REHABILITATION AFTER HAND INFECTION

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THE MINORITY

- Current management principles

- Hand therapy in problematic cases including flexor sheath infection

CURRENT MANAGEMENT PRINCIPLES

- Antibiotics
- Prehab
- Resolution

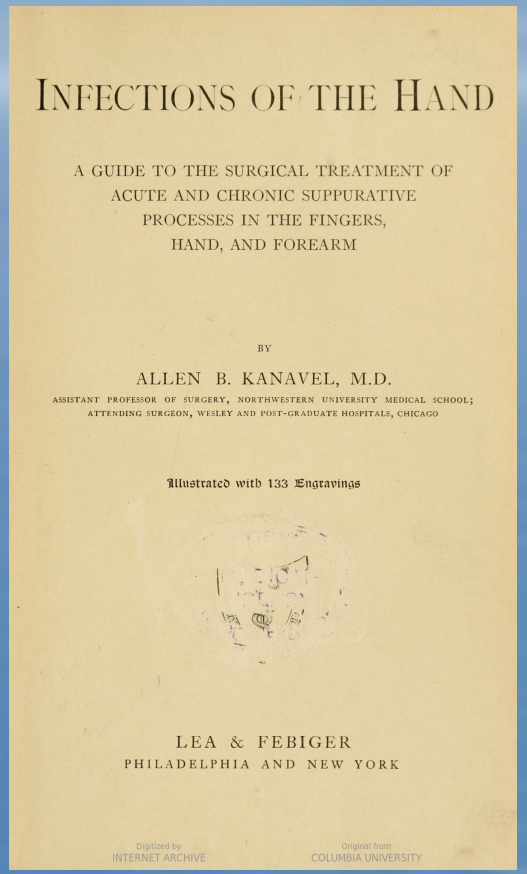
Rest / Immobilization

Elevation

REST AND IMMOBILIZATION

- Kanavel 1912 rest essential to reduce pain and limit spread of infection via the lymph. He did not routinely advocate elevation as did Volkman.

- Prognosis in this era was jeopardy to life and a good outcome frequently included loss of one or more digits.



INFECTIONS OF THE HAND

A GUIDE TO THE SURGICAL TREATMENT OF ACUTE AND CHRONIC SUPPURATIVE PROCESSES IN THE FINGERS, HAND, AND FOREARM

BY

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Illustrated with 133 Engravings

