

Discuss Hand Infection

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Out line

- Introduction
- Relevant Anatomy
- Aetiopathogenesis
- Specific infections
- Management
- Complication
- Conclusion

Introduction

Hand infection

is the infection of the Confined Spaces, Joints, Tendon Sheaths and Bursae of the hand.


The hand is a tool with which the individual can receive information from the outside world and then act upon it. It must be supple, sensate, pain-free and coordinated

History

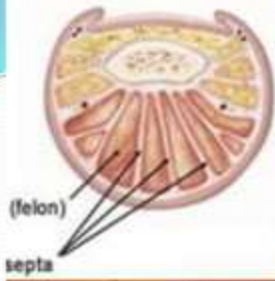
- Surgery derived from “chirurgerie” meaning ‘hand work’
- Allen B. Kanavel 1938

Relevant Anatomy

- The spaces of the hand are of practical significance because they may become infected and distended with pus

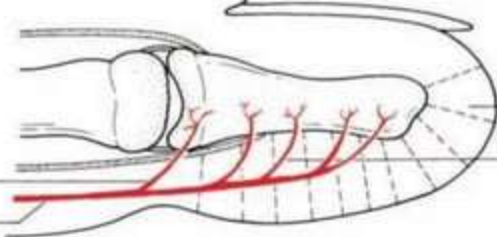
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- 1- the superficial pulp spaces of the fingers
 - 2- the synovial tendon sheaths of the 2nd, 3rd and 4th fingers
 - 3- the ulnar bursa
 - 4- the radial bursa
 - 5- the midpalmar space
 - 6- the thenar space

Cross section



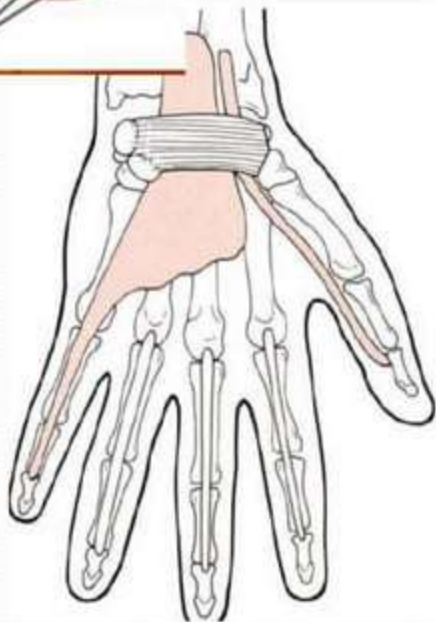
Branch to base of distal phalanx

Digital artery



Distal pulp space

Branches to shaft of distal phalanx traversing the pulp space




Midpalmar space

Ulnar bursa



Thenar space

Radial bursa

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- Edema in hand infections is commonly dorsal, irrespective of the location of the infection
 - Palmer skin is relatively tight and inelastic
 - Palmer aponeurosis is also tight and inelastic

Aetiology

- Bacterial e.g *Staphylococcus aureus* (commonest)
streptococci, clostridium, anaerobes
Mycobacterium species,
pasturella multocida (Animal bite)
Eikenella corrodens (human bite)
- Fungal eg *Candida Albicans*
- Viral infections eg *Herpes Simplex Virus*

Predisposed individuals

- Manual workers
- House wives
- Dish washers
- Laundry men
- Immunocompromised
- Diabetics
- Dental workers
- Nail chewers

Mechanisms of entry

- Spontaneous
- Trivial scratches or injuries (domestic accidents)
- Major injuries
- Bites from animals
- Human bite



Specific infections

1- Paronychia / eponychia

- These are infections that develops along the lateral nail fold or base of the fingernail
- Redness of the skin on the side or base of the nail accompanied by localized tenderness is virtually pathognomonic



2- felon

- A felon is a subcutaneous abscess in a closed – space of the pulp of a finger
- A more serious and usually more painful



3- Herpetic whitlow

is a viral infection of the hand, usually on the fingers, caused by a herpes simplex virus. The condition, characterized by small, swollen, painful blisters, and sometimes numbness,



4- Flexor tenosynovitis

- Infection of the Tenosynovial area
- Commonly involves the flexor tendon sheath
- Most important of all hand infections
- Infection frequently follows trauma at the flexor creases of the fingers- distal crease is most implicated
- Infection may be secondary from other sites in the hand


kanavel's signs

- Generalised swelling of finger
- Tenderness over flexor tendon sheath
- Flexed position of finger
- Pain on attempted extension of finger



5- Deep space infection

- Infections in these spaces present a serious surgical problem
- Good knowledge of the fascial anatomy is essential for proper treatment



Mid-Palmer space-

- Infection usually results from tendon sheath infection of middle or ring fingers
- Obliteration of the concavity of the palm and the presence of a slight bulging are pathognomonic

Thenar space infection

Involved by direct extension of infection of the index finger

Characterised by

- widening of thenar area
- dorsal edema and ballooning of thenar area
- Flexion of distal phalanx but the thumb is not rigid



Hypothenar Space

- Located deep to the hypothenar eminence
- Involvement is usually by direct implantation
- To aid diagnosis there is relative lack of palmar swelling and absence of involvement of the tendon sheath

