



What is a Scaphoid Fracture?

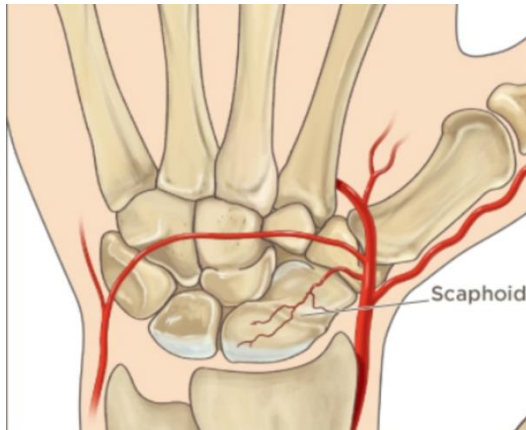
The scaphoid is one of the eight wrist (carpal) bones. A fracture (or break) of the scaphoid bone is commonly missed as there may be little pain or swelling and the initial x-rays are often normal. Scaphoid fractures, especially when not recognised and treated early, are the major cause of early wrist arthritis in young men.

How do Scaphoid Fractures Occur?

Most scaphoid fractures occur from an injury with moderate force such as contact sport, a fall on an outstretched hand or bicycle/motorcycle accident.

How is it Diagnosed?

The diagnosis of a fracture requires a thorough examination by a doctor. The type of injury, the location of any pain and local tenderness over the scaphoid are highly suggestive of a scaphoid fracture. The “anatomical snuffbox” is where the wrist is tender if there is a scaphoid fracture. If plain x-rays are normal and there is a strong suspicion of a fracture, a CT scan may be performed.



A. Scaphoid blood supply



B. The anatomical snuff box

Why do Scaphoid Fractures have a High Risk of not Healing & Avascular Necrosis?

The blood flow to the scaphoid enters the bone further from the wrist and travels back towards the wrist therefore if there is a fracture, the blood flow can be disrupted. This can lead to the fracture not healing (non-union). Scaphoid fractures have a 15% risk of non-union. Avascular necrosis (part of the scaphoid bone dying due to lack of blood flow caused by a fracture) is particularly common for very small scaphoid fractures of the proximal pole (the part of the scaphoid furthest from the blood supply entering the bone). Avascular necrosis and non-union of the scaphoid are serious concerns and can lead to multiple surgeries being required, arthritis of the wrist and eventually the need for fusion of the wrist to relieve pain and weakness.

How is it Treated?

The goal of treatment of any scaphoid fracture is to heal the fracture to relieve pain, return function and prevent arthritis.

Treatment will depend on many factors, particularly the location of the fracture, whether the fracture is displaced (not in normal anatomical position) and how long ago it occurred. All suspected fractures should be immobilised. There is a higher risk of the fracture not healing if a cast has not been applied in the first 2 weeks.



Cast Treatment

Most simple fractures will heal with cast immobilisation for approximately 8 weeks.



Surgical Treatment

Surgical treatment of a scaphoid fracture is usually required for high energy injuries & displaced fractures. The procedure requires putting a screw in the scaphoid to hold the fracture in place while it heals. It is usually performed as a day surgery procedure under general anaesthetic. A guidewire is placed across the fracture through a small incision on the back of the wrist. X-rays are taken to confirm the position and a drill then a screw are passed over the wire to hold the scaphoid in position while it heals.



What is the Recovery?

The recovery for a simple scaphoid fracture treated in a cast or an acute fracture treated with screw fixation is usually approximately 4 months before full movement has returned and unrestricted activity is possible.

More complex scaphoid fractures may take much longer to heal or require more than one procedure to achieve fracture healing (bone union).

What are the Risks and Possible Complications of Scaphoid Fractures?

- Scaphoid fractures have a very high rate of non-union (not healing) ~ 15%. Non-union is more common if the fracture has not been immobilised quickly or the fracture is at the proximal pole where the blood supply is poorer.
- Infection < 1%
- Wrist stiffness
- Screw prominence requiring removal < 1%

What is a Scaphoid Non-Union?

