
بسم الله الرحمن الرحيم

MSK-1 Module
1st year MBBS
Batch 52
Wrist Joint

Date: 23/04/25

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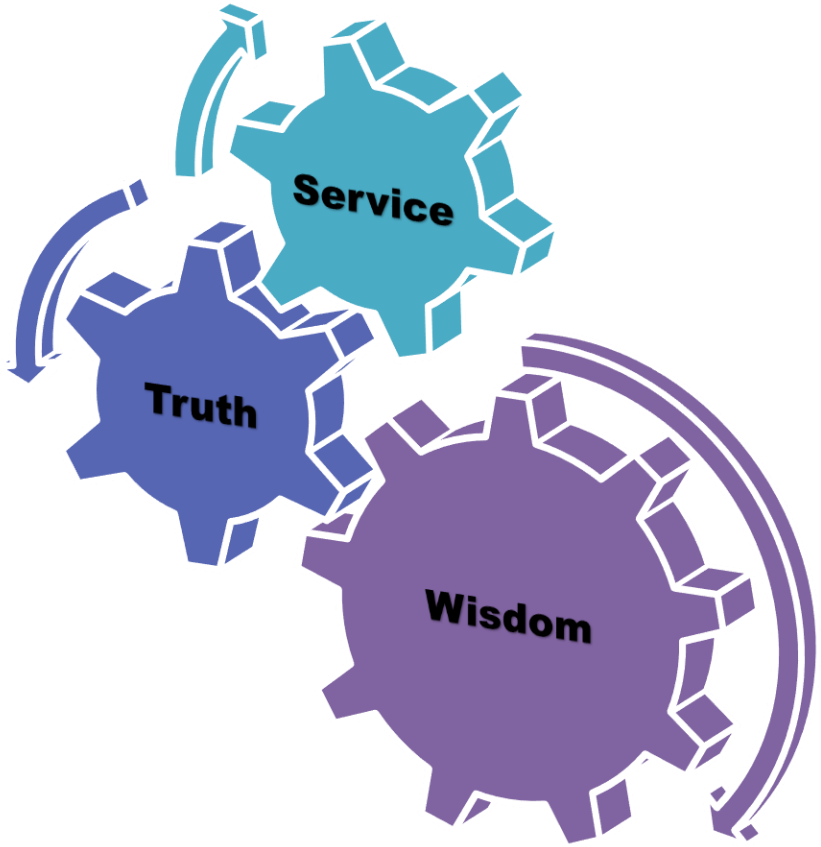
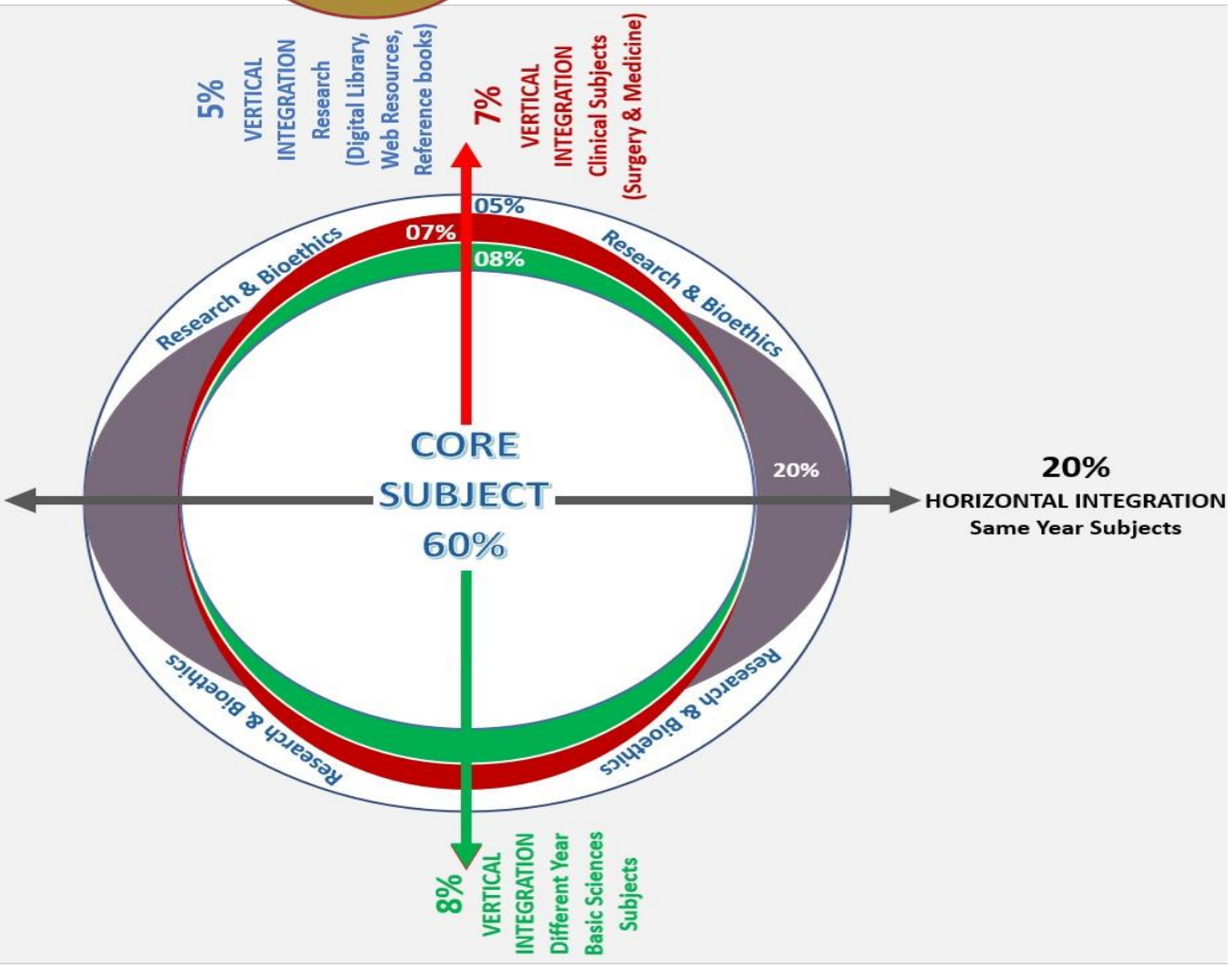
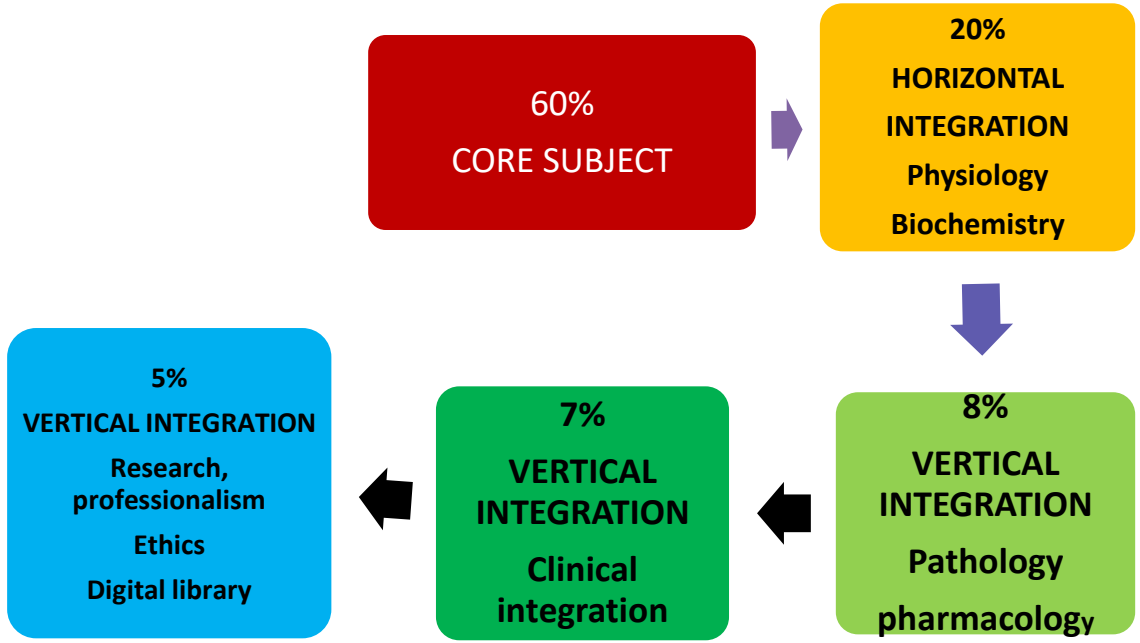
Mission- Vision- Values



