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# Hyperbaric oxygen adjuvant therapy in severe mangled extremities

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## Abstract

**Background:** Mangled Extremity Severity Score (MESS) was first described more than 30 years ago by attempting to predict the need for empiric amputation. In severe traumatic crush and blast injuries, achieving satisfactory limb salvage may be difficult. Notably, a MESS of 7 or higher is consistently predictive of amputation. Additionally, Hyperbaric Oxygen Therapy (HBOT) has been described for many purposes, and related studies have reported HBOT showed benefits in wound healing properties.

**Objective:** The study aimed to evaluate the results of a prospective series of a new modality of adjuvant HBOT for severe mangled extremities.

**Method:** A total of 18 patients were evaluated for clinical and radiographic review. Current standard treatments followed by adjuvant HBOT were administered, and the mean follow-up period was 22 months. Time to wound closure, the number of surgeries and adjuvant HBOT treatment were analyzed for patient clinical evaluation. Complications and limb amputation rates were also recorded.

**Result:** Most clinical findings on follow-up were good to excellent after adjunctive HBOT. Minimal soft tissue infection was recorded, and limb salvage was successful in most cases. Only 1 patient (5.56 %) needed limb amputation because of a dying limb with chronic refractory osteomyelitis.

**Conclusion:** HBOT is an excellent adjunctive option in severely mangled extremities. Nevertheless, the main treatments are eliminating infection and managing surgery, and are promising in the recovery of severe extremity injuries. Although the MESS was evaluated at 7 or higher, limb salvage procedures followed by HBOT should be considered.

**Keywords:** Hyperbaric oxygen therapy; Limb salvage; MESS; Mangled extremities; Severe extremity injury.

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### **Conflict of interest statement**

Declaration of Competing Interest The authors declare they have no conflicts of interest related to this work. No benefits in any form have been or will be received from any commercial party related directly or indirectly to the subject of this article.