Hand and Wrist Injuries in the Athlete
Diagnosis, Treatment, and Return to Play Guidelines

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June 15th, 2018

Financial Disclosures

- No relevant financial disclosures.
- No off-label use will be discussed.
Outline

- General considerations
- Unique injuries
  - Mallet and Jersey finger
  - PIP joint dislocations and sprains
  - Thumb UCL rupture
  - Scaphoid fracture
  - ECU tendon subluxation

Hand and Wrist Injuries in the Competitive Athlete

- Commonly encountered
- Important
- Multiple considerations, highly individualized
  - Age and skill of athlete
  - Timing within season
  - Position and demands of specific sport
  - Type and severity of injury
- Ultimately, must consider long term consequences of potential outcomes
- Play in cast or brace
  - “Waterproof” cast vs. custom splint or cast-brace
Mallet and Jersey finger

- Disruption of the terminal flexor/extensor tendon
- Diagnosis based on clinical exam
  - X-rays to evaluate bony component
- Mallet finger = “Baseball finger”
  - Generally better tolerated, rarely requires surgery
- Jersey finger
  - Significant morbidity, usually requires surgery

Mallet finger

- Bony injury vs. soft tissue only
- Mechanism often benign
- Inability to initiate/maintain DIP extension
- Begin splinting immediately
  - Can be effective if delayed several weeks
- Full time extension splinting x6 weeks
- Expect residual extension lag
- Usually permits full performance
Surgical repair

- Reserved for refractory symptomatic cases
- Large fragments with joint subluxation
  - CRPP, blocking pin technique
  - Dorsal hook plate fixation
- Concern for infection, hardware fracture
- Pins out 6 weeks, begin therapy
- Ligament reconstruction for chronic, symptomatic
- DIP arthrodesis with chronic pain, failure of other techniques

Jersey finger

- Avulsion of the FDP at its insertion on the distal phalanx
- Usually soft tissue, can have bony component
- Rapid/forced extension of a clenched finger
- Pain and inability to flex at the DIPJ
- US vs. MRI to aid in diagnosis
- Protect all fingers to prevent retraction
- Classification determines urgency of repair
Jersey finger

- Requires surgical repair to adequately restore DIP flexion
  - Type I – surgery within 1 week
  - Type II – 3-4 weeks
  - Type III – 6 weeks (or longer?)
- Dorsal blocking splint full time x6 weeks
  - Passive flexion/active extension vs. early active flexion protocol
- Strengthening delayed; likely return to play 12 weeks
- Failure leads to loss of grip strength, requires staged reconstruction

Finger PIP sprains/dislocations

- Wide spectrum of injury
- Usually stable, rarely result in recurrent dislocation
- Stiffness is ubiquitous
  - Early vs. late flexion contracture
  - Present as a “jammed finger”
    - Sometimes several days later
- Check x-ray to r/o fracture
- Tendon and ligament exam
**PIP sprain/dislocation**

- Stable injuries begin immediate static extension splinting and OT
  - Splinting 24/7 x 4 weeks, remove for hygiene and ROM protocol
  - Overnight splinting x4 additional weeks to prevent late contracture
- Return to play dictated by pain, swelling, strength
  - Protected play within first 4 weeks, with splint/wrap/buddy taping
  - Lots of counseling!

- Unstable dislocations splinted in reduced position and extension block splint
  - AROM allowed within stable ROM
  - Extension block gradually reduced under instruction of hand therapy
- Surgery reserved for open/irreducible/recurrent dislocations or chronic instability
  - Usually hyperextension deformity – volar plate repair
  - Collateral ligament repair/reconstruction
Thumb UCL injury

- Forceful abduction of the thumb
  - "Skiers thumb"
- Soft tissue vs. bony injury
- Stability of greater concern vs. PIP injury
- Missed injury can lead to loss of grip/pinch, joint subluxation, early arthrosis
- Examine for stability
  - 0 and 30 degrees of flexion, compare to opposite side
- Palpate for tendon retraction
  - "Stener lesion"

X-rays and MRI to aid in diagnosis
- Incomplete tear/sprain can treat similarly to PIP
  - Protected early return to play
- Complete tears require surgery
  - Timing somewhat flexible
- If position/sport allows, could return to play in cast/custom splint in 2 weeks
  - Protected play x 6 weeks
- Can expect some stiffness but return to previous level of function
Scaphoid Fracture