- To impart evidence-based research oriented medical education
- To provide best possible patient care
- To inculcate the values of mutual respect and ethical practice of medicine

Professor Umar Model of Integrated Lecture





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Learning Objectives

At the end of the Demonstration Student should be able to

- Describe the **type of joint** with its articular surfaces
- Discuss the **capsule, synovial membrane** and **ligaments of the joint**
- Enumerate the related **bursa**
- Describe **axis** and **plane of movements**
- Enumerate **muscles** producing movements at joint
- Discuss wrist **fractures** & **Dislocations**
- Understand the curative and **preventive health care** measures.
- Practice principles of **bioethics**
- Apply strategic use of **artificial intelligence** in healthcare
- Read a relevant **research article**

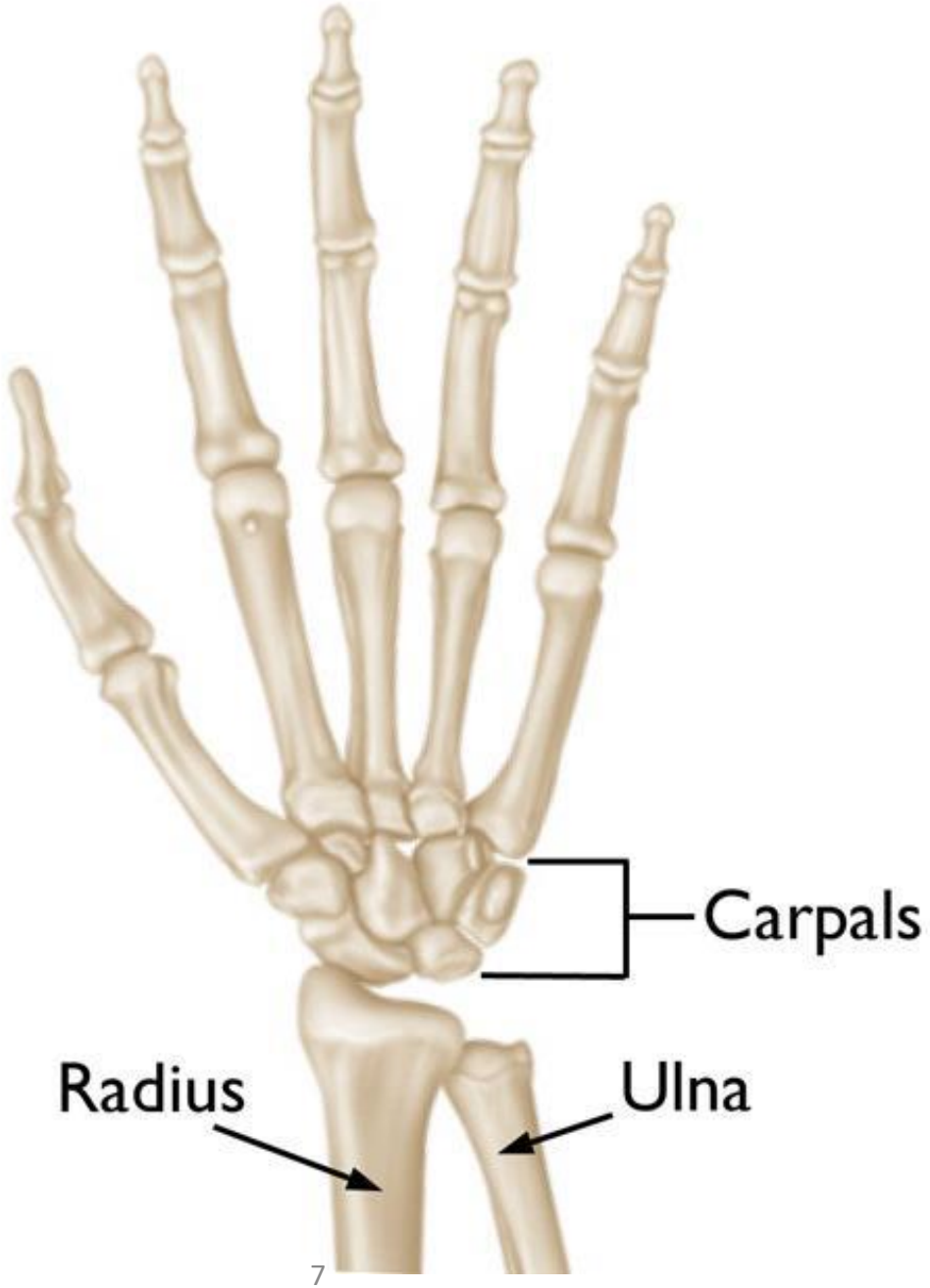
Core Knowledge

(Slide 7-17)

Wrist Joint

- **Type :**
- Condyloid (ellipsoid) type of synovial joint

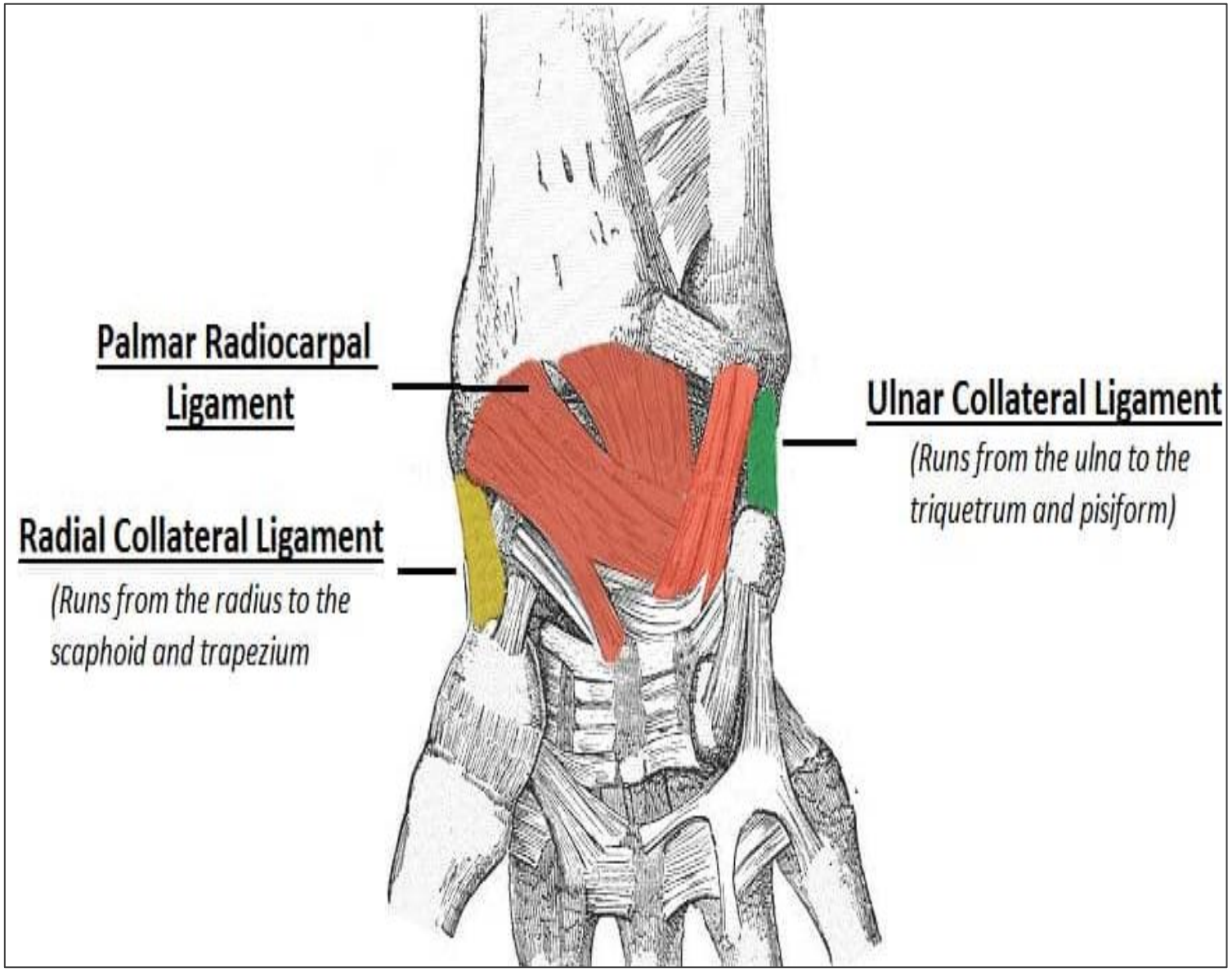
- **Articulating Disc :**
- Distal end of the radius .
- Proximal row of carpal bones
- (except pisiform)
- The ulna is prevented from articulating with the carpal bones



