Fracture Of The Scaphoid

INTRODUCTION

- Scaphoid fractures account for almost 75% of all carpal fractures. The usual mechanism is a fall on the hand with wrist extended.
- The critical movement is probably a combination of dorsiflexion and radial deviation, with the force passing between the two rows of carpal bones; the scaphoid, lying partly in each row, fractures across its waist.
- The injury is rare in children and in the elderly.

CLINICAL SIGNIFICANCE

- The blood supply of the scaphoid diminishes proximally. This accounts for the fact that 1% of distal-third fractures, 20% of middle-third fractures and 40% of proximal fractures result in non-union or avascular necrosis of the proximal fragment.

SPECIAL FEATURES

- There may be **slight fullness** in the anatomical snuffbox; precisely **localized tenderness** in the same place is an important diagnostic sign.
- However, examination must also include pressure backwards over the scaphoid tubercle, palpation over the proximal pole and telescoping of the thumb base. If any of these are positive then the suspicion for a scaphoid fracture should be high.

IMAGING

- **X-rays** should offer anteroposterior, lateral and two oblique views; even then, the fracture may not be seen in the first few days after the injury.
- Two weeks later, the break is usually much clearer, due to bone resorption at the fracture site and slight displacement of fragments.
- The crack is usually transverse through the narrowest part of the bone(the waist), but it may be more proximal or more distal.
- Always look for signs of associated carpal displacement.

IMAGING

- A CT scan is more sensitive for diagnosing a scaphoid fracture; it is particularly useful in confirming the alignment of the bone fragments if surgery is planned.
- MRI is the definitive way to confirm or exclude a diagnosis of scaphoid fracture

TREATMENT

- If the x-ray looks normal but the clinical features are suggestive of a fracture, the patient must not be discharged.
- The diagnosis has to be confirmed one way or another. The usual advice is to return for a second x-ray 2 weeks later.
- Meanwhile, the wrist is immobilized in a cast extending from the upper forearm to just short of the metacarpophalangeal joints of the fingers, but incorporating the proximal phalanx of the thumb.
- the wrist is held dorsiflexed and the thumb forwards in the ‘glassholding’ position (the so-called scaphoid plaster).

TREATMENT

- If a fracture is confirmed, treatment will depend on the type of fracture and the degree of displacement.

FRACTURE OF THE SCAPHOID TUBERCLE

usually needs no splintage and should be treated as a wrist sprain; a crepe bandage is applied and movement is encouraged.

UNDISPLACED FRACTURES

Need no reduction and can be treated in plaster; 90% should heal. After 8 weeks, the plaster is removed and the wrist examined clinically and radiologically.

TREATMENT

DISPLACED FRACTURES

- Can be manipulated and treated in plaster, but the outcome is less predictable.
- It is better to reduce the fracture and to fix it with a compression screw

PROXIMAL POLE FRACTURES

- Have such a poor rate of healing that unless the patient is prepared to spend a long time in plaster.
- There is a tendency to fix these with a percutaneous screw.

COMPLICATIONS

1. NON-UNION

- By 2–3 months it may be obvious that the fracture will not unite. If so, bone grafting should be considered. The aim is to reduce the pain from the non-union and to reduce the chance of secondary osteoarthritis.
- Once a fracture of the waist fails to heal, it starts to collapse into a ‘hump back’ deformity.
- Wedge of bone taken from the iliac crest can be carved and placed into the non-union to restore the proper shape and encourage healing.

COMPLICATIONS

2. AVASCULAR NECROSIS

- X-ray examination at 2–3 months may show increased density of the proximal fragment, a pathognomonic sign of avascular necrosis.
- Although spontaneous re-vascularization and union are possible, they take years and meanwhile the wrist collapses and arthritis develops.
- Vascularized bone grafting may be successful.

COMPLICATIONS

3. OSTEOARTHRITIS

- Non-union or avascular necrosis may lead to secondary osteoarthritis of the wrist.
- If the arthritis is confined to the distal pole, excising the radial styloid may help.
- As the arthritis progresses, changes appear in the scaphocapitate joint.
- Proximal row carpectomy, partial wrist fusion and radiocarpal fusion can be done.