

Hyperbaric Oxygen Therapy and Plastic Surgery



Prof. Vijay Kumar

Editor-in-Chief,

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Vijay Kumar

Department of Plastic & Reconstructive Surgery, King George's Medical University, Lucknow, UP, India

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Hyperbaric oxygen therapy (HBOT) is an expanding modality, used for the treatment of various clinical scenarios from head to toe. Since plastic surgery is a branch that deals from head to toe, the use of HBOT is enhanced, especially due to its effectiveness in wound-related conditions. HBOT can be defined as the provision of 100% oxygen to the body at higher pressure, i.e. more than one atmospheric pressure. Hyper Baric Oxygen Therapy (HBOT) provides increased oxygen supply at cellular level which improves the hypoxia-associated damage to organs. HBOT was first introduced in 1662, by British physician Dr. Henshaw's. He used a steel chamber, which was pressurized with air and was known as ***Pressurized Domicilium***.

For several years, HBOT was discontinued due to the toxic effects of air, which exceeded its benefits. After the discovery of gases by Joseph Priestley in 1774, pressurized air was replaced by 100% pure oxygen. HBOT became again popularized due to its effectiveness in treating decompressive sickness of deep-sea divers. In current scenario, the use of HBOT is emerging beyond the limits and beyond the specialties. Various indications of HBOT, which are approved by Under-sea and Hyperbaric Medicine Society (UHMS) & British Hyperbaric Association are decompressive air embolism, CO poisoning, arterial insufficiencies, compromised grafts and flaps, necrotizing fasciitis, crush injury, compartment syndrome, chronic osteomyelitis, burn injuries, radiation-induced damage, sensory neural hearing loss, sports injuries, aesthetic etc. Although the use of HBOT is vast, various contraindications for its use are claustrophobia, untreated pneumothorax, sinus infection, upper respiratory infection, pulmonary lesions on chest x-ray, high fever (greater than 39°C), history of chest or ear surgery, any convulsive disorder, middle ear infection, pregnancy, acute hypoglycaemia, etc. A thorough screening of the patients should be done before starting the therapy which includes ear evaluation for the integrity of tympanic membrane and complete clinical examination to rule out the above-mentioned contraindications. A trial session of 15 to 20 minutes is usually given first to know any discomfort to the patient like headache, ear ache, anxiety, etc. If patient tolerates the trial session, then regular sessions are started.

Regular sessions can be given daily for one hour with pressure gradually increasing up to 2.5 ATA. Various uses of HBOT related to plastic surgery include chronic wounds, acute wounds, arteriovenous ulcers, crush injuries, lymphatic ulcers, compartment syndrome, fungal ulcer, tubercular ulcer, diabetic foot ulcer, skin graft and flap salvage including free flaps, osteoradionecrosis following cancer ablation therapy, burn injuries, aesthetic and antiaging by decreasing early signs of aging like dryness, pigmentation, fine wrinkles etc. In conclusion, HBOT is useful for plastic surgeons as an adjunct modality in treating various conditions.

***Correspondence:**

kuhuvaidush@hotmail.com

Department of Plastic & Reconstructive Surgery, King George's Medical University, Lucknow, UP, India

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