

HBOT & Orthopedics

Conditions Benefitted

- Bone Grafts
- Fracture repair, delayed non-union
- Inflammatory arthritis
- Osteoporosis
- Post surgical instability
- Sacroiliac Syndrome
- Aid to prosthesis rehabilitative care

HBOT provides adequate oxygen for fibroblasts—cells that make connective tissue- and so promote healing in hypoxic tissue. Cells that remove dead bone (osteoclasts) need oxygen to function, and intermittent oxygen tensions of 30-40 mmHg are needed to grow new blood vessels.

"The generation of oxygen-derived free radicals in cultured bone is associated with the formation of new osteoclasts and enhanced bone resorption, identical to the effects seen when bones are treated with hormones, such as parathyroid hormone (PTH) and interleukin (IL-1). When free oxygen radicals are generated adjacent to bone surfaces in vivo, osteoclasts are formed." Many patients, when following closely the prescribed protocol for Hyperbaric Oxygen Therapy notice the following cumulative benefits from the oxygen:

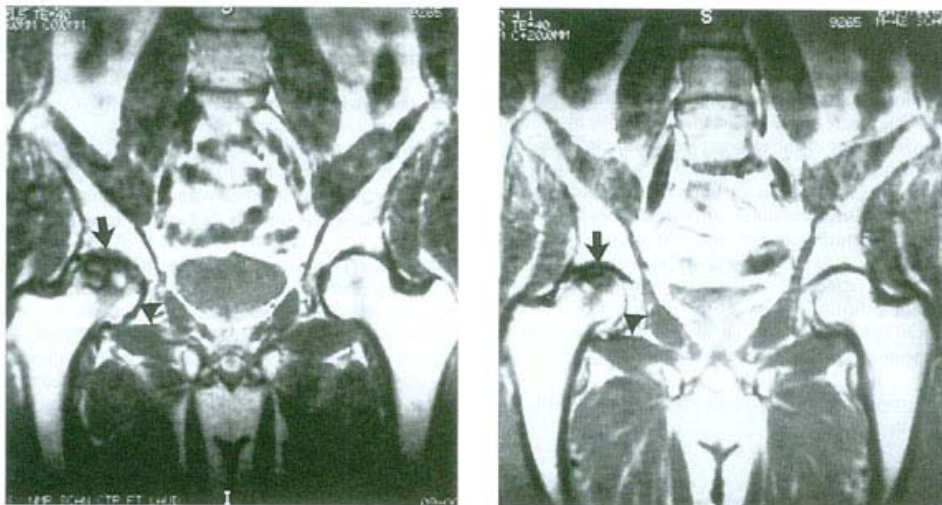


Figure 30.2

Left: Pre-HBO treatment NMR scan of right femur of a 41-year old male with diagnosis of aseptic necrosis. Intact hyaline articular cartilage (arrow) shows no evidence of femoral head collapse. Small medial area of high signal (arrowhead) shows normal fatty marrow. *Right:* Post-HBO treatment. Intact hyaline cartilage (arrow) overlies small ring-like zone of aseptic necrosis. Also, normal area of fatty marrow (arrowhead) is now larger (from Neubauer *et al* 1989a).

"The effect of HBO on the healing of standardized metaphyseal defects in the cortices of rat femurs was studied by Barth et al. Once-a-day treatment appeared to accelerate bone repair and vessel ingrowth."

"In a prospective randomized study by Lindström et al., 20 consecutive patients, with closed and simple tibial shaft fractures treated with reamed intramedullary nailing, were assigned randomly to HBO or control groups. HBO therapy was given postoperatively at 2.5 ATA for 90 minutes daily for a total of five treatments. The first HBO therapy was given 1 hour after the operation. There was a significant improvement in the tibialis posterior arterial peak signal (TPA) in the nailed legs in the HBO group after the first postoperative day, and these values remained at a significantly higher level until the end of the study when compared to the nailed legs in the control group. Further, there was a significant improvement in the PtcO₂ values in the nailed legs of the HBO group after the third HBO treatment. The improvement in the TPA and ptCO₂ values may result from the vasoconstrictive and edema reductive effect of HBO."