

Scaphoid Injuries

Contributors

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Overview

The scaphoid is the commonest carpal bone fracture with rates up to 90%, particularly common in men aged 15-30 years old.¹

Scaphoid fractures are important to recognise due to the potential complications. Non-union or malunion can lead to instability and secondary arthritic changes. In addition, due to the blood supply to the proximal pole, avascular necrosis can occur if there is a fracture of the waist of the scaphoid².

Case Studies

A 30 year old man was out walking and tripped over a branch and fell forwards. He put his right arm out to break his fall. As he got up sudden pain and swelling developed over the base of his thumb which was exacerbated on moving his wrist. On examination in A&E the reviewing doctor ordered a plain film X-ray which showed a fracture through the waist of the scaphoid. The patient was referred to orthopaedics.

An 18 year old female was playing football when she went up to head the ball and collided with her opponent. She fell to the ground putting her hand out to break her fall. Sudden pain developed in her wrist. On review in A&E her initial investigations were normal but clinically she had pain in the anatomical snuffbox. The patient's wrist was immobilised and further imaging was requested for a weeks time. On follow up plain film showed a lucent line through the proximal pole of the scaphoid. The patient was referred to orthopaedics.

Anatomy

The wrist is formed by the radius and ulna of the forearm and the eight carpal bones. The scaphoid is the largest carpal bone of the proximal row.

Anatomically the scaphoid is described as boat like in shape with the proximal pole nearest the radius, trapezium and trapezoid distally, and the capitate and lunate medially. The waist of the scaphoid separates proximal and distal poles.

The scaphoid receives its blood supply from branches of the radial artery. The medial and distal segments are well supplied, but the proximal segment relies on retrograde flow³.

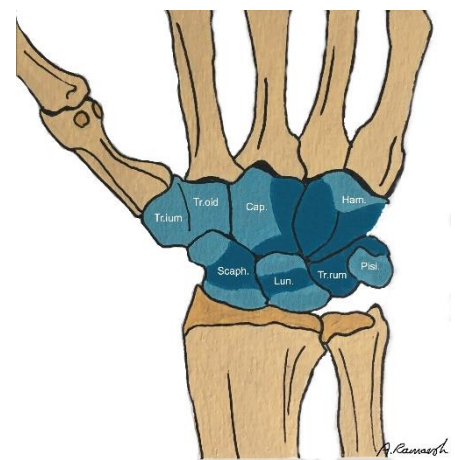


Figure 1. Carpal bones. Image created by Aksha Ramaesh

Aetiology

Mechanism of injury is primarily reported as a **fall onto outstretched hand (FOOSH)**.

Clinical Features

Classically there is pain in the region of the anatomical snuffbox +/- pain/swelling. The pain can be reported as worse on moving the thumb, and worse if the examiner applies axial loading to the thumb. An index of suspicion is needed as the pain may not be severe and the injury can be passed off a simple wrist sprain⁴.

Investigations

If clinical suspicion of a scaphoid fracture is present the first line investigation is plain film X-ray. Dedicated scaphoid views should be requested. It should be noted that in the acute phase scaphoid fractures may not be demonstrated on plain film and, if suspicion remains, a repeat plain film in 5-10 days should be requested⁵.

In regards to CT and MRI, studies have shown these modalities are better at excluding a fracture rather than confirming one. MRI has been shown to be superior for detecting displaced fractures within the first 24 hours of injury ^{6, 7}.

Current RCR guidelines recommend plain film followed by CT, MRI or nuclear medicine with MRI the favoured secondary investigation⁸.

Classification

There are three common calssifications²:

1. Mayo classification: divides scaphoid fractures into 3 types according to location of fracture line: middle (70%), distal (20%) and proximal (10%). Distal fractures are further divided into distal articular surface and distal tubercle fractures.
2. Russe Classification

Russe Classification	
Type	Description
Type I	Horizontal oblique fracture line • Distal third • Middle third • Proximal third
Type II	Transverse fracture line
Type III	Vertical oblique fracture line

3. Herbert Classification

Herbert Classification	
Type	Description
A: acute, stable	A1: fracture of the tubercle A2: nondisplaced incomplete fracture in the waist
B: acute, unstable	B1: oblique fracture in the distal third B2: displaced or mobile fracture in the waist B3: fracture of the proximal pole B4: fracture with dislocation B5: comminuted fracture
C: delayed union	>6 weeks
D: established non-union	D1: fibrous D2: sclerotic

Mayo and Russe are based on anatomy whereas Herbert define unstable and stable fractures.

Management Options

Initial immobilisation should occur in any patient with a suspected scaphoid fracture. If a fracture is confirmed orthopaedic referral is advised for consideration of surgical options such as internal fixation¹.

Should initial imaging not demonstrate a fracture but clinical suspicion remains (i.e. pain in the anatomical snuffbox) then the patient should keep the wrist immobilised and have repeat plain film imaging in 5-10 days.

If a fracture is not demonstrated at this time but clinical suspicion remains then secondary imaging modalities should be considered.

References

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