

Case Report

# Hyperbaric oxygen in the management of wound tissue necrosis after external dacryocystorhinostomy



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## Abstract

Hyperbaric oxygen is an adjunctive treatment for promoting wound healing and reducing infection. We present an unusual case of wound tissue necrosis occurring after external dacryocystorhinostomy (ExtDCR) that was subsequently treated with hyperbaric oxygen (HBO) and advancement flaps with good outcome. HBO improves vascularization of ischemic tissues after ExtDCR for greater success after reconstructive surgery.

**Keywords:** External dacryocystorhinostomy, Tissue necrosis, Hyperbaric oxygen therapy, Treatment

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## Introduction

Tissue necrosis at an infected external dacryocystorhinostomy (ExtDCR) incision site is a rare complication that is challenging to surgically reconstruct due to tissue avascularity. One method to address tissue avascularity is hyperoxygenation. Good outcomes have been reported after hyperbaric oxygen (HBO) treatment of carbon monoxide poisoning, compromised grafts and flaps, radiation injury to soft tissue and bone, clostridial myonecrosis, necrotizing infections, refractory osteomyelitis, compromised cutaneous ulcers, thermal burns, and peripheral ischemia.<sup>1–4</sup>

HBO has been proposed for ophthalmic conditions such as central retinal artery occlusion, radiation optic neuropathy, acute post-radiation scleral necrosis, orbital implant vascularization and compromised periorbital soft tissue grafts.<sup>5–7</sup>

This report describes the use of HBO as an excellent adjunctive treatment for a case of tissue necrosis post-ExtDCR that was unresponsive to conventional therapy.

## Case report

A 70-year-old female with systemic hypertension presented with tearing in the left eye. The patient was diagnosed with obstruction of the common canaliculus. An ExtDCR was performed using the Dupuy-Dutemps technique. Briefly, a U-flap was constructed between the lacrimal sac and nasal mucosa and bicanalicular stents were placed. Intraoperatively, there was severe bleeding from the orbicularis muscle, angularis vein and nasal mucosa which was controlled with extensive bipolar cauterization. At the end of the surgery, nasal packing was performed with 5 cc of physiologic saline combined with 5 cc diluted adrenaline in the left nostril for 24 h. Postoperative surgical wound site care included application of neomycin, bacitracin and dexamethasone ointment (Maxitrol, Alcon Inc., Fort Worth, Tx, USA) 4 times a day over 10 days and erythromycin ointment (Erythromycin, Alcon Inc., Fort Worth, Tx, USA) for 2 weeks. Systemic antibiotics were not prescribed preoperatively or postoperatively. Four days

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