

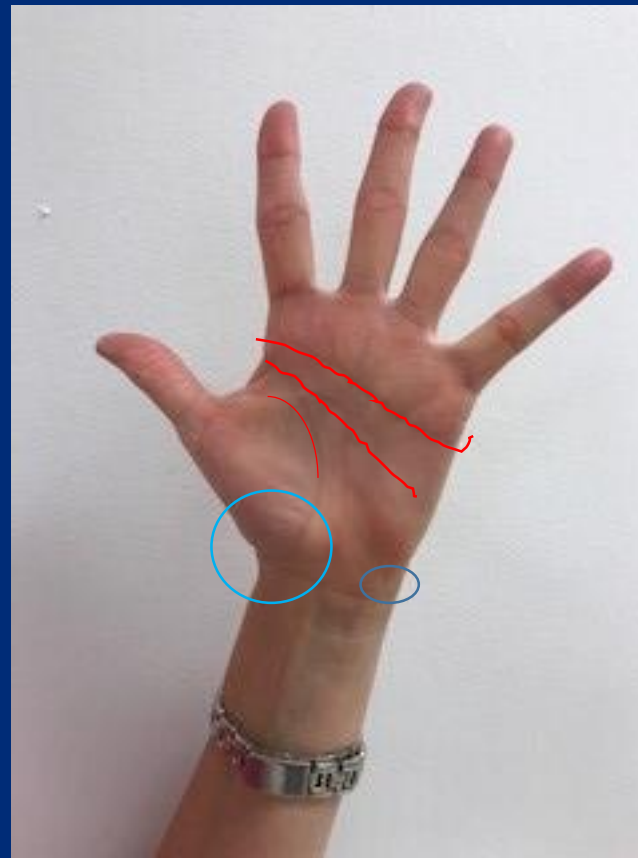
Occupational Therapy Orthosis Course



Distal UE anatomy review

- Surface anatomy, landmarks and boney prominences
- UE Peripheral nerve pathways and gross assessment
- Wound healing phases & primary concerns
- Risks, precautions and alarms
- Disease process and hierarchy of healing
 - Complicated cases require critical thinking and problem solving
 - Prioritize and clarify with MD

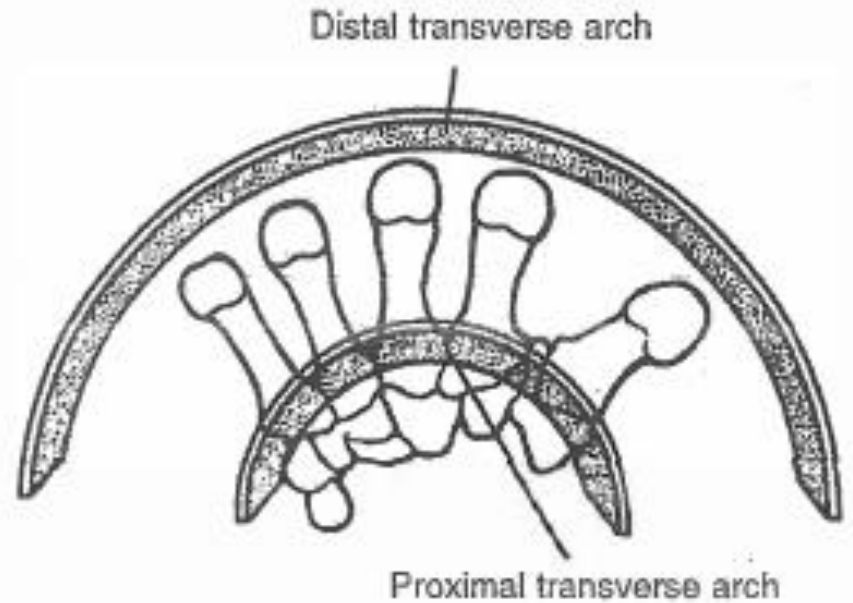
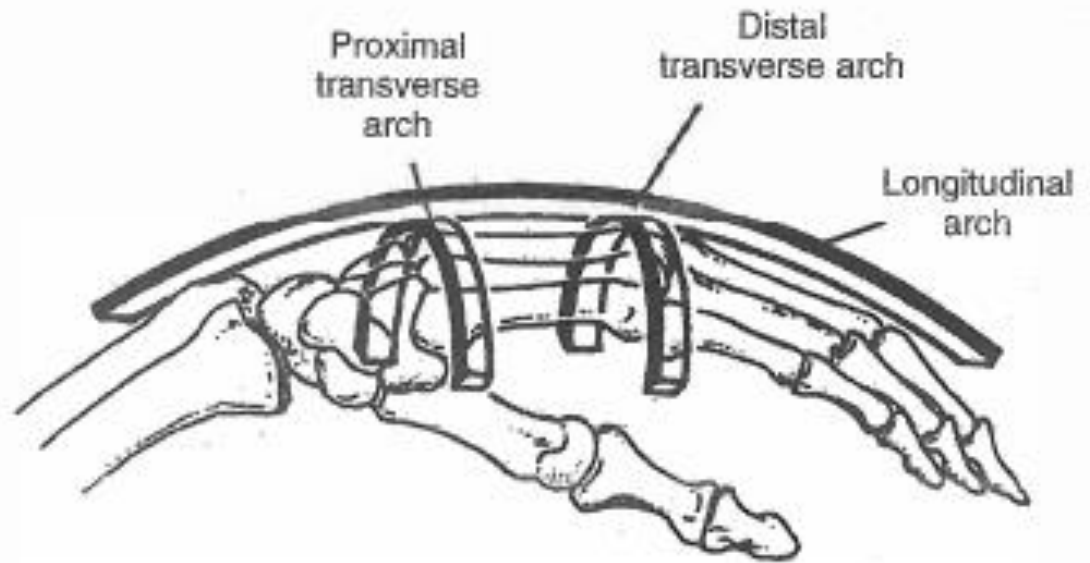
Surface anatomy, landmarks and boney prominences



