CONDITION

Broken bone

Learn how broken bones happen, what symptoms to watch for, how fractures are diagnosed and treated, and when an injury needs urgent care.

WHAT IT IS
Crack or complete break in a bone

BODY SYSTEM
Bones and joints

MAIN SYMPTOMS
Pain, swelling or bruising, tenderness, difficulty moving

WHAT CAUSES IT
Injury, repeated stress or weakened bone

HOW IT IS DIAGNOSED
X-rays, CT or MRI

MAIN TREATMENT
Immobilization, reduction, surgery and rehabilitation

CAN IT BE CURED?
Yes, most fractures heal with treatment

IS IT AN EMERGENCY?
Sometimes, bone visible through a wound

LONG-TERM OUTLOOK
Most heal, with possible delayed union, nonunion or malunion

Overview

A broken bone, also called a fracture, is a crack or complete break in a bone. Fractures can result from a fall, collision, direct blow, twisting injury, or repeated stress. A bone weakened by osteoporosis or another medical condition may break with much less force.

Fractures range from small, stable cracks to severe injuries in which the bone moves out of position or breaks through the skin. The type and location of the fracture affect how it is treated and how long recovery may take.

Doctors may describe a fracture using several terms:

Bones can heal by producing new tissue around the break. Correct alignment and enough stability are important for this process. Some fractures heal with a cast or brace, while others

need surgery.

- A closed fracture does not break the skin.
- An open fracture creates a wound that connects with the broken bone. This requires urgent care because of the risk of infection.
- A displaced fracture means the bone pieces have moved out of their usual position.
- A nondisplaced fracture means the pieces remain lined up.
- A comminuted fracture means the bone has broken into several pieces.
- A stress fracture is a small crack caused by repeated loading rather than one major injury.
- A growth plate fracture affects an area near the end of a growing child's bone.

Symptoms

Pain is the most common symptom. It often begins at the time of injury and becomes worse with movement, pressure, or attempts to use the affected area.

Other possible symptoms include:

Symptoms are not always severe. Some stress fractures and fractures in weakened bone cause gradual pain without a clear injury. A person may also be able to move a limb or walk despite having a fracture. Being able to use the injured area does not rule out a break.

Seek emergency care for a suspected fracture with any of the following:

Until help arrives, avoid straightening a deformed limb or pushing exposed bone back into place. Keep the person still if a neck or back injury is possible. Cover an open wound with a clean dressing if this can be done safely.

- Swelling or bruising
- Tenderness over the bone
- Difficulty moving a nearby joint
- Trouble standing, walking, lifting, or gripping
- A limb or finger that looks bent, shortened, or out of place
- A grinding sensation or sound at the time of injury
- A wound near the suspected break
- Bone visible through a wound
- Heavy bleeding

- A limb that is severely deformed
- Skin beyond the injury that is pale, blue, cold, or numb
- Loss of movement below the injury
- Severe or rapidly increasing pain and tight swelling
- A suspected fracture of the neck, back, pelvis, or skull
- Breathing difficulty, confusion, fainting, or other signs of major trauma

Causes and risk factors

Many fractures happen when a force is greater than the bone can absorb. Common causes include falls, sports injuries, motor vehicle crashes, workplace accidents, and direct blows.

Twisting can also cause a fracture, especially in the ankle or lower leg. Repeated impact from running, marching, or jumping may lead to a stress fracture. A sudden increase in training intensity can raise this risk.

Some conditions reduce bone strength. Osteoporosis causes bones to become less dense and more fragile. It is more common with aging, but younger people can also be affected. Long-term use of certain medicines, including corticosteroids like prednisone or hydrocortisone , may contribute to bone loss. Nutrition problems, low body weight, smoking, heavy alcohol use, and some hormone or digestive disorders may also affect bone health.

Less commonly, a tumor, infection, or inherited bone disorder can weaken a bone. A break through abnormal or weakened bone is sometimes called a pathologic fracture . This term describes how the fracture happened; it does not identify the underlying cause.

Children's bones are more flexible than adult bones. Some childhood fractures bend or crack without breaking completely. Because growth plates help bones lengthen, an injury involving one may need careful follow-up.

Previous fractures, balance problems, poor vision, muscle weakness, unsafe surroundings, and medicines that cause dizziness can increase the chance of falling. A fracture after a minor fall in an older adult may be a reason to assess bone strength and future fracture risk.

Diagnosis

A healthcare professional will ask how the injury occurred, where it hurts, and whether there is numbness or weakness. They will examine the area for swelling, wounds, tenderness,

deformity, and reduced movement.

The examination also checks circulation and nerve function. This may include feeling for a pulse, checking skin color and temperature, testing sensation, and asking the person to move fingers or toes.

