Finger Injuries In Sports

Background
1. Finger injuries are common in sports
   - Hands frequently absorb initial contact of other athletes, equipment, ground
   - Protecting fingers often results in limited dexterity, discomfort, or reduced performance ability
   - Injuries are important to diagnose in a timely manner because delay in treatment can result in significant deformity and disability
   - Often injuries to fingers are under-reported by athletes, severity is easily underestimated
   - Most finger injuries can be effectively treated in the primary care setting, but careful evaluation for cases requiring referral is necessary

Tendon and Ligament Injury
1. Mallet Finger-extensor tendon injury at distal interphalangeal (DIP) joint
   - Background
     - M/c in ball sports
     - M/c closed tendon injury of finger
   - Pathophysiology
     - Forceful flexion caused by object hitting extended finger
     - Extensor tendon is stretched, partially or completely torn
     - 1/3 of pts will have a bony avulsion fracture
   - Diagnostics
     - History and exam
       - Tenderness at dorsal aspect of DIP joint
       - No active extension of DIP (characteristic flexion deformity)
       - Neurovascular status
     - Radiographs to evaluate for avulsion fracture
   - Recommendation
     - Pts w/ finger injuries should receive a minimum of anteroposterior, true lateral, and oblique radiographic views.
     - The only way to examine joint congruity is w/ a true lateral view
     - Correct positioning is vital
   - Treatment
     - Splint for 6 wks in neutral or slight hyperextension of DIP
     - Proximal interphalangeal joint (PIP) should remain mobile
     - Must be uninterrupted splinting
     - If flexion occurs, 6 wks starts over
     - Pts may participate in sports while splinted
     - Excessive hyperextension with splinting may lead to necrosis of volar surface
     - Recommendation
       - Pt compliance should be monitored when treating mallet finger with splinting
6.1.10

Continuous splinting imperative for successful outcomes.

All splints for mallet finger achieve similar results.

- Follow-up
  - F/u after injury as clinically indicated to ensure compliance
  - After 6 weeks if active extension is present, splint at night and during sports for 6 more wks
  - Conservative treatment effective up to six mos even if initial treatment is delayed.

- Referral
  - Refer for surgery if unable to achieve full passive extension or bony avulsion exists

- Recommendation
  - Proximal phalanx and articular surface fractures involving more than 30 percent of the joint should be managed in consultation w/ orthopedic or hand surgeon (SOR C).

- Prognosis
  - Permanent flexion of DIP may persist despite adequate treatment and is usually not a factor in function.
  - Greater than 80% success w/ conservative management.

- Prevention
  - Difficult
  - Gloves cause loss of dexterity and sensation

2. Jersey Finger (Flexor Digitorum Profundus (FDP) injury)

- Background
  - M/c in tackling sports-finger catches on article of clothing of another player

- Pathophysiology
  - Forceful extension of flexed digit
  - 75% of time ring finger is involved
  - Weakest finger

- Diagnostics
  - Tenderness/swelling at volar aspect of DIP joint
  - Unable to flex DIP joint w/ joint isolated
  - If tendon retracts, palpable lump may be felt
  - Evaluate neurovascular status

- Treatment
  - Splint finger acutely
  - Wrist at 30 degrees flexion, metacarpophalangeal joint at 70 degrees flexion, PIP at 10-15 degrees flexion.

- Recommendation
  - Pts with confirmed of suspected jersey finger should be referred to an orthopedic or hand surgeon (SOR C).
  - Splint post-operatively for 6 wks, followed by progressive range of motion until 12 weeks
  - Return to play 4-6 months

- Prognosis
Finger Injuries in Sports

1. Finger Injuries in Sports

   - Worse prognosis with delay in treatment and severely retracted tendon
     - Best is treated within 7-10 days
   - Early repair and early active rehab protocols lead to likely unrestricted use at 3-6 mos

   o Prevention
     - Re-rupture is unlikely after 8 wks if early rehabilitation

3. Central Slip Extensor Tendon Injury (usually PIP joint)

   o Background
     - Common in basketball players and other ball sports
   o Pathophysiology
     - Forceful flexion of actively extended PIP joint
     - Also caused by volar dislocation of PIP
   o Diagnostics
     - Evaluate with joint in 15-30 degrees of flexion
     - Tender at dorsal aspect of PIP joint
     - Inability to actively extend joint
     - Evaluate neurovascular status
   o Treatment
     - Dorsal splint in full extension for 6 wks
       - Uninterrupted splinting
       - If flexion occurs, splinting time restarts
     - DIP may have full range of motion
   o Follow up
     - Referral to surgery if cannot achieve full passive extension or avulsion fracture
   o Prognosis
     - Delay in tx may result in boutonniere deformity
       - Unopposed flexion of PIP by flexor digitorum superficialis (FDS) with hyperextension of DIP and metacarpophalangeal joint (MCP)
       - Required surgical exploration for tendon integrity
     - Prevention: none