Deep Fascial Space Infections

- Dorsal subaponeurotic abscess
 - Swelling and erythema on dorsum of hand
 - Pain with passive movement of extensor tendons
 - Looks like cellulitis
- Subfacial web space infection
 - Secondary to infection of palmar space
 - Spreads dorsally - “collar button abscess”



5- Bites

Animal or human bites can lead to infection

6- Pilonidal sinus;

A hair implanted in the palm or web space can cause a recurrently infected cyst resulting in discharging sinus



7- Septic arthritis

8- Osteomyelitis

9- mycobacterium infection

Management

- Early, accurate, careful assessment improves outcome
- History
 - hand pain, swelling, loss of function, drainage
 - penetrating trauma, animal bites
 - onset, duration
 - constitutional symptoms- eg fever
 - hand dominance
 - occupation
 - premorbid - Diabetes



- Examination

1. General - ill looking, painful distress, febrile

2. Specific –

- skin- point of trauma, bruises, bite point, pointing of the abscess

- soft tissues- edema

- bones –deformity (in osteomyelitis)

- joint –swelling (in septic arthritis)

- limitation of ROM of hand

- Kanavel's signs

- Investigations

- Aspirate/ pus for m/c/s
- Tissue biopsy for histology/ afb
- FBC, ESR- \uparrow wbc with neutrophilia, \uparrow ESR
- RBS- diabetes
- X-rays- hand



Treatment

1- Prevent swelling by Elevating hand



- Use of arm sling above the level of heart
- Elevation on pillow
- Hanging the affected limb

2- medications

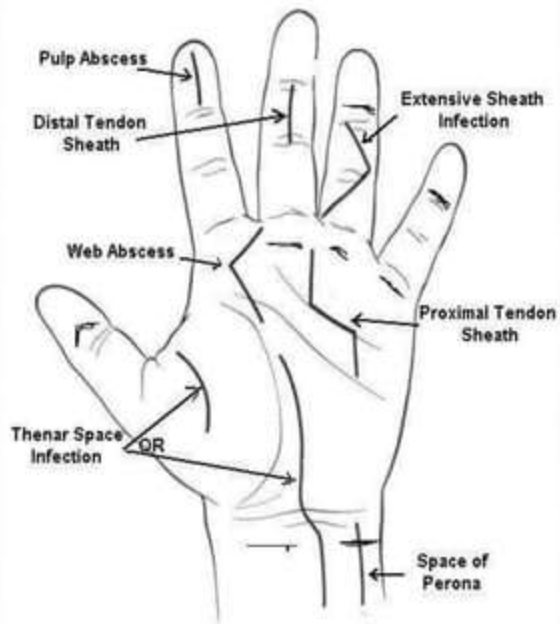
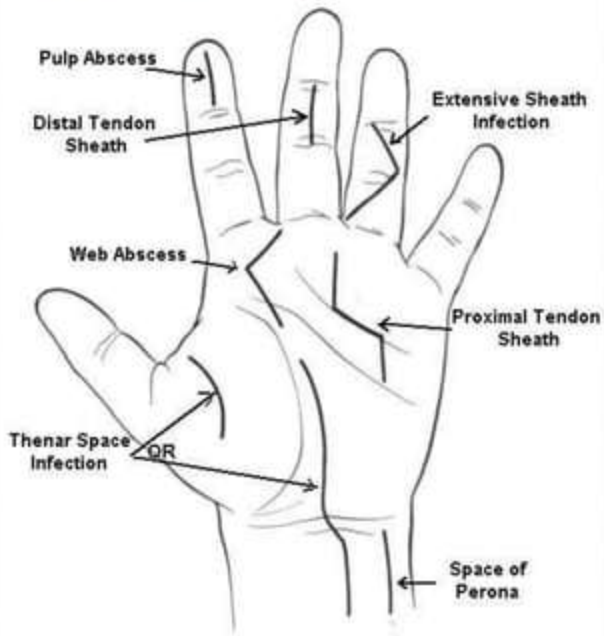
- Antibiotics ;- broad spectrum , after m/c/s sample is obtained
- TT / ATS
- Analgesia- opioid /NSAID
- Acyclovir
- AntiTB



3- Surgical treatment

I- Surgical Drainage

- if pus is present
- Adequate anaesthesia (G.A / Digital block)
- Tourniquet to ensure bloodless field
- Appropriate positioning of hand
- Tendon sheath/ deep space pus needs irrigation




Collar stud abscess



Paronychia/ eponychia




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- Bites should be explored, debrided, cleaned and managed with broad-spectrum antibiotics
 - Wound is left open
 - The pus obtained is sent for m/c/s
 - Hand should be re examine 24hrs after drainage

Splintage

- Splint in the position of safe immobilisation (Edinburgh position)
- Removable splint to allow for wound dressing



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- All infections need early mobilization once inflammation Subsided
 - Active / passive joint physiotherapy

Complications

- Hand infections
 - a) Tendon destruction
 - b) Sepsis
 - c) Functional disability
 - d) Extension into the forearm
 - e) Compartment syndrome
 - f) Septic arthritis
 - g) Osteomyelitis
 - h) Contractures
- Surgical intervention
 - a. injury to hand structures

Conclusion

- Hand is an important tool to livelihood, Rapid precise diagnosis and quick surgical intervention makes significant difference between patient losing his hand or getting back his livelihood

Referances

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Thank U for listening

