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 Incisus 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
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