

## FOUR HAND INJURIES NOT TO MISS: AVOIDING PITFALLS IN THE EMERGENCY DEPARTMENT

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## Introduction

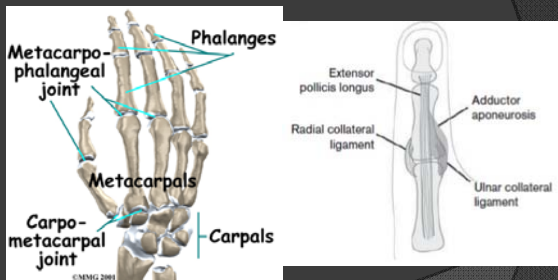
- Upper limb injuries are common in ED
  - 50% has fractures
- Distal radius, elbow and shoulder fractures: usually not be missed
- BUT! How about the HAND?

## Four hand injuries not to miss

- Ulnar collateral ligament injury
- Base of metacarpal: Bennett's fracture
- Volar plate avulsion fracture
- Flexor digitorum profundus avulsion

## Ulnar collateral ligament injury

- Thumb:
  - Pinching, grasping
  - 50% of hand function
  - Stabilized by radial collateral ligament and ulnar collateral ligament (UCL)



## Ulnar collateral ligament injury

- UCL:
  - More frequently injured
    - Sudden forced abduction of the thumb
    - Trauma, contact sports
  - 2 portions: proper ligament and accessory ligament
- Skier's thumb: acute injury
- Gamekeeper's thumb: chronic laxity

## Diagnosis of UCL injury

- History:
  - sporting injury
  - Pain at the base of the thumb
- PE:
  - Reduced ROM at MCP joint
  - Maximal tenderness over the ulnar aspect
  - Stress examination:
    - Lateral (valgus) stress: angulation  $>35^\circ$ , or  $>15^\circ$  than the uninjured side  $\rightarrow$  complete rupture
    - Flexion: proper collateral ligament rupture
    - Extension: accessory collateral ligament

## Diagnosis of UCL injury

- Complete v.s. incomplete rupture
  - Complete rupture:
    - Both accessory and proper collateral ligaments rupture
    - Often associated with Stener lesion (50%)
    - Need surgery
  - Incomplete rupture:
    - immobilization



## Diagnosis of UCL injury

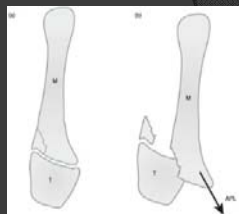
- X-ray: NOT diagnostic for UCL injury
  - Should be obtained Before stress tests
  - To exclude nearby bone fracture
  - True lateral radiography: dorsal capsular and collateral ligament tear  $\rightarrow$  palmar subluxation  $\rightarrow$  need surgery

## For UCL injury

- History and PE!
- All suspected UCL injuries: immobilization
- Untreated UCL injuries  $\rightarrow$  affect hand function, decrease power of hand, early OA

## Base of metacarpal: Bennett's fracture

- 2 part, oblique intra-articular fracture subluxation of base of thumb metacarpal
- Falls  $\rightarrow$  axial load on a flexed thumb metacarpal
- The most common first metacarpal fracture



## Bennett's fracture

- Even a 1 mm malunion can result in residual symptoms: early OA, pain, stiffness
- Best treated with surgery

## Diagnosis of Bennett's fracture

- PE:
  - Pain and swelling to the thumb base
  - Exam the UCL and scaphoid injury
- X-ray:



## Volar plate avulsion fracture

- Proximal interphalangeal (PIP) joint:
  - A hinge joint
  - The largest ROM in the hand (0-110°)
  - Stabilized by several important structure: including the volar (palmar) plate



## Diagnosis of volar plate avulsion fracture

- History:
  - Forced hyperextension
  - Deformity
  - Common in athletes, ball sports
- PE:
  - Pain, bruising, swelling, reduced ROM in PIP joint

## X-ray for volar plate fracture



Avulsion fracture is characteristic!

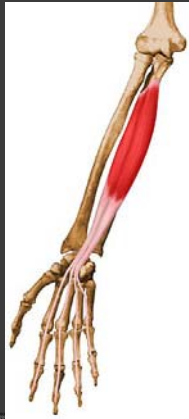
## Treatment for volar plate injury

- Dorsal or palmar dislocation: should be reduced, and repeat X-ray is obtained
- A volar plate injury with small fracture, no joint subluxation: conservative Tx
- >40% articular surface involved → need surgery
- Or: early OA, stiffness, loss of function

## Flexor digitorum profundus avulsion

- Flexor digitorum profundus (FDP)
  - Flexion of DIP
  - Origin: forearm, insertion: palmar base of the distal phalanx
  - Avulsion at insertion:
    - Often normal X-ray
    - The finger is able to actively flexion at PIP and MCP, but not at DIP
    - Commonly misdiagnosed!!

## FDP



## Diagnosis of FDP injury

- History:
  - Injury when sporting, Sudden extension of an actively flexed DIP joint
  - Most common in the ring finger
  - Avulsion in insertion
  - Rugby jersey finger
- PE:
  - Swollen, bruised distal digit
  - To exam FDP function

## X-ray for FDP injury

- Useful, but not diagnostic



## Treatment for FDP injury

- No any role for conservative treatment!
- The tendon would retract!
- Primary repair is impossible after 7-10 days

## Conclusion

- In thumb injuries, to exam RCL and UCL in Both hands
- In PIP joint injuries: need true lateral X-ray
- FDP avulsion: clinical diagnosis; all need surgery
- Bennett's fracture: usually need surgery
- All fracture need 2 projections

## PRIMARY CLOSURE OF CUTANEOUS ABSCESSSES: A SYSTEMATIC REVIEW

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## Background

- Patients with cutaneous abscess doubles over the last decade
- Community-acquired methicillin-resistant *Staphylococcus aureus* (CA-MRSA) also increased
- How to treat the cutaneous abscess?

