

Rapid Recovery Hyperbarics

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Non-Union Fracture

When a bone is broken, it is referred to as a fracture. There are five basic types of fractures:

1. **Greenstick** - the break does not go all the way through the bone and occurs more often in children rather than adults.
2. **Simple** - there is a clean break of the bone with little damage to surrounding tissues.
3. **Comminuted** - or closed fracture is where the bone is broken in more than two places and healing is usually slow because the blood supply is interrupted but the skin remains intact.
4. **Compound** - the broken end of the bone pierces the overlying skin and can cause considerable tissue damage. This type of fracture carries a high risk of infection and associated complications such as osteomyelitis.
5. **Pathological** - where a bone is already weakened from disease and normal stresses may cause a spontaneous fracture to occur.

Most simple bone fractures can heal itself with adequate rest, immobilization and time. When bone fails to heal it is called a non-union fracture and for this condition, HBOT could be used. It stimulates the production of collagen, a tough, fibrous material that fills in the space between the two broken ends of the bone. Under hyperbaric conditions, new capillaries are stimulated to grow bringing in more oxygen and nutrients to the area. In turn the body produces more osteoblasts and osteoclasts which cause new bone growth and helps to take away old dead bone.

HBOT provides the tissues with a high concentration of oxygen and the oxygen perfusion distance around the arteries and veins is increased. This stimulates cell recovery, reduces swelling, causes tissues to release the build up of toxic wastes from the cells, suppresses infection, potentiates the use of antibiotics which in turn, speeds up the healing process. This is especially important in healing tibia/fibular fractures which have a poor blood supply. Diabetes is another complication to the healing process of fractures. See Diabetic Wounds information on our website.

HBOT also helps bone grafts - pieces of bone transplanted to a fracture site, to "take" and heal with less complications. By adding HBOT to conventional surgical methods it helps to improve bone regeneration for a faster recovery time. HBOT is used when osteomyelitis (bone infection) has complicated or stopped the healing process. See Osteomyelitis information on our website.

References:

Hyperbaric Medicine Practice by Eric P. Kindwall, M.D. & Harry T. Whelan, M. D.
Textbook of Hyperbaric Medicine by K. K. Jain, M. D.
Hyperbaric Oxygen Therapy by Richard Neubauer, M.D. & Morton Walker, DPM