X-rays identify many fractures and show whether the bone pieces have moved. Images are usually taken from more than one angle. Joints above and below the painful area may also need assessment.

Some fractures are difficult to see on an early X-ray. This can happen with stress fractures and certain wrist, hip, rib, and spinal fractures. If suspicion remains, the clinician may recommend repeat X-rays or another imaging test.

A computed tomography, or CT , scan provides detailed cross-sectional images. It may help with complex fractures or surgical planning. Magnetic resonance imaging, or MRI , can show small fractures and injuries to bone marrow, ligaments, tendons, or other soft tissues.

Blood tests are not needed for every fracture. They may be used when a medical condition could have weakened the bone or when surgery is planned.

Treatment and management

Immediate care focuses on protecting the injury, controlling bleeding, and checking blood flow and nerve function. Keeping the injured area still can reduce pain and prevent further damage. Ice wrapped in cloth may help with swelling, but it should not be placed directly on the skin.

Treatment depends on the bone involved, the fracture pattern, the person's age and health, and whether the skin or nearby nerves and blood vessels are injured.

A splint is often used first because it allows room for swelling. A cast, boot, brace, or sling may later hold the bone in position while it heals. Instructions about weight-bearing are important. Some fractures can tolerate early movement or partial weight, while others must be protected.

If the bone pieces are out of position, a clinician may perform a reduction , meaning the pieces are moved back into alignment. Pain relief, sedation, or anesthesia may be used depending on the injury and procedure.

Surgery may be needed when a fracture is unstable, enters a joint, damages nearby structures, or cannot be held in a good position with a cast. Surgeons may use plates, screws, rods, pins, or an external frame to stabilize the bone. Open fractures usually need prompt antibiotics and surgical cleaning because bacteria can enter through the wound.

Pain management may include nonprescription or prescription medicines, depending on the

injury. A clinician or pharmacist can help a patient choose an appropriate option based on other medicines, medical conditions, allergies, and surgical plans.

Good cast or splint care helps prevent skin and circulation problems:

Rehabilitation is often part of recovery. Guided exercises can restore joint movement, muscle strength, balance, and normal use of the limb. Returning to work, driving, or sports should be based on healing and function rather than pain alone.

Adequate nutrition supports bone repair. Protein, calcium, vitamin D, and overall energy intake are important, but supplements are not automatically necessary. Smoking can slow bone healing, so support with quitting may improve recovery.

- Keep it dry unless told that the material is waterproof.
- Do not place objects, powders, or creams inside it.
- Follow instructions about elevation, movement, and weight-bearing.
- Contact the care team if it becomes cracked, loose, soaked, or too tight.

Complications

Most fractures heal, but complications can occur. Early recognition may improve the outcome.

An open fracture can develop a deep bone infection called osteomyelitis . Infection can also occur after surgery. Warning signs may include increasing redness, warmth, drainage, fever, or pain that worsens after initially improving.

Swelling or displaced bone can injure nerves or blood vessels. New numbness, weakness, color change, or cold skin below the injury needs urgent assessment.

Compartment syndrome occurs when pressure rises within enclosed muscle tissue and reduces blood flow. Severe pain that seems out of proportion to the injury, pain with gentle stretching, increasing tightness, numbness, or weakness can be warning signs. This is an emergency.

A fracture may heal slowly, fail to join, or heal in the wrong position. These problems are called delayed union, nonunion, and malunion. Risk can be affected by the fracture's severity, blood supply, stability, infection, smoking, and certain medical conditions.

Fractures extending into a joint may increase the risk of later arthritis. Long periods of limited movement can contribute to stiffness, muscle loss, pressure injuries, or blood clots. Hip and pelvic fractures can have broader effects on mobility and independence, especially in older adults.

In children, some growth plate fractures can affect future bone growth. Regular monitoring may be needed even after pain has resolved.

Follow up

Follow-up appointments allow the care team to check alignment, skin condition, circulation, movement, and healing. Repeat imaging may be needed. Keep these visits even if the injury feels better, because pain may decrease before the bone is strong enough for unrestricted activity.

Ask when it is safe to bear weight, return to work or school, drive, and resume exercise. Follow instructions about cast removal and rehabilitation. Removing or adjusting a cast without professional guidance can disturb healing.

Contact the treating clinician promptly for increasing pain or swelling, a cast that feels too tight, persistent numbness, new weakness, skin irritation, fever, wound drainage, or pain that is not improving as expected.

Seek emergency care for severe or rapidly worsening pain, a cold or discolored hand or foot, loss of sensation or movement, uncontrolled bleeding, breathing difficulty, or signs of compartment syndrome.

After a fracture caused by a minor fall or everyday movement, especially in midlife or later life, ask whether evaluation for osteoporosis is appropriate. Fall prevention, vision care, medication review, strength training, and home safety changes may help reduce future injuries.

Sources

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