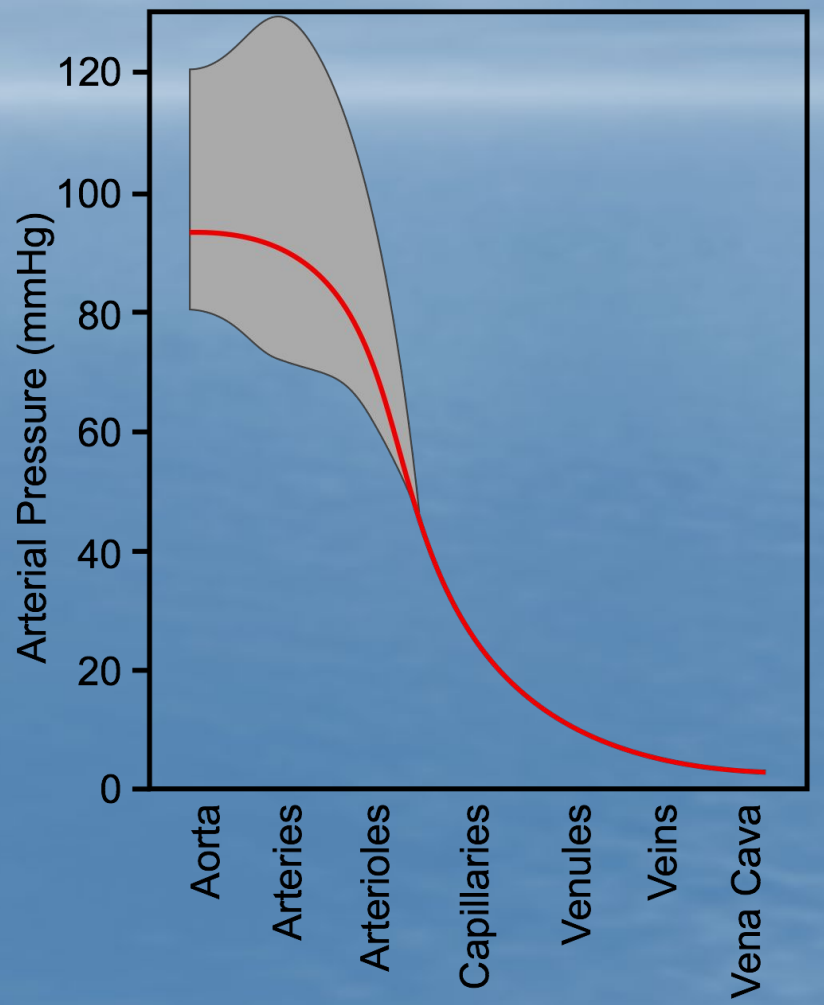
LEA & FEBIGER

PHILADELPHIA AND NEW YORK

ELEVATION

- Reduced digital blood pressure - Khan et al
- Improved venous return
- Reduces peripheral interstitial hydrostatic pressure
- Improved lymphatic return (not volume)

Pain relief



REST / IMMOBILIZATION AND ELEVATION

- Combined effect, interdependent in the early stages of infection
- **Pain reduction**
- The reduced interstitial pressures, help limit oedema
- **When prolonged potential for stiffness and dysfunction**

RESOLUTION

Receding signs of infection.

Self management.

Hand therapy, **urgent** referral.

Resolving pain

PROBLEMATIC CASES

Caution articular damage

INFLAMMATION

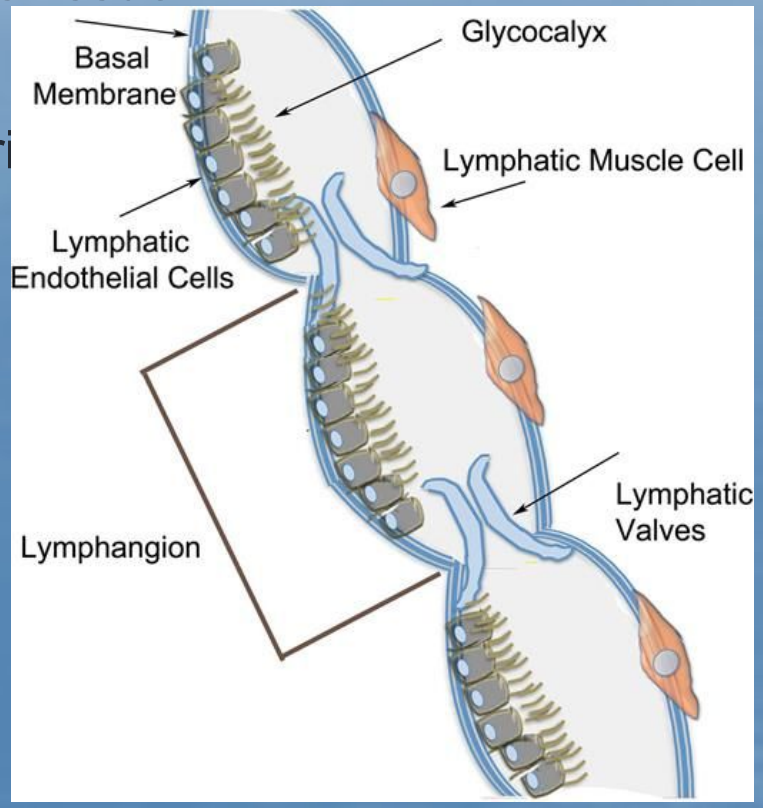
- Complex chemical reaction.
- Increased micro vessel permeability.
- Vasodilation.

