

**SCA79****Incidence and characteristics of cerebral oximetry and cognitive dysfunction during the post-operative period following cardiac surgery**

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**INTRODUCTION:** Monitoring cerebral and peripheral tissue oximetry post-operatively can be critical in high risk, complex patients. Little information is known regarding the incidence and characteristics of post-operative cerebral hypoxia as monitored by NIRS cerebral oximetry. It is possible that these unidentified or "silent" desaturation events can contribute to negative outcomes following high risk or complex surgery.

**METHODS:** Patients undergoing CABG and/or valvular surgery with cardiopulmonary bypass were enrolled in the study. Bilateral cerebral and tissue (skeletal muscle) oximetry was monitored continuously from pre-operative baseline through 24 hours post-ICU with a dual emitter-dual detector four wavelength NIRS tissue oximeter. Post-operative delirium (DOS: Delirium Observational Screening) and confusion (CAM: Confusion Assessment Method) were assessed at baseline, post-operatively daily for up to four days and on the day of hospital discharge. Oximetry desaturation was defined as rSO<sub>2</sub> less than 55% for greater than 1 minute.

**RESULTS:** Forty-eight (48) patients (29 Male, age: 63 ± 14 [21, 85] years) undergoing CABG and/or valvular surgery with cardiopulmonary bypass were included in the study. Prior medical history included: 8% prior cardiac surgery; 55% diabetes; 6% cerebral vascular disease. All were ASA class 3 or 4. Overall, 193 post-operative cerebral desaturation events occurred in 21 subjects. The median duration of cerebral desaturation events was 22 minutes. Of the 21 subjects with a desaturation occurring post-operatively, the first episode was noted within 6 hours of monitoring in 10 subjects with the remaining 11 subjects having the first incident greater than 6 hours following ICU admission and up to 22 hours post-operative. A total of 31 subjects had at least one somatic desaturation.

Incidence of post-operative delirium as assessed by DOS was greatest on post-op day 1 (15.9%) and decreased daily through the hospital stay. Daily incidence of confusion as assessed by CAM ranged from 6.8% to 11.4%.

**DISCUSSION:** Our study demonstrates that risk for cerebral desaturation events continues following cardiac surgery into the initial ICU stay. NIRS cerebral oximetry can provide additional monitoring insights into this fragile patient population during the transitional period of initial ICU stays.