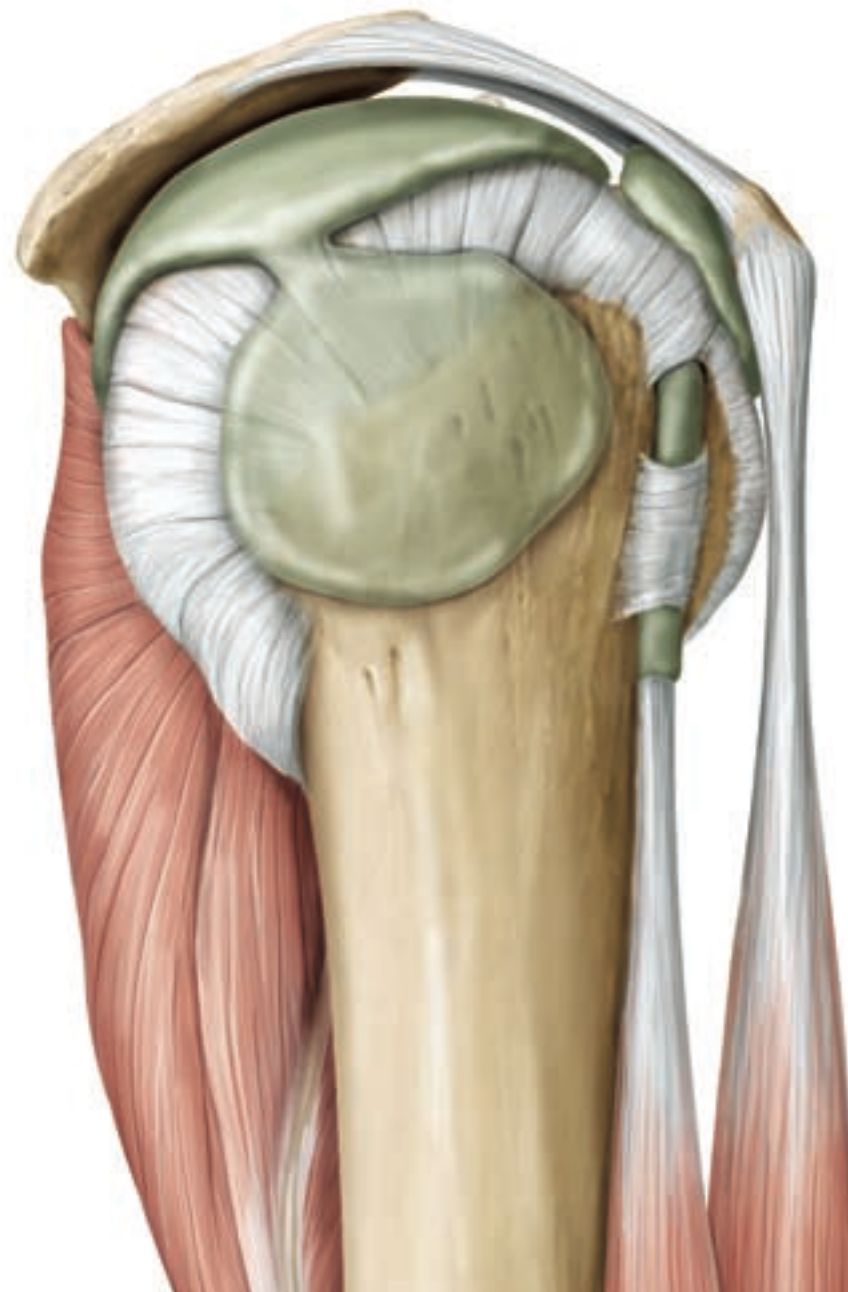
Bursae mucosae omae

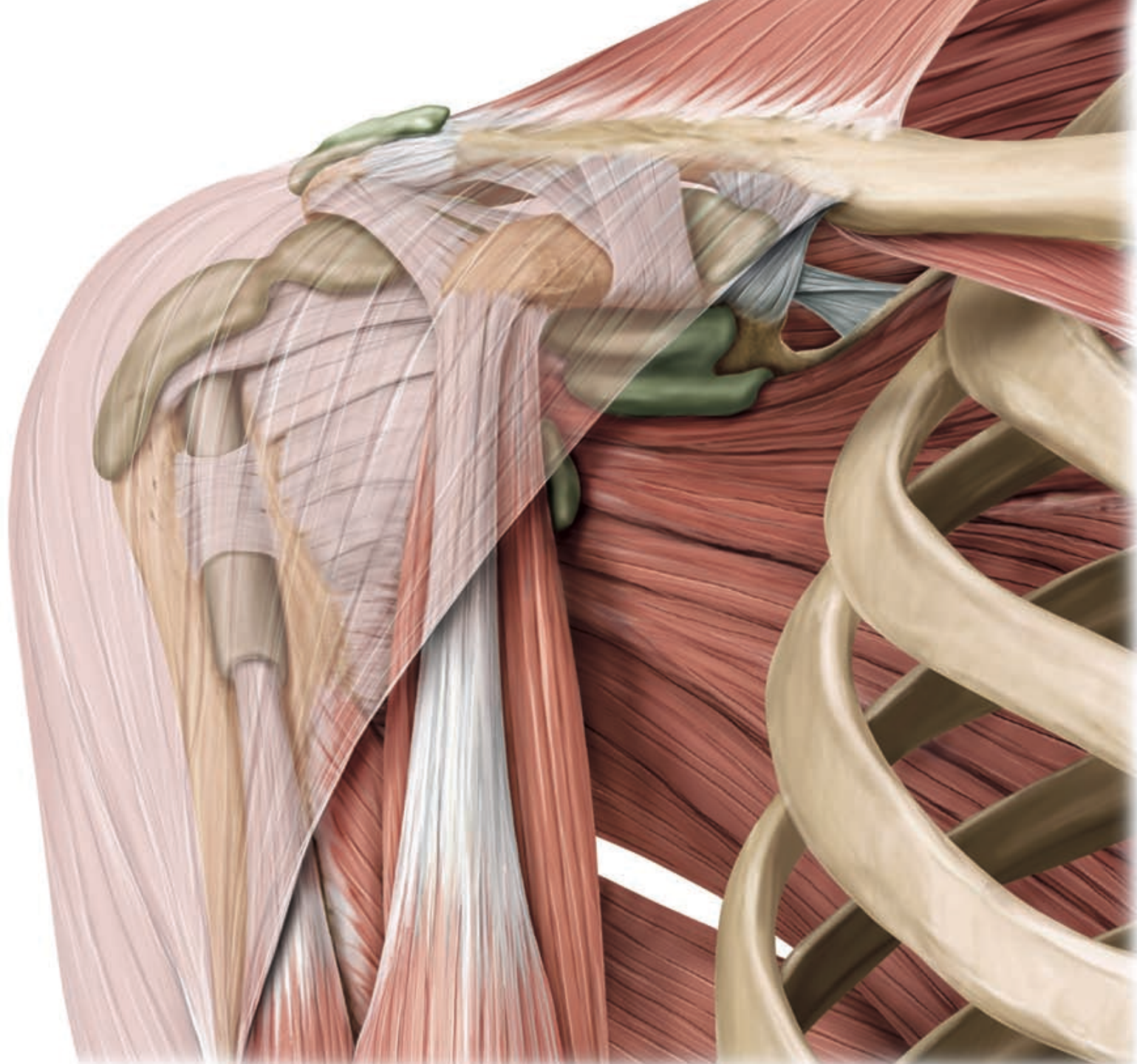


- ♦ Cavitas glenoidalis
- ♦ Labrum glenoidale
- ♦ Tendo m. bicipitis (caput longum)
- ♦ Capsula articularis
- ♦ Musculi
- ♦ Bursae
- ♦ *Bursae subacromialis /subdeltoidea*
- ♦ *Bursa m. subscapularis*
- ♦ *Bursa m. infraspinatis*

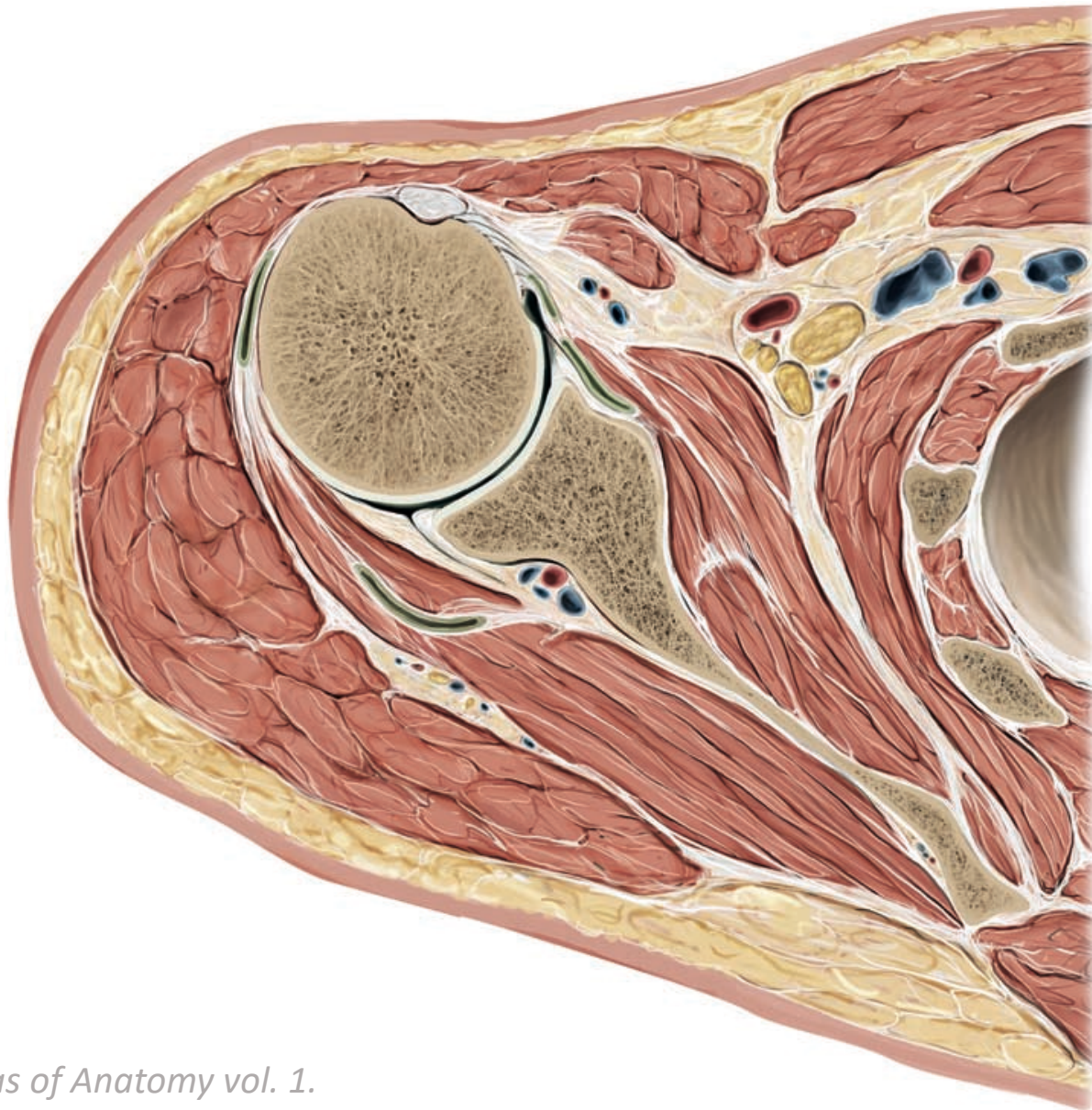


Thieme Atlas of Anatomy vol. 1.