Resting Posture of the Hand

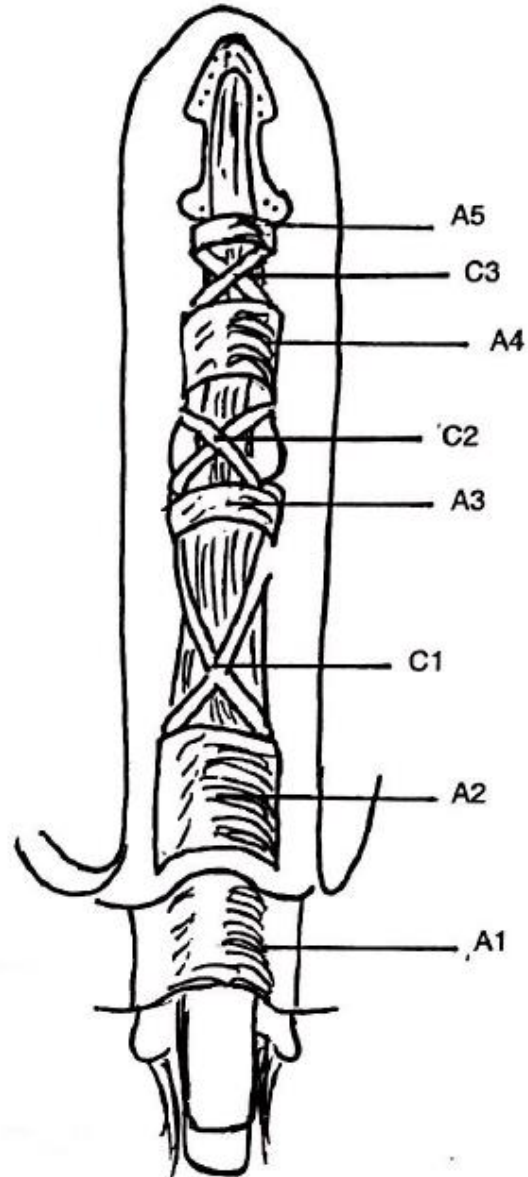


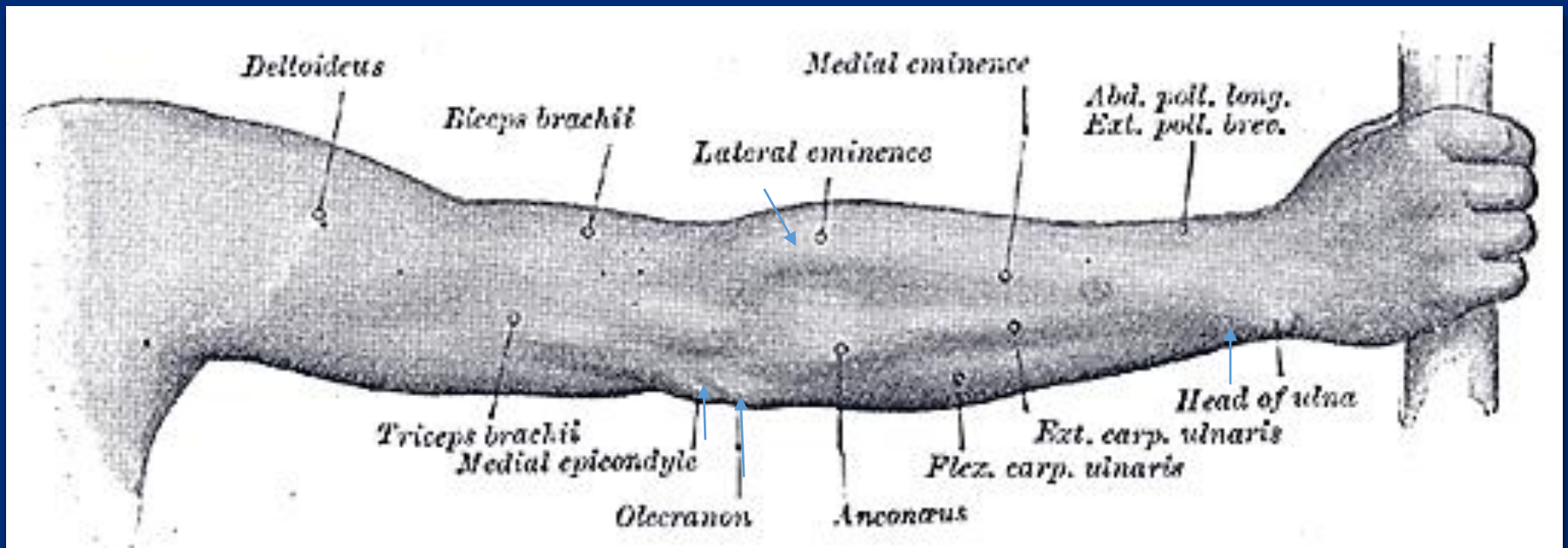
Arches of the Hand



PULLEY SYSTEM OF THE FINGER

