EmergencyKT: Hand Infection

### History
- Circumstances surrounding infection/injury
- Time since injury, time since infection and progression of symptoms
- Hand dominance / occupation
- History of DM, HIV, immunosuppression, IVDA, MRSA infection, HSV1/HSV2, nail biting, finger sucking, etc.
- Systemic symptoms (fever, n/v, rashes, swelling)

### Physical Exam
- Evaluate hand position at rest
- Evaluate skin for swelling, erythema, lymphangitis, open wounds, wound over MCP
- Evaluate digits for full ROM, DIP, PIP for evaluation of FDS & FDP
- Evaluate neurological function, including sensation to median, radial, ulnar nerves.
- Evaluate for motor function of median (thumb opposition), ulnar (finger abduction) and radial (wrist extension / finger extension)

### Recommendations
- Do not I&D
- Consider anti-viral if:
  - <48h old or recurrent episodes
  - HIV or immunocompromised
- **Antivirals:**
  - Acyclovir 200 mg PO 5 x daily for 10 days in immunocompromised hosts or
  - Valacyclovir 500 mg PO BID for 10 days

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Confined to fingertip? No → Continue on Page 2

Yes → Continue on Page 2

Tenderness along flexor tendon? No → Continue on Page 2

Yes → Concern for Flexor Tenosynovitis

Infection extends proximal to DIP? No → Continue on Page 2

Yes → Continue on Page 2

Vesicles? Hx of oral / genital herpes? No → Continue on Page 2

Yes → Herpetic Whitlow

Features
- Soft finger pad as opposed to felon
- No local trauma
- Resolves spontaneously in 2-3 weeks

Confined to nailbed? No → Continue on Page 3

Yes → Paronychia

- Acute Paronychia
- Chronic Paronychia

Continue on Page 4

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Concern for Flexor Tenosynovitis?

No

Bite Wound? Wound over MCP?

Yes

Continue on Page 5

Evaluate for cellulitis vs. abscess, using established protocols

Review Kanavel’s signs

- Fusiform swelling of digit (sausage finger)
- Pain along flexor tendon
- Pain with passive extension
- Finger held in flexed position

Any one of Kanavel’s signs?

No

Likely not FTS

Yes

Labs: ESR, CRP, CBC, Type & Screen
 Obtain hand Xray

Uncomplicated

- <24-48h of infectious symptoms
- Lower suspicion for FTS; only one of Kanavel’s signs
- No history of DM, HIV, immunosuppression, renal failure, peripheral vascular disease
- Consider use of US to further differentiate fluid in sheath
- Mimic could be calcific tendonitis (calcium deposits on Xray)

Complicated

- >24-48h of infectious symptoms
- History of DM, HIV, immunosuppression, renal failure, peripheral vascular disease
- Signs of significant infection; multiple Kanavel’s signs
- Subcutaneous purulence or ischemia on physical exam

NPO
 Consult Hand
 Vancomycin/Unasyn, but tailor antibiotics to specific cause*
 Observation (CDU)

NPO
 Consult Hand
 Vancomycin/Zosyn, but tailor antibiotics to specific cause*
 Observation (CDU) vs. Admit

*Anaerobic coverage for human bites / oral flora
Continued from Page 1
(Not confined to nailbed)

Confined to distal pulp / volar finger pad?

Consider Alternative Diagnosis
(High pressure injection injury, etc.)

Yes

Concern For Abscess?

Felon
- Obtain x-ray
- If concern for osteomyelitis or foreign body, consult Hand

No

Concern For Abscess

I&D using lateral or volar longitudinal incision over most fluctuant spot
  - Ulnar side incision for 2nd, 3rd, 4th digits
  - Radial side incision for thumb, 5th digit
- Obtain wound culture
- Antibiotics: Bactrim DS BID + Keflex 500 mg QID x 5 days
- Follow up ED / PCP in 48 hours, especially if history of DM, HIV, immunocompromised
- Tetanus prophylaxis
- If concerned about follow up, significant cellulitis, history of DM, consider Observation with IV to PO conversion of antibiotics

No Concern For Abscess

Elevate
- Warm soaks 3-4 times daily
- Tetanus prophylaxis
- Follow up in 48 hours with PCP / ED
- Antibiotics: Bactrim DS BID + Keflex 500 mg QID x 5 days

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**Acute Paronychia**
- One Nail
- History of pain for 2-5 days
- History of nail biting, finger sucking, manicures

**Apply Digital Pressure Test**
(Apply pressure to volar pad to attempt to locate abscess/pus)

**Abscess Present?**
- Yes
- No

- **History of DM, HIV, Immunosuppression, IVDA?**
  - Yes
  - No

**Complicated**
- Warm soaks 3-4 times daily
- Antibiotics: Augmentin 500/125 mg TID x 5 days + Bactrim DS BID x 5 days
  OR
  Clindamycin 450mg TID x 5 days