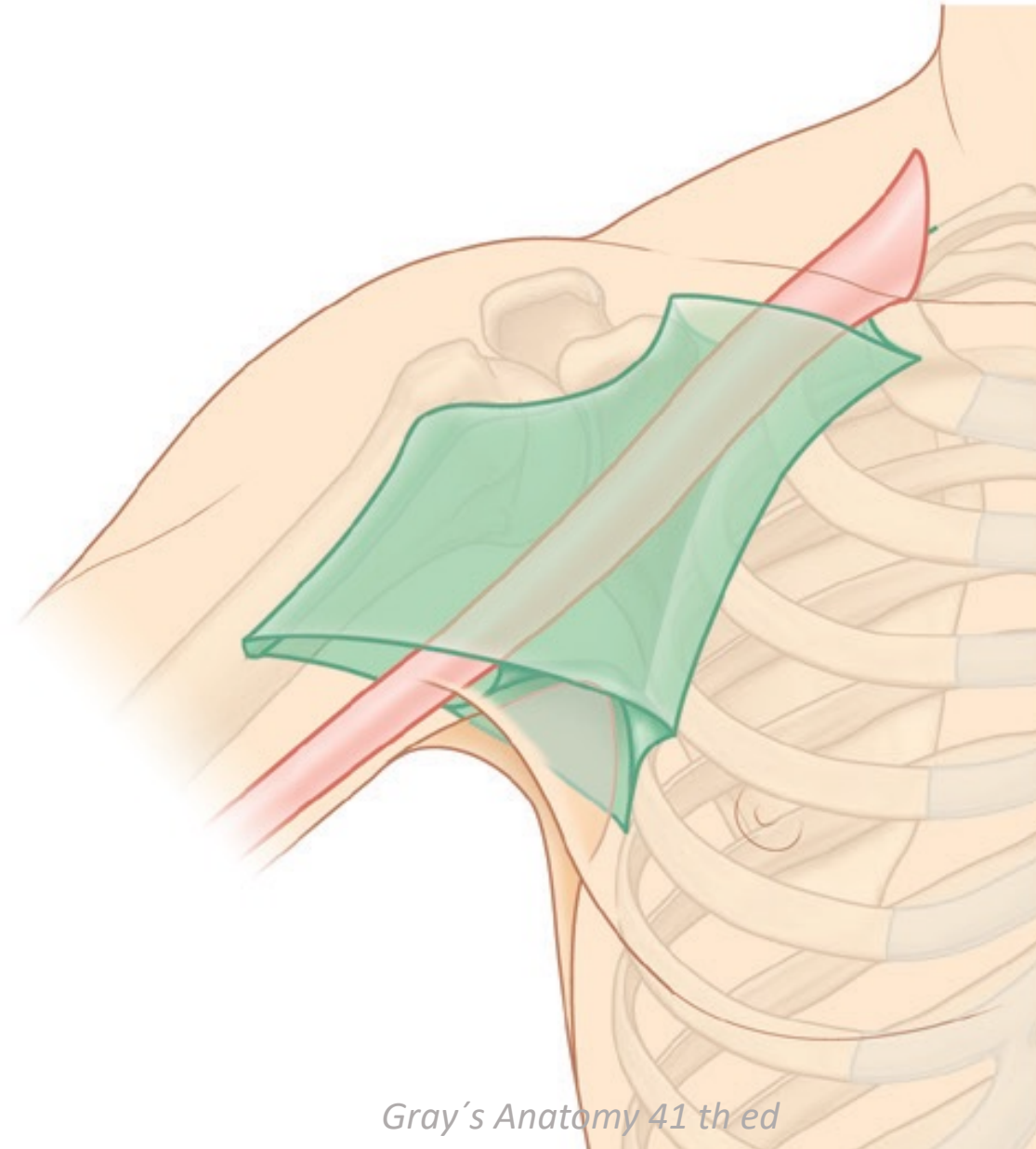


Axilla

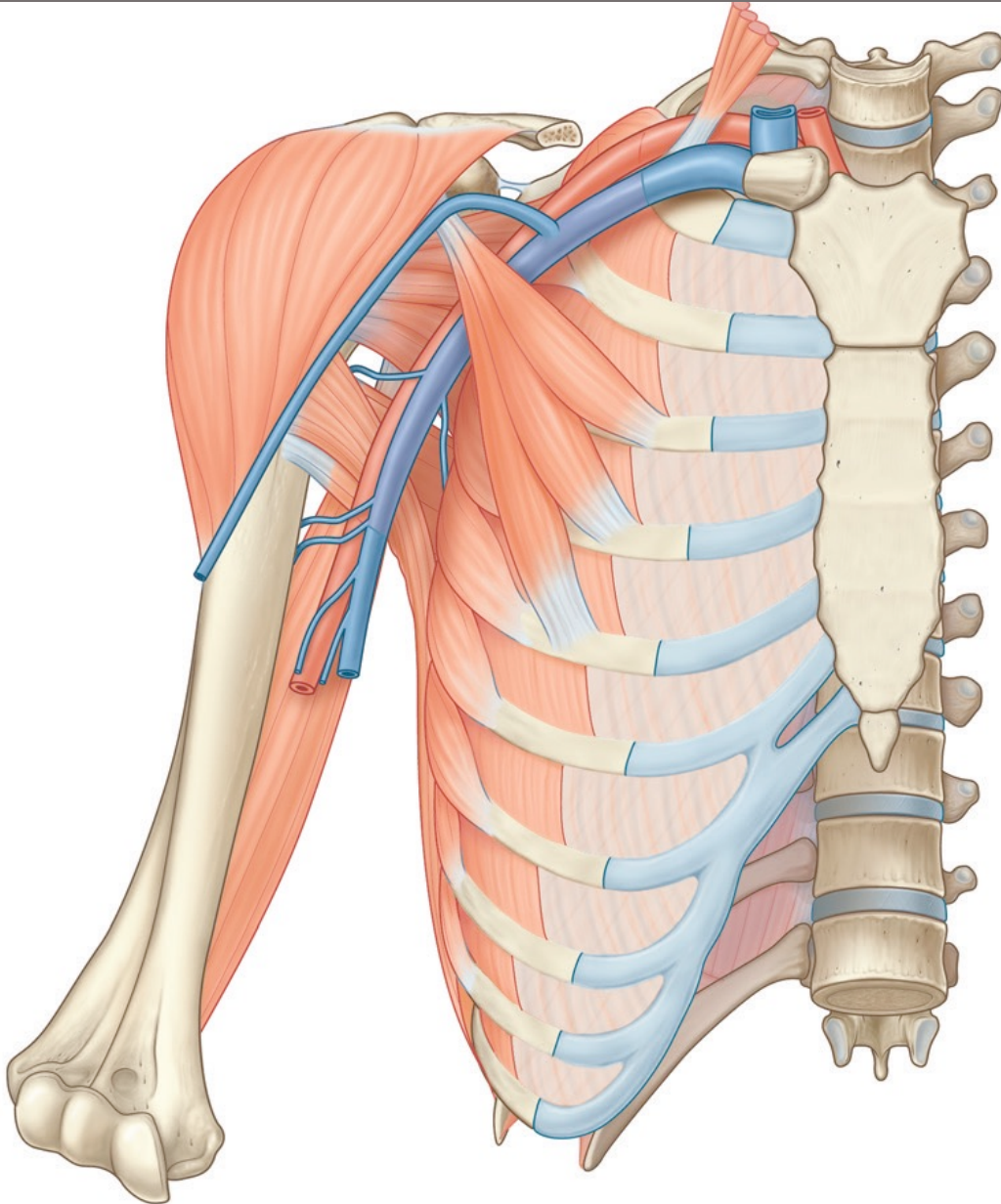


Axilla

- ♦ **Nerves, vessels, lymphatics**
- ♦ **Entering** - *clavicula, costa I. , scapula*
- ♦ **Anterior wall**
 - ♦ *m. pectoralis major et minor*
- ♦ **Medial wall**
 - ♦ *hrudní stěna, m. serratus anterior*
- ♦ **Dorsal wall**
 - ♦ *m. subscapularis, m. teres major, m. latissimus dorsi*
 - ♦ *m. triceps brachii caput longum*
- ♦ **Lateral wall**
 - ♦ *Sulcus intertubercularis*
- ♦ **Floor** - *kožní kryt axily*



