HYOX

HYPERBARIC MEDICINE HEALS.

HYPERBARIC OXYGEN THERAPY FOR EARS, NOSE, AND THROAT

HyOx treats the following approved and covered conditions:

- **Delayed radiation injuries**
  - Osteoradionecrosis (ORN) of the mandible
  - ***Referral protocol:*** MARX Protocol includes prophylactic pre- and post-treatment for patients undergoing invasive surgery to the head and neck, including tooth extraction, in a previously radiated jaw to improve tolerance to surgical wounding
- **Soft tissue radionecrosis (STRN)** including chondro radionecrosis
  - ***Referral Protocol:*** Post diagnosis of STRN or ORN (may occur weeks, months, even year post-radiation)
- **Orocutaneous fistulas**
  - ***Referral Protocol:*** Immediately, when post-surgical site shows signs of dehiscence, necrosis, blistering, erythema, and/or infection
- **"Lumpy Jaw" infection** (refractory actinomycosis and other mycoses)
- **Necrotizing bone and soft tissue infections** (orbital cellulitis, rhino-cerebral mucormycosis, zygomycosis)
- **Malignant external otitis** (necrotizing invasive pseudomonal infection of the external auditory canal)
  - ***Referral Protocol:*** Immediately, in the acute phase, after a wound culture, MRI or bone biopsy show necrotizing bone or soft tissue infection
- **Compromised skin grafts and flaps from radiation, decreased perfusion or hypoxia**
  - ***Referral Protocol:*** Immediately, to preserve a flap or graft that shows signs of dehiscence, necrosis, blistering, erythema, and infection
- **Sudden sensorineural hearing loss* (1)**
  - ***Referral Protocol:***
    - Immediately after diagnosis is made after initial ENT evaluation with imaging and audiologic assessment
    - Along with steroid therapy, hyperbaric oxygen therapy most benefits patients with 60 dB of hearing loss undergoing five to 15 treatments
    - If there is a significant delay between the initial audiogram and commencement of treatment, a second audiogram should be ordered to serve as a more accurate baseline

Benefits of Hyperbaric Oxygen Therapy:

- Stimulates angiogenesis / neovascularization in hypoxic tissues following the Marx Protocol for ORN (20 treatments pre- and 10 post-extraction) to achieve uncomplicated healing and viable tissue prior to surgery** (**2**)
- Increases cellularity and vascularity in irradiated tissues optimally working in tandem with surgical intervention since ORN is the result of an avascular, aseptic necrosis (**3**)
- Reverses tissue hypoxia in malignant external otitis, which enhances phagocytic killing of aerobic microorganisms and stimulates angiogenesis, and augments the action of aminoglycoside antibiotics (**4**)
- Decreases infection, inflammation, dehiscence and delayed healing in soft tissue necrosis (**5**) (**6**)
- Maximizes the viability of compromised tissue while revascularization takes place thereby reducing the need for regrafting or repeat flap procedures (**7**) (**8**)
- Works synergistically with antibiotic therapy to boost healing process in bone and soft tissue infections like actinomycosis, primarily occurring in the head and neck
- Boosts effectiveness of corticosteroids, either systemic or injected into the tympanic membrane for sudden sensorineural hearing loss (**9**)

REFERENCES:

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(**2**) Chavez JA, Adkinson CD. Adjunctive hyperbaric oxygen in irradiated patients requiring dental extractions: outcomes and complications. J Oral Maxillofac Surg 2001; 59:518-22.

(**3**) Marx RE. Osteoradionecrosis: a new concept of its pathophysiology. J Oral Maxillofac Surg. 1983; 41: 283-288.

(**4**) Mader JR, David JC, et al. Adjuvant hyperbaric oxygen in malignant external otitis. Arch Otolaryngol Head Neck Surg. 1992, Jan, 118 (1): 89-93.

(**5**) Neovius EB, Lind MG, Lind FG. Hyperbaric oxygen for wound complications after surgery in the irradiated head and neck: a review of the literature and a report of 15 consecutive cases. Head and Neck 1997; 19:315-322.

(**6**) Agra IM, Carvalho AL, Pontes E, Campos OD, Ulbrich FS, Magrin J, Kowalski LP. Postoperative complications after en bloc salvage surgery for head and neck cancer. Arch Otolaryngol Head Neck Surg, 2003, Dec; 129 (12): 1317-21.

(**7**) Perrins DJD. "The effect of hyperbaric oxygen on ischemic skin flaps." In: Grabb WC, Myers MD, Eds. Skin Flaps. Boston, MA: Little Brown & Co: 1975: 53-63.

(**8**) Greenwood TW and Gilchrist AG. "Hyperbaric oxygen and wound healing in post-irradiation head and neck surgery." Br J Surg. 60:394-397, 1973.

(**9**) Bennett MH, Kertesz T, Perleth M, Yeung P. Hyperbaric oxygen for idiopathic sudden sensorineural hearing loss and tinnitus. Cochrane Database of Systematic Reviews 2007, Issue 1. Art. No.: CD004739. DOI: 10.1002/14651858.CD004739.pub3

NOTES:

* Not covered by insurance 100% of the time. Check with your insurance if they will cover your treatment.

** May require more treatments for mandibular resection and reconstruction success.