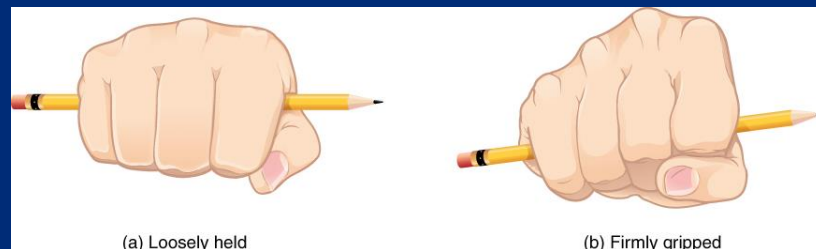
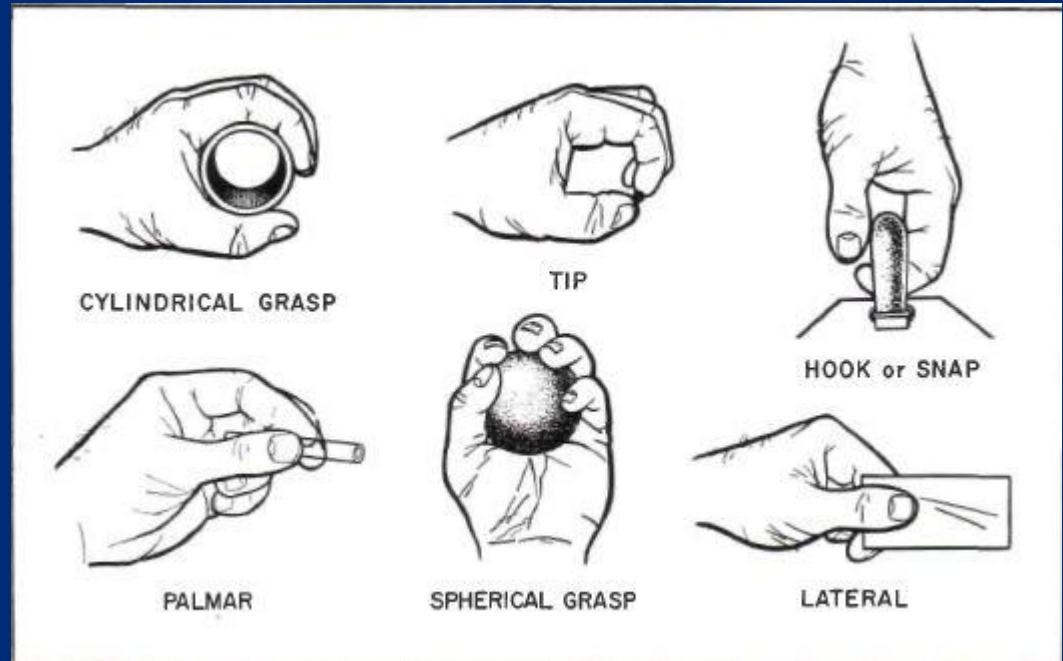
A1-A5 = annular pulleys
C1-C3 = cruciate (criss cross) pulleys