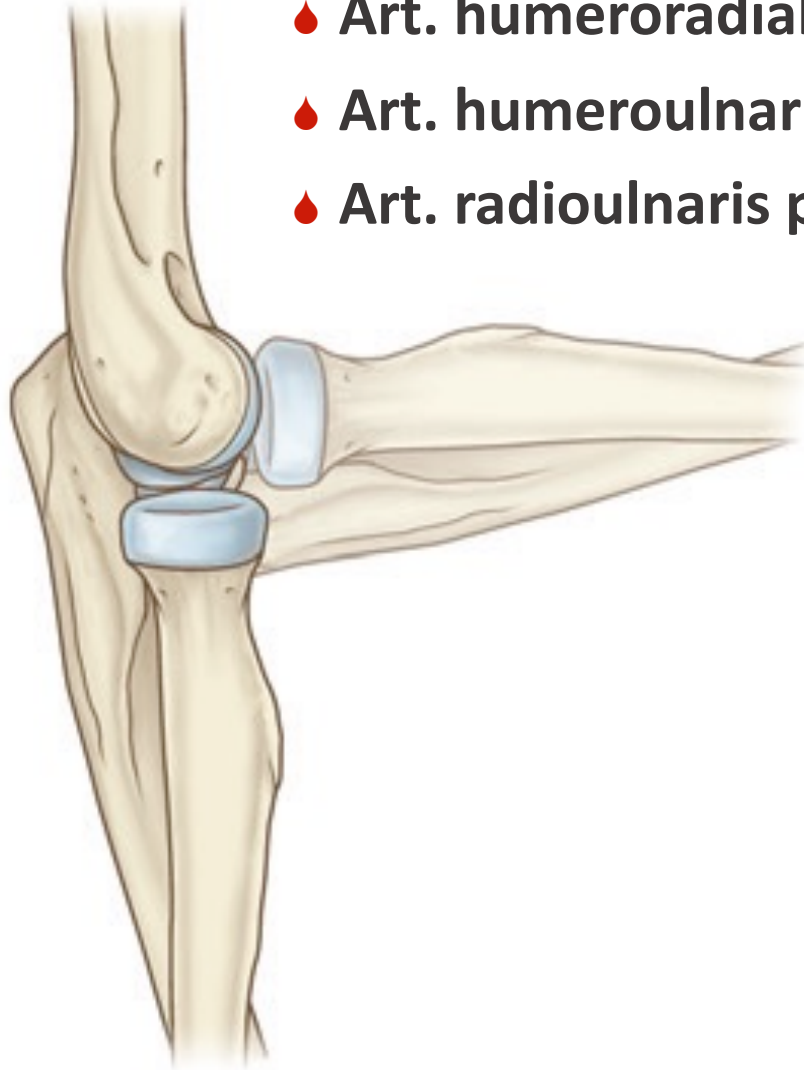
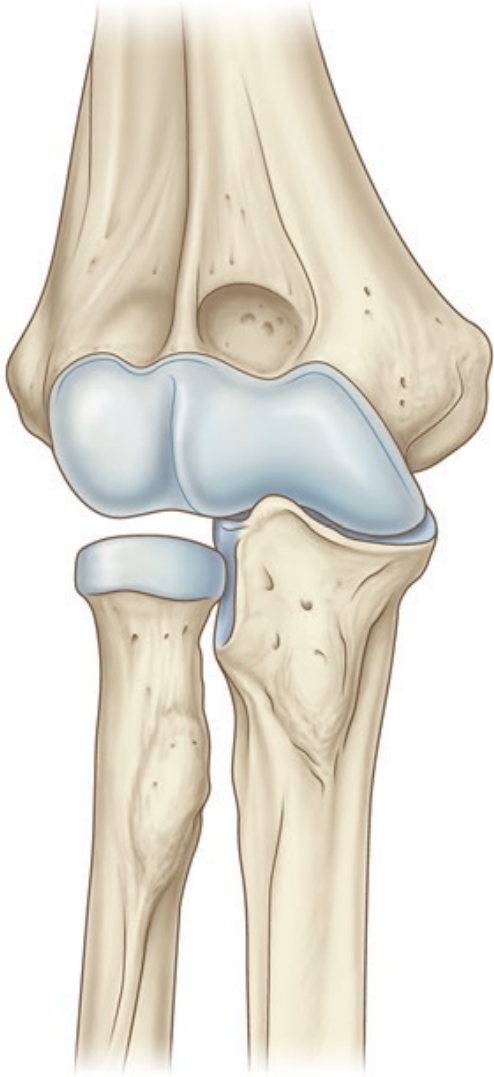
Axilla



- ♦ **Vena axillaris**
- ♦ **Arteria axillaris**
- ♦ **Nodi lymphatici**
 - ♦ *I nodi humerales + pectorales,*
 - ♦ *II - nodi centrales*
 - ♦ *III - nodi apicales, infraclaviculares*
- ♦ **Plexus brachialis**
 - ♦ **Upper – divisiones**
 - ♦ Anterior and posterior
 - ♦ **Medial - fasciculi**
 - ♦ medialis, lateralis, posterior
 - ♦ **lower- nervi**
 - ♦ N. musculocutaneus
 - ♦ N. radialis
 - ♦ N. medianus
 - ♦ N. ulnaris

