

Bone fractures - treatment options

A fracture is a break in the bone. It can be either complete or incomplete. Following diagnosis of the fracture, the treatment is to realign the bone ends and immobilise the fracture by external splints or internal fixing of the bone. The aim of treatment is to assist the bone to recover fully in strength, movement and sensitivity. Some complicated fractures may need surgery or surgical traction (or both) for best results.

Causes of fractures of healthy bones include incidents such as sporting injuries, vehicle accidents and falls. As we get older, our bones usually become more brittle. Osteoporosis and some types of cancer can also cause the bones to fracture more easily.

Problems associated with bone fractures

Some of the problems associated with fractures include:

- Blood loss
- Injury to organs, tissues or surrounding structures (such as blood vessels)
- Stunted growth of the bone, if a child's long bone breaks close to the joint.

Medical issues to consider

Treatment to set a broken bone depends on the location and severity of the injury. Some of the different types of fracture include:

- **Closed (simple) fracture** – the skin remains intact and there is little damage to surrounding tissue.
- **Open (compound) fracture** – the broken bone protrudes through the skin or there is a wound that leads to the fracture site.
- **Complicated fracture** – in addition to the fracture, there is injury to the surrounding structures. There may be damage to the veins, arteries or nerves and there may also be injury to the lining of the bone (the periosteum).

First Aid principles with fractures

Good first aid care of fractures is always important. Abnormal movement of the broken bones can increase pain and bleeding and cause damage of the tissues around the injury. This can lead to complications in the repair and healing of the injury later on.

First aid for fractures is all about immobilising (limiting movement) the injury. Splints can be purpose made or makeshift but will be effective if the injury is immobilised above and below the break to stop movement. Any external bleeding should be controlled. Complicated breaks where a limb is very deformed may need to be realigned before splinting and this is best done only by paramedics or medical staff.

Other fractures of the body such as skull, ribs and the pelvis are all serious and should be managed by paramedics.

Operation procedure

Plaster of Paris is one of the most common methods used to immobilise a limb. This cast is made from a preparation of gypsum that sets hard when water is added. Operation procedures depend on the location and severity of the fracture, for example:

- **Closed or simple fractures** -- the two ends of the broken bone are lined up and held in place. The limb is thoroughly bandaged then the wet plaster is applied. Sometimes, once the plaster is dry, the cast is split into two and the two halves are then re-banded on the outside. This allows for any swelling that may occur.
- **Open or compound fractures** – these have to be thoroughly cleansed in the operating room to remove debris prior to being set because a broken bone exposed to the open air is at increased risk of infection.
- **Long bones** – long bones, like the bone of the thigh (femur), are difficult to keep aligned and, in adults, are generally treated by internal nailing. Children may need traction for a couple of days prior to setting in a cast. Once the two ends of bone start to show signs of healing, the leg and hip joint are immobilised in plaster of Paris. In other cases, pins are inserted above and below the fracture and secured to an external frame or 'fixator' under a general anaesthetic.

Immediately after the operation

Your doctor checks that you have full feeling in the limb. For example, if you have a broken arm in plaster, you are asked to wiggle your fingers. Your limb is also checked for tingling, pallor or coolness. The injured part is immobilised as much as possible in the first few days (with the aids of splints, if necessary) in order to reduce pain and displacement of the fracture.

The nursing staff will offer you adequate pain relief medication. They will determine the difference between the pain of your fracture and any pain that could be caused by the splint, traction, plaster cast, poor alignment of the limb or swelling of the limb following the fracture.

Possible complications

Some of the possible complications may include:

- Poor alignment of the limb
- Infection
- Incorrectly fitted plaster cast (for example, too tight or too loose).

Taking care of yourself at home

Be guided by your doctor but general suggestions include:

- Until the cast has properly set, avoid direct heat such as hot water bottles.
- Rest the limb as much as possible to promote healing.
- Use the techniques shown to you by nursing staff to walk or manage day-to-day activities. For example, you risk further injury if you use crutches incorrectly.
- Avoid any lifting or driving until the fracture has healed.
- If you experience an itch, don't poke anything between the cast and your limb (such as a coat hanger or pencil). Instead, use a hairdryer to blow cool air into the cast.
- Avoid getting your cast wet, as wet plaster becomes soft and does not provide the necessary support. Wet plaster can also cause skin irritation. When showering, wrap the cast in a plastic bag and tape it directly to the skin, keeping the area water-tight.
- See your doctor immediately if you experience swelling, blueness or loss of movement of the fingers or toes, pins and needles, numbness or increased pain.

Long-term outlook

In most cases, the cast can be removed after a few weeks but the limb must be handled with care for at least the next month or so. Leg fractures will take several months to heal. The temporary bone (callus) is still being replaced by real bone and is susceptible to injury. Atrophied (wasted or decreased in size) muscles may need rehabilitation including strengthening exercises to recover from their immobilisation.

Other forms of treatment

Some bones, such as the collarbone or bones of the toes, are immobilised with a sling or splint (instead of plastered) and rested for about two months.

Where to get help

- Your doctor.

Things to remember

- A fracture is a break in the bone.
- Some complicated fractures may need surgery and surgical traction for best results.
- In most cases, the cast can be removed after a few weeks but the limb must be handled with care for at least the next month or so.

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