Joint Capsule Of Wrist Joint

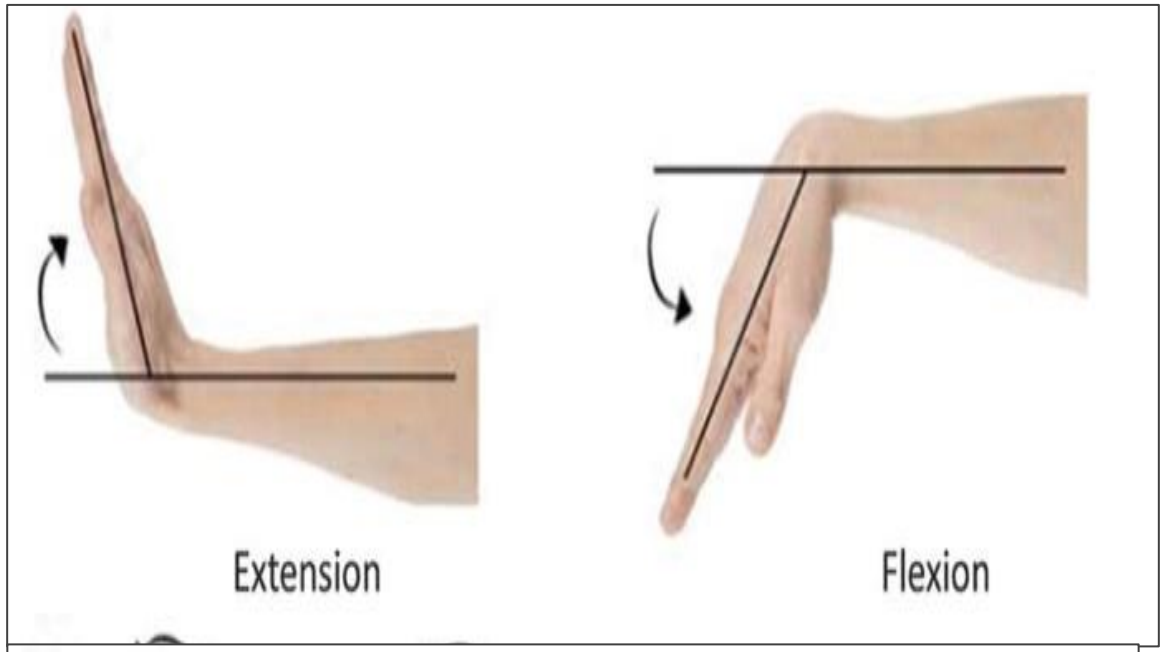
- The fibrous layer of the joint capsule
- attached to the distal ends of the radius and ulna and the proximal row of carpals (scaphoid, lunate, and triquetrum).
- It is lined internally by a **synovial membrane**, which produces synovial fluid to reduce friction.

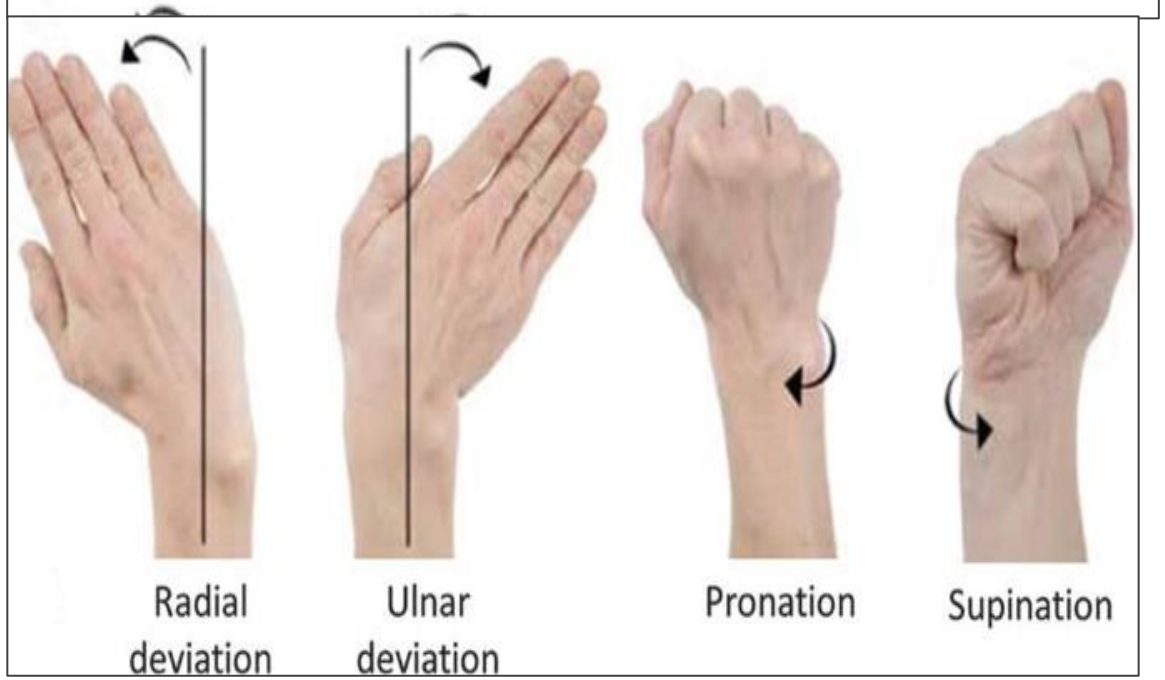
- **Palmar radiocarpal** –on the palmar (anterior) side of the joint.
- **Dorsal radiocarpal** – on the dorsum (posterior) side of the hand.
- **Ulnar collateral** –ulnar styloid process to the triquetrum and pisiform.
- **Radial collateral** – from the radial styloid process to the scaphoid and trapezium.