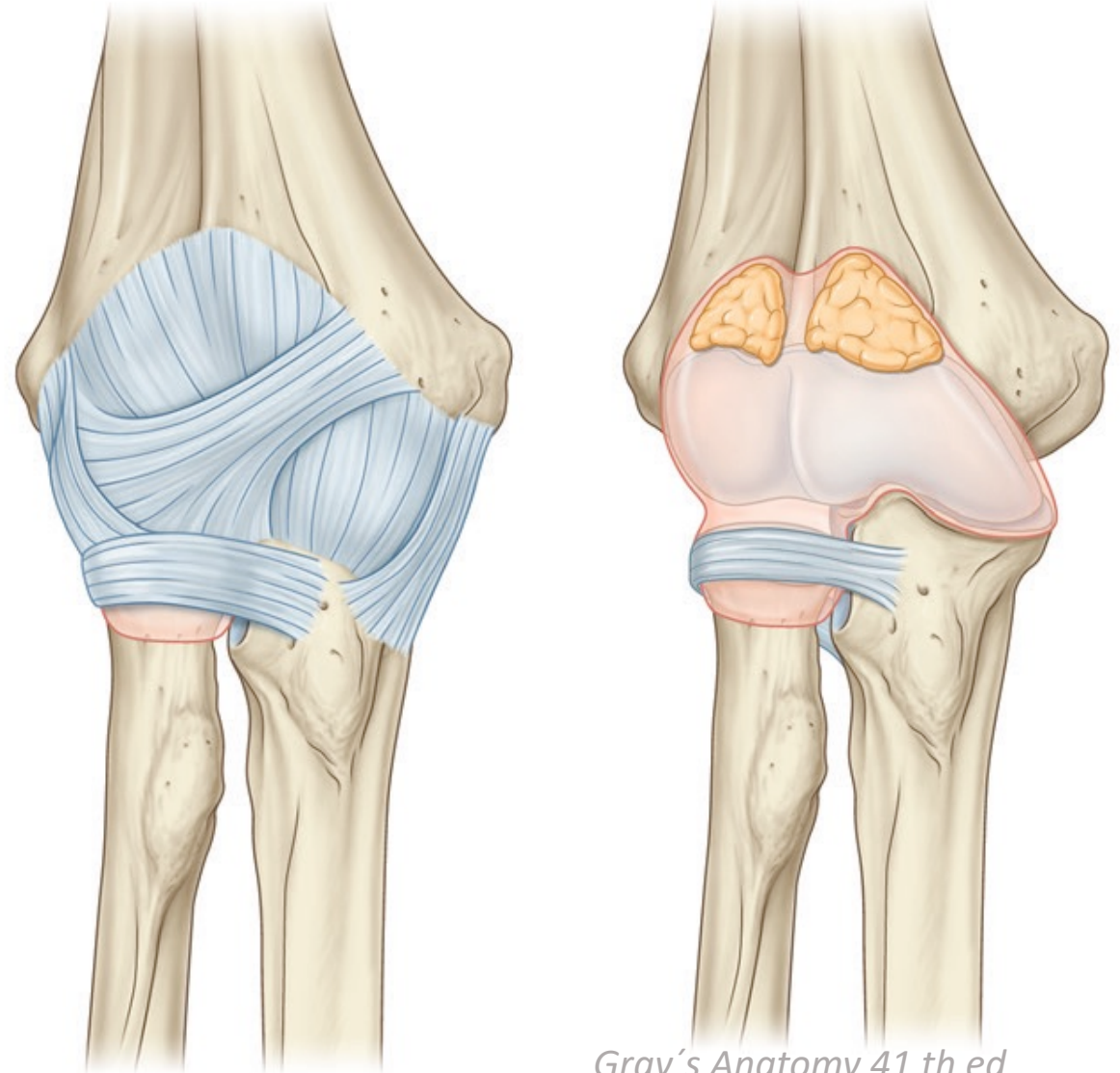
Art. cubiti

- Art. humeroradialis
- Art. humeroulnaris
- Art. radioulnaris proximalis



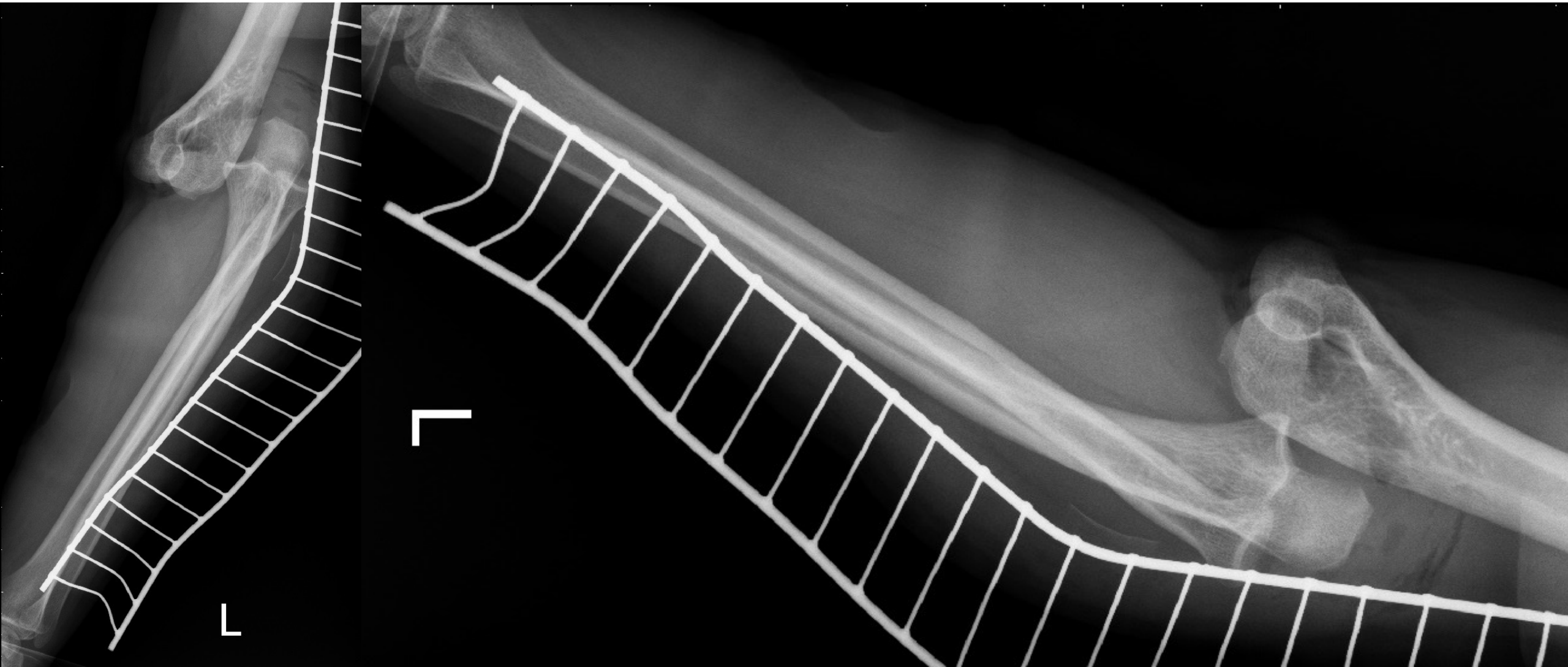
Art. cubiti

- Ligamentum collaterale radiale
- Ligamentum collaterale ulnare
- Ligamentum anulare radii
- Capsula articularis
- Corpus adiposum

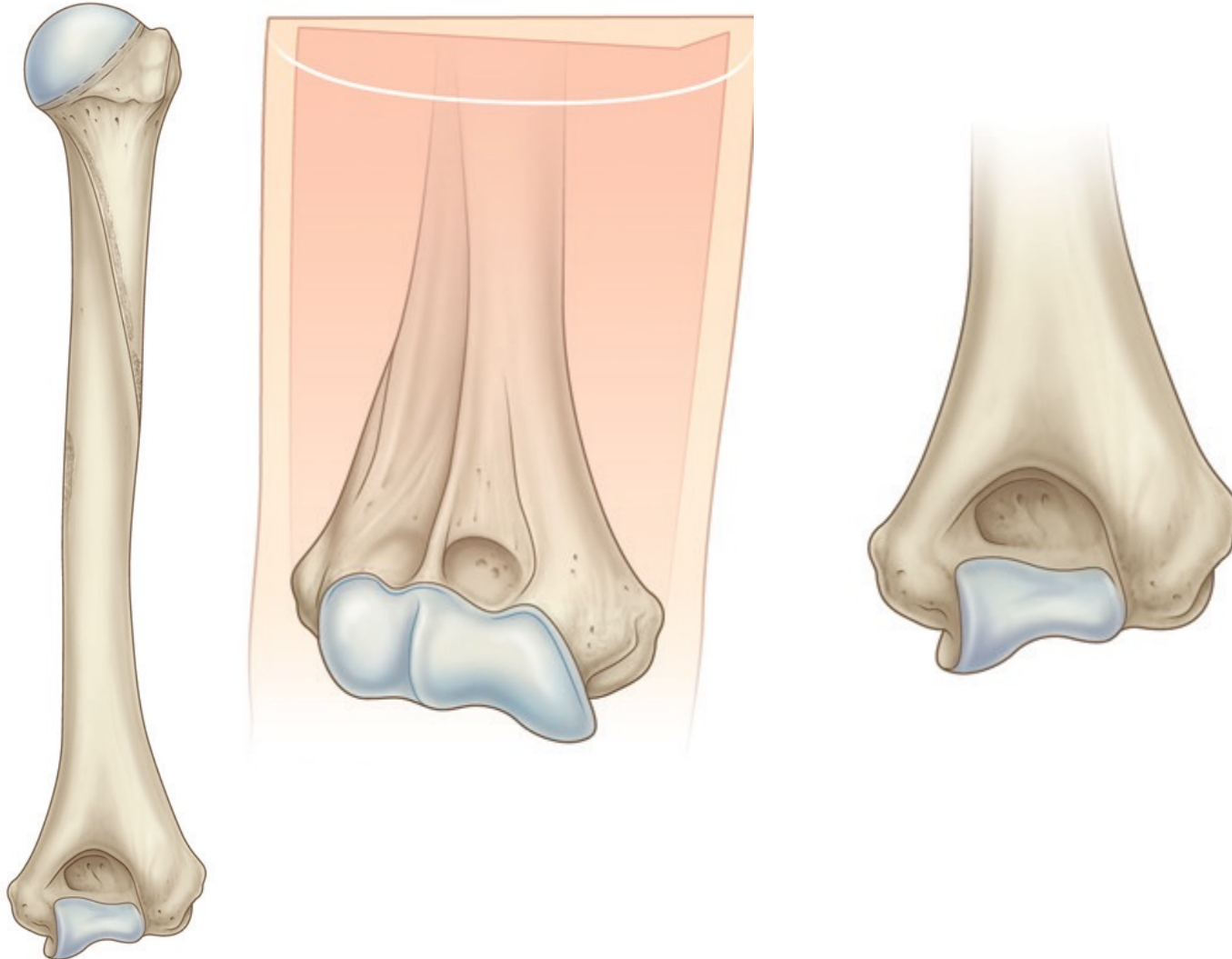




Luxation

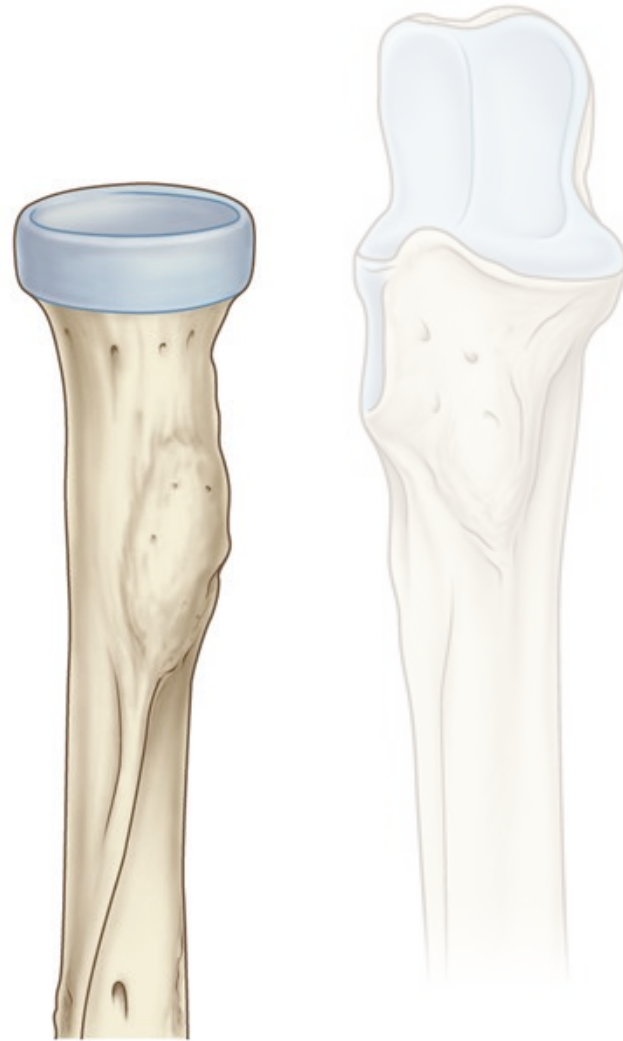


Distal humerus



- ♦ **Sulcus nervi radialis**
- ♦ **Condylus humeri**
- ♦ **Epicondylus humeri lateralis**
- ♦ **Epicondylus humeri medialis**
- ♦ **Capitulum humeri**
- ♦ **Fossa radialis**
- ♦ **Trochlea**
- ♦ **Fossa coronidea**
- ♦ **Fossa olecrani**
- ♦ **Sulcus nervi ulnaris**

