MANAGEMENT OF COMMON FRACTURES

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LEARNING OBJECTIVES

• Examine the frequency of fracture management in primary care settings
• Review the most common fractures
• Discuss evaluation and treatment strategies of these fractures
• Consider when to refer

WHY WORRY ABOUT FRACTURES?

• National Ambulatory Medical Care Survey (NACMS)¹
  • Sample of 81,000 primary care visits nationwide
  • Fracture and dislocation made up 1.6% of all visits (1,296 visits)
  • Fracture and dislocation ranked 14th out of the top 20 diagnoses
  • Orthopedic surgeons saw 70% of the fractures
  • Family physicians saw the next highest percentage (16%)
  • Fracture was the 7th most common diagnosis in children younger than 17
• Setting matters
  • Much more common in rural, urgent care or emergency department


COMMON FRACTURES SEEN IN PRIMARY CARE

• Finger – 17%
• Metacarpal – 16%
• Radius – 14%
• Tola – 9%
• Fibula – 7%
• Metatarsal – 6%
• Clavicle – 5%
• Radius and ulna – 4%
• Carpal, Ulna, Humerus, Tibia – 2% Each
• Tarsal 1%


FINGER FRACTURE

• Distal phalanx fracture - Mechanisms
  • Crush injury to distal phalanx
  • Jammed finger – axial load from thrown ball
• Classification
  • Shaft fracture – may be transverse or longitudinal
  • Tuft fracture (often associated with nail bed fracture – open fracture)
  • Dorsal base (Mallet Finger)
  • Volar base (Type III Jersey Finger)
  • Salter-Harris
FINGER FRACTURE – INITIAL MANAGEMENT

- Focus on any soft tissue injuries/laceration
- Repair any nail bed lacerations if needed (may need to remove nail)
- Reduce any displaced fractures
- Evaluate active range of motion (check for significant tendon injury)
- Splint with a U-shaped padded aluminum splint or fingertip guard
- Ensure it is anchored to the middle phalanx
- Consider referral if:
  - Displaced or angulated transverse fracture
  - Open/nail bed fracture
  - Failure of closed reduction

MALLET FINGER

DISTAL PHALANX - MANAGEMENT

- Splinting as discussed
- Keep splint on – especially for Mallet finger
- Length of immobilization – at least 4 weeks, possibly longer
- Follow up every 1-2 weeks initially
- Indications for later referral
  - Non-union
  - Persistent symptoms (pain)
  - Decreased range of motion or strength

MIDDLE OR PROXIMAL PHALANX FRACTURES

- Mechanism
  - Direct blow to the middle or proximal phalanx
  - Rotational force to the finger (finger caught in dog leash)

MIDDLE OR PROXIMAL PHALANX - MANAGEMENT

- Consider buddy taping for non-displaced/stable fractures
- Gutter splint or Burkhalter-type splint after reduction of displaced fractures
- Initial follow up – 7-10 days
- Length of immobilization
  - 3-4 weeks for buddy taping
  - 4-6 weeks for splinting/casting
- Overall healing time: 4-6 weeks
- Follow up interval: Every 1-2 weeks to assess joint motion
- Repeat radiographs: At initial follow up and every 1-2 weeks for reduced fractures
MIDDLE OR PROXIMAL PHALANX - REFERRAL

- Malrotation or uncorrected angulation
- Oblique or spiral fractures
- Intraarticular fractures
- Loss of alignment

METACARPAL FRACTURES

- Mechanism
  - Crush injuries or direct blows to the hand
- Most commonly 4th and 5th metacarpal
- 5th metacarpal neck fractures are also known as Boxer’s fracture

METACARPAL FX – INITIAL MANAGEMENT

- Gutter splint in a functional position:
  - Wrist in 30° of extension; MCP 70-90° of flexion;
    PIP or DIP 5-10° flexion
  - Helps to “elongate” the fractured metacarpal and maintain alignment
- Length of immobilization in splint/cast: 4-6 weeks
- Can maintain in splint if compliant
- May need short arm cast for protection or comfort
- Repeat radiographs at initial follow up in 1 week and at end of treatment to document healing

4TH METACARPAL FRACTURE

METACARPAL FRACTURE – REFERRAL

- Angulated or displaced fractures of the 2nd or 3rd metacarpal neck
- Metacarpal neck fractures with rotational malalignment
- If degree of angulation is unacceptable to the patient

