**Hand Injuries in Baseball**

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**Wrist injuries in Major and Minor League Baseball**
Rhee PC, Camp CL, D’Angelo J, Desai V, Shin SS, Sheridan D, Conte S
HITS Database 2011-2016
- 6,226 hand and wrist injuries
  - Hand: 4,478 (72%), Wrist: 1,748 (28%)
- 902 (14%) in MLB players
- 5,324 (86%) in MiLB players
- 105,246 days out of play
- Most common mechanism: hit by baseball (2,672; 43%)

**Most Common Hand and Wrist Injuries**

<table>
<thead>
<tr>
<th>HAND</th>
<th>WRIST</th>
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<tbody>
<tr>
<td>Contusions (42.4%)</td>
<td>Wrist sprains (33.7%)</td>
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<td>Blisters (9.0%)</td>
<td>Wrist contusions (25.3%)</td>
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<tr>
<td>Thumb ulnar collateral ligament (UCL) injuries (7.4%)</td>
<td>Hook of hamate fractures (10.5%)</td>
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<tr>
<td>Metacarpal fractures (4.7%)</td>
<td>Other wrist injury (9.8%)</td>
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Hook of Hamate Fracture

History
- Felt sharp pain in left hand (bottom hand) after a swing during a game
- X-rays: “negative”
- CT: hook of hamate fx

Physical Exam: Left wrist
- Tender at hook of hamate
- Check for ulnar nerve paresthesias
- Check ring/small flexor tendons
- Check ulnar artery at Guyon’s canal
Hook of Hamate Fracture: Surgery

- Short arm volar plaster splint
- Wrist ROM at 7-10 days
- Strengthening at 3 weeks
- Batting progression starts at 4 weeks
- RTP when comfortable

Hook of Hamate Fracture: Post Op

- 2012-2017
- 41 baseball players
  - Single surgeon
  - 12 professional, 17 collegiate, 12 high school
- **Median RTP: 5 weeks (range: 3-7 weeks)**
- HITS study: 51.5 days missed (7+ weeks)
Take-Home Points

• Common injury
• Partially healed hooks can be painful too
• Don’t wait... remove early (more predictable outcome)

Metacarpal Fractures

• When do we operate?
  • “Finger is pointing the wrong way” = ROTATIONAL DEFORMITY
  • “Multiple fragments/fractures” = COMMINUTED
  • “The joint isn’t smooth” = ARTICULAR STEP-OFF/INCONGRUITY
  • “Bone is sticking out” or “bone is exposed” = OPEN FRACTURE
  • “More than one is broken” = MULTIPLE FRACTURES

• EARLIER RETURN TO PLAY (?)

Metacarpal Fractures: Return to Play

• HITS: 59.6 days (mean) missed; ~8.5 weeks
• My experience:
  • NBA: 3-5 weeks (after ORIF)
  • NFL: 1-4 weeks (after ORIF)
  • MLB: 4-8 weeks (with or without ORIF)

ORIF gives me peace of mind
Metacarpal and Phalanx Fractures: % Chance of Re-Injury (IMHO)

Without Plate and Screws
- 3 weeks: 50%
- 4 weeks: 25%
- 5 weeks: 10%
- 6 weeks: "near" 0%

With Plate and Screws
- 3 weeks: "near" 0%

RHD MLB player: Left MF Proximal Phalanx Fx
RTP 3.5 weeks

RHD MLB player: Left 4th MC Fx
Plate and Screws: RTP 4 weeks

Non-Operative vs Operative Treatment

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<th>Operative</th>
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<td>Don't have to get cut</td>
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<td>Wait 2-3 weeks to start ROM (until fracture gets “sticky”)</td>
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<td>Need to protect until 6 weeks (usually say fractures take 6 weeks to heal, although remodeling occurs over 2 years)</td>
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Non-Operative Treatment
- Don't have to get cut
- Have to wait 2-3 weeks to start ROM (until fracture gets “sticky”)
- Need to protect until week 6 (we usually say fractures take 6 weeks to heal, although remodeling occurs over 2 years)
- Risk of re-fracture

