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Hyperbaric oxygen therapy and promoting neurological recovery following nerve trauma
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There is a constant search for new techniques that induce more extensive and rapid wound healing. Hyperbaric oxygen therapy (HBO2T) involves placing a patient in a sealed chamber and elevating its pressure several-fold above ambient air pressure while the patient breathes 100% oxygen. HBO2T induces a number of physiological actions, and which wounds are selected for HBO2T depends on the specific actions of HBO2T relative to the wound's healing requirements. Although nerve traumas are not yet indicated for HBO2T, there are many animal and clinical examples showing the benefits of HBO2T in inducing neurological recovery following nerve trauma. This review examines the general mechanisms required to induce wound healing and the actions of HBO2T which meet these requirements. It then examines the requirements for inducing axon regeneration and how many are met by HBO2T. Finally, we discuss anecdotal evidence that HBO2T enhances the rate and extent of axon regeneration in both animal models and clinically. We conclude that HBO2T triggers most of the mechanisms required to induce axon regeneration.