



**Hand Infections**  
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**Disclosures**

- None
- Thank you



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**Overview**

- Very broad topic
- Some practical points
- You got this!



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### Pertinent History

- Age
- Handedness
- Occupation
  - Laborer, dentist, marine exposure
- Immunologic status
  - DM, Steroids, HIV, Renal failure, etc.
- Mechanism
  - Bite, injection, direct trauma



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### Special Studies

- Labs:
  - CBC with Differential, ESR, CRP
- Gram Stain and Culture:
  - Obtain before initiating antibiotics
- Radiographs:
  - foreign body
  - osteomyelitis



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### Counseling patients

- Signs of worsening
- Informed patients
  - Multiple debridements
- Failure to improve
  - Advanced imaging



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### Acute Management

- Rest
  - Soft wrap vs. splint (removable)
- Elevation
  - Pillows
- Antibiotic Coverage
  - Empirically treat unless culture results are available
  - Likely pathogens and immune status should guide empiric treatment




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### Antibiotic Use in Hand Infections

Infection	Antibiotic	Most Likely Organism
Felon/Paronychia	1st-generation cephalosporin	<i>S. aureus</i>
Flexor tenosynovitis	1st-generation cephalosporin and penicillin	<i>S. aureus</i> , Streptococci, gram-negative bacteria
Herpetic whitlow	None, unless secondary bacterial contamination	Herpes simplex 1 and 2
Deep-space abscess	1st-generation cephalosporin and penicillin	<i>S. aureus</i> , gram-negative bacteria, anaerobes
Cellulitis/Lymphangitis	1st-generation cephalosporin	Streptococcus spp
Hand infection in intravenous drug abuser	vancomycin	Methicillin-resistant <i>S. aureus</i>
Human bite	1st-generation cephalosporin and penicillin or ampicillin—sulbactam or amoxicillin—clavulanic acid	<i>S. aureus</i> , <i>Eikenella corrodens</i> , anaerobes
Animal bite	Same as for human bite	<i>Pasteurella</i> , gram-positive cocci, anaerobes

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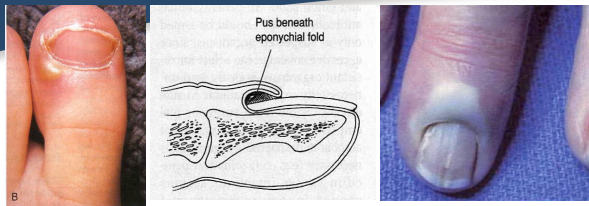
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### Paronychia / Eponychia



- **Etiology:** disruption of of the seal between the nail fold and plate
  - manicures, hangnails, nailbiting, penetrating trauma
- **Presentation:** localized pain and tenderness about nail.
  - erythema and swelling
  - fluctuance and purulence
- **Pathogen:** *Staph aureus* most frequent




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### Paronychia / Eponychia Treatment



- Early infections: oral abx, soaks, splinting
- Drainage is most reliable
- Lift nail fold off of nail plate
- Avoid eponychial fold incisions
- Warm soaks after 24 to 48 hrs.




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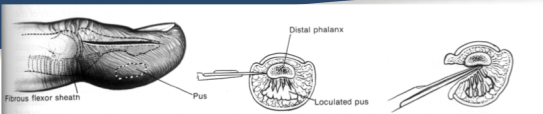
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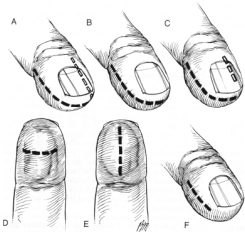
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### Felon Management



- High lateral incision is best
  - Mid-volar – sensitive scar, good for draining sinus
  - Fishmouth – poor wound healing
  - Transverse – NV bundle at risk
- Warm soaks
- Antibiotics
- Wound closure by secondary intention




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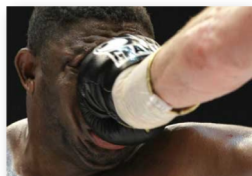
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### Dorsal MCP Laceration

#### Fight Bite

- Open injuries should always raise suspicion for fist vs tooth
  - *Strep* and *Staph* most common
- Dorsal incision
- Secondary intention




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### Interdigital (Web) Space Infection

- **Presentation:**
  - Palmar and dorsal swelling
  - Dorsal usually more significant
  - Abducted finger posture
- **Spread:**
  - *Collar-button* abscess
  - Palmar fascia prevents spread beneath skin




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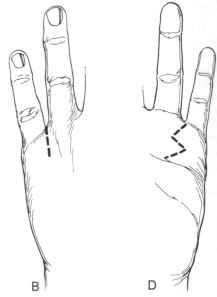
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### Interdigital (Web) Space Infection

- **Surgical Treatment:**
  - Consider possibility of hour-glass abscess (dorsal and volar incisions)
  - Brunner incisions on palm