- Increased compliance in the extracellular matrix.
- **Degradation of lymphatic anchoring filaments**.

LYMPHATICS

- Smaller collecting vessels, (lymphangion's) have no pump mechanism, thought to respond to stretch. No's > in muscle than subcutaneous tissue.
- Larger Lymph ducts do have smooth muscle that aids flow via peri
- Main contributors to lymphatic flow thought to be:-

1. **Muscle and joint movement**
2. Thoracic activity creating –ve pressure centrally



Larger than blood vessels returning 2-3 litres to the blood in a 24hr period

OEDEMA

- Elevation Venous and lymphatic pump **Active movement**

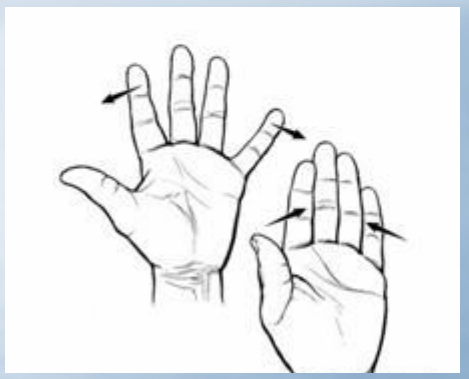
- Function

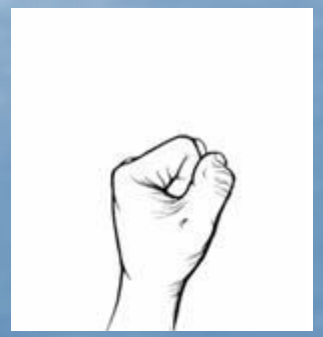
- Hook grip best for fingers

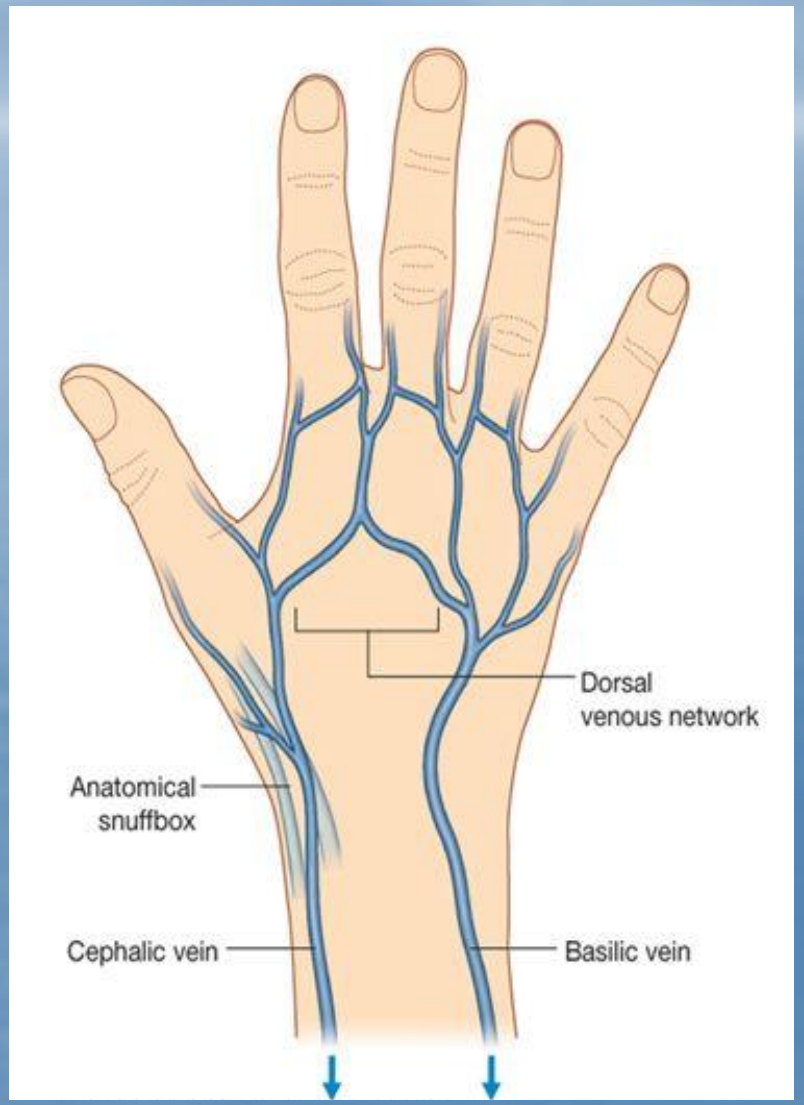
- Manual oedema mobilization (MEM) +/- kinesio tape

