

ORTHOPAEDICS



FOR PRIMARY
HEALTH CARE



LION

LEARNING INNOVATION VIA
ORTHOPAEDIC NETWORKS

EDITOR: **MICHAEL HELD**

UNIVERSITY OF CAPE TOWN'S **ORTHOPAEDIC DEPARTMENT**

Scaphoid fractures

by Pieter Jordaan, Neil Kruger & Duncan McGuire

Learning objectives

1. Maintain a high index of clinical suspicion; acute fractures can be missed on plain X-ray.
2. Repeat X-ray after 10–14 days if a scaphoid fracture is suspected.
3. Untreated scaphoid fractures can lead to non-union.
4. A scaphoid non-union can lead to wrist arthritis.

Definition and anatomy

The scaphoid is the most commonly fractured carpal bone. The scaphoid's blood supply enters from distal and flows retrograde, making the scaphoid vulnerable to avascular necrosis and non-union.



Scaphoid wrist fracture, associated with a peri-lunate dislocation

Mechanism of injury

A fall on an outstretched hand, with wrist extension and axial load on the wrist.

Differential diagnosis

- Distal radius fracture.
- Scapholunate interosseous ligament injuries.
- Thumb metacarpal base fractures or dislocations.

Diagnosis

Maintain a high index of suspicion.

History

The patient will present with radial sided wrist pain following trauma with the injury mechanism as described above.

Examination

Observe for swelling over the dorsum of the wrist and the anatomic snuffbox. Palpate the dorsum of the wrist over the proximal scaphoid, in the anatomic snuffbox and volar over the scaphoid tubercle for pain. Circumduction of the thumb will be painful as well as axial compression of the thumb.

Special investigations

Imaging

Plain X-rays, asking for scaphoid views and should include a posteroanterior (PA) and lateral of the wrist, ulnar deviation PA and supination oblique views.

A CT scan is suitable for fracture morphology, but should only be requested by the treating surgeon.

MRI is the most sensitive investigation for picking up occult scaphoid fractures.

If a scaphoid fracture is suspected clinically, but the X-ray does not show a fracture, then the patient must be placed in a backslab and seen again after 10-14 days for a repeat examination and X-ray. If earlier confirmation is required, then an MRI scan should be performed.

Management

Non-surgical

The majority of undisplaced fractures will heal if immobilised in a below-elbow cast. No benefit has been shown if the thumb is included in the cast (traditional scaphoid cast).

Surgical

All displaced fractures should be treated surgically with either percutaneous or open reduction and screw fixation.

Complications

- Non-union
- Avascular necrosis
- Wrist arthritis

Pitfalls

- Missed scaphoid fractures.

References

Hammert WC, Calfee RP, Bozentka DJ, Boyer MI; 2010; *ASSH Manual of Hand Surgery*; Lippincott, Williams and Wilkins (Wolters Kluwer); Philadelphia, USA.

Miller MD; 2008; *Review of Orthopaedics*, 5th edition; Elsevier; Philadelphia, USA.

Wolfe SW, Hotchkiss RN, Pederson WC, Kozin SH, Cohen MS; 2017; *Green's Operative Hand Surgery*, 7th Edition; Elsevier; Philadelphia, USA.

Assessment

A 20-year-old mountain biker presents after a fall and complains of radial-sided wrist pain. He is very tender in the anatomic snuffbox, and any thumb movement is painful. What is your next step?

- Refer to an orthopaedic surgeon.
- Splint the wrist and tell him to rest.
- Do a CT wrist.
- Do a wrist X-ray, including scaphoid views.
- Do a wrist MRI.

The correct answer is (D), do a wrist X-ray including scaphoid views.

Editor: Michael Held

Conceptualisation: Maritz Laubscher & Robert Dunn

Cover design: Carlene Venter
(Creative Waves Brand Design)

Developmental editing and design:
Vela Njisane and Phinda Njisane

ABOUT THE BOOK

Informed by experts: Most patients with orthopaedic pathology in low to middle-income countries are treated by non-specialists. This book was based on a modified Delphi consensus study* with experts from Africa, Europe, and North America to provide guidance to these health care workers. Knowledge topics, skills, and cases concerning orthopaedic trauma and infection were prioritised. Acute primary care for fractures and dislocations ranked high.

Furthermore, the diagnosis and the treatment of conditions not requiring specialist referral were prioritised.

* Held et al. Topics, Skills, and Cases for an Undergraduate Musculoskeletal Curriculum in Southern Africa: A Consensus from Local and International Experts. JBJS. 2020 Feb 5;102(3):e10.

THE LION

The Learning Innovation via Orthopaedic Network (LION) aims to improve learning and teaching in orthopaedics in Southern Africa and around the world. These authors have contributed the individual chapters and are mostly orthopaedic surgeons and trainees in Southern Africa who have experience with local orthopaedic pathology and treatment modalities but also in medical education of undergraduate students and primary care physicians. To centre this book around our students, iterative rounds of revising and updating the individual chapters are ongoing, to eliminate expert blind spots and create transformation of knowledge.

DISCLAIMERS

Although the authors, editor and publisher of this book have made every effort to ensure that the information provided was correct at press time, they do not assume and hereby disclaim any liability to any party for any loss, damage, or disruption caused by errors or omissions, whether such errors or omissions result from negligence, accident, or any other cause.

This textbook is not intended as a substitute for the medical advice of physicians. The reader should regularly consult a physician in matters relating to his/her health and particularly with respect to any symptoms that may require diagnosis or medical attention.

The information in this book is meant to supplement, not replace, Orthopaedic primary care training. The authors, editor and publisher advise readers to take full responsibility for their safety and know their limits. Before practicing the skills described in this book, be sure that your equipment is well maintained, and do not take risks beyond your level of experience, aptitude, training, and comfort level.

The individual authors of each chapter are responsible for consent and rights to use and publish images in this book.

© The Authors 2021



Licensed under a Creative Commons Attribution (CC BY) 4.0 International Licence.

ACKNOWLEDGEMENTS

This work was carried out with the aid of a grant from the International Development Research Centre, Ottawa, Canada. Thanks to Johan Fagan, Michelle Willmers and Glenda Cox for their mentorship and support.