

Noninvasive continuous hemoglobin monitoring of blood transfusion in obstetric procedures

Beleta MI, Abdallah SR, Hammad YM, Yahia HE, Ali AA, Mohamed AA, AbdElhameed BM. *Egyptian Journal of Anaesthesia*. 2022 Dec 31;38(1):701-8.

Background: Non-invasive Hb (SpHb) may allow for a faster detection of clinically important blood loss, improve perioperative transfusion practices significantly and enable a faster evaluation of a patient's condition and a better blood treatment and may even reduce needless transfusions. This study determined the accuracy of continuous SpHb monitoring as a guide for fluid and blood transfusion practice using Masimo pulse co-oximetry in comparison with invasive Hb during elective cesarean section (CS).

Methods: This prospective cohort study was carried out on 60 pregnant women candidates for elective CS under general anesthesia. Participants were multigravida, aged between 18 and 45 years and carry a singleton fetus with ASA I–II. All had antepartum hemorrhage and were candidates for blood transfusion. Pre-induction of anesthesia (basal), pre-transfusion and post-transfusion SpHb and invasive Hb were assessed. The primary outcome parameter was the correlation between SpHb and invasive hemoglobin (Hb).

Results: There was a significant positive correlation between SpHb and Invasive Hb in baseline, pretransfusion and posttransfusion ($r = 0.946, 0.902$ and 0.698 , respectively). Bland–Altman analysis between SpHb and invasive Hb reported low bias with moderate limits of agreement at baseline, pre-transfusion and post-transfusion [mean bias (limits of agreement): 0.348 (-0.584 and 1.280) g/dl, 0.314 (-0.561 and 1.188) g/dl and 0.348 (-0.584 and 1.280) g/dl, respectively]

Conclusions: In patients undergoing CS with antepartum hemorrhage, continuous SpHb through Masimo pulse co-oximetry demonstrated clinically acceptable accuracy of Hb measurement compared with Invasive Hb, even at low hemoglobin levels.