

Is Continuous Noninvasive Hemoglobin Monitoring Estimates Timing for Detection of Anemia During Operation better than Clinicians

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Blood loss is a common surgical complication, but patient complications and healthcare costs can be exacerbated by needless blood transfusions. Non-invasive and continuous monitoring of hemoglobin concentrations is possible with the Radical-7 Pulse CO- Oximeter. These determined values are identical to those obtained by blood sampling for hemoglobin concentrations, and the technique enables continuous monitoring over time of changes in Hemoglobin levels.

Aims of Study: to investigate whether noninvasive, continuous, and real-time monitoring of Hemoglobin could estimate the timing for further Hemoglobin measurements more accurately than clinicians' discretion during surgery.

Patients and Methods: 54 Patients eligible for the study were underwent different surgeries with planned invasive venous blood gas sampling for blood Hemoglobin for hemoglobin measurement while Radical-7 Pulse CO-Oximeter continuously reading Hemoglobin noninvasively during each surgery. Blood samples were obtained 5 min after induction of anesthesia (other samples was taken multiple time during operations according to time of operation). The Conventional venous blood gas measurements were compared with radical 7 co-oximeter obtained at the time of the blood sampling.

Results: In our study There was no statistically significant differences ($p>0.05$) in mean hemoglobin level, whether measured by SpHb or by conventional laboratory. in addition, Bland–Altman plot was utilized and show no marked difference between invasive and noninvasive method. All these factors signify a good compatibility between the two methods.

Conclusions: The radical 7 satisfactorily follows hemoglobin shifts and more reliably predicts the required timing for early Hemoglobin management decisions throughout surgery.