Movements

1. **Flexion** – flexor carpi ulnaris , flexor carpi radialis asst. by flexor digitorum superficialis.
2. **Extension** – extensor carpi radialis longus & brevis and extensor carpi ulnaris asst. by extensor digitorum.
3. **Adduction** – extensor carpi ulnaris and flexor carpi ulnaris
4. **Abduction** – abductor pollicis longus, flexor carpi radialis, extensor carpi radialis longus and brevis.





Bursae of Wrist Joint

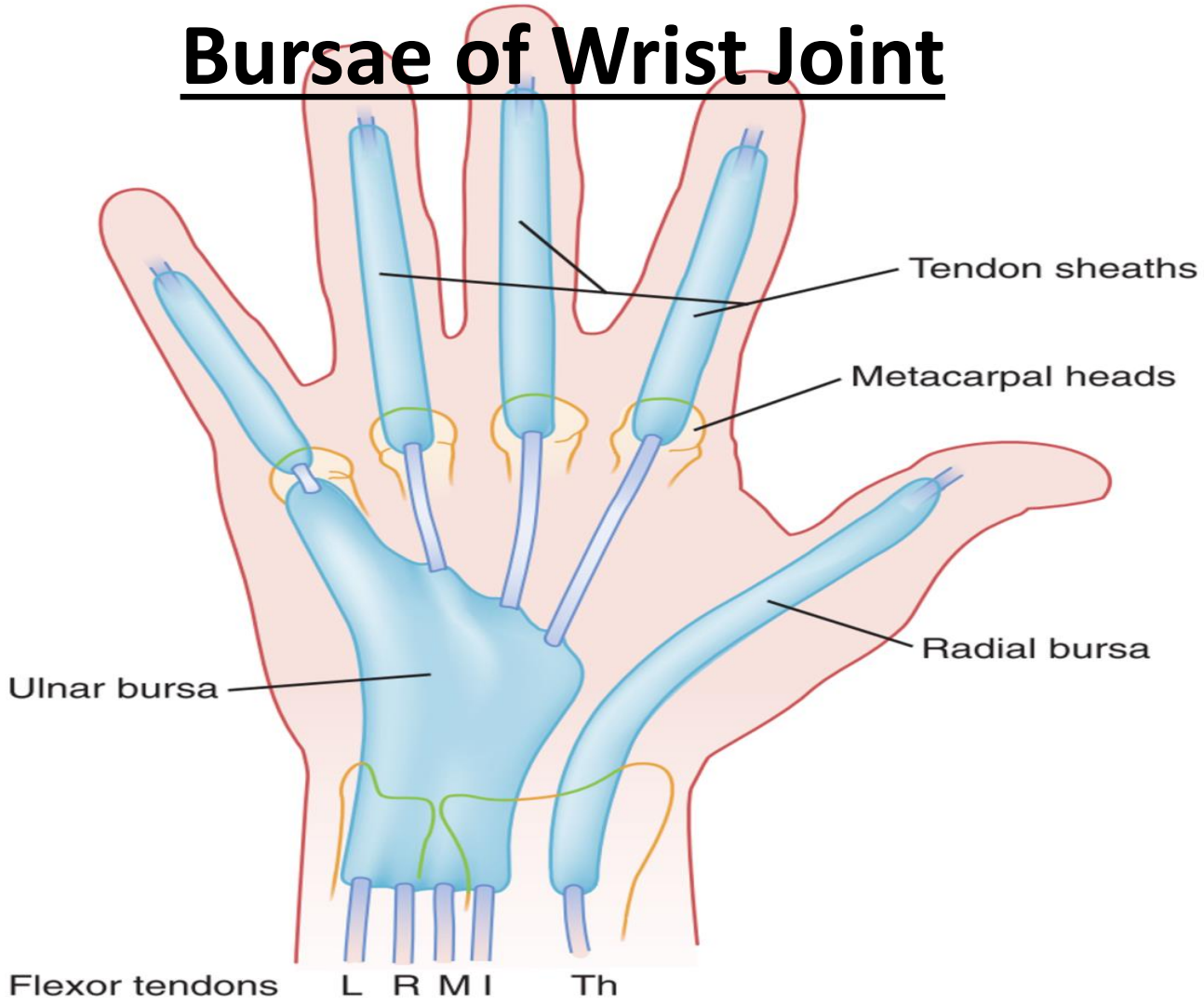


Figure 50-21. Radial and ulnar bursae and their relation to flexor tendons and to each other. *I,* index finger; *L,* little finger; *M,* middle finger; *R,* ring finger; *Th,* thumb. (From Siegel DB, Gelberman RH: Infections of the hand. Orthop Clin North Am 19:779, 1988.)