- Compression, coban, digi-sleeve, Isotoner gloves (35mmHg)

VENOUS RETURN (DORSAL VENOUS ARCH)





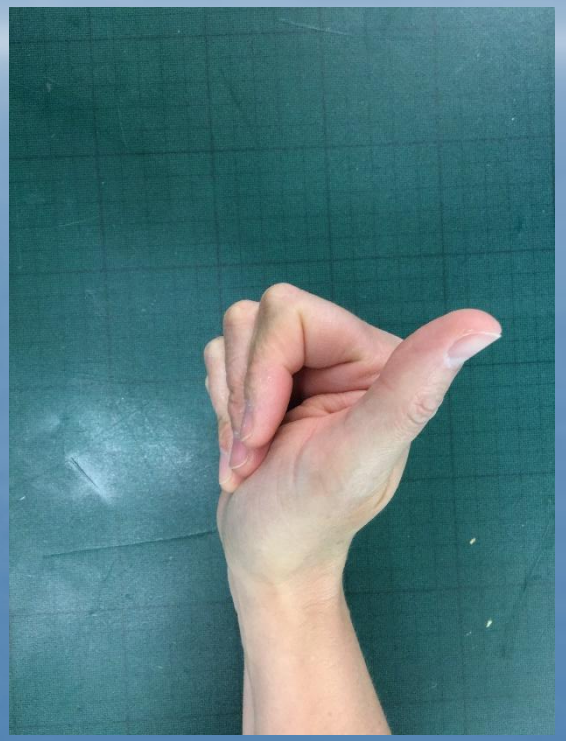


Venous congestion elevates interstitial pressures

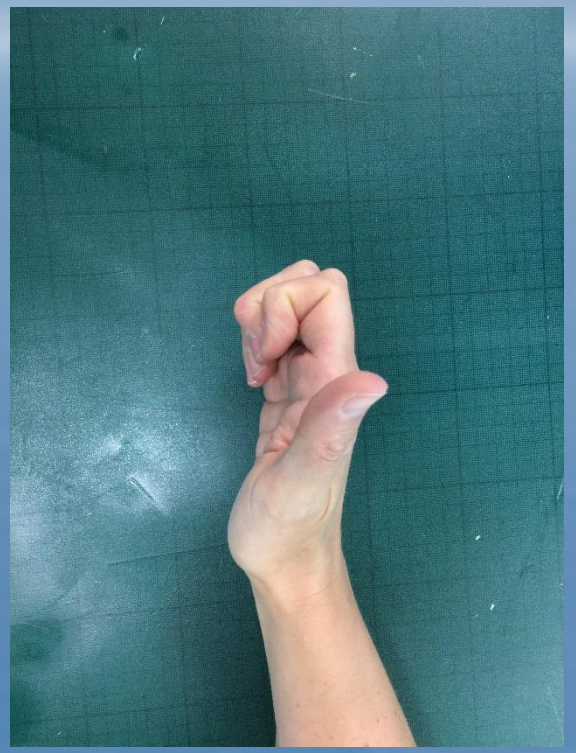
ACTIVE EXERCISE

Full ext

Closed fist
maximum FDP
excursion

