Metacarpal Fractures
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- Metacarpal and phalangeal fractures = 10% of all upper extremity fractures
- 70% occur between the ages of 11-45
- Most are treated nonoperatively with reduction, protective splinting, and early mobilization
- Avoid prolonged immobilization
- Aggressive treatment can lead to soft tissue injury, tendon adhesions, infection, secondary surgery

Indications for Surgery
- Irreducible fractures
- Malrotation
- Intra-articular fractures
- Open fractures
- Segmental bone loss
- Multiple fractures
- Fractures with soft tissue injury
- Osteotomy
Meta Carpal Neck Fractures
“Boxers Fracture”

- Pt is a 32 year male who sustained a fracture to his 5th metacarpal after punching a wall.
- Fracture was found to be malrotated on exam.

Metacarpal Neck Fractures

- Nonoperative
  - Nonunion is uncommon
  - Minimal functional deficit
  - Complaints: loss of dorsal prominence, palpable MC head in the palm, rotational mal-alignment
  - Casting or Functional brace- wrist at 30°-70° flexion of MP
    - Worn until pain subsides

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- Flexion of the MP 90° relaxed the deforming force of the intrinsics and tightened the collateral ligaments
- Allows the proximal phalanx to exert a dorsal force on the MC head
- Immobilize for 2 weeks then AROM
Metacarpal Neck Fractures

- Operative
  - Human bite
  - Pseudoclawing: hyperextension of the MP and flexion of the PIP
  - Malrotation
  - IF and MF accept 10-15°
  - RF 30-40°
  - SF can accept more angulation (40-70°) due to 20-30° motion in the CMC saggital plane

Metacarpal Neck Fractures

- CRPP
  - Crossed K-wires
  - Transverse K-wires to adjacent MC
  - Minimally invasive
  - Less rigid-2.5-3 wks of immobilization

Bouquet Osteosynthesis

- Technically difficult
- Migrating pins
- Immobilization 2-6 weeks
- Equivalent to transverse
- May get better ROM than retrograde
  - Scadel-Hopfner
ORIF

- Rare
- Crossed K-wires
- Dorsal tension band
- Mini-condylar plate

Metacarpal Shaft Fractures

- Patient is a 16yo male who injured his hand when he punched a wall
Metacarpal Shaft Fractures

- Transverse
  - Axial load
  - Apex dorsal
  - Reduce if any angulation in IF or MF, 20° in RF, 30° in SF
- Oblique/Spiral
  - Torsional forcer
  - Rotational deformity - scissoring
- Comminuted
  - Direct impact
  - Shortening

Nonoperative

- Most
- Avoid over treatment
- Wrist at 30° extension, 60-80° flexion of MP joints IP joints extended in either a cast or dorsal extension splint
  - Until nontender for stable fractures
CRPP

- MC head prominence
- Pseudoclawing
- Aesthetically displeasing
- Shortening

Operative Options

- ORIF- multiple MC
  - Lag screws
  - Plates- 4 cortices
  - Intramedullary fixation
  - Bouquet
  - Osteosynthesis
  - Tension band
  - Ex fix
Post op

- Try protected ROM as early as possible
  - If stable at 5-7 days post op
- Remove pins at 3-6 weeks

Case

- Pt is a 37yo male who was on his motorcycle when he hit a tree
- Multiple injuries: femur fracture, multi-ligamentous knee, open tib-fib, and ipsilateral 4th MC fracture

Case #1
Thank you