Operative Treatment
- Can start ROM immediately
- Bone is fixed and strong (low risk of re-fracture)
- Peace of mind with early RTP
- Have to get cut
- Metal goes in (often plate and/or screws)
- Risks of surgery (low), e.g. infection, scar tissue, nerve injury

Thumb UCL Tears
- Most common thumb ligament tear (90%)
- UCL Tear: Skier’s thumb (acute), Gamekeeper’s thumb (chronic)
Thumb UCL Tears

- When do we operate acutely?
  - Complete tear WITH INSTABILITY (compared to opposite thumb)
  - If torn but stable, can consider playing with splint
  - Avulsion fracture that is DISPLACED
  - If broken but non-displaced, can consider playing with splint

Thumb UCL Tear: Traditional Surgery

- Suture Anchor Repair of ligament back to bone
- Thumb Cast for 4-6 weeks, then start therapy
- RTP 6-8 weeks with splint, sometimes longer
- Play without splint: 10-12 weeks

RTP: Thumb Ligament Tears

- According to HITS study, 25.6 days (mean) missed for sprain or rupture
- My experience for RUPTURES: RTP 4-6 weeks after surgery with Internal Brace augmentation, NO SPLINT
What is Internal Brace (IB) Augmentation?

• Strong, biocompatible and synthetic "suture tape" is placed over repair or with reconstruction to immediately add significant strength

• First used in lateral ankle ligament reconstruction, now for other indications, e.g. Achilles, ACL, MCL, elbow UCL, etc.

Acute UCL Tear

1st Anchor Placed
Recovery Process and Return to Play

**Repair without IB**
- Plaster splint for 1 week
- Cast for at least 3 more weeks
- Start ROM at 4 weeks post-op
- Strengthening at 6-8 weeks
- RTP: 2-3 months

**Repair with IB**
- ROM within 1st week
- Strengthening and light throwing at 2 weeks
- Begin hitting at 3 weeks
- RTP 4-5 weeks (rehab assignment)

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**Kinematics of Thumb Ulnar Collateral Ligament Repair with Suture Tape Augmentation: A Cadaveric Study**

Nilay A. Patel MD, Charles C. Lin BSE, Yasuo Itami MD, Michelle McGarry MS, Steven S. Shin MD, Thay Q. Lee PhD

**Objectives**
To assess the kinematics and angular stiffness of the thumb UCL repair with and without suture tape augmentation (STA).

**Materials/Methods**
8 cadaver thumbs

- Varus/valgus kinematics was measured at -10°, 0°, 15°, and 30° deg of thumb MCP flexion in the following conditions: (1) intact thumb UCL, (2) complete UCL tear (proper and accessory ligaments), (3) UCL repair, and (4) UCL repair with STA.

**CONCLUSION**
Thumb UCL repair with STA improves varus/valgus kinematics after complete UCL tear. In addition, the higher angular stiffness afforded by the STA may allow for earlier rehabilitation after surgery.
Return to Play in High Level Athletes After Thumb UCL Repair with Suture Tape Augmentation

Daniel B. Gibbs MD, Anthony De Giacomo MD, Steven Shin MD

*Presented at 73rd Annual Meeting of ASSH, Boston 2018

• Retrospective review of 9 high-level athletes (baseball, basketball)
• In season, RTP was 15-37 days (avg: 30 days)

Take-Home Points

• Common injury in baseball (head-first slides, landing on hand)
• Internal bracing is a “game changer” for faster/safer RTP
• If player opts to wait until off-season for surgery, be ready for tendon graft reconstruction if native ligament quality is poor
• Other indications for IB:
  • Scapholunate ligament tears
  • Thumb /5th CMC joint acute dislocations

Conclusion

• Hand and wrist injuries are a significant cause of missed days
• Hook of Hamate fracture: TAKE IT OUT
• Metacarpal fracture: Fix (or don’t fix)
• Thumb UCL tear: IB is the way to go
THANK YOU