Radius and ulna



- ♦ **Caput**

- ♦ **Fovea radii**

- ♦ *Capitulum humeri*

- ♦ **Circumferentia articularis**

- ♦ *Incissura radialis*

- ♦ **Collum radii**

- ♦ **Tuberositas radii**

- ♦ *M. biceps brachii*

- ♦ **Linea obliqua**

- ♦ **Margo interosseus**

- ♦ *Membrana interossea*

- ♦ **Foramen nutricium**

Radius and ulna



♦ Olecranon

♦ *M. triceps brachii*

♦ Processus coronoideus

♦ Incissura trochlearis humeri

♦ *Trochlea humeri*

♦ Incissura radialis

♦ *Circumferentia articularis radii*

♦ Tuberositas ulnaris

♦ *M. brachialis*

♦ Foramen nutricium

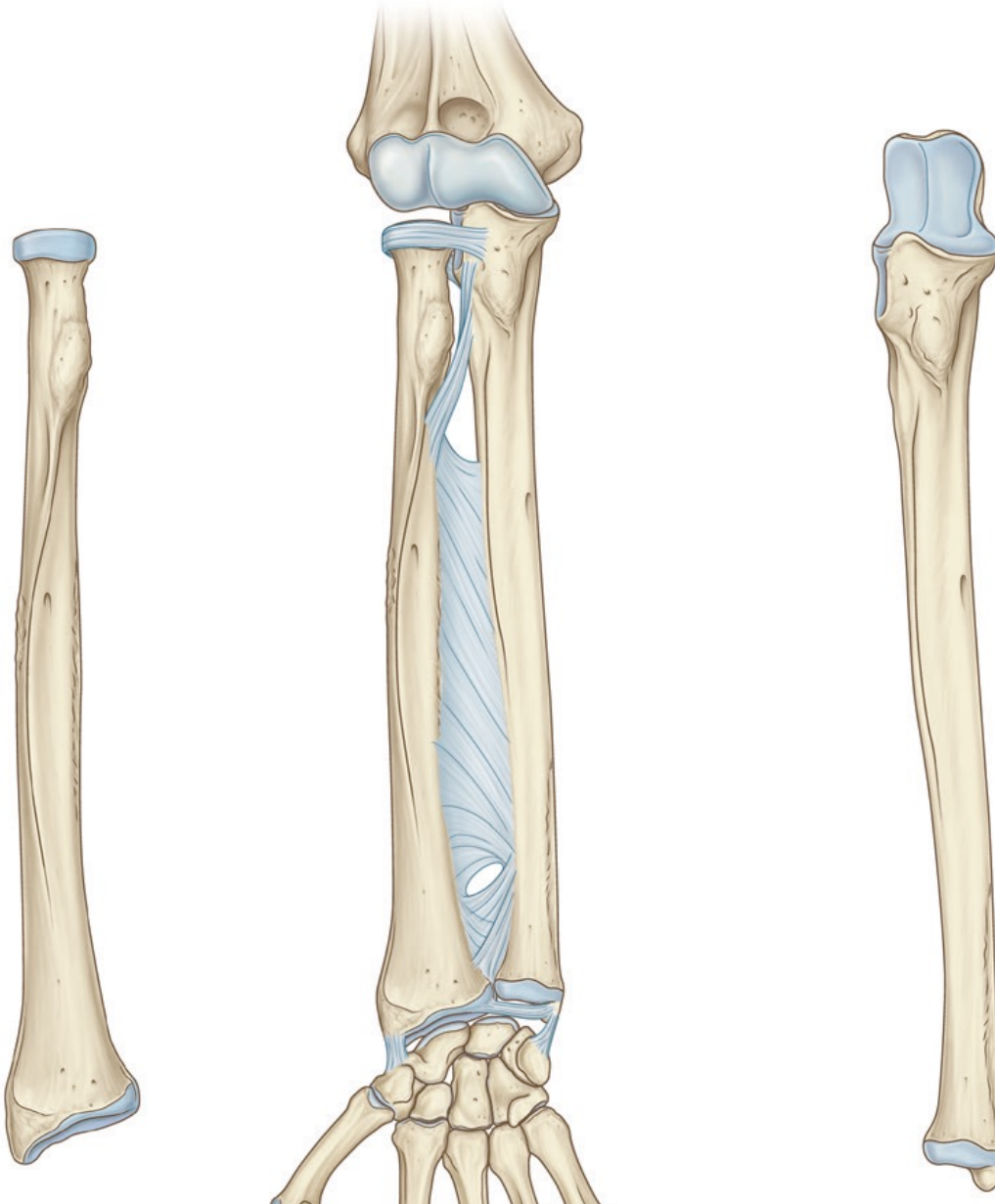
♦ Crista m. supinatoris

♦ Margo intertarsosseus

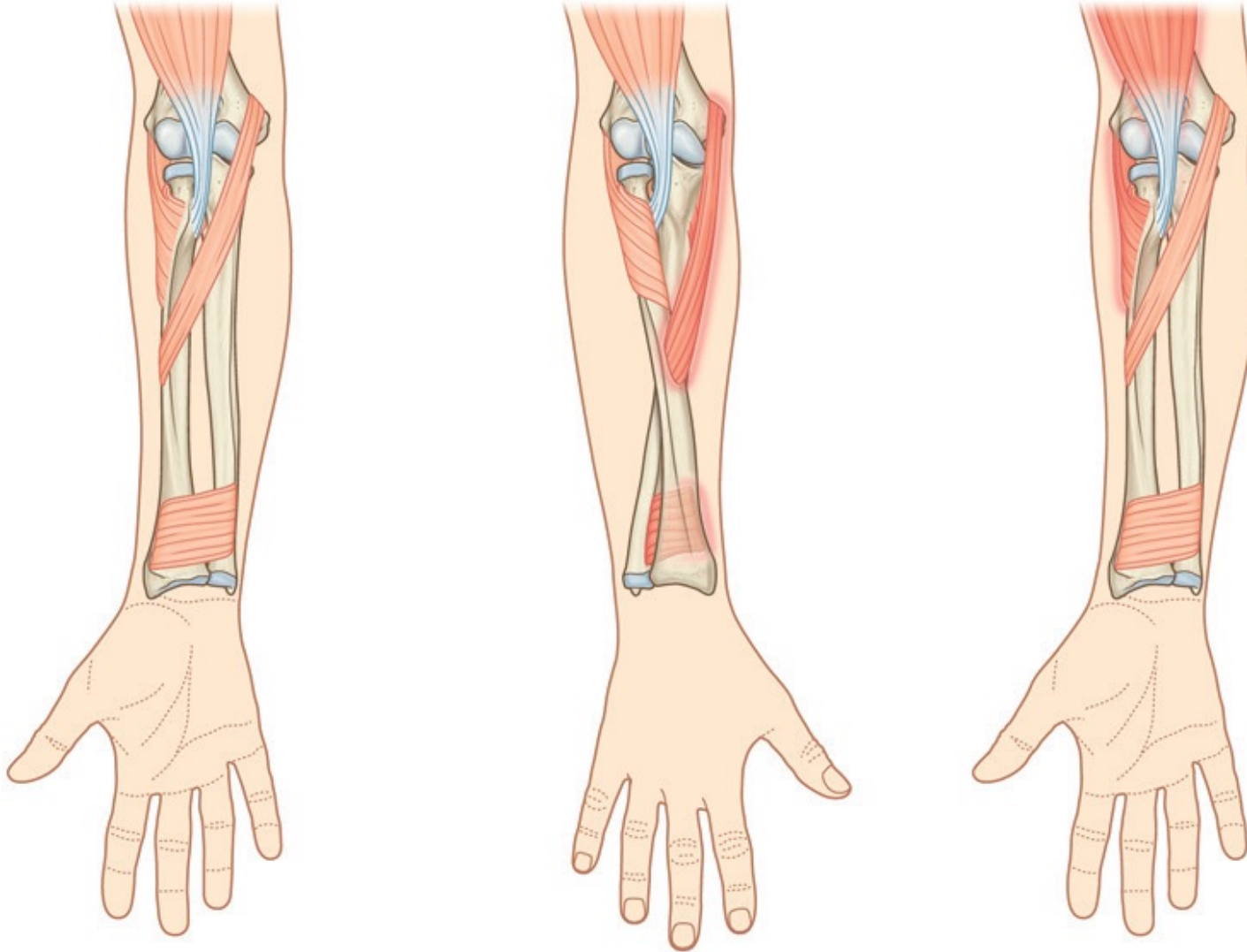
♦ *membrana interossea*

Antebrachium - forearm

- Ulna
- Radius
- Chorda obliqua
- Membrana interossea
- Apertura a. interosseae



Pronation and supination



- ◆ Rotation of the radius around ulna

- ◆ **Two** and **two** muscles

- ◆ *M. pronator teres*

- ◆ *M. pronator quadratus*

- ◆ **contraction - pronation**

- ◆ *M. supinator*

- ◆ *M. biceps brachii*

- ◆ **contraction - supination**

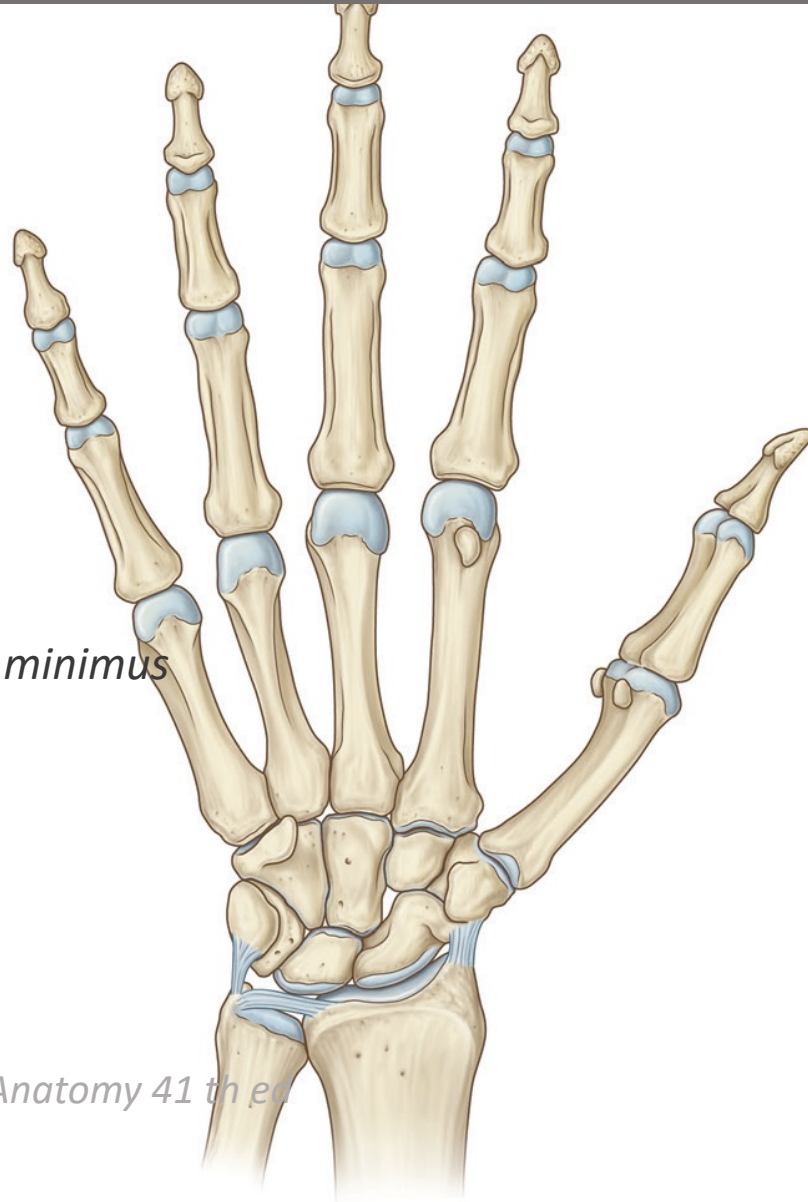
Carpus et manus – wrist and hand

🔥 Carpus

- 🔥 *Ossa carpea (carpi)*
- 🔥 *Metacarpi I. - V.*

🔥 Manus

- 🔥 *Pollex*
- 🔥 *Digiti*
 - 🔥 *index, medius, annularis, minimus*
- 🔥 *Phalanges*
 - 🔥 *Proximales*
 - 🔥 *Mediae (II. - V.)*
 - 🔥 *Distales*