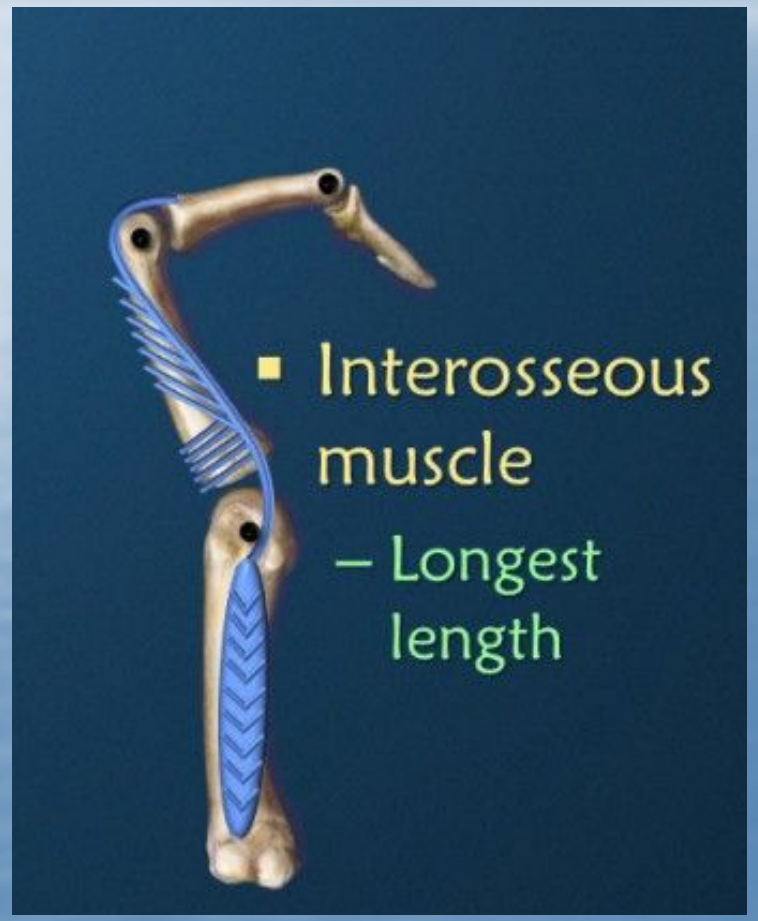


Straight fist
best for MCP flexion



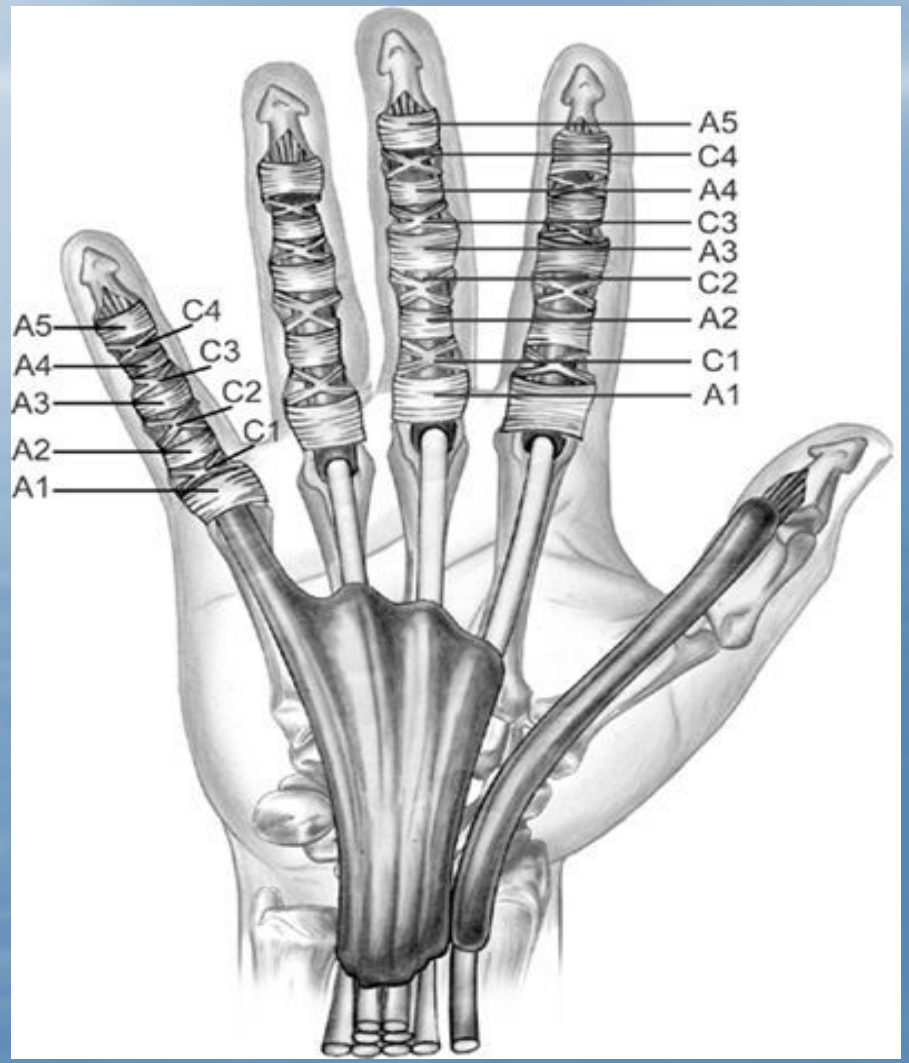
Hook

HAND INTRINSICS



Lumbricals need dynamic stretch due to the origin off FDP, MCP ext block useful

FLEXOR SHEATH INFECTION



- Maintain differential tendon gliding
- Reduce oedema