- Most common carpal fracture
- Linkage between carpal rows and distal radius
- Blood supply becomes tenuous from waist - proximal
- Typical mechanism = FOOSH
- Easily missed, disregarded
- High rate of nonunion, eventual arthrosis
- Elevated index of suspicion

Scaphoid Fracture

- Classically present with wrist pain/swelling/tenderness
- X-rays even with minor suspicion
  - Splint w/ neg x-rays if suggested by exam
- Repeat x-rays if initially negative
- MRI to rule out occult fracture
- Evaluate for associated injuries
  - Distal radius fracture, SL tear, perilunate dislocation
**Scaphoid Fracture**

- Distal pole/tubercle fracture
  - Immobilize x 6 weeks
- Screw fixation for all waist/proximal fractures
  - Open vs. percutaneous techniques
  - Arthroscopic assistance
- May resume protected practice/play in 1-2 weeks
  - Begin ROM out of cast or splint
- Strengthening a 6 weeks if CT shows at least 50% healing
  - Monitor radiographs until complete healing
- Reasonable to expect return to previous level of play with some stiffness

**ECU Tendinopathy/Instability**

- Often encountered in “stick and ball” sports
- Compromised when flexed, ulnarly deviated, supinated
- Acute vs. chronic injury
- Pain over dorsal/ulnar wrist
  - With or without mechanical snap
- ECU synergy test
- Examine for tendon stability
- MRI vs. US
ECU Tendinopathy/instability

- Tendinosis without subluxation
  - Conservative management mainstay
  - Brief immobilization, NSAID’s, modalities
  - Injection
  - Debridement/release/reconstruction of the ECU subsheath only in severe/recalcitrant cases

- With ECU tendon instability
  - Reduce tendon along with associated DRUJ dislocation if present
  - Immobilization (above elbow? Wrist position?)
  - Depending on severity, immobilize 1-2 weeks followed by 1-2 more weeks of motion recovery
  - Therapy with taping/bracing
  - Return to strength/swinging approx. 6 weeks
ECU stabilization

Other considerations

- Does the patient fully understand the nature of the injury?
  - The consequences of treatment failure?
- Are we burning any bridges?
  - Is there a backup plan?
- Focus on the objective component vs. the emotional component
- Expect the best, plan for the worst
- Be honest and forthright
- Ask for help, phone a friend
- Be an advocate for the child athlete
References

Return to football and long-term clinical outcomes after thumb ulnar collateral ligament suture anchor repair in collegiate athletes.
Werner BC1, Hadeed MM1, Lyons ML1, Glock JS1, Distelke DB1, Chhabra AB1.

Injuries to the Collateral Ligaments of the Metacarpophalangeal Joint of the Thumb, Including Simultaneous Combined Thumb Ulnar and Radial Collateral Ligament Injuries, in National Football League Athletes.
Werner BC1, Bakin HS2, Kennedy SE1, Weiss L1, Barnes RP1, Budes BA1, Werner RP1, Hofferkin RP1.

Arthroscopy. 2017 Dec;33(12):2154-2158
Mehrotra CM1, Cunto JA1, Chhabra AB2, Caine MD3, Kennedy SE1, Simunek DS2, Brandewie JP4, LaPrade RF5, Panemacher AB6.

Scaphoid fracture in the elite athlete.
Bakay AR1, Luhmann BJ, Buchhammer DB.

Sports & Orthopaedic Specialists

References

Opinions regarding the management of hand and wrist injuries in elite athletes.
DK CF1, Rehmehoost C1, Herman KS1, Carlson MG1.

Acute hand and wrist injuries in athletes: evaluation and management.
Morgan WT1, Brennan LB1.

Diagnosis, Treatment, and Return to Play for Four Common Sports Injuries of the Hand and Wrist.
Goldfarb CA1, Part SB1, Carlson MG1.

Phalangeal fractures: displaced/undisplaced.
Simunek DS1, Chhabra AB1.

Return to Play After Hand and Wrist Fractures.
Hoffe S1, Werner AP1.
Thank You!

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