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Peripheral pulse oximetry (SpO_2) is probably the greatest technological advance for continuous monitoring since electrocardiography. It has almost become a mandatory clinical tool [1], despite it never having been subjected to a clinical outcome validation [2,3]. Pulse oximetry is widely used for monitoring oxygenation with empirical alarm limits to avoid hypoxia. Nevertheless, its measurement has many important limitations: SpO_2 is e ective only in measuring the degree of haemoglobin saturation at a short point in time; does not reliably predict changes in oxygen saturation (SaO_2); is not re ective of oxygen supply to tissues; and has not been demonstrated to in uence perioperative outcome [4]. is paper is to reiterate the well-known fact that low SpO_2 does not necessarily mean tissue hypoxia, maintaining SpO_2 above 92% is not necessarily protective of hypoxia [5] and empirically imposing SpO_2 'limits' to minimise errors [6] may become an hindrance to medical evolution if used as a heuristic for clinical decision making [7].

e terms hypoxia and hypoxemia are not interchangeable. Hypoxemia is arterial oxygen tension (PaO_2) below normal values.

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thereby arterial oxygenation is to raise cardiac output. erefore, pulse oximetry is not a diagnostic tool that de nes de nitive therapy: it is a heuristic used to minimise human error.

During one lung anaesthesia, the SpO_2 improves when the blocked lung collapses or when the patient is positioned with the ventilated lung dependent (due to reduction in shunt fraction). Hypoxic Pulmonary Vasoconstriction (HPV) is an essential physiological response that minimizes this shunt [25], reducing V/Q mismatch by diverting blood ow away from the under ventilated lung. e HPV response is maximal at normal pulmonary vascular pressure and reduced at either high or low pulmonary vascular pressure. One can only attain maximal HPV when oxygen partial pressure in venous blood (PvO_2) is normal, a decreased response seen with either high or low PvO_2. erefore, the use of inhalational anesthetic agents and other vasodilating drugs, together with high or low Fraction of Inspired Oxygen (FiO_2) will diminish the HPV response, including in children [26].

Oxygenation during One Lung Ventilation (OLV) depends not only on the magnitude of shunt fraction but also on the oxygenation of the shunted blood [27]. us, factors leading to a decrease in the oxygenation of the shunted (venous) blood (states of increased oxygen extraction, low cardiac output, low hemoglobin levels) compromise the 'bu ering' capacity against tissue hypoxia. Under limited

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