- Prevent joint contractures

TENDON GLIDE

Action Effort	FDS	FDP
Full fist	23mm (67%)	34mm
Straight fist	28mm	27mm
Hook	13mm (54%)	24mm
Effort	21 %	17%

Active movement

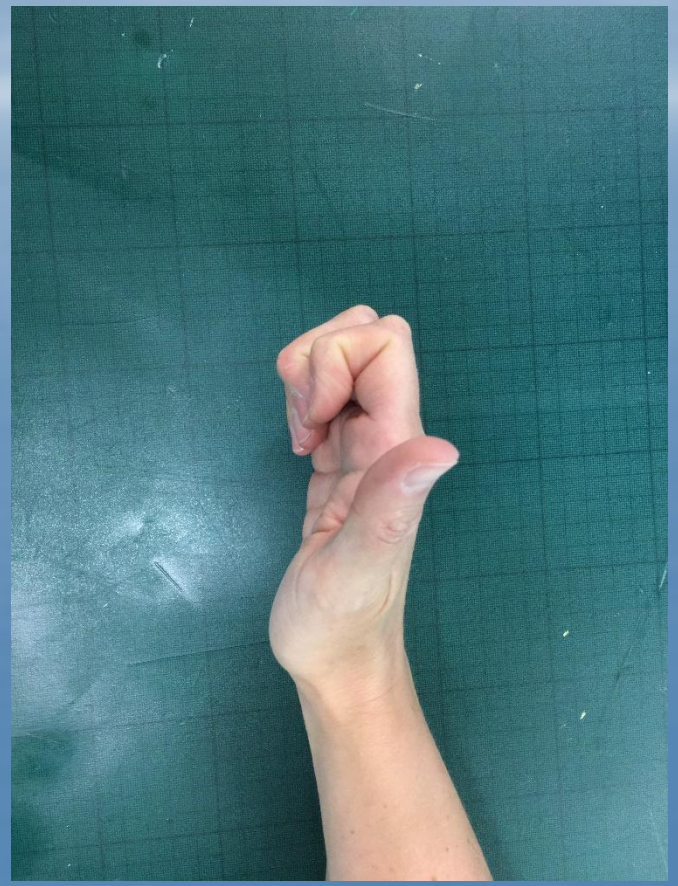
Hook greatest differential glide

Passive flexion "Duran protocol" demonstrated only

3-5mm distal glide.