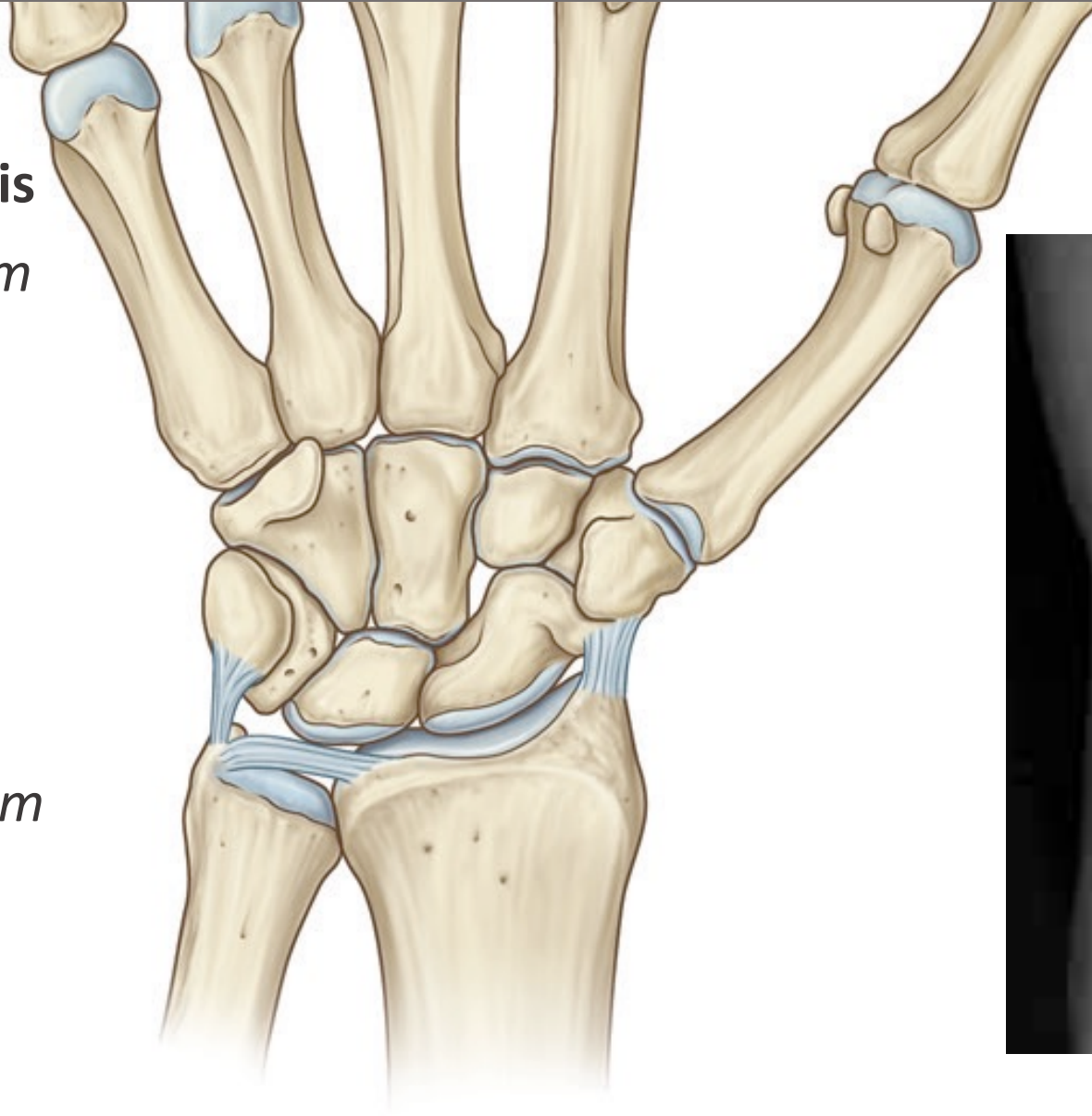


Gray's Anatomy 41th ed



Ossa carpi

- ♦ **Linea proximalis**
- ♦ *Os scaphoideum*
- ♦ *Os lunatum*
- ♦ *Os triquetrum*
- ♦ *Os pisiforme*
- ♦ **Linea distalis**
- ♦ *Os trapezium*
- ♦ *Os trapezoideum*
- ♦ *Os capitatum*
- ♦ *Os hamatum*





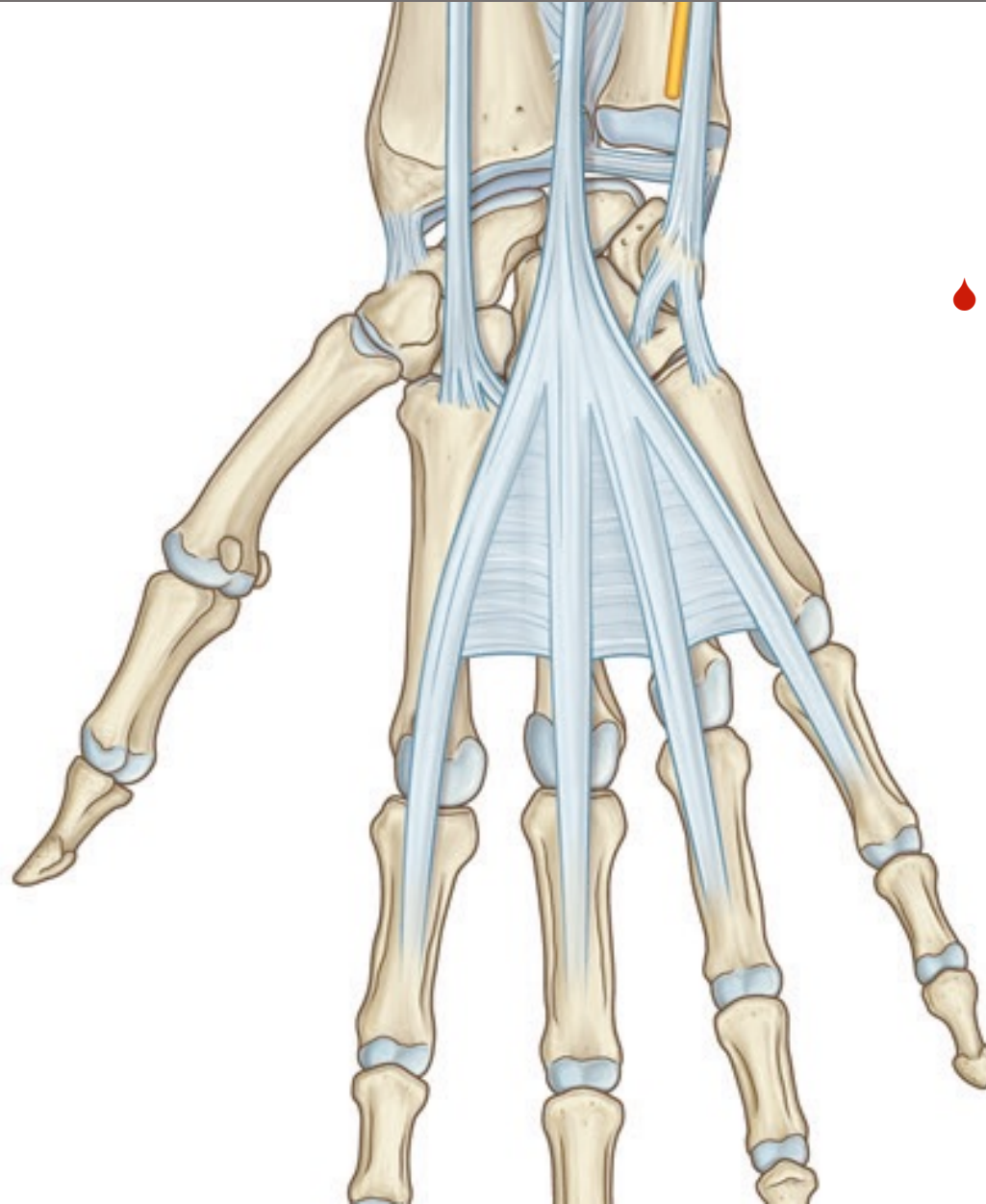


- **Linea proximalis**
- *Os scaphoideum*
- *Os lunatum*
- *Os triquetrum*
- *Os pisiforme*
- **Linea distalis**
- *Os trapezium*
- *Os trapezoideum*
- *Os capitatum*
- *Os hamatum*



- **Linea proximalis**
- *Os scaphoideum*
- *Os lunatum*
- *Os triquetrum*
- *Os pisiforme*
- **Linea distalis**
- *Os trapezium*
- *Os trapezoideum*
- *Os capitatum*
- *Os hamatum*

