

Understanding a Cervical Spine Fracture

Treatment, Recovery and Rehabilitation



A cervical spine fracture is a break affecting one or more of the seven vertebrae in the neck. These injuries range from stable fractures that heal with immobilisation to complex unstable injuries that may threaten the spinal cord and require urgent surgery. Cervical spine fractures most commonly result from high-energy trauma such as road traffic collisions, falls or sporting injuries, although older adults may sustain fractures following relatively minor falls due to osteoporosis.

This guide explains how cervical spine fractures are diagnosed and treated, the rehabilitation process, expected recovery and the factors that influence long-term functional outcomes.

Key message — early recognition, appropriate spinal protection and carefully planned rehabilitation are the most important factors influencing recovery following a cervical spine fracture. Prompt assessment and progressive rehabilitation help maximise recovery while reducing the risk of neurological complications, long-term pain and functional disability.

Injury at a Glance

Injury	Cervical spine fracture
Common causes	Road traffic collisions, falls from height, sporting injuries, diving accidents and falls in older adults
Typical symptoms	Neck pain, reduced movement, muscle spasm, tenderness, numbness, weakness or neurological symptoms
Diagnosis	Clinical assessment with CT scanning; MRI when ligament, spinal cord or nerve injury is suspected
Treatment options	Cervical collar or brace, pain management, surgical stabilisation where indicated and rehabilitation
Rehabilitation	Progressive restoration of movement, strength, balance, function and return to everyday activities
Expected recovery	Bone healing typically occurs within 8–12 weeks, although functional recovery may continue for 12 months or longer depending on injury severity
Possible complications	Neck stiffness, chronic pain, neurological impairment, non-union, instability, post-traumatic arthritis and spinal cord injury



Understanding the Injury

The cervical spine consists of seven vertebrae that support the head, protect the spinal cord and allow movement in multiple directions. A fracture occurs when one or more of these bones break following forces that exceed their strength. Some fractures remain stable because surrounding ligaments continue to support the spine, whereas others are unstable and may place the spinal cord or spinal nerves at risk.

Because the spinal cord passes through the cervical vertebrae, injuries affecting the neck require urgent assessment. Even relatively minor movements after an unstable fracture can increase neurological injury. Initial treatment therefore focuses on protecting the neck until imaging confirms whether the spine is stable.

Once the fracture has been stabilised, rehabilitation aims to restore neck movement, muscle strength, balance, confidence and overall function while protecting healing tissues.

Symptoms and Diagnosis

Symptoms commonly include severe neck pain, muscle spasm, tenderness, reduced neck movement and difficulty supporting the head. Some people also experience pain radiating into the shoulders or arms, tingling, numbness or weakness if spinal nerves are affected. More severe injuries may produce difficulty walking, loss of coordination or changes in bladder or bowel function, suggesting spinal cord involvement.

Diagnosis begins with emergency clinical assessment and cervical spine immobilisation where appropriate. CT scanning is the primary investigation for identifying cervical fractures, while MRI is often performed when ligament injury, spinal cord compression or neurological symptoms are suspected. The stability of the fracture largely determines treatment and rehabilitation planning.

Treatment Options

Treatment depends on fracture stability, spinal alignment and the presence of neurological injury. Stable fractures are commonly managed using a rigid cervical collar or other external immobilisation while the bone heals. Pain relief, careful activity modification and regular clinical review support recovery during this period.

Unstable fractures, fractures causing spinal cord compression or injuries with significant displacement frequently require surgical stabilisation using internal fixation to restore alignment and protect neurological structures.

Regardless of treatment pathway, rehabilitation begins early with safe mobilisation, breathing exercises, maintenance of shoulder and upper limb movement and education regarding posture, collar use and activity restrictions. Treatment decisions are guided by achieving the safest recovery with the lowest risk of long-term disability.

Rehabilitation and Recovery

Rehabilitation progresses gradually according to fracture healing, spinal stability and neurological recovery. During immobilisation, maintaining movement of the shoulders, arms and lower limbs helps minimise stiffness, muscle weakness and loss of physical conditioning. Walking and general mobility are encouraged where medically appropriate.

Following confirmation of fracture healing or surgical stability, physiotherapy focuses on restoring comfortable neck movement, improving deep cervical muscle control, rebuilding upper body strength and correcting posture. Balance, coordination and functional movement are particularly important following more severe injuries or periods of prolonged immobilisation.

