Management of Phalanx Fractures

Mike Starecki, MD
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No Disclosures

Do they really need to be fixed?
Do they really need to be fixed?
Proximal Phalanx Fractures - Angulation

- Apex volar angulation
- Distal fragment is extended - pull of the central slip
- Proximal fragment flexed by pull of the interossei

Progressive apex volar angulation results in:
- Pseudoclawing
- Skeletal shortening
- Incompetent extensor tendon

Middle Phalanx Fractures - Angulation

- Middle phalanx fractures angulation is less predictable
- Mid-shaft: apex palmar or dorsal - depending on relationship to FDS
- Proximal shaft: apex dorsal secondary to pull of central slip
Middle Phalanx Fractures - Angulation

- Distal shaft: apex volar secondary to strong pull of FDS on proximal fragment

Assessment of Phalangeal Fractures

Clinical
- Deformity
- Rotational alignment
- Crossing over of digits, scissoring
- Open wounds

Radiographic
- Angulation/displacement
- Articular malalignment
- Comminution
- Pathological lesions
Treatment of Phalangeal Fractures

Most phalanx fractures can be treated non-operatively.

Majority of patients will tolerate malalignment including slight rotational deformities.

Key is counseling patients about likelihood of deformity and loss of motion prior to definitive treatment.

Treatment of Phalangeal Fractures

Most important aspect of treatment is early hand and finger motion!

Regardless of treatment method.

Prolonged immobilization will guarantee a poor outcome.

Surgical Indications

- Rotational malalignment
- >10 degrees angulation any plane
- Articular incongruity
- Multiple unstable fractures
- Open fractures
- Segmental bone loss
Surgical Indications Phalanx Fractures

• NEVER an “absolute indication”
• Loss of motion likely

Proximal Phalanx Fractures

- Surgical Options
  - Kirshner wire pinning - PREFERRED
  - Lag screw fixation
  - Headless screws
  - Circulage wires
  - Plate fixation
  - Locking plates
  - External fixation

K-Wire Pinning

- Percutaneous or open
- Not permanent implant
- Remove at 4 weeks or sooner
- Radiographic healing is DELAYED
K-Wire Pinning

- Cons to pinning
- Limited rotational stability
- Transfixion of tendons
- Pin site infections
- Loss of fixation

Cross K-Wire Pinning of Proximal Phalanx Fractures

- Stern et al JHS 2012:
- 50 proximal phalanx fractures
- 48% complication rate with early surgical intervention
- Bottom line: proximal phalanx fractures are difficult to treat - counsel patients that they will lose motion in their fingers

Lag Screw Fixation

- Rigid fixation
- Compression
- Can start early motion
- Minimal soft tissue interference
Headless Screws
- "Herbert" screws
- Percutaneous and mini-open insertion
- Less soft tissue irritation

Plate fixation
- Rigid fixation
- Useful for transverse and periarticular fractures
- Earlier ROM than pins
- Cons:
  - Soft tissue interference, irritation
  - Adhesions
  - May require hardware removal

Plate Fixation of Phalanx Fractures
- 67% complication rate - stiffness, malunion, nonunion, tendon irritation (Stern et al, Clin Orthop Relat Res, 1987)
- 92% complication rate - extensor lag, stiffness, contracture (Page and Stern, JHS, 1998)
- Results are less than ideal!
Surgical Approaches – Middle Phalanx - Midaxial

Case Examples Proximal Phalanx Fractures

Proximal Phalanx Base Fracture
Proximal Phalanx Base Fracture - Pinning

Proximal Phalanx Base Fracture - Pinning

Proximal Phalanx Base Fracture - Pinning

It is possible to have a good outcome!
Proximal Phalanx Shaft Fractures – Spiral and Oblique

Spiral and oblique fractures likely to result in malrotation

Proximal Phalanx Shaft Fractures – Spiral and Oblique
57 y.o. fall at work – Comminuted Proximal Phalanx Fracture

Comminuted Proximal Phalanx Fracture – T-Plate

Comminuted Proximal Phalanx Fracture – T-Plate
Proximal Phalanx – Condylar Neck Fracture

Unlikely to reduce using closed techniques
Displacement between central and lateral band

Proximal Phalanx Fracture – Condylar Neck - Pins
Proximal Phalanx Fracture – Condylar Neck - Plate

Middle Phalanx Fractures

- Surgical Options
- K wires
- Lag screw fixation
- Plate fixation - almost never

Middle Phalanx Fracture - Oblique
Middle Phalanx Fracture - Oblique

Middle Phalanx Fracture - Oblique

Summary and Recs

- Majority of phalanx fractures should be treated non operatively
- Early motion is key! (Regardless of treatment)
- No fixation method is superior
- Counsel patients prior to definitive treatment to help set realistic expectations
Thank You