

Monitoring

FORE-SIGHT Cerebral Oximeter in cardiac patients

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The FORE-SIGHT Cerebral Oximeter is a non-invasive, optically-based monitor of cerebral tissue oxygen saturation (SctO₂). This observational study determined the range of SctO₂ during stages of cardiac surgery.

With written consent, patients undergoing CABG and/or valvular surgery (VS) with CPB were enrolled. Two FORE-SIGHT Cerebral Oximeter Sensors were placed on the patient's forehead prior to induction. SctO₂ were recorded at 2-sec intervals. The average of left & right cerebral tissue oxygen saturations was used for analysis. The length of time SctO₂ below 55, 60 and 65% was calculated and tested for association with gender, race, diabetes and procedure type.

59 patients (age 69, gender 38M/21F, 51 W/7 AA/1 HS, 18 diabetics, 48 CABG & 11 VS±CABG [median times: cross-clamp 73 v 120 mins, CPB 116 v 162 mins]. Significant differences in time below 55/60/65% SctO₂ thresholds for gender and procedure type: 0/9/98 mins [Male] and 6/71/129 mins [Female], 0/17/91 mins [CABG] and 50/129/175 mins [VS±CABG]. Prolonged desaturation (>5 minutes below 55% SctO₂) 10/21 females versus 5/38 male (p<0.01), 7/11 VS patients versus 8/48 CABG-only patients (p<0.01). Awake SctO₂ was 70.7% (70.3% M / 72.4% F) with small variability (SD 4.4%) independent of age, skin color and gender. The pre-CPB SctO₂ 72.0% dropped to 61.9% during CPB before returning to 70.0% at chest closure. VS patients showed longer periods below all 3 thresholds of SctO₂ values possibly because of significantly longer cross-clamp and CPB times. Awake SctO₂ of females were slightly higher than males before CPB, but females experienced more SctO₂ < 55% episodes during CPB.

The range of SctO₂ values during cardiac surgery is described. The difference in gender values warrants further study with regard to clinical significance.

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