ClearSight™ is not equivalent to invasive arterial pressure measurements in obese patients

Eley VA1,2, Christensen R1,2, Guy L1,2, Wyssusek K1,2, Pelecanos A3, Dodd B4, Stowasser M5, van Zundert A1,2

1. Department of Anaesthesia and Perioperative Medicine RBWH; 2. Faculty of Medicine UQ; 3. QIMRB; 4. Upper GI Surgery RBWH; 5. PAH Hypertension Unit.

Objective: Measuring blood pressure in obese patients is challenging. The ClearSight™ finger cuff (FC, shown in Figure 1) uses the vascular unloading technique to provide continuous non-invasive blood pressure measurements. We aimed to test the equivalence and agreement of the FC versus invasive radial arterial monitoring (INV) in obese patients. We recruited patients with a BMI >45 kg.m-2 and undergoing elective laparoscopic bariatric surgery.

Methods: We recorded FC and INV measurements simultaneously every 5 minutes on each patient, following stable anaesthesia. Equivalence of the primary outcome of mean arterial pressure (MAP) within +/- 5 mmHg at 5 minutes was analysed using two one-sided tests (TOST). Agreement over time was assessed using Bland-Altman plots.

Results: The participants had a mean age of 45 ± 11.7 years (range 24 to 65), median BMI of 50.2 kg.m-2 (IQR 48.3 to 55.3, range 45.1 – 69.2) and 26 (87%) were female. Figure 2 shows the Bland-Altman plots for mean arterial pressure (A), systolic blood pressure (B) and diastolic blood pressure (C).

Conclusion: The vascular unloading technique was not equivalent to radial arterial monitoring when assessed at a single time-point and these methods did not agree over time. We do not recommend this technique for the perioperative blood pressure monitoring of obese patients.


Funding: ANZCA Project Grant; RBWH Post-doctoral Fellowship. The authors have no conflicts to declare.