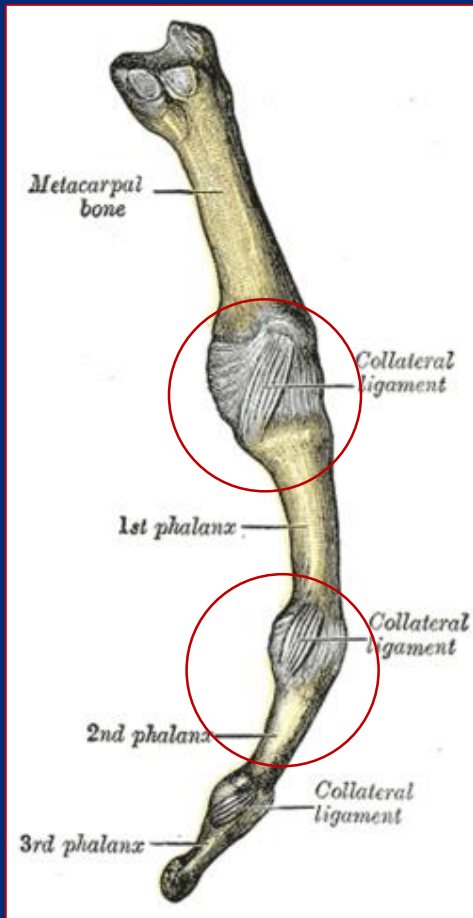
Functional Patterns of the Hand

- Prehensile Patterns
 - 2 point / Tip to Tip
 - 3 point / Palmar Pinch
 - Lateral / Key Pinch
- Grasp Patterns
 - Cylindrical
 - Spherical
 - Hook Grasp
 - Power Grasp





Ligamentous Integrity

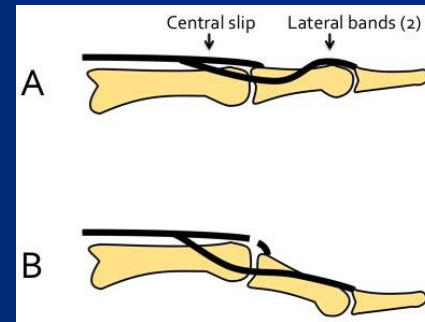
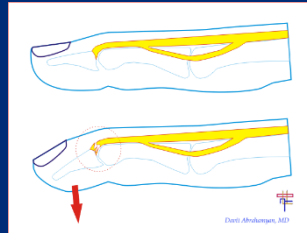


- MP joints 60* or more flexion to maintain length of collateral ligaments
- PIP and DIP in full extension to prevent joint contractures and avoid volar plate shortening
- Intrinsic Plus position