Innervation & Blood Supply

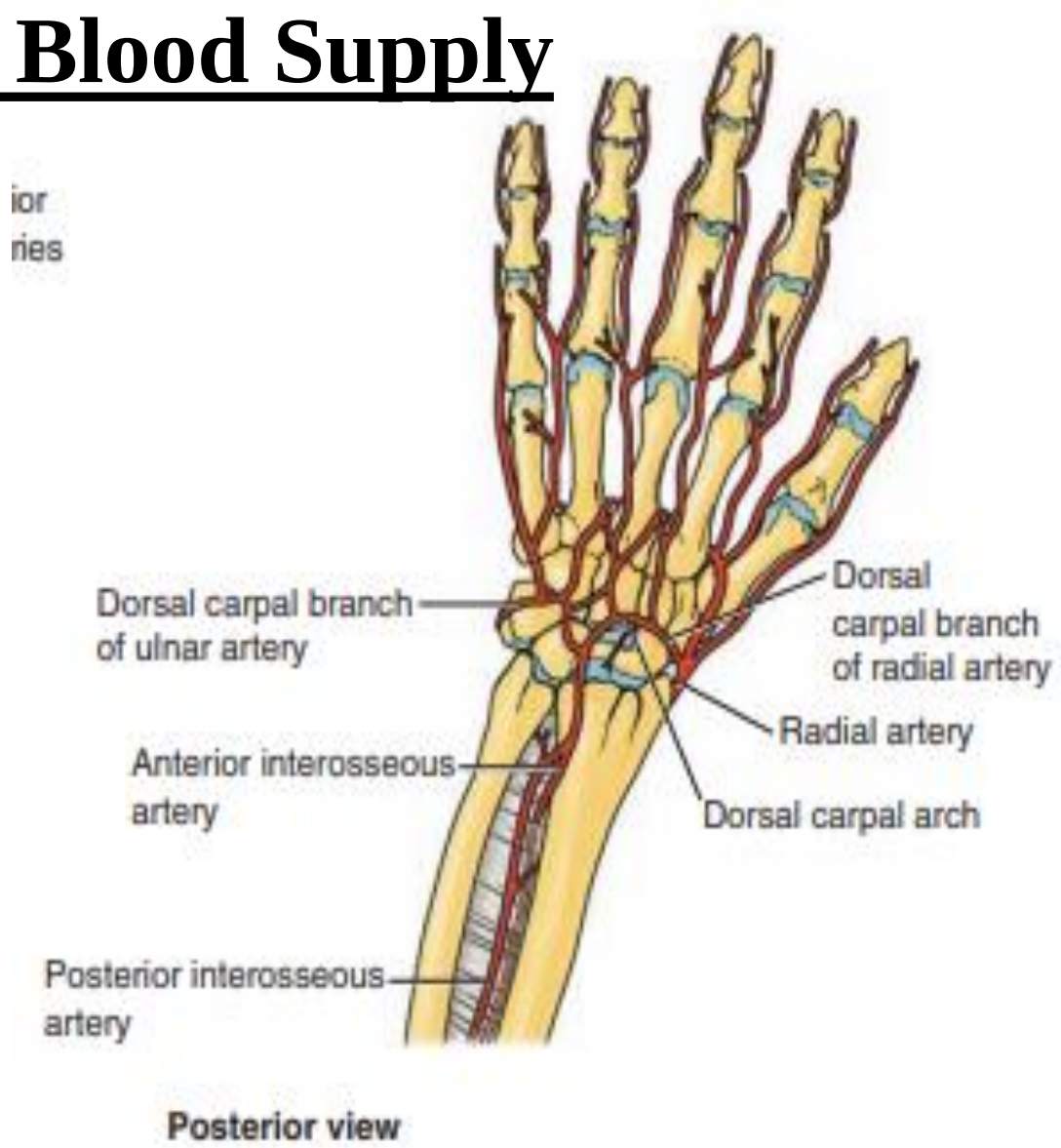
- **Innervation**

  Innervation to the wrist is delivered by branches of three nerves:

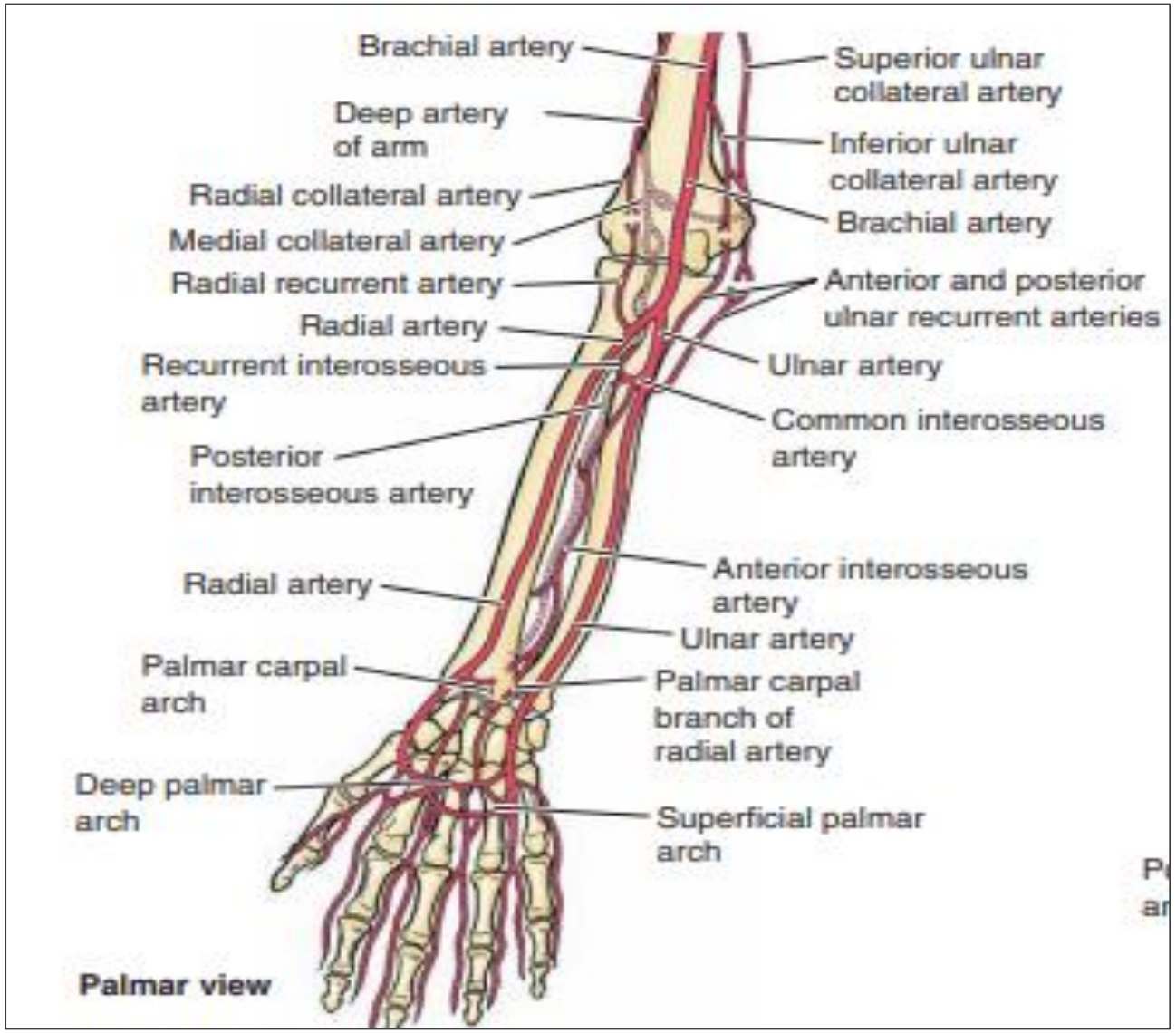
- **Median nerve** – Anterior interosseous branch.
- **Radial nerve** – Posterior interosseous branch.
- **Ulnar nerve** – deep and dorsal branches

Innervation & Blood Supply

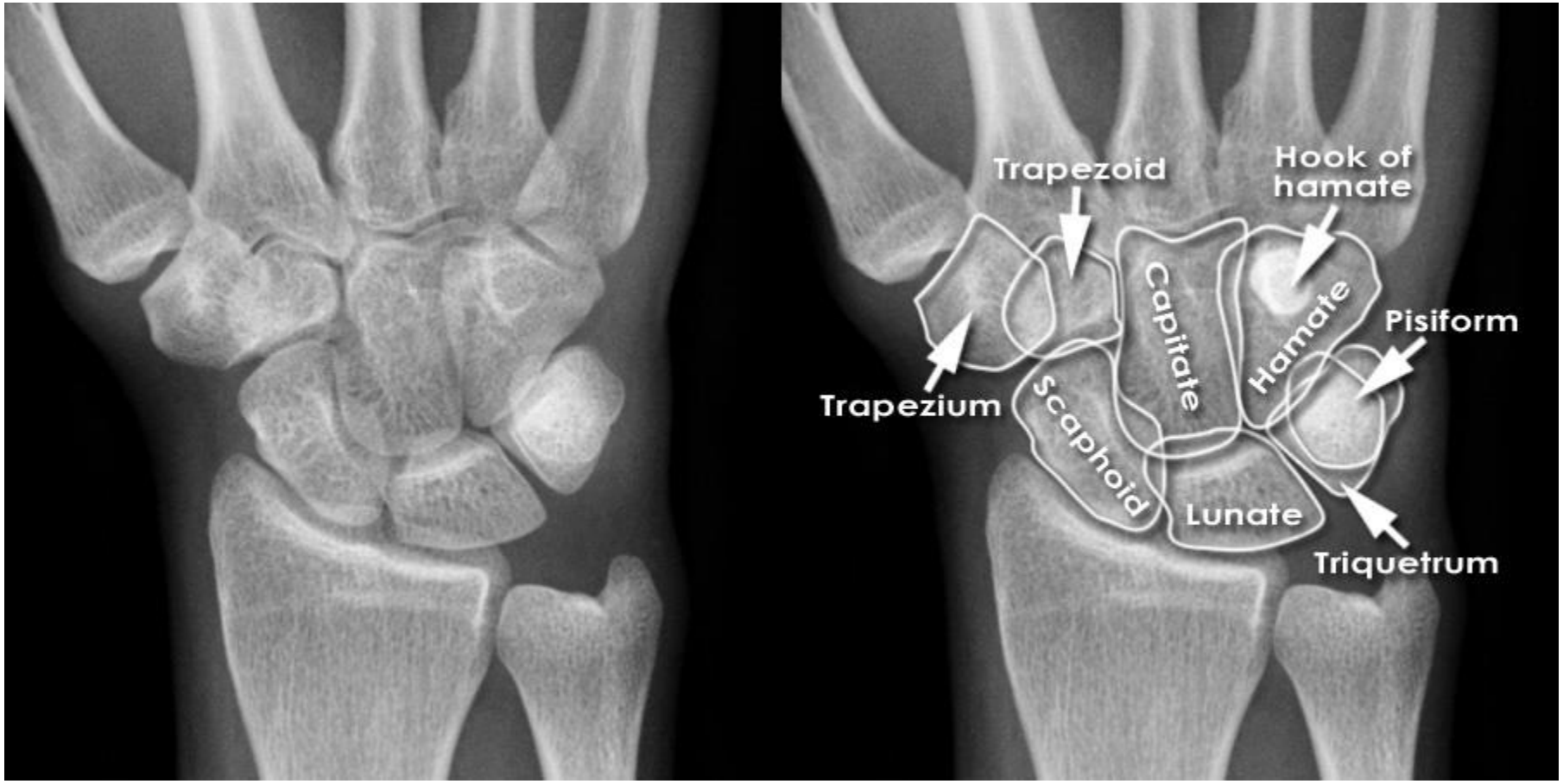
- The Radiocarpal joint receives its blood supply from the branches of dorsal and palmar carpal arches.
- The **Dorsal carpal arch** arises from dorsal carpal branches of the radial ulnar, anterior interosseous and posterior interosseous arteries.



