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# **Acute Scaphoid Fractures**

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# Acute Scaphoid Fractures

- Epidemiology
  - Mechanism
  - Anatomy
  - Diagnosis
  - Investigation
  - Classification
  - Management
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# Epidemiology

- Commonly fractured carpal bone
  - 60% of carpal fractures
  - 11% of hand fractures
  - Young adults M:F/ 5:1
  - 5-25% non union
  - Incidence:       Waist 19.9  
                          Prox pole 2.7  
                          Tuberosity 6.2
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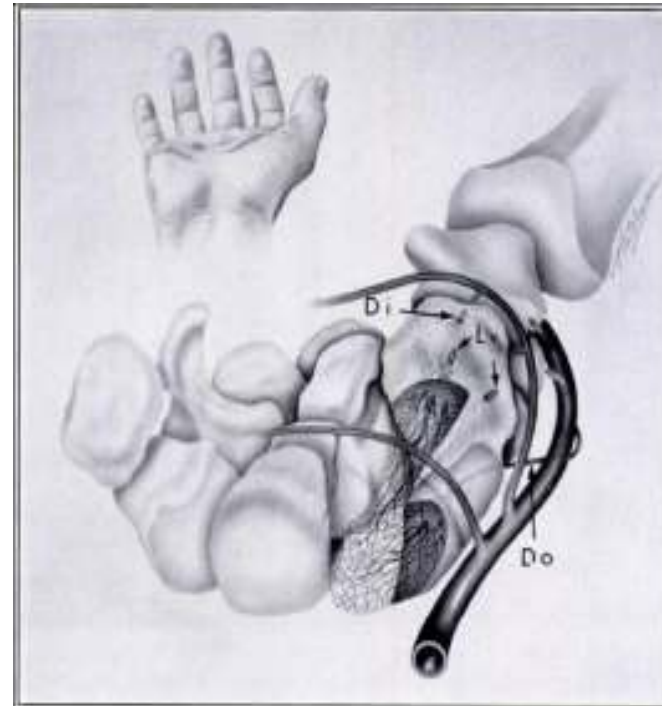
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# Mechanism

- FOOSH with wrist extension and radial deviation (other mechanism rare)
  - Prox pole wedged between capitate, radius and taut palmar capsule , distal pole mobile
  - Failure occurs at the point receiving highest bending movement
  - Flexion injuries (3%)
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# Anatomy

- Boat shaped
- Blood supply:
  - Dorsal (75%)
  - Volar branches radial artery



Taleisnik, JBJS Am. 1966

# Diagnosis

	sensitivity	specificity
ASB Tenderness	100%	9%
Scaphoid tubercle tenderness	100%	30%
Axial compression thumb	100%	48%
Total	100%	74%

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# Investigations

- Plain x-rays: scaphoid series
- MRI
- Bone scan
- CT scan



# Classification

## TYPE A: STABLE ACUTE FRACTURES



A1: Fracture of tubercle



A2: Incomplete waist fracture

## TYPE B: UNSTABLE ACUTE FRACTURES



B1: Distal oblique fracture



B2: Complete waist fracture



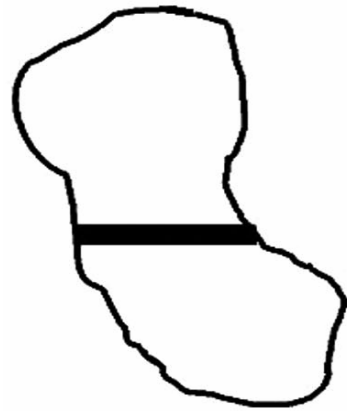
B3: Proximal pole fracture



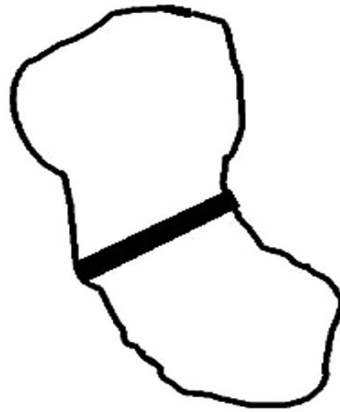
B4: Transscaphoid perilunate fracture dislocation of carpus

