Does hyperbaric oxygen therapy have the potential to improve salivary gland function in irradiated head and neck cancer patients

Following radiotherapy, many patients with osteoradionecrosis suffer from xerostomia, thereby decreasing their quality of life. Patients can develop problems with speech, eating, increased dental caries, dysphagia, fractured dentition, chronic refractory osteomyelitis and osteoradionecrosis.

Symptoms associated with salivary gland dysfunction can be severe enough that patients terminate the course of their radiotherapy prematurely due to the decrease in their quality of life. Currently, the only treatments available to patients are palliative.

A definitive treatment has yet to be discovered. Head and neck cancers, which comprise 5% of overall cancer treatments, rank 8th most expensive to treat in the United States today.

Hyperbaric oxygen is being considered for the therapy of radiated salivary glands because it has been shown to stimulate capillary angiogenesis and fibroplasia in radiation treated tissues. It has been hypothesized that salivary acinar cells undergo apoptosis following radiation therapy.

The purpose of this paper is to discuss the mechanisms of salivary gland injury and evaluate whether hyperbaric oxygen therapy improves salivary gland function in patients who develop xerostomia and osteoradionecrosis following head and neck radiation.