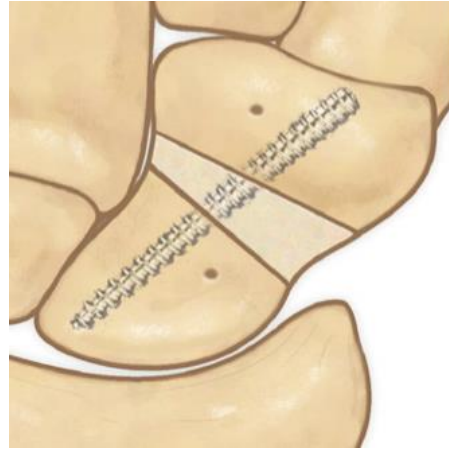
Scaphoid non-union (unhealed fracture) is a much more challenging situation and the outcome of surgery is not as good as treating a fracture soon after it has occurred. Unfortunately, as the symptoms are often not severe, many people do not have the fracture diagnosed until it has become an established non-union. The



x-rays will demonstrate a gap in the fracture site, often sclerosis (whitening) of the fracture edges from rubbing against each other and cystic changes where the joint fluid and movement have eroded part of the scaphoid.

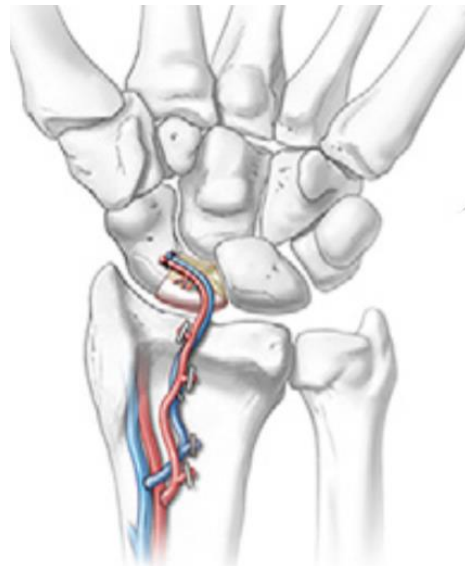
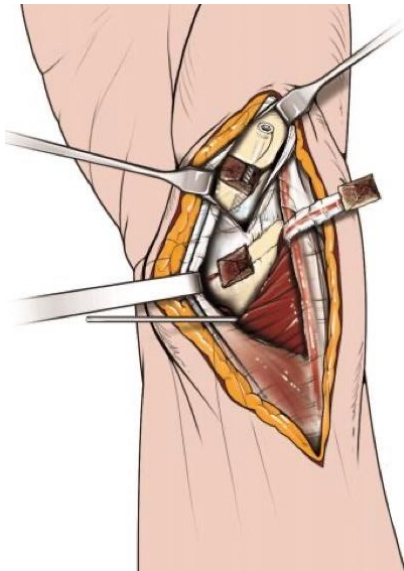
Scaphoid waist non-union

Non-union of the “waist” or mid-section of the scaphoid can often be healed by clearing the fibrous, unhealthy tissue from the fracture site, packing it with a piece of bone-graft taken from the hip and inserting a screw to hold the fracture in position.



Proximal pole non-union

Non-union of small proximal pole have poor blood supply and may need to be treated with a vascularised bone graft, a bone graft moved to the scaphoid with its blood supply. This may be taken from the distal radius where a piece of bone is carefully moved with its blood vessels still attached or from the knee where the blood vessels are then attached to blood vessels in the wrist using microsurgery.



What are the Risks and Possible Complications of Scaphoid Non-Unions?

In addition to the complication of scaphoid fractures, there are other risks for non-unions

- Scaphoid non-unions are difficult to treat with a risk of requiring more than one surgical procedure to achieve fracture union.
- If attempts to reconstruct the scaphoid with bone grafts/vascularised bone grafts fail, a partial or complete wrist fusion may eventually be required to manage pain and weakness.
- Scaphoid non-unions are the most significant cause of wrist arthritis in young men.