4. Volar Plate Injury (usually PIP joint)

   o Background
     - Common in ball sports, tackling sports, and in falls
   o Pathophysiology
   o Hyperextension of finger joint causing complete or partial tearing of volar plate
     - May include avulsion fracture
   o Diagnostics
     - History and exam
       - May have slight hyperextension deformity
       - Maximal tenderness at volar aspect of involved joint
       - Full flexion and extension preserved
       - Collateral ligaments intact
     - X-ray: evaluate for fracture
   o Treatment
     - Goal to restore joint stability
6.1.10

- Splint at 30 degrees flexion
- Increase extension slowly over 2-4 wks
- Buddy taping should follow until pain free
  - At least 4-6 weeks
  - Joint swelling may persist for 6-12 mos

  o Follow up
    - Refer for surgery if joint unstable or large avulsion fracture
  o Prognosis
    - Early active range of motion improves outcome
  o Prevention
    - None

5. Collateral ligament injury (usually PIP joint)-"Jammed finger"
  o Background
  o Pathophysiology
    - Forced ulnar or radial deviation of IP joint causing partial or complete tear of collateral ligament
  o Diagnostics
    - X-ray: evaluate for fracture
    - Tenderness at involved collateral ligament
    - Test stability of joint at 30 degrees flexion with MCP joint flexed 90 degrees
      - Apply valgus or varus stress
      - Extended MCP tightens collaterals and inhibits exam
  o Treatment
    - Stable joint is buddy taped for 2-4wks
      - Never leave 5th finger exposed as it is naturally extended, thus prone to injury
    - May have avulsion fracture
    - May continue to participate while taped
  o Referral
    - Unstable joint referred for surgery
    - Low threshold for referral should exist for collateral ligament injuries in children because of growth plate involvement (SOR C)
  o Prognosis
    - Usually heals well w/ no long term problems
  o Prevention
    - None

6. Dislocations and Fractures
  o Joint Dislocation
  o Background
  o Pathophysiology
    - PIP m/c dislocated
    - Severity often underestimated
    - May be associated with significant morbidity
    - Usually due to high velocity blow to end of finger
  o Diagnostics
    - History and Exam
    - Obvious deformity
• Dorsal more common than volar or lateral
• Volar plate injury and/or avulsion fracture may result
• Reduction may be attempted without radiography
  o Treatment
    • During an athletic event:
      • Pain medication not usually necessary
      • Apply distal traction to injured finger
      • Volarly directed pressure to middle phalanx
      • If unsuccessful, may hyperextend distal portion while applying volar pressure on middle phalanx
      • If successful, buddy tape
      • Radiographs at end of contest to evaluate alignment
    • In office:
      • Digital or hematoma block for pain control if treatment delayed >1 hour
      • Radiograph prior to reduction
      • Reduce as above
      • Radiograph post-reduction for alignment
      • Splint at 30 degrees for 2-3 wks followed by buddy taping
      • Radiograph at 1 wk to ensure healing
  • Volar dislocation may result in central slip of extensor tendon
    • Attempt reduction after radiographs only
    • Hyperflexion of distal phalanx
    • Then apply traction to joint
    • Only try one time
    • If successful, splint in extension for 6 wks
  • Lateral dislocation often easily reduced
    • Buddy tape for 3 wks
    • Evaluate neurovascular status, range of motion after reduction
    • Appropriately treat any soft tissue injury found
  o Referral
    • Refer to surgery if large avulsion fracture or irreducible
  o Prognosis
    • No long term issues if managed quickly w/ reduction or surgical evaluation if necessary
  o Prevention
    • None

7. Phalanx Fracture
  o Background
  o Pathophysiology
    • M/c caused by crush injuries
    • Usually distal phalanx
  o Diagnostics
    • Hx and exam
      • Obvious deformity w/ pain and swelling
    • Radiographs for angulation, displacement, rotation of fracture
      • Transverse fractures usually more stable than oblique or angular fractures
6.1.10

Treatment

- Reduce only closed fracture and w/o obviously contaminated skin
- Administer digital or hematoma block prior to reduction
- Gently manipulate fragments to get proper alignment
  - Rotation is assessed by looking at fist or slightly flexed fingers
  - All fingernails in same plane when digits flexed
  - On volar surface, all point at scaphoid bone
- Splint in extension for 6 weeks
  - Dorsal aluminum splint
- Rest, ice, elevation
- Followed by buddy taping for 6 wks

Referral

- Refer to surgery if unable to align bones properly, fracture is displaced, or open fracture
- Recommendation
  - Proximal phalanx and articular surface fractures involving more than 30 percent of joint should be managed in consultation w/ orthopedic or hand surgeon (SOR C)

Prognosis

- Malunion may cause significant loss of function and visible deformity

Prevention

- None

References


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