

Forearm, Wrist, and Hand Osteology Review



Four Units of Bone in Hand

- One central fixed unit for stability
- Three mobile units for dexterity and power

Central Fixed Unit

- Eight carpal bones tightly bound to the second and third metacarpals

Three Mobile Units

- Thumb
- Index finger
- Middle, ring, and little fingers

Thumb

1. Powerful pinch
2. Grasp
3. Fine manipulations

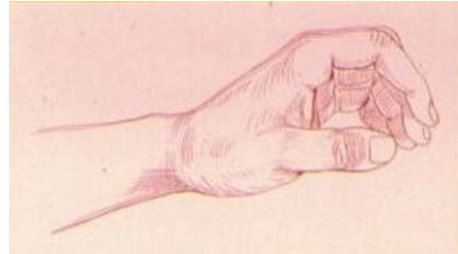
Index finger

- Precise movements alone or with thumb

Middle, Ring, and Little fingers

- Power grip

Attitude of the Hand



Tendon Damage



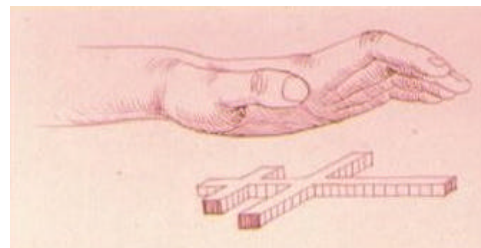
Contours of the Palmar Surface and the Underlying Anatomy



Three Arches



Intrinsic Muscle Atrophy



Two Transverse Arches



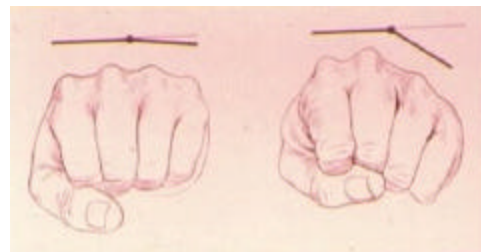
Pinch Unit



Syndactyly (webbing)



Normal Metacarpal Joints and Contour



Inspect Nails and Interphalangeal Joints



Spoon and Clubbed Nails



Nail Pathologies

- Hippocratic = clubbing = Chronic respiratory and circulatory diseases
- Koilonychia = spoon = Acromegaly, trauma, syphilis, nutritional deficiencies, hypothyroidism
- Onychophagia = nail biting = neurosis
- Fragilitas unguium = brittle = dietary deficiency and local trauma

Skin Palpation



Bones of the Wrist



Basic Reference Points in Wrist



Radial Styloid Process



Ulnar Deviation Facilitates Palpation of Navicular



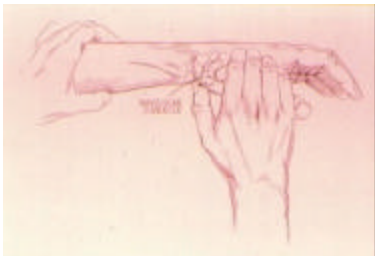
Palpation of Trapezium



Trapezium/First Metacarpal Articulation



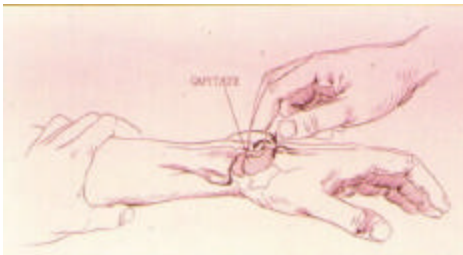
Trapezium/First Metacarpal = Radially
Navicular Tubercle = Proximally



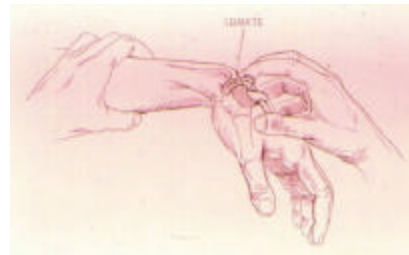
Palpation of Tubercle of Radius (Lister's)



Capitate Palpation (slight palpable depression)



Flex Wrist to Palpate Lunate



Ulnar Styloid Process



**Radially Deviate to Palpate
Triquetrium**



Bones of Wrist (volar aspect)



