Fracture Management for Primary Care
Objectives

- Review fracture terminology
- Define common fractures seen in health center clinic
- Identify common splinting techniques
- Discuss common non-union fractures
Reassurance

- Vast majority of fractures treated by primary care physicians heal well
- Most adverse outcomes can be avoided if family physicians carefully select which fractures they manage
Fracture Healing

- Inflammation, Repair, Remodeling
- Factors that influence fracture healing
  - Age
  - Hormones
  - Nutrition
  - Type of injury
  - Stabilization
  - Fracture loading
Fracture Nomenclature

- Fracture Location
  - Diaphysis, metaphysis, intra-articular

- Fracture Type
  - Fracture line description
  - Intra-articular, comminuted
  - Impacted, avulsion, compression, pathologic, stress
  - Buckle, greenstick
Fracture Nomenclature

- Fracture displacement
  - Translation
    ▪ Anterior-posterior plane or medial-lateral plane
  - Angulation
    ▪ Frontal or sagittal or both
    ▪ Direction in which the apex of the angle is pointing
  - Shortening
    ▪ Determines if proper healing is possible
  - Rotation
    ▪ Clinical assessment
Referral Decisions

- Life-threatening conditions
- Arterial or Nerve injuries
- Compartment syndrome
- Open fractures or fractures tenting the skin
- Fractures that need reduction, intra-articular fractures, fracture-dislocation, epiphyseal plate fractures, associated tendon injuries
Fractures
Boxer’s Fractures

- Fracture of the neck of the 5th metacarpal with volar angulation of the head of the metacarpal
- By far the most common hand fracture encountered
- MCP joint is depressed
- Treatment with Ulnar gutter splint
- Healing time – 4-6 weeks
Metacarpal Shaft Fractures

- 3rd, 4th, and 5th most common
- Rotation is important
  - Finger sign
- Angulation is important
  - 10 degree rule
- Healing time
  - 6-8 weeks
Ulnar Gutter Splint
Ulnar Gutter Splint

- Wrist in 30 degrees of extension
- MCP joint in 70 to 90 degrees of flexion
- PIP or DIP – 5-10 degrees of flexion
Fracture #2
Wrist Anatomy Review

Hand and Wrist Bones

Phalanges

Metacarpals

Carpals

Radius

Ulna

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Scaphoid Fracture

- FOOSH injury
- Classification
  - Distal pole
  - Waist (most common)
  - Proximal pole
- Physical exam Finding
- Treat with thumb spica splint
- Healing time between 6 and 24 weeks
Complications
  - Nonunion
  - Avascular necrosis
- High level of clinical suspicion
  - Cast for two weeks and re-evaluate
Thumb Spica Splint
Thumb Spica Splint

- Wrist in neutral to slight extension
- Thumb slightly extended and abducted with IP joint free
Distal Radius Fracture

- Colles, Smith are common names
- "silver fork" deformity
- Look for ulnar fracture or effect on median nerve
- Non-displaced, minimally angulated, treat with short arm cast
Sugar Tong Splint
Sugar Tong Splint

- Wrist in slight extension
- Ulnar deviation
Fracture #4a
5th Metatarsal Fracture

- Avulsion
- Most common fracture of lower extremity
- Peroneal brevis tendon
- Ankle sprain
- Firm soled shoes for 4-8 weeks
Fracture #4b
5th Metatarsal Fracture

- Jones
- Sir Robert Jones, described in 1902
- Transverse and extends into the joint between the bases of 4th and 5th, 1.5cm distal to tubercle
- Healing may take 2-3 months
- Non weight-bearing, consider referral
- COMPLICATIONS
Stress Fracture
Associated with young, male athletes, basketball players
Proximal diaphysis

COMPLICATIONS
- Nonunion
- Prolonged healing time
- Recurrence of the fracture
Posterior Splint
Fracture #5
Navicular Fracture

- 4 types – dorsal avulsion, tuberosity, body, stress fractures
- Healing time – 6-10 weeks, up to 6 months for stress fracture
- Risk of non-union
Fracture #6
Fibular fracture

- Isolated usually result of direct below, usually other injuries involved
- Proximal – Maisonneuve fracture – ankle sprain
- Non-weightbearing bone
- Stirrup splint
- Walking boot with crutches for comfort
- Healing time 6-8 weeks
Stirrup splint
Fracture #7
Mallet Finger

- Avulsion of the extensor tendon from the dorsum of the base of the distal phalanx
- Forced flexion of the extended fingertip
- Dorsal padded splint or stack splint continuously for 6-8 weeks
- Referral recommended if continued extension lag
Fracture #8
Avulsion of the flexor digitorum profundus
Hyperextension of the DIP
Referral is recommended

Three types
- I – tendon retracted to palm, loss of blood supply
- II – most common, can be re-inserted 2-3 months after injury
- III – large bony fragment involved
Fracture #9
Boutonniere deformity

- Disruption of central slip of the extensor tendon, torn from the dorsal aspect of the middle phalanx when the extended PIP joint is forcibly flexed
- Develops 4-6 weeks later after a “jammed” finger
- PIP splinted in full extension, DIP and MCP left free
Fracture #10
Classification

- Proximal 1/3 – orthopedic referral recommended for displaced fractures
- Middle 1/3 – most common
- Distal 1/3 – three types

Healing time – 6-8 weeks

Treatment – sling or figure of eight
Questions?
References

THANK YOU!