

Topical Hyperbaric Oxygen Therapy (THOT): Design concept to Market Product

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The history of Hyperbaric Oxygen Chambers leading to the development of Topical Hyperbaric Oxygen Therapy (THOT) units dates back as far as the 1600's. While the first known Hyperbaric Pressure Chamber was built in 1662 by an English clergyman, Henshaw. It wasn't until 1774 that Joseph Priestley discovered oxygen and in 1789 a French chemist Antoine Laurent Lavoisier recorded that highly concentrated oxygen was toxic. After that it wasn't until 1878 that Paul Bert, a French psychologist published the first results of hyperbaric experiments considered the cornerstone publication of hyperbaric medicine. From that period until the mid 1960's that there wasn't any real utilization of hyperbaric oxygen until the formation of the Undersea Medical Society in 1967.

The development of Hyperbaric Oxygen Therapy was thought to be an interesting concept but there was confusion on how to maximize its benefit in wound healing. Problems relating to whole body chambers; high cost, availability and significant negative side effects, led researcher Dr. Boguslav Fischer to develop various devices which would apply oxygen topically to treat extremity and torso wounds. The results obtained by Dr. Fischer were both so dramatic and exciting that it led to his publication of the first article on TI-IOT in the Lancet in 1969, one of the most prestigious peer reviewed medical journals in the world. In 1977 while working together with Dr. Fischer and others we created different versions of both extremity and torso chambers.

The most significant development in the history of THOT was the creation of an extremity chamber that offered a dual purpose modality. Which added intermittent compression therapy and allowed for the application of oxygen inside the chamber at greater than twice the pressure then had been previously used, without causing a tourniquet effect and reducing peripheral circulation further. From this added benefit came intermittent compression therapy, which helped to reduce edema in patient's lower extremities. Today there are several devices available to treat the different areas of a patient's body and THOT, now commonly referred to as Topical Wound Oxygen (TWO₂), has been shown to achieve as high as 95% success rates in healing many chronic wound types.

The clinical evidence to date has demonstrated that TWO₂, when used as an adjunctive therapy to conventional wound care, is safe, easy to use, less costly when compared to full body HBO, and an efficacious treatment for healing chronic wounds and saving limbs from amputation.