The **palmar carpal arch** is generally formed by palmar carpal branches of the radial and ulnar arteries anterior interosseous artery and penetrating branches of the deep palmar arch.



Radiograph


Trapezoid
Hook of hamate
Capitate
Hamate
Pisiform
Trapezium
Scaphoid
Lunate
Triquetrum

Colle's Fracture

Fracture of Distal radius after falling on an out stretched hand with an extended wrist

Synovial Cyst

KLM 7th Edition page no 767

- The thin walled cyst contains clear mucinous fluid
- Unknown cause
- On flexion - It may enlarge and can be painful – called Ganglions
- Commonly at
- distal attachment of the ECRB tendon to the base of the 3rd metacarpal

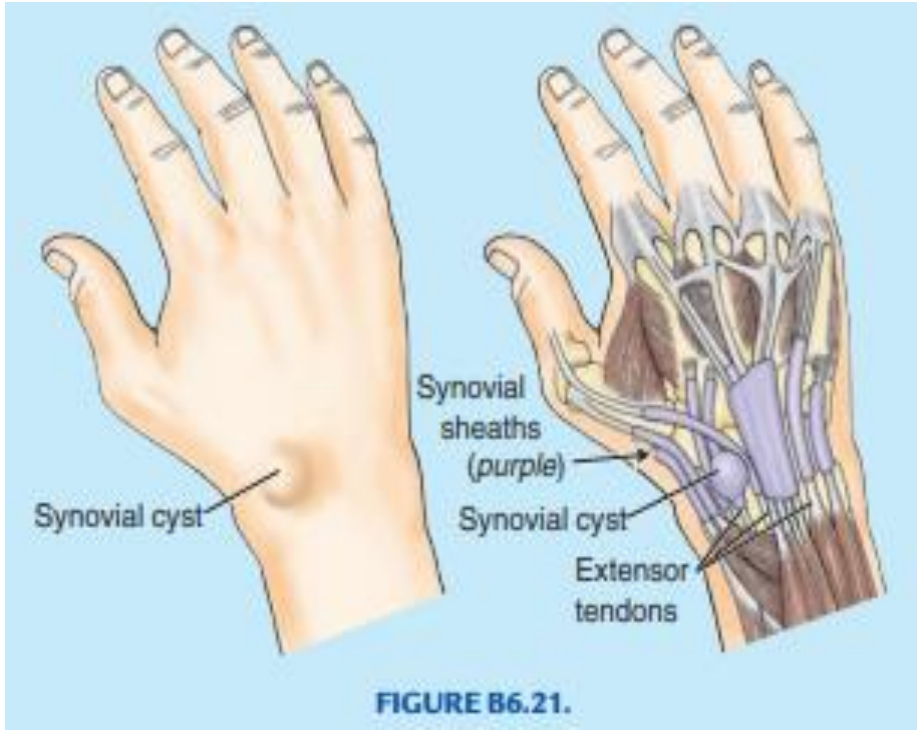


FIGURE B6.21.

Vertical Integration

Family Medicine

- **Initial Assessment:** Family physicians play a crucial role in the initial assessment of fractures/dislocation of wrist joint , providing immediate medical attention, diagnosing the severity of the injury, and initiating appropriate treatment plans.
- **Referral and Coordination:** They facilitate referrals to orthopedic specialists if necessary, ensuring patients receive specialized care for complex fractures/dislocations. Additionally, they coordinate with radiologists for timely imaging, aiding in accurate diagnosis and treatment planning.
- **Follow-up Care:** Family physicians provide ongoing monitoring and management of fractures, overseeing the healing process, adjusting treatment as needed, and addressing any complications or concerns that may arise during recovery.

Biomedical Ethics

- Biomedical ethics in the context of wrist joint fractures/dislocations involve ensuring patient autonomy in treatment decisions, such as choosing between surgical intervention and conservative management.
- Physicians must uphold beneficence by prioritizing patient well-being, opting for treatments that optimize long-term function and quality of life.
- Additionally, ethical considerations include maintaining patient confidentiality regarding sensitive medical information related to the injury and treatment process.

Artificial Intelligence

- AI aids in fracture detection through advanced imaging analysis, assisting radiologists in accurately identifying and categorizing wrist joint fractures/dislocations from X-rays or scans.
- Additionally, AI-powered systems can help predict fracture healing times and outcomes based on patient-specific factors, guiding treatment decisions for optimal recovery.
- Furthermore, AI algorithms contribute to the development of personalized rehabilitation plans, enhancing post-fracture care by tailoring interventions to individual patient needs and progress.

Research Article

- Wrist pain: a systematic review of prevalence and risk factors– what is the role of occupation and activity?
- https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/s12891-019-2902-8

Learning Resources

- Clinically Oriented Anatomy 7th Edition page no. 809 -811

  Blue boxes 765 -767
- Research Article Link https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/s12891-019-2902-8

Thankyou