Recommendation for 6-9 mm by Silverskiold 1992 to prevent adhesions.

HOOK GRIP



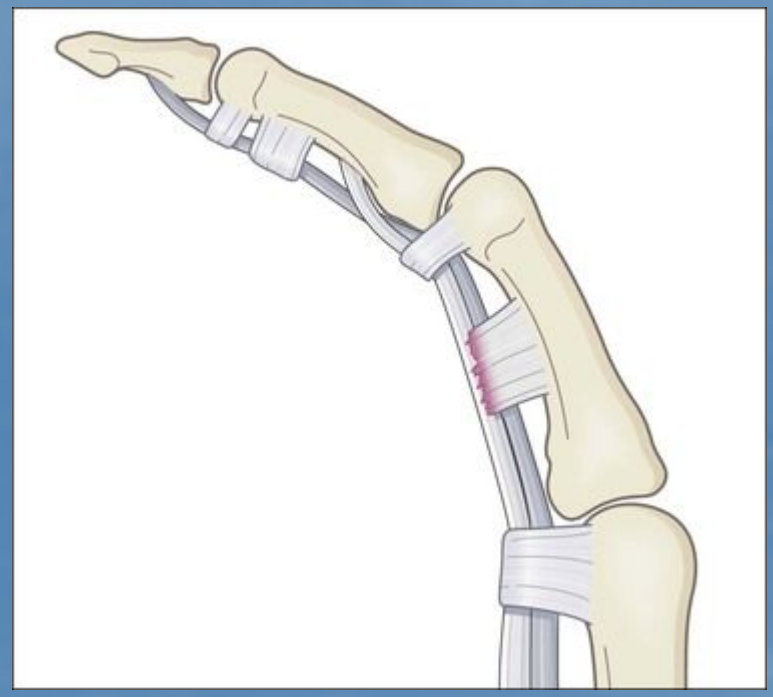
Active movement

Hook 11 mm differential glide

HOOK GRIP

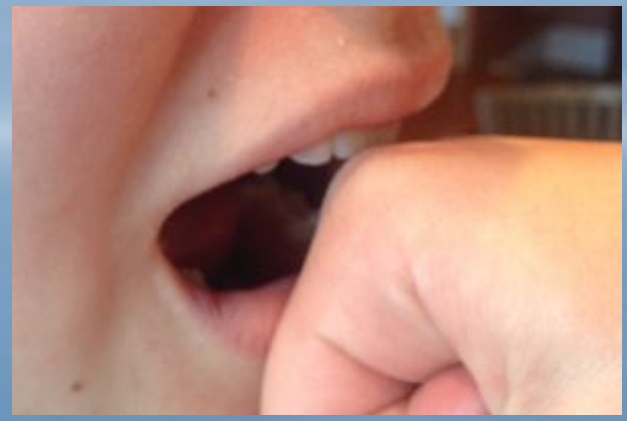
LIGHT RESISTED EXERCISE

- Mild bow stringing normal due to flexibility in the flexor sheath at A2
- During active flexion AP thickness of tendons increases
- Restoration of normal sheath capacity



HUMAN BITE

- 200 bacteria species
- Worse than dogs or cats
- High risk of intra-articular infection
- Often delayed presentation
- Avoid over aggressive mobilization
- Resting splint in flexion



EARLY RETURN TO FUNCTION

- Maintains brain hand interaction
- General psychological wellbeing
- Promotes independence and self rehab

CAUTION

- Recurrence of infection when antibiotics stop
- Nerve involvement - CTS
- Ongoing joint pain and crepitus
- Chronic stiffness

Majority of patients do well