

9. The Erlanger Microlightguide Photometer: a new concept for monitoring intracapillary oxygen supply of tissue--first results and a review of the physiological basis.

Kuchenreuther S, Adler J, Schutz W, Eichelbronner O, Georgieff M.

Department of Anesthesiology, University Hospital Ulm, Germany.

J Clin Monit 1996 May;12(3):211-24

The local oxygen supply to the skin immediately before and after withdrawal of blood was appraised in 18 healthy test subjects by measuring the intracapillary hemoglobin oxygenation (HbO₂). The investigation was carried out with the Erlanger Microlightguide Photometer (EMPHO). EMPHO measurements are based on the registration of tissue remission spectra from which the HbO₂ values are calculated using the Kubelka-Munk theory. The results show that global parameters do not reflect the supply of oxygen to the tissue; for example, in hypovolemia, the physiological response to the pathophysiological stimulus is centralization. This is manifested at a very early stage in the skin, before the oxygen supply to other organs (e.g., liver, kidney, gut) is affected. The disturbance of the local cutaneous oxygen supply is reflected in a change in the intracapillary hemoglobin oxygenation of the skin. Hence, one might consider measurements of the local oxygen supply to the skin as an early indicator for centralization.

PMID: 8823645 [PubMed - indexed for MEDLINE]