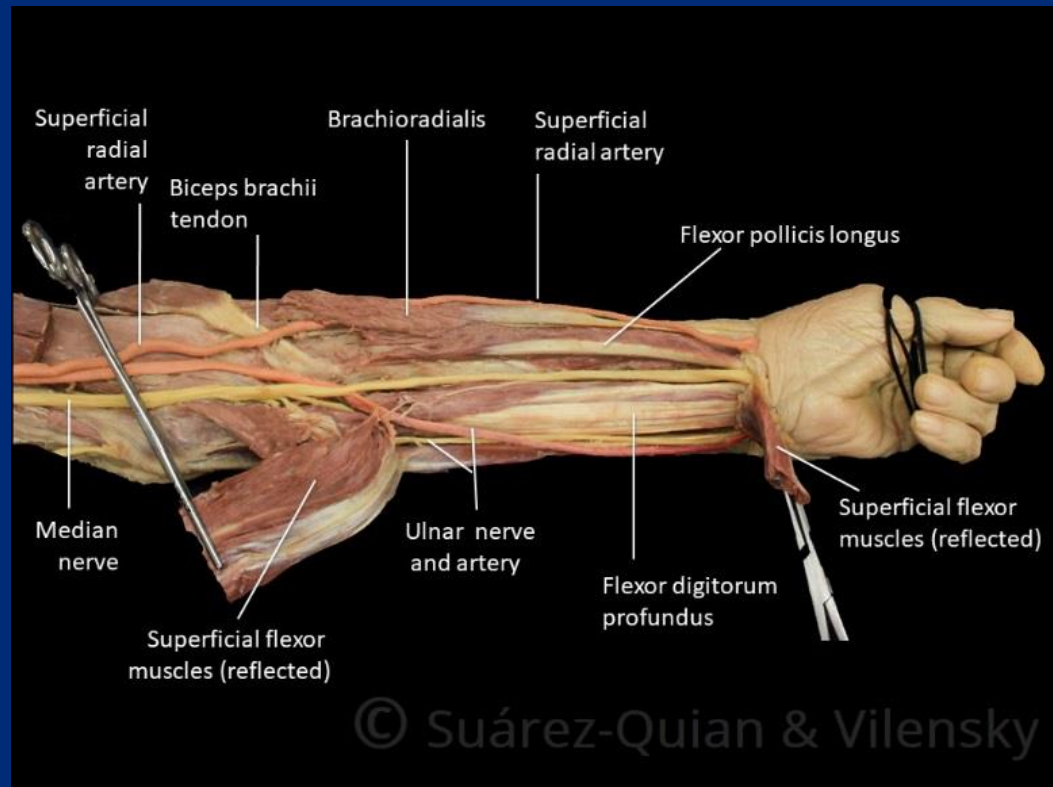
Common Acquired Deformities of the Hand

- Mallet Finger
- Boutonniere
- Swan neck
- Claw Hand
- Dupuytren's contracture
- Rheumatoid Arthritis