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# Classification



Horizontal Oblique

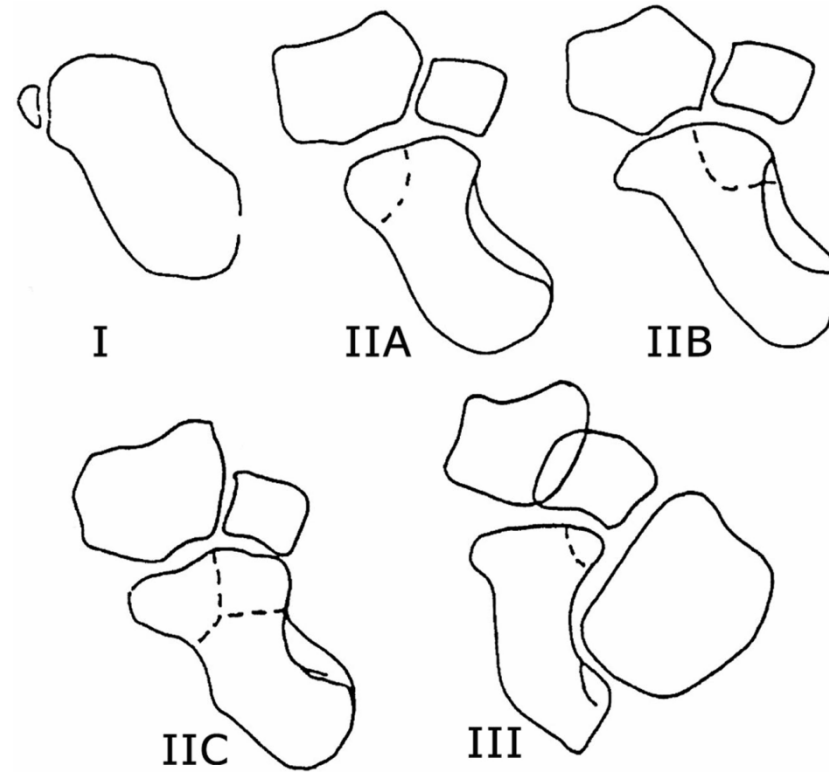


Transverse



Vertical Oblique

# Classification



Prosser AJ JHS [Br]1988.

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# Management

- Non-operative: cast treatment
- Operative:
  - Displaced fractures
  - Open fractures
  - Fracture dislocation
  - Multiply injured
  - failure of non-operative management

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# Risk factors

- Fracture displacement gap/ step >1mm
- Angulation > 15 degrees
- Osteonecrosis
- Vertical oblique fractures
- Smoking



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# Un-displaced Waist fracture

- Below elbow cast, 8 wks

Clay, Need the thumb be immobilised in scaphoid fractures? JBJS Br. 1991

- Clinical evaluation, X rays 8,12 weeks

- 88% union

Dias, Patterns of union in fractures of the waist of the scaphoid. JBJS Br.1989

- CT scan if no healing at 12 wks

Dias, Should Acute Scaphoid Fractures Be Fixed? JBJS Am. 2005

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# Displaced Waist fracture

- ORIF
- Volar / Dorsal approach



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# Proximal pole

- **31% non-union**

Clay NR, Need the thumb be immobilised in scaphoid fractures? JBJS Br. 1991

- **Initial treatment in plaster**

- **ORIF**

Haisman, Acute Fractures of the Scaphoid  
JBJS Am. 2006



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# Distal fractures

- Tuberosity : Cast 4-6 wks
- Type II: wire fixation



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# Trans-scaphoid peri-lunate dislocation