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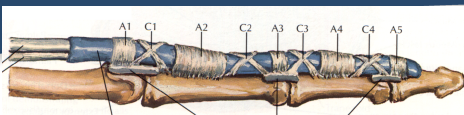
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### Pyogenic Flexor Tenosynovitis



Bacterial infection of flexor sheath

**Kanavel's signs:**

1. flexed position
2. fusiform swelling
3. tenderness over flexor sheath into palm
4. severe pain on passive extension

Flexor tenosynovitis exists in other forms




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### Pyogenic Flexor Tenosynovitis

- Pathogens:
  - Penetrating injury: S aureus, strep, Gram negatives
  - Hematogenous: Gonococcus
- Early infection < 24 hrs from time of infection
  - elevation
  - splinting
  - IV antibiotics?
  - if no improvement- surgery
- Delayed therapy:
  - vascular compromise and tendon necrosis
  - Adhesions
  - poor gliding



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### Flexor Tenosynovitis

Open drainage:

- Midlateral incision
- Avoid Brunner-type incision...
- Avoid neurovascular structures



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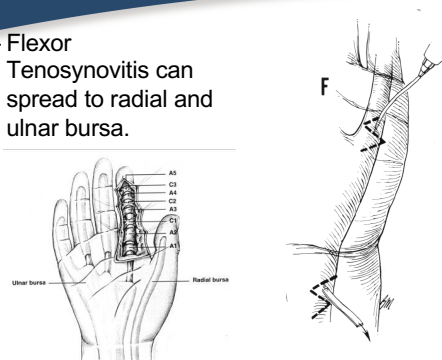
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### Radial and Ulnar Bursal Infections

- Flexor Tenosynovitis can spread to radial and ulnar bursa.



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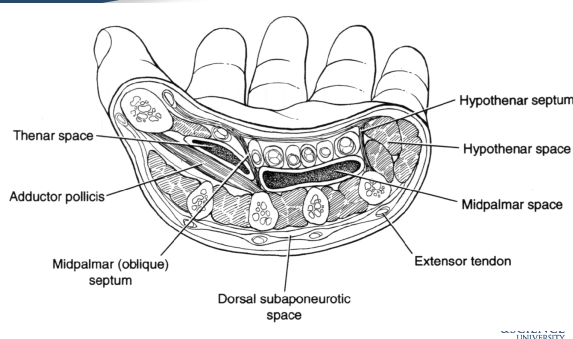
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### Deep Subfascial Spaces



Labels in diagram:

- Thenar space
- Adductor pollicis
- Midpalmar (oblique) septum
- Dorsal subaponeurotic space
- Hypothenar septum
- Hypothenar space
- Midpalmar space
- Extensor tendon



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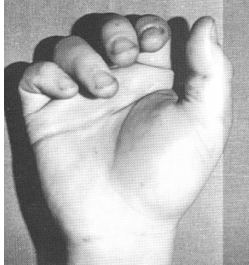
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### Thenar Space Infection

- **Presentation:**
  - Penetrating trauma
  - Pain with passive adduction/opposition
  - Contiguous spread from index flexor tenosynovitis
- **Spread:**
  - Can spread around adductor to dorsal first web space



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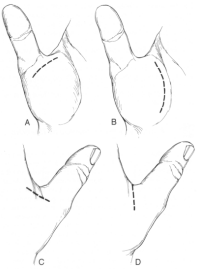
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### Thenar Space Infection

- **Surgical approaches:**
  - Volar transverse: risk to digital nerve
  - Thenar crease: risk to palmar cutaneous branch
  - Dorsal transverse risk of web contracture
  - Dorsal longitudinal
- Hypothenar infection



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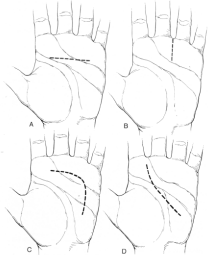
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### Midpalmar Space Infection

- **Surgical approaches:**
  - Transverse distal
  - Lumbrical canal approach in 3rd interspace
  - Combined transverse and longitudinal
  - Oblique longitudinal
    - o Preferred method
    - o Use flexor tendons of ring finger as guide



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### Mimickers of Acute Infection

- Acute calcific tendonitis
- Loxoscelism (Brown Recluse Spider)
- Pyogenic granuloma
- Metastatic lesions
- Gout
- Pyoderma Gangrenosum
- Foreign Body Reaction
- Herpetic Whitlow
- Pseudogout
- Rheumatoid Arthritis



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### Pyoderma Gangrenosum



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### Herpetic Whitlow

- ⦿ Often mistaken for paronychia or eponychia
  - Most occur at finger tip- more proximal sites have been reported
- ⦿ Common in dentists, health care workers, anesthesiologists, etc.
  - Exposure to orotracheal secretions
- ⦿ Pathogens:
  - Herpes simplex 1 or 2



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### References

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### Thank you

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