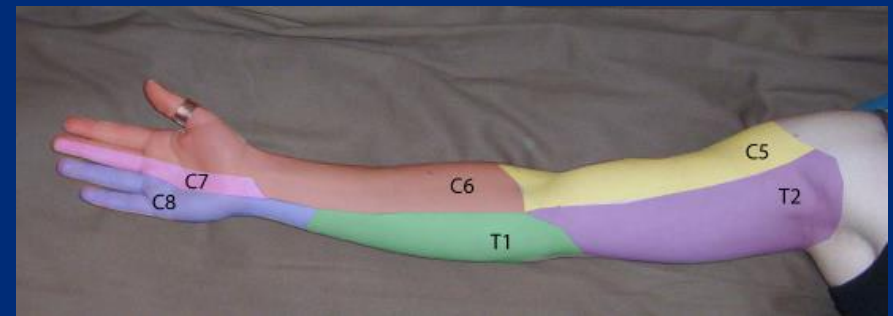
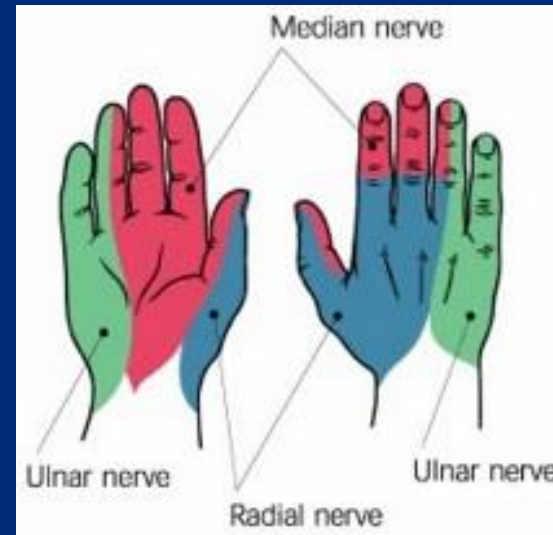
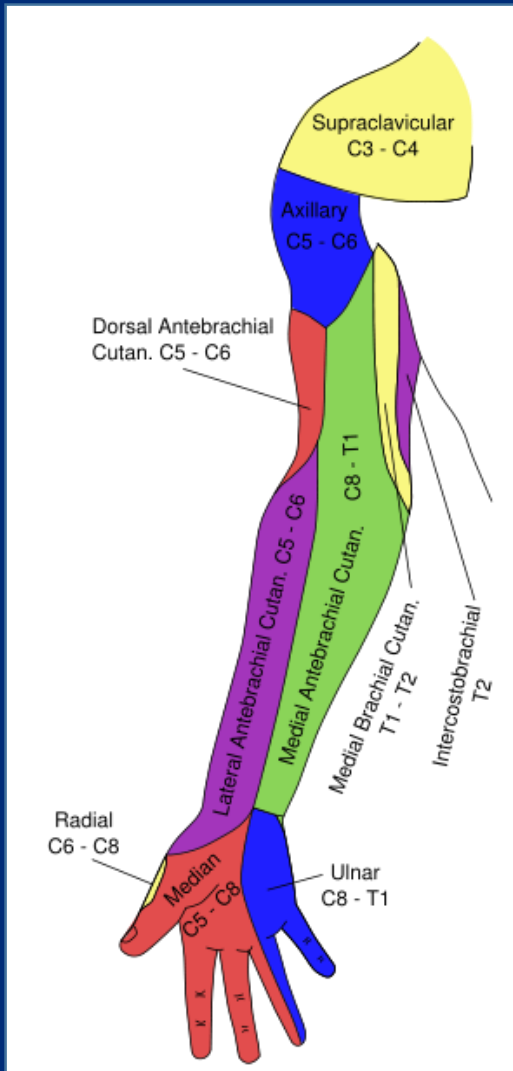


UE Peripheral Nerves: Pathways and gross assessment

- Musculocutaneous
- Radial Nerve
- Median Nerve
- Ulnar Nerve



Peripheral or Not?



Wound Healing Phases & primary concerns

- Primary or secondary closure
- Clean or contaminated wound
- Crush
- Vascular integrity



b. **IMPLANTATION
BIORESORBABLE SCAFFOLD**



INFLAMMATORY PHASE

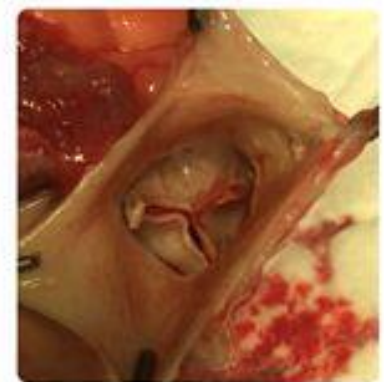
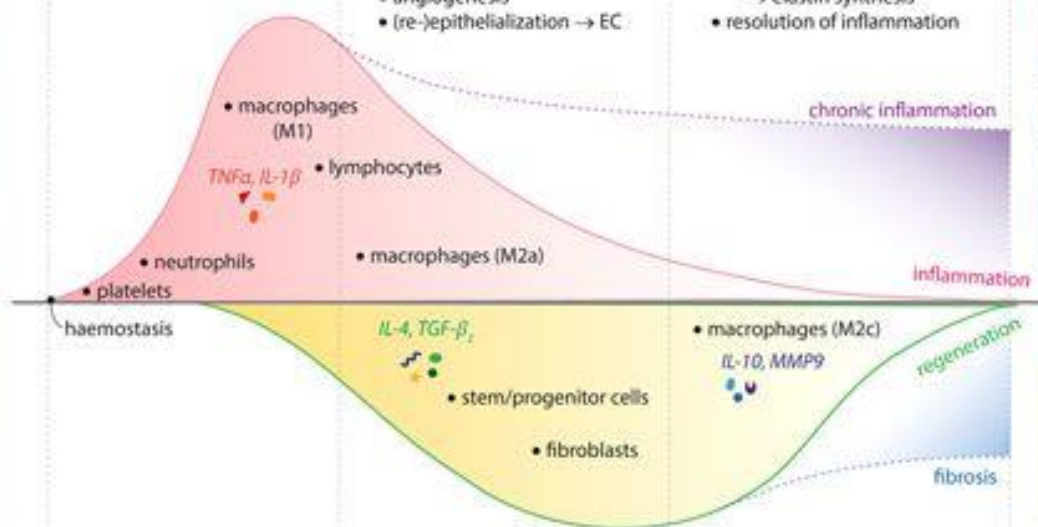
- preliminary matrix
- infiltration immune cells