Muscular insertions



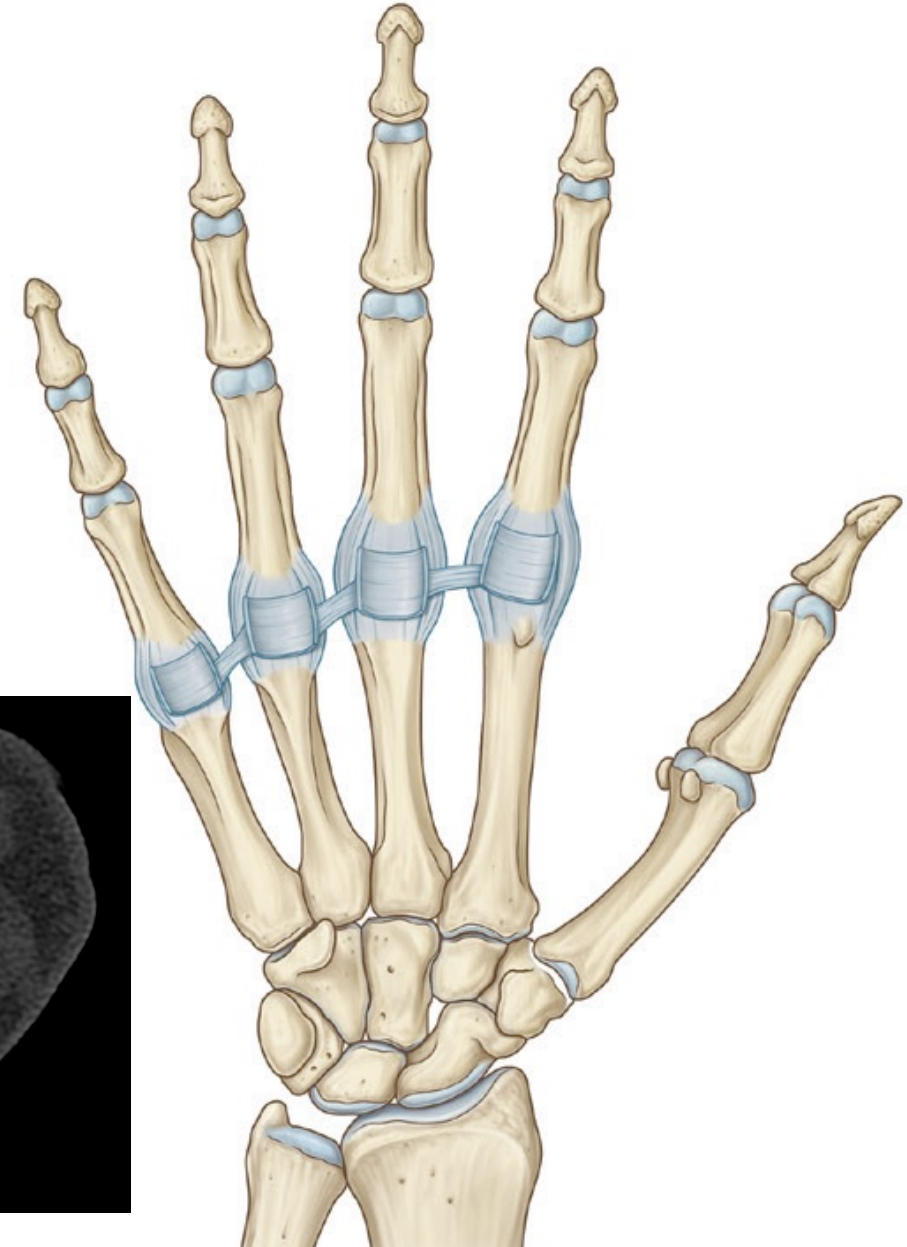
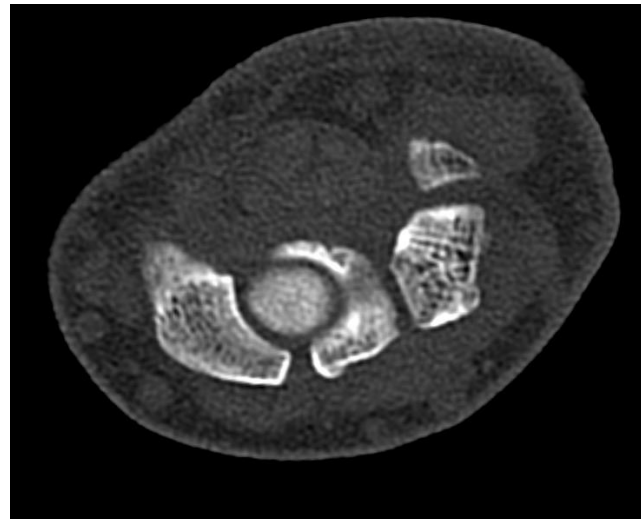
♦ ***M. flexor carpi ulnaris***

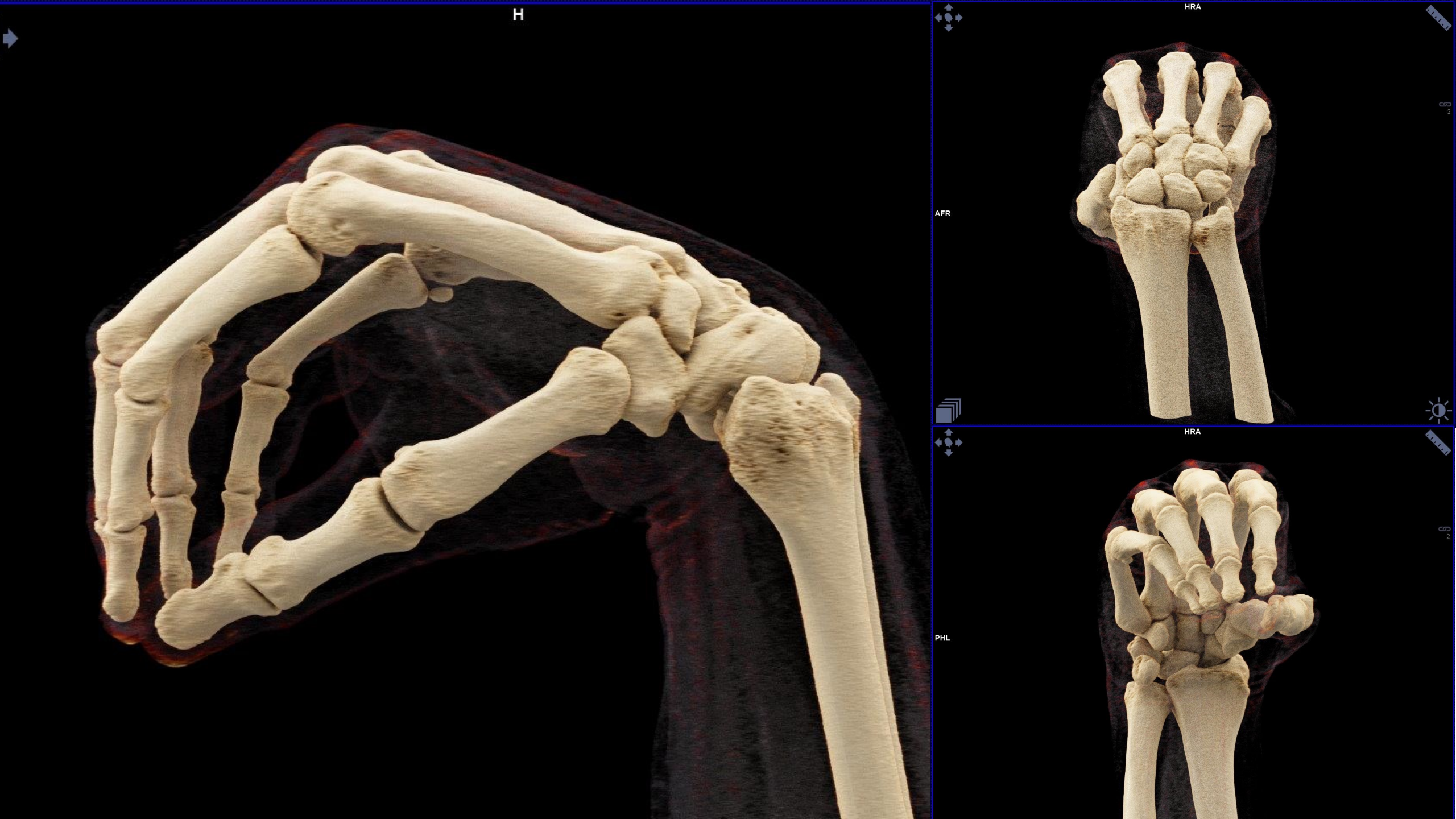
- ♦ *Olecranon a dorsum ulnae*
- ♦ *Epiconylus medialis humeri*
- ♦ *Os pisiforme*
- ♦ *Lig. pisohamatum*
- ♦ *Lig. pisocarpeum*

Articulations of wrist and hand

- ♦ **Art. interphalangeales distales**
- ♦ **Art. interphalangeales proximales**
- ♦ **Art. carpometacarpea pollicis (sellaris)**
 - ♦ *Lig. collateralia*
- ♦ **Art. carpometacarpeae II-V (amphiarthrosis)**
 - ♦ *Ligg. palmares (laminae fibrocartilagineae palmares)*
 - ♦ *Ligg. collateralia*
 - ♦ *Ligg. metacarpalia transversa profunda*
- ♦ **Art. mediocarpea (art. spheroides)**
 - ♦ *Ligg. intercarpalia*
- ♦ **Art. radiocarpea- discus**
- ♦ **Art. radioulnaris distalis**
 - ♦ *Radius - incisura ulnaris*

Gray's Anatomy 41 st ed





Retinaculum flexorum

- ♦ **Junction of lateral and medial carpal crest**

- ♦ *Tuberculum ossis trapezii*
- ♦ *Os pisiforme*
- ♦ *U - prostror*

- ♦ **Below retinaculum**

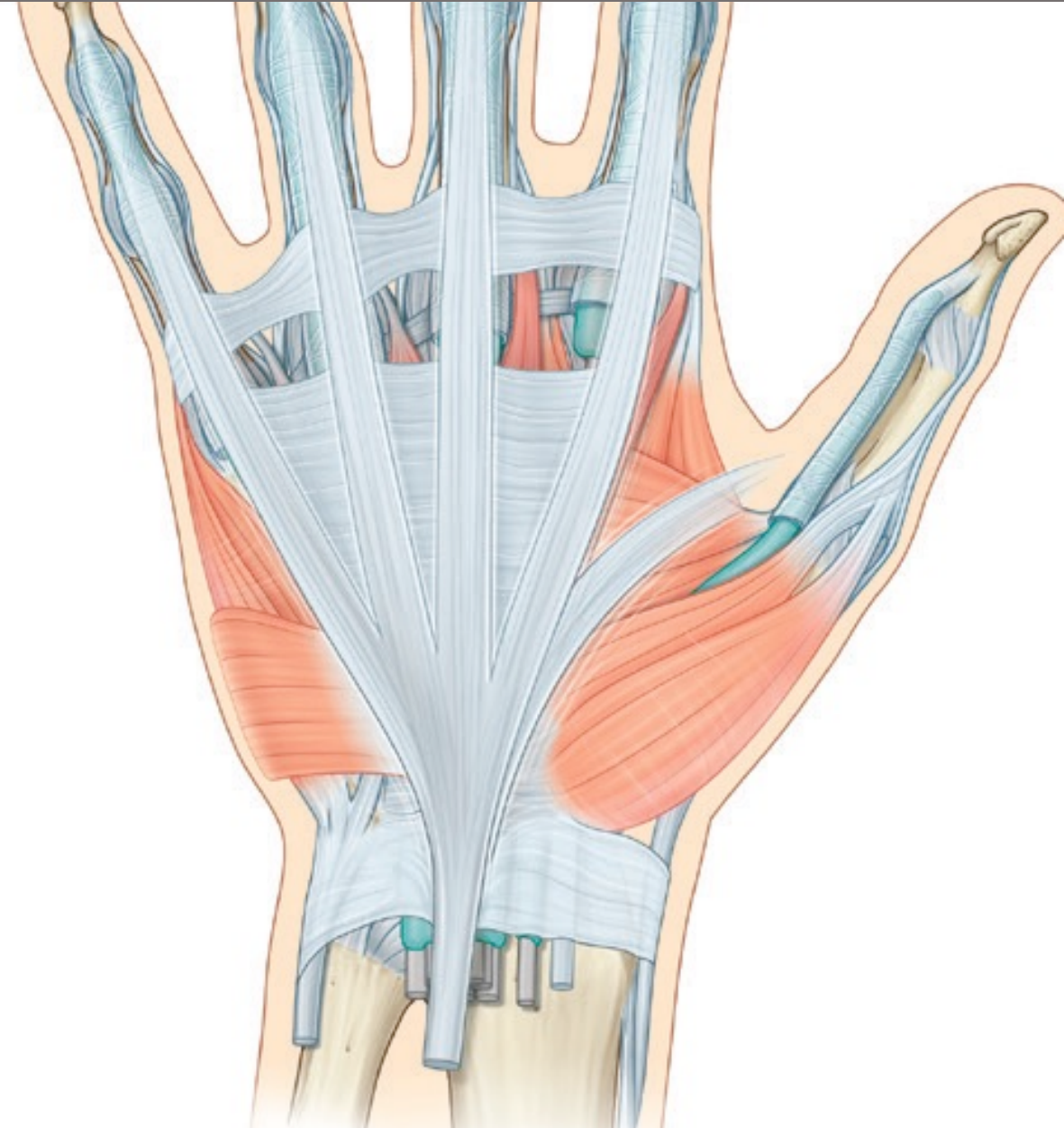
- ♦ *N. medianus*
- ♦ *Mm. flexores digitorum superf. et prof. (T)*
- ♦ *M. flexor pollicis longus (T)*