Occupational therapy may assist individuals who experience difficulty returning to self-care, work or driving. Those with neurological injury may require specialist multidisciplinary rehabilitation involving spinal rehabilitation teams, occupational therapists, psychologists and vocational rehabilitation professionals.

Return to work depends upon occupational demands. Sedentary roles may resume earlier than physically demanding occupations requiring lifting, prolonged driving or overhead activities. Return to sport should only occur after specialist assessment confirms adequate healing, movement, strength and spinal stability.

Recovery is rarely entirely time-dependent. Progress should be guided by clinical assessment, symptoms and functional improvement rather than fixed timescales alone.

Recovery Timeline

First week

Emergency assessment, cervical spine protection, pain management and neurological monitoring

2 to 6 weeks

Continued immobilisation where required, maintaining mobility of unaffected joints, walking and general conditioning

6 to 12 weeks

Progressive reduction in immobilisation where appropriate, restoration of neck movement and gentle strengthening

3 to 6 months

Improving strength, endurance, posture and return to most everyday activities and work

6 to 12 months

Ongoing functional recovery, increasing activity levels and return to recreational activities where appropriate

12 months+

Long-term outcome assessment; some individuals continue improving, particularly following neurological injury

Factors Affecting Recovery

Recovery varies considerably between individuals and is influenced by fracture severity, spinal stability, associated spinal cord or nerve injury, age, bone quality and general health. Smoking, osteoporosis and other medical conditions may delay bone healing, while adherence to rehabilitation and gradual return to activity generally improve long-term outcomes. Psychological wellbeing, confidence and occupational demands also influence functional recovery following cervical spine injury.

Possible Complications and Red Flags

Possible complications

- Persistent neck stiffness and reduced movement
- Chronic neck pain
- Delayed union or non-union
- Spinal instability
- Nerve root irritation or persistent neurological symptoms
- Spinal cord injury with ongoing neurological impairment
- Post-traumatic cervical arthritis

Seek urgent medical advice if...

- Pain suddenly becomes significantly worse after initial improvement.
- The fingers become cold, pale or blue.
- Increasing numbness or weakness develops.
- Swelling rapidly worsens or the cast becomes excessively tight.
- Surgical wounds become increasingly red, swollen or discharge fluid.
- Fever develops following surgery.

Frequently Asked Questions

When can I drive?

Driving should only resume once your clinician confirms that your neck movement is sufficient, immobilisation is no longer required where applicable, and you can safely control the vehicle while meeting your insurer's requirements.

Will I always need surgery?

No. Many stable cervical spine fractures heal successfully with immobilisation alone. Surgery is generally reserved for unstable fractures, significant displacement or neurological compromise.

Will I need physiotherapy?

Most people benefit from physiotherapy once the fracture is stable enough to begin restoring movement, strength, posture and normal function safely.

When can I return to work?

This depends on the severity of the injury and your occupation. Office-based work often resumes earlier than manual or safety-critical roles.



Will my neck ever feel completely normal again?

Many people regain excellent function, although some experience mild long-term stiffness or intermittent discomfort, particularly following more severe injuries.

Can I return to sport?

Most individuals can return gradually once fracture healing is confirmed and sufficient movement, strength and spinal stability have been restored under specialist guidance.

Medicess Clinical Insight

Recovery following a cervical spine fracture involves considerably more than successful bone healing. Restoring normal movement, posture, muscular endurance, confidence and functional independence are equally important components of rehabilitation. Individual recovery varies according to fracture stability, neurological involvement and overall health, making rehabilitation programmes highly personalised. Early recognition of delayed recovery or emerging neurological symptoms allows timely reassessment and can significantly improve long-term functional outcomes.

References and Further Reading

- National Institute for Health and Care Excellence (NICE): Spinal injury: assessment and initial management (NG41).
- National Institute for Health and Care Excellence (NICE): Major trauma: assessment and initial management (NG39).
- British Orthopaedic Association Standards for Trauma (BOAST): Management of Spinal Trauma.
- British Association of Spine Surgeons (BASS): Standards for cervical spine injury management.
- AO Spine Clinical Practice Guidelines for Cervical Spine Trauma.
- Cochrane Database of Systematic Reviews: Rehabilitation following spinal injuries.
- World Federation of Neurosurgical Societies (WFNS) Spine Committee Recommendations for Cervical Spine Trauma.
- British Society of Rehabilitation Medicine (BSRM): Standards for Specialist Rehabilitation Services

Disclaimer

This guide is intended for general educational purposes only and does not constitute individual medical advice. Treatment, rehabilitation and recovery vary between individuals. Readers should follow the advice of their treating healthcare professional.