

# Kienböck's Disease (Lunate Avascular Necrosis)



## What is Kienböck's Disease?

**Kienböck's disease** is a condition in which the **lunate**, one of the **carpal bones** in the wrist, loses its blood supply. This leads to weakening and collapse of the bone over time, resulting in pain, stiffness, and reduced wrist function.

The lunate sits in the centre of the wrist and plays an important role in wrist movement and stability. When its blood supply is disrupted, the bone may gradually become damaged, leading to progressive wrist problems.

Kienböck's disease often develops gradually but may sometimes follow an injury. Without treatment, the condition may progress and lead to **wrist arthritis**.

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## Causes and Risk Factors

The exact cause of Kienböck's disease is not always clear, and it is considered **multifactorial**.

Factors that may contribute include:

### Reduced Blood Supply

The lunate has a relatively delicate blood supply, making it vulnerable to injury or disruption.

## Previous Injury

A fall or repeated trauma to the wrist may damage the blood supply to the lunate.

## Ulnar Variance

Some individuals have a **shorter ulna** relative to the radius (**negative ulnar variance**), which may increase pressure on the lunate and contribute to the development of the condition.

## Repetitive Wrist Loading

Occupations or activities involving repetitive wrist stress may increase the risk.

## Age

Kienböck's disease most commonly affects adults between **20 and 40 years of age**, although it can occur at other ages.

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## Symptoms

Symptoms of Kienböck's disease often develop gradually but may worsen over time.

Common signs include:

- **Pain** in the centre or back of the wrist
- **Swelling** around the wrist
- **Stiffness** and reduced wrist movement
- **Weakness** when gripping objects
- **Tenderness** over the centre of the wrist
- **Reduced grip strength**
- Difficulty performing tasks that require wrist movement

In more advanced cases, symptoms may include:

- Persistent pain even at rest
- Progressive loss of wrist movement
- Worsening grip strength
- Development of **wrist arthritis**

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## Diagnosis & Investigation

Kienböck's disease is diagnosed **based on clinical history and physical examination**, supported by imaging.

During your visit:

- The surgeon will ask about **wrist pain**, duration of symptoms, and any previous injuries.
- A **physical examination** will assess tenderness, movement, grip strength, and wrist function.

### Imaging

- **X-rays** are usually performed initially and may show changes in the lunate bone.
- **MRI scans** are particularly useful in detecting early disease before changes are visible on X-rays and in assessing blood supply to the lunate.
- **CT scans** may be used to assess bone structure and plan surgical treatment.

The condition is often classified into **stages**, which help guide treatment decisions.

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## Non-Surgical Treatment

Early-stage Kienböck's disease may sometimes be treated without surgery.

Non-surgical treatment options may include:

- **Splinting or casting**, to reduce stress on the lunate
- **Activity modification**, avoiding heavy or repetitive wrist loading
- **Pain relief medication**, such as paracetamol or anti-inflammatory medication
- **Hand therapy**, to maintain movement and strength
- Regular **monitoring with imaging**

These treatments aim to reduce symptoms and slow progression of the disease.

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## Surgical Treatment

Surgical treatment may be recommended depending on the **stage of the disease**, symptoms, and wrist function.

Common surgical options include:

### Joint Levelling Procedures

These procedures aim to reduce pressure on the lunate.

Examples include:

- **Radial shortening osteotomy**, where a small section of the radius is removed
- **Ulnar lengthening osteotomy**, in selected cases

These procedures are often used in earlier stages of the disease, particularly when **negative ulnar variance** is present.

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## Revascularisation Procedures

In some cases, surgery may be performed to improve blood supply to the lunate using a **vascularised bone graft**. This involves transferring bone with its own blood supply to support healing.

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## Proximal Row Carpectomy (PRC)

This procedure involves removing several carpal bones, including the lunate, to reduce pain and preserve wrist movement. It is often used in more advanced stages of the disease.

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## Partial Wrist Fusion

This involves fusing selected carpal bones to stabilise the wrist while maintaining some movement.

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## Total Wrist Fusion

In severe cases, particularly when arthritis has developed, total wrist fusion may be performed to relieve pain. This procedure eliminates wrist movement but provides reliable pain relief.

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## Recovery

Recovery following treatment depends on the stage of the disease and the procedure performed.

- Immobilisation is usually required following surgery.
- **Hand therapy** is usually recommended to restore strength and function.
- Recovery may be gradual, particularly following reconstructive procedures.

Recovery times vary depending on treatment:

- **Joint levelling procedures** typically require a period of bone healing before full activity resumes.
- **Revascularisation procedures** require careful rehabilitation.

- **Proximal row carpectomy** and **partial wrist fusion** require structured rehabilitation.
  - **Total wrist fusion** requires longer immobilisation and gradual return to activities.
  - Full recovery may take **several months**.
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## Risks

Although treatment is usually successful, complications can occur, including:

- Persistent pain
- Stiffness
- Reduced wrist movement
- Progression of disease
- Development of arthritis
- Non-union following bone procedures
- Infection (after surgery)
- Nerve injury

Early diagnosis improves outcomes.

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## When to See One of Our Hand Specialists

You should consult a hand specialist if:

- You have **persistent wrist pain**, particularly in the centre of the wrist
- You notice **reduced wrist movement**
- Your grip strength is decreasing
- Symptoms are not improving with rest
- You have ongoing wrist pain following an injury

**If you have sustained a severe wrist injury, have significant swelling or deformity, or have an open wound, this should be assessed urgently in the Emergency Department (A&E).**

**Book an appointment:**