- ♦ **In retinaculum**

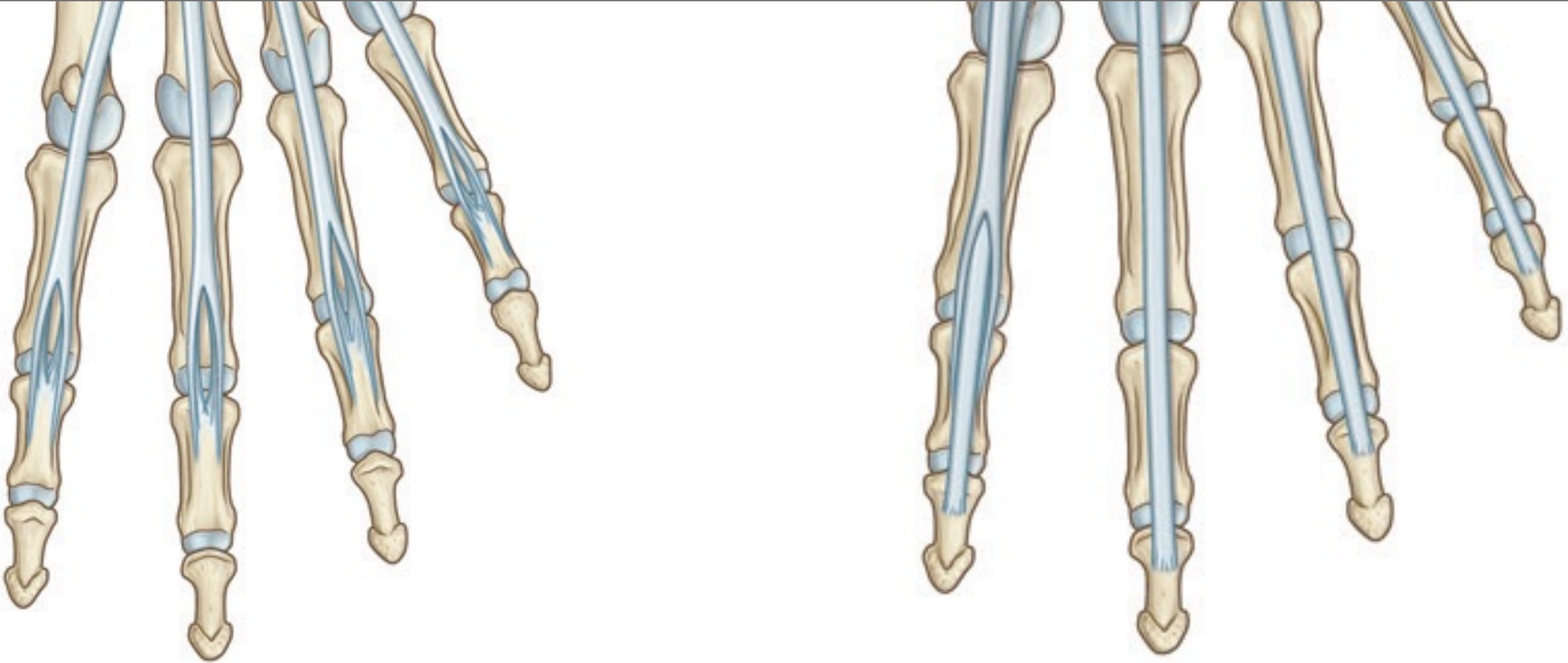
- ♦ *M. flexor carpi radialis (T)*

- ♦ **Superficial to the reticulum**

- ♦ *N. ulnaris*
- ♦ *A. ulnaris*
- ♦ *M. palmaris longus (T)*



mm. Flexores profundi et superficiales



M. flexor digitorum superficialis - phalanges medii II., III., IV., V.

M. flexor digitorum profundus - phalanges distales II., III., IV., V.

Palma manus

♦ **Aponeurosis palmaris**

- ♦ *Triangular thickening of deep fascia*
- ♦ *Anchored to retinaculum flexorum*
- ♦ *Following of the tendons of m. palmaris longus*
- ♦ **Deeper from fascia nerves and vessels**

♦ **Fasciculi longitudinales**

- ♦ *Anchored to subcutaneous tissue – middle part*
- ♦ *Anchored to dorsal part of fingers - lateral part*

♦ **Fasciculi transversi**

♦ **Fasciculi praetendinosi**

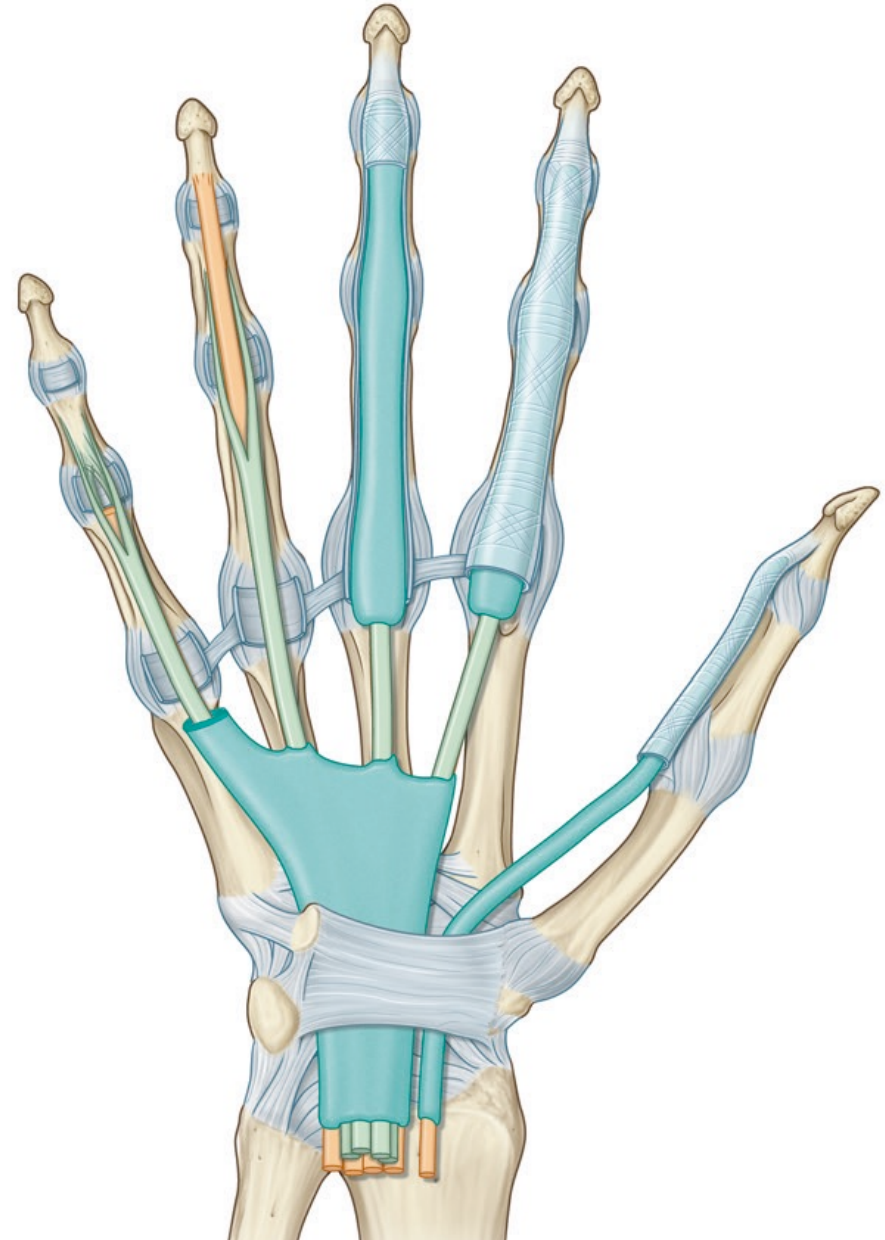
♦ **M. palmaris longus - tendines**

♦ **M. palmaris brevis - hypothenar**



Vaginae tendineae manus

- ♦ **Vagina synovialis mm. flexores**
- ♦ **Vagina synovialis m. flexoris pollicis**
- ♦ **Vagina synovialis digitorum**
- ♦ **Tendinous insertions**
- ♦ **M. flexor digitorum superficialis**
 - ♦ *Divided tendons – inserted to the middle phalanx*
- ♦ **M. flexor digitorum profundus**
 - ♦ *Passing through divided tendon to the distal phalanx*



Upper limb 1

Prof. MUDr. Jiří Ferda, Ph.D.