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Fractures and Fracture Healing

By Shaleen Bhagat

Our human body has 206 bones that all work together to support our body structure and protect our internal organs. Despite being one of the strongest materials created by nature, bones--if excessive force is placed on them--will break. Broken bones, also known as fractures, are among the most common orthopedic problem; most people will fracture at least one bone during their lifetime. There are many reasons why a fracture occurs, including the amount of force that is placed on the bone, the strength of the bone, and the person's age and general health.

The most common cause of fractures are traumas such as a fall or car accident; however, especially in elderly men and women, fractures can occur where the bone has been weakened by an underlying disease process such as osteoporosis or cancer. The most common bones to fracture include the wrist, ankle, and hip, with hip fractures being most common in the elderly.

The symptoms of a bone fracture include pain that is sharp and localized, swelling, bruising, and deformity. Typically, someone who has just fractured a bone will be reluctant to move the injured area. Occasionally people describe a pop or a snap sound at the time of the injury. If a fracture is suspected, an x-ray is usually used to diagnose it; however CT and MRI scans may be used for further investigation if the fracture is complex.

Fractures are grouped into two basic classifications: open and closed. In closed fractures, the bone breaks, but the skin remains intact and there is little damage to the surrounding tissue. On the other hand, in an open fracture, the broken bone protrudes through the skin resulting in more damage to the surrounding tissue and risk of infection. With both types, the broken bones will heal by themselves if they are aligned properly. When someone goes to the hospital with a fracture, doctors will attempt to realign the bones so proper fracture healing can occur. If successful, they will then immobilize the body part with a cast or a splint to allow the healing process to start. If a stable alignment cannot be achieved by the doctor, then surgery is necessary. Metal rods, screws, and plates can be used to realign the bones and hold the fracture together as it heals.

Bones are natural healers. Within a few days after a break, bones will produce many new cells and tiny blood vessels that will help to rebuild the bone. Fragments of

broken bone are removed from the site by specialized cells (osteoclasts) that dissolve non-living bone. Then bone building cells (osteoblasts) produce new repaired bone, called the *soft callus*, which bonds the ends of the bones together; this is usually completed within three weeks. When first produced, the callus has no calcium, it is soft and rubbery, but within six to 12 weeks, the callus calcifies and becomes much stiffer and as a result bone strength increases. Once fully healed, the new bone is usually thicker and may even be stronger than the original bone. It is unlikely that the bone will ever break again in the same place due to the strength of the repair.

Once the fracture has healed and the cast is removed, most people find that the body part looks and feels different; it is often stiff, muscles are weaker and appear smaller or atrophied. This is quite normal after casting and physiotherapy is an essential component to addressing some of these issues. If you break a bone, a good rehabilitation program will help you regain normal joint movements, full muscle flexibility and power, and ensure good bone strength so that you can return to your normal activities. Different combinations of active exercises, passive accessory movements and stretches, strengthening, and functional exercises can help achieve these results. Your physiotherapist also works closely with your doctor/surgeon to determine the best treatment plan for your fracture, which will ensure rapid healing and a full recovery.

For further information on this topic please contact the Fawzia Sultan Rehabilitation Institute (FSRI) in Hawally at 264-2862, or check out our website at www.rehabinstitutekuwait.com

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