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CONTINUOUS AND NONINVASIVE HEMOGLOBIN MONITORING MAY REDUCE EXCESSIVE INTRAOPERATIVE RBC TRANSFUSION.

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Background & Objectives: Blood loss is a common surgical complication; however, overuse of red blood cell (RBC) transfusions may increase patient risks and healthcare costs. A recent meta-analysis showed that patients undergoing RBC transfusions have higher rates of mortality, infection, and acute respiratory distress syndrome. The Radical-7® Pulse CO-Oximeter (MASIMO, CA, USA) enables noninvasive and continuous monitoring of hemoglobin concentrations (SpHb). These measured SpHb values are similar to the hemoglobin concentration values obtained by blood sampling and the procedure allows continuous monitoring of changes in SpHb levels over time. We investigated whether SpHb monitoring results in a decrease in intraoperative RBC transfusion volumes.

Materials & Methods: We retrospectively identified patients who had undergone intraoperative RBC transfusions at our hospital from October 1, 2012, to September 30, 2014, from a database (except those who had undergone autologous blood transfusion, cardiovascular surgery, or liver transplantation)[A1]. The patients identified were divided into two groups: those with SpHb measurements (SpHb group) and those without SpHb measurements (C group). Total RBC transfusion volumes and RBC transfusion volumes per 1 g of blood loss were determined for each group. Differences between the groups were assessed using Student's *t*-test.

Results: A total of 371 patients underwent RBC transfusions over a 2-year period (SpHb group, n = 94; C group, n = 277). The median blood loss during surgery were as follows ; SpHb group were 1160 g (interquartile range , 483 to 2166) , C group were 900 g (interquartile range , 325 to 1955). No significant difference was observed in the average RBC transfusion volume (SpHb group, 815 ± 819 ml vs C group, 785 [A1] ± 773 ml, p = 0.75), or the preoperative hemoglobin concentration (SpHb group, 10.4 ± 1.9 g/dl vs C group, 10.2 ± 2.4 g/dl, p = 0.27) between the groups. On the other hand, a significantly lower mean RBC transfusion volume per 1 g of blood loss was observed in the SpHb group compared with the C group (SpHb group, 0.9 ± 1.0 ml/g blood loss vs C group, 2.4 ± 5.9 ml/g blood loss, p < 0.01).

Conclusion: SpHb measurements are associated with reducing excessive intraoperative RBC transfusion.

Disclosure of Interest: None declared