

## **Accuracy of non-invasive haemoglobin measurements in patients undergoing transurethral resection of prostate surgery**

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### **Background and Aims:**

The aim of this study was to evaluate the accuracy of non-invasive haemoglobin (SpHb) compared to laboratory venous haemoglobin (tHb) measurements among patients undergoing elective transurethral resection of prostate (TURP) surgery under spinal anaesthesia.

### **Methods:**

In a prospective, observational, outcome-assessor blinded, cohort trial, we enrolled 50 American Society of Anesthesiologists physical status (ASA-PS) I-II patients with benign prostatic hyperplasia. The primary outcome included SpHb and tHb measurements performed at four perioperative time-points: just before initiating the fluid preload (T1), and at 30 min (T2), 1 h (T3), and 2 h (T4) after starting the prostate resection, respectively. Statistical tool included intra-class correlation (ICC), Bland-Altman plots, and linear regression analysis.

### **Results:**

We collected 200 SpHb/tHb data sets from 50 patients. The SpHb had a non-significant negative bias of  $-0.83$  g/dL,  $-0.43$  g/dL,  $-0.81$  g/dL, and  $-0.46$  g/dL, with limits of agreement of  $2.6$  g/dL to  $-4.2$  g/dL,  $2.4$  g/dL to  $-3.3$  g/dL,  $1.3$  g/dL to  $-2.8$  g/dL, and  $1.4$  g/dL to  $-2.3$  g/dL, for T1 to T4, respectively. The SpHb/tHb pairs correlated significantly (time-dependent increase in ICC from T1 to T4). The SpHb-tHb difference correlated significantly with corresponding serum sodium (T1 to T3), but not with perfusion index. No correlation existed between % change in SpHb-tHb difference (T1 to T4), and intraoperative blood loss or perioperative weight gain.

### **Conclusion:**

The SpHb exhibited a clinically acceptable negative bias compared to tHb during TURP surgery. Although a wide limit of agreement between the SpHb/tHb pairs is a limitation, the real-time SpHb trends can still serve in clinical judgement.