PROLIFERATIVE PHASE

- recruitment secondary cells
- ECM deposition
- angiogenesis
- (re-)epithelialization → EC

REMODELING PHASE

- ECM remodeling
→ collagen remodeling
→ elastin synthesis
- resolution of inflammation



TISSUE HOMEOSTASIS



Phases of Healing

- Inflammatory Phase
 - Open wound with edema
- Fibroplastic Phase / Proliferative Phase
- Scar Maturation phase

- Both fibroplastic phase and maturation phase offer opportunity for scar management
 - Otoform / silicone gel sheet
 - Kinesiotape / dynamic tape
- Scar tissue at dorsum of hand, web spaces or joint creases prone to contractures -> leads to loss ROM

Risks, Precautions and Alarms

- Vascular considerations
 - Capillary refill, warm/cold, etc
 - Consider geriatric skin and long term steroid use – burns and bruises easily
 - Diabetes and scleroderma – may have diminished sensation
 - Replant patients – closely monitor and avoid elevation
- Edema
 - Prevention and treatment minimizes scar formation
 - Dorsum of the hand loosely attached and fibrous

- Compartment Syndrome
 - Increased pressure from the injury results in insufficient blood supply in that compartment
 - Symptoms:
 - severe pain, numbness
 - Poor pulses and pale color
 - Decreased or difficulty with AROM
 - Surgery must be in a timely manner (usually <6 hours from onset) to avoid permanent nerve, muscle or vascular damage
 - Untreated -> leads to Volkmans Contracture
 - Permanent flexed contracture of the hand and wrist in claw-like deformity with painful and restricted passive extension

Patient Education

- Elevation
- Skin Integrity
- Optimal Orthosis positioning aids to maintain and increase ROM
- Protection of repaired structures
- Minimize complications of wound healing
- Active ROM and tendon gliding as one heals to minimize adhesions – when appropriate per condition and diagnosis



Pre-fabricated OR Custom Orthosis

- If prefab meets your treatment goal – go with it
- Options for:
 - Wrist cock up
 - Thumb spica
 - Resting hand orthosis
 - Neuro
 - Intrinsic (+) resting hand -> custom
- Call a friend? Hand therapists just a phone call away



Pre-Cuts

- May save time and be more efficient for you and your patient
- Cost effective
- Fabricate it as you would a custom orthosis



Documentation and billing

- Use correct L code (EO, EWO, WHFO, WHO, HFO, FO custom or prefab)
- OTR/COTA considerations for billing
- Clarify patient education and wearing schedule
 - provide signage for nursing, caregivers



Acute Care

- Initiate ROM program
 - AROM when possible MOTION is LOTION (include photos)
 - Tenodesis
 - Tendon gliding for long flexors
 - Intrinsic exercises
 - PROM if necessary to reduce risk of contracture
 - Look proximal and look distal to injury
 - Monitor skin and vascular function to prevent complications
- Discharge recommendations
 - OT out-patient hand rehab
 - Home Health or Inpatient rehab
 - Wound care or wound clinic

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Thank You