CARPAL FRACTURE

- Mechanism – FOOSH (Fall On Outstretched Hand) or axial load to the wrist
- Scaphoid Fracture – 70% of all carpal fractures
SCAPHOID
- Most frequently fractured wrist bone
- 15% of acute wrist fractures
- Need to have a high suspicion for fracture based on exam and mechanism of injury
  - Tenderness at the anatomic snuffbox as well as over scaphoid pole
  - May present late as the "wrist sprain" that didn’t get better

SCAPHOID WAIST FRACTURE

SCAPHOID - IMAGING

SCAPHOID - AVN
- Blood supply to proximal pole of scaphoid is retrograde
- Avascular necrosis in 33 up to greater than 50%

SCAPHOID FX – INITIAL MANAGEMENT
- Suspected: Short arm thumb spica splint or cast
- Non-displaced:
  - Distal third – short arm thumb spica splint or cast (slight wrist extension)
  - Middle or proximal – long arm thumb spica splint or cast
- Follow up:
  - Suspected - 2 weeks (to repeat radiograph to look for early callous formation)
  - Non-displaced – 1-2 weeks

SCAPHOID – MRI AVN
SCAPHOID FX – DEFINITIVE TREATMENT

- Length of immobilization
  - Suspected – continue immobilization until diagnosis confirmed/clarified
  - Non-displaced:
    - Distal – 6 weeks
    - Middle – 10-12 weeks
    - Proximal – 12-20 weeks
- Indications for referral
  - Any fracture, given high rate of non-healing and AVN
  - Displaced fractures
  - Nonunion
  - Early signs of AVN

DISTAL RADIUS (COLLES’) FRACTURE

- Mechanism – also most commonly due to FOOSH injury
- One of the most common fractures
- Various classification systems, essentially intra-articular versus extra-articular

- Frykman classification of distal radius fractures

DISTAL RADIUS

- Older patients can be predictor of subsequent fractures
- Imaging: AP/Lat:
  - Wrist
  - Forearm
  - Elbow
- Treatment Decisions
  - Age
  - Angulation
  - Deformity

- Non-op treatment
  - Splint
  - Can be used for true buckle fracture
  - Cast
    - 6-8 weeks
    - Long arm vs Short arm
      - Long arm with both bone involvement/angulation
      - Short arm – stable/non-displaced
  - Operative
    - Age, location, angulation, deformity

CLAVICLE FRACTURE

CLAVICLE FRACTURE - MIDSHAFT
CLAVICLE FRACTURE – CALLOUS FORMATION

CLAVICLE FRACTURE

- Initial management
  - Arm sling
  - Sling and swath if needed for comfort or more displaced fractures
  - Figure of 8 splints do not improve anatomic healing outcomes
- Follow up every 2-3 weeks until healed
- Healing time 6-8 weeks, longer for more complex fractures
- Indications for referral
  - More complex distal clavicle fractures (type II)
  - Midshaft fractures in high-level throwing athletes or patients with significant overhead physical activity

DISTAL CLAVICLE FRACTURE

Type I and III fractures can usually be managed non-operatively

FIBULA FRACTURE

- Mechanism of injury
  - Direct blow to the lateral leg
  - Inversion ankle injury (ankle sprain mechanism) – Distal fibula mechanism
- Treatment
  - Most stable fractures can be treated with walking boot
  - May need partial weight bearing or crutches for comfort

DISTAL FIBULAR FRACTURE
DISTAL FIBULA TREATMENT

- Short-leg walking cast or walking cast fracture boot
- Duration of immobilization
  - Malleolar – 4-6 weeks
  - Distal fibula – 6-8 weeks
- Indications for referral
  - Unstable fractures
  - Bimalleolar and trimalleolar fractures
  - Symptomatic non-union
  - Intra-articular involvement

DISTAL FIBULA FX WITH ANKLE INSTABILITY

Surgical referral needed to maintain/reconstruct ankle mortise

5TH METATARSAL FRACTURES

- Mechanism
  - Twisting injury to ankle or foot
  - Can be an acute injury or can be a common site of stress fracture
  - Base of 5th metatarsal fractures can be treated with weight-bearing immobilization
  - Slightly more distal fractures (Jones Fractures) may need operative intervention as they have a higher risk for non-union

BASE OF 5TH METATARSAL AVULSION FRACTURE

BASE OF 5TH AVULSION FX – MILDLY DISPLACED
We discussed the frequency of office visits for fracture management.

- Most common fractures
- Management strategies for fractures
- Indications for referral