Palpation of Pisiform



Palpation of Hamate



**Palpation of the Hook of the
Hamate**



Palpation of Second Metacarpal



**Second and Third Metacarpals
(easily palpated)**



**Second and Third Metacarpals
(immobile)**



**Fourth and Fifth Metacarpals
(mobile)**



Palpation of First Metacarpal



**Palpate Condyles at Division of
Metacarpalphalangeal Joint**



Flex Metacarpalphalangeal Joint to Palpate



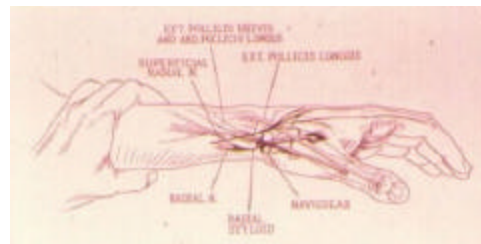
Palpation of PIP Joints



Soft Tissue Palpation of Wrist and Clinical Zones

1. Radial Styloid Process
2. Tubercle of Radius (Lister's)
3. Ulnar Styloid Process
4. Pisiform
5. Palmaris Longus and Carpal Tunnel

Bony and Soft Tissue Landmarks



Anatomic Snuffbox



Radial Border of Snuffbox



**Extend Thumb to Palpate
Abductor Pollicis Longus and Brevis**



Palpate Radial Artery



**Six Tunnels for Extensor
Tendons**



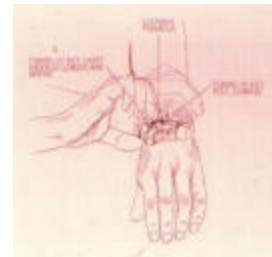
**Tunnel 1
Abductor Pollicis longus and Extensor
Pollicis Brevis**



Finkelstein Test



**Tunnel 2
Extensor Carpi Radialis Longus and Brevis**



Palpate ECRL & ECRB
Fist Clenched



ECRL & ECRB
Radial Side of Lister's



Course of Extensor Pollicis Longus Tendon



Tunnel 3

- Ulnar side of radial tubercle contains the extensor pollicis longus
- May rupture due to Colles fracture or rheumatoid arthritis

Tunnel 4
Extensor Digiti Communis & Extensor Indicis Tendons



Palpate Each Tendon in Hand



Ganglia of Wrist



Tunnel 5 Extensor Digiti Minimi



Extensor Indicis & Extensor Digiti Minimi Capable of Independent Action



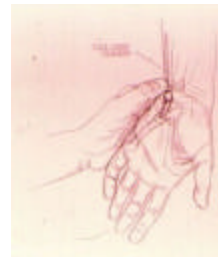
Tunnel 6 Extensor Carpi Ulnaris



Ulnar Deviation to Palpate Extensor Carpi Tendon



Palpation of Flexor Carpi Ulnaris Tendon



Tunnel of Guyon
Ulnar Nerve and Artery



Situated Between Hook of Hamate and Pisiform



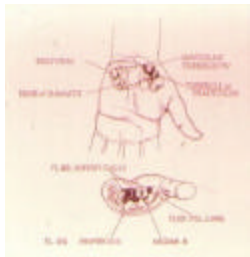
Palpation of Ulnar Artery



Palmaris Longus



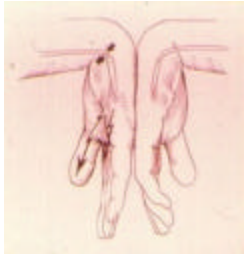
Carpal Tunnel
Median Nerve and Flexor Tendons



Carpal Tunnel Syndrome



Phalen's Test



6 Clinical Zones of Hand

1. Thenar Eminence
2. Hypothenar Eminence
3. Palm
4. Dorsum
5. Phalanges
6. Tufts of fingers

Palpation of Flexor Carpi Radialis Tendon



Palpation of Thenar Eminence



Palpation of Hypothenar Eminence



Normal Development



Atrophy



Palmar Aponeurosis



Dupuytren's Contracture



Trigger Finger



PIP Joint



Heberden's Nodes



Swan-neck Deformity
Rheumatoid Arthritis



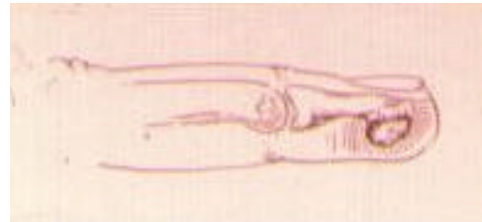
“Boutonniere” Deformity
Avulsion of Extensor Digitorum Communis
Tendon



Mallet Finger
Avulsion of Distal Extensor Digitorum
Communis



Finger Tuft Infection
Felon



Paronychia