**Uncomplicated**
- Mild Disease

**History of nail biting or thumb sucking?**
- Yes
- No

- Warm soaks 3-4 times daily
- Antibiotic cream +/- steroid cream

**Chronic Paronychia**
- >6 weeks fluctuating symptoms
- No purulence, no active signs of infection
- >one nail
- History of repeated water exposure: bartenders, dishwashers, housekeepers

**Treatment**
- Avoidance of exposures / irritants (Use rubber gloves if needed for specific occupations)
- Topical steroid application
- Refer to hand surgery for follow up
- If signs of infection, refer to acute paronychia

**I&D**
- Superficial abscess drained with 11-blade scalpel
  OR
  - Lifting nail fold with 21-23 gauge needle
  - If pus underneath nail or if ingrown nail, portion of nail may need to be removed
  - Apply packing if possible, remove after 48 hours
  - Warm soaks 3-4 times daily after 48 hours
  - Avoid nail trimming, biting, piercing

**History of DM, HIV, IVDA, Immunosuppression? Nail biting, finger sucking?**
- Yes
  - Augmentin 500/125 mg TID x 5 days + Bactrim DS BID x 5 days
  OR
  Clindamycin 450mg TID x 5 days

- No
  - No antibiotics
  - Antibiotic cream +/- steroid cream

**Yes**
- Warm soaks 3-4 times daily
- Antibiotics:
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  Bactrim DS BID for 5 days
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**No**
- Warm soaks 3-4 times daily
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**4-14-14**
Bite Wound / Wound over MCP

Laceration over MCP or human bite? No

Clenched fist injury? Yes

Occlusion injury (Bite)

Consult Hand
Thorough irrigation & debridement (ED vs. OR)
Tetanus / Hep B
IV Unasyn

Joint / flexor tendon involvement? No

Consult Hand
IV Unasyn
OBS vs. Admit
Consider rabies prophylaxis
Leave wound open/secondary closure
Irrigate and cleanse wound
Tetanus prophylaxis

Joint involvement? Active signs of infection? Yes

Animal Bite

Thorough irrigation & debridement# (ED vs. OR)
Tetanus / Hep B
IV Unasyn

Extensor tendon exposure/laceration? Yes

Augmentin 500/125 mg PO TID x 5 days
Discharge
OK for discharge

Augmentin 500/125 mg TID x 5 days

Complex wound? Yes

Augmentin 500/125 mg TID x 5 days
Leave wound open/secondary closure
Tetanus prophylaxis

Complex wound? No

Irrigate & cleanse wound
Augmentin 500/125 mg TID x 5 days
Leave wound open/secondary closure
Tetanus prophylaxis

Irrigation & Debridement Technique

Ensure proper sterile conditions, betadine around wound, no betadine/chlorhexidine inside wound
Adequate analgesia (nerve block vs. local); OK to use lidocaine + epinephrine in digits
Hemostatic control with tourniquet if needed
Irrigate with normal saline using 50-100 ml/cm of laceration with 18/19 gauge needle or equivalent OR splash guard
Explore under good lighting for tendon, joint injury (may need to extend wound)

Irrigation & Debridement Technique


Clenched fist injury? No

Thorough irrigation & debridement
Leave wound open for secondary closure
Consider Tetanus / Hep B

Discharge
Augmentin 500/125 mg TID x 5 days

Continue on Page 6

No

No

Clenched fist injury? No

Consult Hand
IV Unasyn
OBS vs. Admit
Consider rabies prophylaxis
Leave wound open/secondary closure
Irrigate and cleanse wound
Tetanus prophylaxis


**EmergencyKT: Hand Infection**

**Clenched Fist Injury**

- Evaluate hand in flexion, extension
- X-ray hand for foreign body/fracture

**Active Infection?**

- Yes
  - Make NPO
  - Consult Hand
  - Discuss starting antibiotics in ED vs. after surgical debridement
  - Consider Hep B / Tetanus prophylaxis
  - Admit

- No

**Explore wound with good hemostatic conditions in extension/flexion**

**Joint involvement?**

- Yes
  - Consult Hand, irrigate and debride thoroughly
  - Make NPO
  - IV Unasyn
  - Consider Hep B / Tetanus prophylaxis
  - Admit

- No

**Extensor tendon exposure/laceration?**

- Yes
  - If hand consult present, consult hand team
  - If in community, no hand consult:
    - Thorough irrigation & debridement
    - Leave open for secondary closure
    - Splint in anatomic position
    - Follow up with hand surgeon in 24h
  - Discharge
  - Augmentin 500/125mg PO TID x 5 days

- No
  - Leave wound open / secondary intention
  - Irrigate and debride thoroughly
  - Augmentin 500/125 mg PO TID x 5 days
  - Consider Hep B/Tetanus prophylaxis
  - Follow up with hand surgery within 24-48 hours
  - Splint in anatomic position

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*If the assailant can be tested, or if known HepB, use accelerated vaccination course @ 0, 1, 2 months. No indication for prophylaxis. If patient is immune, no need for re-vaccination. Vaccine effective for prevention if given up to 48 hours after exposure.

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