## Treatment of cutaneous abscess

- Conventional treatment:
  - Incision and drainage (I&D) + secondary healing
- How about the primary closure??
  - Ellis (1951): heal faster, few complication
  - Some studies in Europe, Africa, Asia and Australia ever mentioned about it
    - Speed healing
    - Reduce pain
    - Improve scarring

## Goal of this paper

- Primary closure V.S. secondary healing
- Speed of healing and rate of recurrence

## Methods

- Search MEDLINE (PubMed), EMBASE, Cochrane Library
- Keywords: primary closure, abscess, incision and drainage, soft tissue infection
- Exclusion: review articles, retrospective analyses, noncomparative studies, abstracts

## Results

- 543 articles
  - 33 articles: primary closure after I&D, total 2000 patients
    - 7 RCT

## Jadad score for RCT

Item	Score
Was the study described as randomized (including "randomly", "random", "randomization")?	1
was the method used to generate the sequence of randomization described and was it appropriate (e.g. table of random numbers, computer-generated)?	1
Was the study described as double-blind?	1
Was the method of double-blinding described and was it appropriate (e.g. identical placebo, active placebo, dummy)	1
Was there a description of withdrawals and dropouts?	1
Deduct 1 point if the method used to generate the sequence of randomization was described but was inappropriate	-1
Deduct 1 point if the study was described as double-blind but the method of blinding was inappropriate	-1

Jadad score  $\geq 3$  → high quality

## RCT in the meta-analysis

Source	Location of abscesses*	Primary closure (no. of abscesses)	Secondary closure (no. of abscesses)	Outcomes	Jadad score
Abraham et al [15], 1997	Head and neck (8), trunk and limbs (13), buttock, anogenital region, groin (33), axillary (4), breast (5)	32	29	Healing at 1 wk, healing at 1 mo	2
Eliso et al [6], 2001	Breast (53), gluteal (29), head and neck (14), muscle (10), perianal (10), axilla (2), inguinal (1), trunk (4), pilonidal (1)	51	55	Time to healing, recurrence rate, quality of scars, cost	0
Looper et al [16], 1976	Perianal, retroareolar	110	109	Time to healing, time off work, recurrence rate	2
Maeda and Harvey [17], 1977	Limbs, perianal, breast, axilla, knee, neck, buttock	121	98	Time to healing, recurrence rate	1
Simons et al [19], 1982	Anogenital (39), head and neck (21), axilla (27), breast (5), trunk/limb (22)	54	60	Time to healing, no. of return visits, recurrence rates	0
Stewart et al [7], 1985	Head and neck (33), trunks (20), limbs (16), pilonidal (21), perianal (47)	64	73	Time to healing, time off work, no. of hospital visits, recurrence rates	1
Vivianathan [18], 1988	Skeletal muscle (59)	23	36	Time to healing, length of hospital stay, recurrence rate	1

\* Numbers in parentheses indicate number of abscesses in each specific anatomical site (when reported in the references).

## Use of pre-OP anti, analgesia/anesthesia and method of primary closure

Study	Preoperative antibiotic	Analgesia/anesthesia	Type of suture
Abraham, 1997	IV ceftriaxone	NA	Nonabsorbable vertical mattress
Eliso, 2001	IV ampicillin and cloxacillin	Ketamine anesthesia	Monoofilament nylon vertical mattress
Maeda, 1977	IV lincomycin in half of the patients only	NA	Nylon mattress
Looper, 1976	IV ampicillin and cloxacillin	General anesthesia	Monoofilament vertical mattress
Simons, 1982	IV or IM cindoloxycillin	General anesthesia	Monoofilament sutures
Stewart, 1985	Not given	General anesthesia	Monoofilament nylon mattress
Vivianathan, 1988	IV cloxacillin	NA	Chromic catgut mattress

IV indicates intravenous, NA, nonavailable.

## Outcomes by treatment method

Outcome	Primary suture	Secondary closure
Mean (95% CI) healing time, days	7.8 (7.3-8.3)	15.0 (14.3-15.7)
% Abscess recurrence (95% CI)%	7.6 (4.6-10.6)	11.1 (7.5-14.7)
% Complications (95% CI)	8.1 (1.9-14.3)	11.0 (4.6-17.4)
Mean (95% CI) time until return to work, d	4.1 (2.3-5.9)	14.6 (11.7-17.5)

## Conclusion

- Primary closure after I&D:
  - faster healing
  - Low rates of abscess recurrences
  - Not associated with any significant adverse events
- Using antibiotic? Controversial
- Who does the I&D?
  - Mostly: by general or colorectal surgeons under GA
    - Complete drainage of abscess and curettage of its walls → successful primary closure!

## Results

- After primary closure, all patients should be seen within 48 to 72 hours
  - Recurrence or spread: remove the suture and drain the abscess
- For CA-MRSA
  - Not in any of the 7 RCT
  - Some study favor I&D + secondary closure

## Conclusion

- Primary closure of I&D results in **faster healing and similar low abscess recurrence rate**

**THANKS FOR YOUR  
LISTENING!**