



## BURN LITERATURE

Burns. 2008 Jun;34(4):467-73. Epub 2007 Sep 25.

### **Effects of hyperbaric oxygen therapy on fibrovascular ingrowth in porous polyethylene blocks implanted under burn scar tissue: an experimental study.**

**Dinar S, Agir H, Sen C, Yazir Y, Dalci H, Unal C.**

Effects of hyperbaric oxygen (HBO) therapy on biointegration of porous polyethylene (PP) implanted beneath dorsal burn scar and normal skin were experimentally examined in Sprague-Dawley rats. In Group One (n=20), daily HBO treatments were given after the implantation of PP material under dorsal burn scar, whereas, in Group Two (n=20) no treatment was given following the same surgical procedure. In Group Three (n=20), PP was placed under dorsal normal skin and subsequently HBO therapy protocol was applied while Group Four (n=20) stayed without HBO treatment after the implantation. One, 2, 3 and 4 weeks after the implantations, sections were respectively taken from five rats from each group. Biointegration process and effects of HBO therapy were evaluated microscopically and the ratio of fibrovascular ingrowth (FVI) was determined for each rat. The results showed significantly superior FVI in Group One compared to Group Two and again FVI into PP under normal skin treated with HBO revealed better results against Group Four (p<0.05). Well-vascularized capsule formation and tissue integration was delayed both in Group Two and in Group Three in the first 3 weeks. **In conclusion, HBO therapy enhances biointegration of PP in hypoxic burn scar areas via improving collagen synthesis and neovascularization**; otherwise, it apparently delays tissue ingrowth into porous structure implanted in normal healthy tissues.

Mil Med. 2007 May;172(5):560-3.

### **Frostbite in a mountain climber treated with hyperbaric oxygen: case report.**

**Folio LR, Arkin K, Butler WP.**

**We describe a case of frostbite to all fingers of a mountain climber, treated with hyperbaric oxygen (HBO). All fingers eventually healed to full function, with only some cosmetic deformity to the tip of the most severely affected finger.** Because few cases of frostbite treated with HBO have been reported, we hope that such case reports will stimulate future research in this area. It is hoped that multiple anecdotal cases may help guide future research in this area. Sequential digital photographs were taken at various stages of healing during HBO treatments. We raise the possibility of photographic techniques and standards that may facilitate planning of therapy for frostbite with improved treatment comparisons, resulting in more consistency in the future. For example, a graphical software application is described that allows morphing of sequential images to demonstrate healing progress in a concise movie format. The morphing allows concise demonstration of healing to the referring provider and patient and helps in teaching and research on frostbite treatment outcomes.



## BURN LITERATURE

Burns. 2001 Jun;27(4):404-8.

### **Hyperbaric oxygen treatment in deep frostbite of both hands in a boy.**

**von Heimburg D, Noah EM, Sieckmann UP, Pallua N.**

An 11-year-old boy in good general health conditions suffered deep frostbite on six fingers while he was working without gloves as a beater during a hunt in Poland at an outdoor temperature of -32 degrees C over a 4 h-period. Three days later he was first seen by a physician who planned to amputate the affected fingers. The patient was transferred by his family to our University Hospital in Aachen, Germany. We found third degree frostbite on four fingers of the right and on two fingers of the left hand. Because of the late beginning of the therapy, the patient was treated by HBO(2) according to the Marx-schema for problem wounds (2,4 bar, total time at depth: 90 min, alternations of 100% O(2) and air breathing). HBO(2)-treatment was repeated daily for 14 days. No adverse events were recorded during the course of therapy. A total recovery of the severe frostbite was observed after 14 days of HBO(2)-treatment. Twenty-eight months after the injury the patient reports fully regained sensibility and no pain. The plain X-ray after this period showed no premature closure of the epiphyses or sclerosis of the metaphyses. Conclusions: Because of the low risk associated with HBO(2), and its potential therapeutic efficiency, HBO(2) should be recommended as adjunct therapy in the treatment of deep frostbite.

Burns Incl Therm Inj. 1984 Feb;10(3):193-6.

### **Effects of hyperbaric oxygen on oedema formation after a scald burn.**

**Nylander G, Nordström H, Eriksson E.**

Hyperbaric oxygen (HBO) has been advocated as an adjuvant in the therapy of thermal burns. One of the positive effects was reported to be a decrease in fluid requirements. The effect of HBO on oedema formation was evaluated in the burned area and in distant areas. Fifty-four mice were used in a standardized scald burn model, burning their left ear. Biopsies were taken from the left and right ear and from the quadriceps muscle 2, 6 and 24 hours after burn. Half of the group was treated with HBO immediately after burn. In the burned HBO treated group the oedema of the burned ear was not significantly different from that of burned untreated mice. With HBO treatment the water content in the contralateral ear was significantly (P less than 0.01) lower and in these animals the water content of the contralateral uninjured ear was not significantly different from that of uninjured untreated animals. In the burned HBO treated animals there was a significantly (P less than 0.05) lower water content of the quadriceps muscle 2 and 24 hours after burn compared to the burned untreated animals. This experimental study indicates a significant reduction of the general post-burn oedema with a HBO treatment.



## BURN LITERATURE

[Ann Plast Surg.](#) 1978 Mar;1(2):163-71.

**Hyperbaric oxygen in the treatment of burns.**

**Grossman AR.**

Since 1972, over 800 burn victims have been treated with hyperbaric oxygen at the Burn Center of Sherman Oaks Community Hospital in Los Angeles. HBO is used only as an adjuvant to standard resuscitation and is not intended to replace current accepted therapy. The results of the first three-year study program show definite changes in burn care delivery. There has been a definite decrease in the mortality as compared with our own predictions and statistics and with those of the N.B.I.E. In addition, a marked improvement in morbidity and a reduction in hospital stay were noted.