- Stage III (Mayfield)
- rare
- associated with a scaphoid fracture



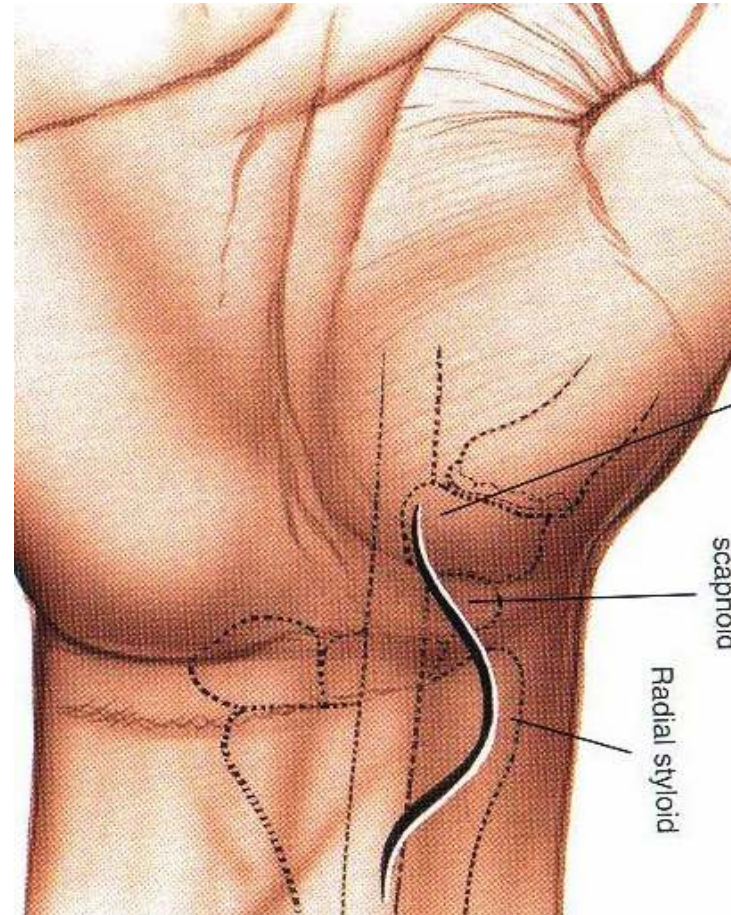
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# Trans-scaphoid peri-lunate dislocation



# Approach

- Volar
- FCR tendon
- Distal / Waist fractures
- Preserve dorsal vessels



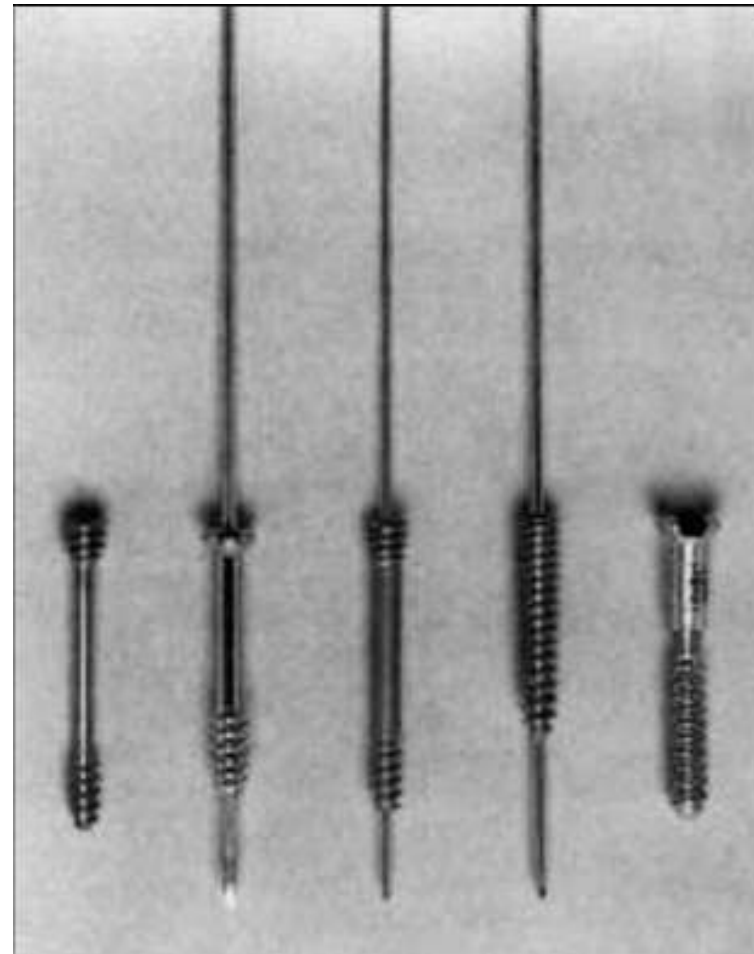
# Approach

- Dorsal
- Centred over lister's tubercle
- 3/4 extensor compartment



# Implants

- Herbert screw
- AO screw
- Herbert whipple
- Acutrak



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# Percutaneous technique.



Bond, Percutaneous screw fixation or cast immobilization for nondisplaced scaphoid fractures. JBJS Am. 2001

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# Percutaneous fixation



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# Summary

- Cast treatment for un-displaced fractures
  - Aggressive conservative approach
  - Operative management of displaced waist, proximal pole fractures
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**Questions ?**

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