Utility of non-invasive haemoglobin monitoring in oncosurgery patients.

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BACKGROUND AND AIMS: Oncosurgeries may incur massive blood loss demanding frequent blood sampling to assess blood loss and the need for intraoperative blood transfusions. Accuracy of non-invasive spectrophotometric haemoglobin (hereafter to be referred as SpHb) monitoring has been studied in various perioperative settings. The intraoperative use of Radical-7(®), Masimo Corp., (Radical-7(®)) for SpHb monitoring may be useful during cancer surgery. The aim of this study is to evaluate the intraoperative utility of SpHb monitoring by the Radical-7(®) to guide intraoperative transfusion in oncosurgeries.

METHODS: Fifty adult patients, undergoing oncosurgery with anticipated blood loss of more than 20% of blood volume, were selected. Continuous SpHb monitoring was performed intraoperatively and blood transfusion was based on SpHb values. Simultaneous laboratory haemoglobin (LabHb) samples were taken for validation. The accuracy of intraoperative blood transfusions based on SpHb was analysed using Error Grid Analysis. Paired measurements of SpHb and LabHb were compared using Bland-Altman plot analysis.

RESULTS: There were 66 paired data points for blood transfusion from fifty patients with a correlation of 73% ($P < 0.001$) between SpHb and LabHb. In the Bland-Altman analysis, the bias was - 0.313 g/dl with ~ 95% of values within the limits of agreement of 1.81 g/dl to -2.44 g/dl. In the Error Grid Analysis, most data points were in the least error zone (Zone A).

CONCLUSION: The Radical-7(®) has the advantage of providing SpHb value continuously to take prompt decision regarding blood transfusion intraoperatively.