

# Carpal Tunnel Syndrome



## What is Carpal Tunnel Syndrome?

**Carpal tunnel syndrome** is a condition that occurs when the **median nerve** becomes compressed as it passes through the **carpal tunnel** at the wrist.

The **carpal tunnel** is a narrow space at the wrist formed by the **carpal bones** and a strong ligament called the **transverse carpal ligament**. The median nerve passes through this tunnel along with tendons that help bend the fingers and thumb.

When pressure increases within the carpal tunnel, the median nerve becomes compressed, leading to symptoms such as **numbness, tingling, pain, and weakness** in the hand.

Carpal tunnel syndrome is a common condition and may affect one or both hands. Symptoms often develop gradually and may worsen over time if untreated.

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## Causes and Risk Factors

Carpal tunnel syndrome is **multifactorial**, meaning that several factors may contribute to increased pressure within the carpal tunnel.

Common contributing factors include:

### Age

While carpal tunnel syndrome can occur at any age, it becomes more common with increasing age.

### Repetitive Hand Use

Activities involving repeated wrist or finger movements may increase pressure within the carpal tunnel.

Examples include:

- Repetitive manual work
- Use of vibrating tools
- Frequent gripping activities
- Prolonged keyboard or tool use

### Medical Conditions

Certain conditions are associated with an increased risk, including:

- **Diabetes**
- **Rheumatoid arthritis**
- **Thyroid disorders**
- Fluid retention conditions

### Pregnancy

Fluid retention during pregnancy may increase pressure within the carpal tunnel. Symptoms often improve after delivery.

### Previous Injury

Previous wrist fractures or injuries may alter wrist anatomy and increase the risk of nerve compression.

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## Symptoms

Symptoms of carpal tunnel syndrome often develop gradually and may worsen over time.

Common signs include:

- **Numbness or tingling** in the thumb, index finger, middle finger, and part of the ring finger
- Symptoms that are often worse **at night**
- **Pain** in the hand or wrist
- **Weakness** when gripping objects
- Difficulty performing fine tasks, such as fastening buttons
- A tendency to **drop objects**
- Symptoms that may improve temporarily by shaking the hand

In more advanced cases, symptoms may include:

- Persistent numbness
- Loss of strength in the thumb
- **Muscle wasting** at the base of the thumb (thenar wasting)

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## Diagnosis & Investigation

Carpal tunnel syndrome is diagnosed **based on clinical history and physical examination**.

During your visit:

- The surgeon will ask about **the pattern of symptoms**, including when they occur and which fingers are affected.
- A **physical examination** will assess sensation, strength, and signs of nerve compression.

Specific tests may include:

- **Tinel's test**, where tapping over the median nerve reproduces symptoms
- **Phalen's test**, where bending the wrist may reproduce symptoms

### Imaging and Tests

- **Nerve conduction studies** are commonly used to confirm the diagnosis and assess the severity of nerve compression.
  - **Ultrasound** may be used in selected cases.
  - Additional imaging is **rarely required**.
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## Non-Surgical Treatment

Non-surgical treatment may be effective, particularly in early or mild cases.

Non-surgical options may include:

### Splinting

A wrist splint worn at night helps keep the wrist in a neutral position, reducing pressure on the median nerve.

### Activity Modification

Avoiding repetitive or prolonged wrist movements may help reduce symptoms.

### Pain Relief Medication

Medications such as paracetamol or anti-inflammatory medication may help relieve discomfort.

### Corticosteroid Injection

A **corticosteroid injection** into the carpal tunnel may reduce inflammation and relieve symptoms. This is commonly performed in the clinic and may provide temporary or long-term relief in selected cases.

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## Surgical Treatment

Surgery may be recommended if symptoms are severe, progressive, or do not improve with non-surgical treatment.

### Carpal Tunnel Release Surgery

This procedure involves releasing the **transverse carpal ligament** to reduce pressure on the median nerve.

Key points about the procedure:

- Usually performed as a **day-case procedure**
- Typically carried out under **local anaesthetic**
- A **small incision** is made in the palm
- The transverse carpal ligament is carefully divided
- This creates more space within the carpal tunnel and relieves pressure on the nerve

Carpal tunnel release surgery is generally very effective in relieving symptoms.

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## Recovery

Recovery following carpal tunnel treatment depends on the severity of symptoms and treatment performed.

- Most patients experience improvement in symptoms following surgery.
- **Hand therapy** is not always required but may be recommended in selected cases.
- Some tenderness around the scar is common in the early stages.

Recovery times vary depending on treatment:

- Following **corticosteroid injection**, symptoms may improve within **days to weeks**.
- After **carpal tunnel release surgery**, light activities can usually resume within **a few days**.
- Most patients regain improved hand function once the wound has healed.
- Full recovery of strength and comfort may take **several weeks**, particularly in more severe cases.

Recovery of sensation may take longer if nerve compression has been present for an extended period.

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## Risks

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

- Infection
- Scar tenderness
- Persistent numbness or weakness
- Incomplete relief of symptoms
- Injury to nearby nerves or blood vessels (rare)
- Recurrence of symptoms (uncommon)

Careful surgical technique helps reduce these risks.

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## When to See One of Our Hand Specialists

You should consult a hand specialist if:

- You experience **persistent numbness or tingling** in the hand
- Symptoms disturb your sleep
- You notice **weakness** in your hand
- You are dropping objects more frequently

- Symptoms are not improving with splinting or rest
- You develop **muscle wasting** at the base of the thumb

**If you develop sudden severe weakness, significant hand dysfunction, or symptoms following trauma, this should be assessed urgently in the Emergency Department (A&E).**

**Book an appointment:**

