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Post-traumatic Limb Ischemia: Prediction of Final Outcome by Transcutaneous Oxygen Measurements in Hyperbaric Oxygen.

Mathieu D, Wattel F, Bouachour G, Billard V, Defoin JF.

Centre Régional d'Oxygénothérapie Hyperbare, Hôpital Albert Calmette, Lille, France.

In limb injuries (amputation, laceration injuries, or compartment syndrome), a circulatory insufficiency with a total or subtotal ischemia may occur and jeopardize the result of reconstructive surgery. Transcutaneous oxygen monitoring has been shown to reflect tissue perfusion and has been advocated to predict the final outcome of major vascular trauma of the limb. Unfortunately, in normal atmospheric conditions, this test is not sufficiently discriminative; we evaluate the effect of hyperbaric oxygen on the efficiency of this test. 23 patients with major vascular trauma of the limbs were evaluated by clinical examination and transcutaneous oxygen pressure (PTCO₂) measurements. Sixteen had arterial repair and seven had clinical evidence of peripheral ischemia without an arterial lesion. In normal air, the transcutaneous oxygen values in the traumatized limb, of these 23 patients, were significantly lower than in the nontraumatized limb. But neither the absolute PTCO₂ value nor the ratio between the traumatized limb's PTCO₂ and that of the nontraumatized one can predict the final outcome (amputation). ***In hyperbaric oxygen (2.5 ATA), this ratio is significantly higher in the group where the surgery will succeed than in the group where final amputation will be needed (81.2 +/- 26.0 vs. 15.2 +/- 13.1; p less than 0.01).*** The overall sensitivity and specificity of prediction of the limb's final outcome when the bilateral PTCO₂ ratio in 2.5 ATA pure oxygen is less than 0.40, are 100% and 94%, respectively. But what is perhaps more interesting is that, when considering a ratio value of less than 0.20, amputation can be predicted with a 100% true predictive value.(ABSTRACT TRUNCATED AT 250 WORDS)

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