

# Monitoring Brain Oxygen Saturation During Coronary Bypass Surgery: A Randomized, Prospective Study

in JM, et al. *Anesth Analg*. 2007 Jan;104(1):51-8.

## Objective

This randomized, prospective, blinded study was designed to **evaluate the impact of cerebral oximetry monitoring and an intervention protocol on clinical outcomes** in patients undergoing elective CAB surgery.

We postulated that the majority of interventions to optimize cerebral oxygen saturation would have a beneficial systemic effect for enhancing global tissue perfusion and potentially improve outcomes.

We therefore hypothesized that **use of intraoperative NIRS monitoring** with a predetermined treatment protocol designed to minimize decreases from baseline rSO<sub>2</sub> values **would result in improved outcomes in elective patients undergoing CAB surgery.**

## Patients

200 coronary artery bypass patients of age >18 yr and scheduled for primary elective CAB surgery with use of cardiopulmonary bypass (CPB).

## Protocol

Patients were randomized to either intraoperative cerebral regional oxygen saturation (rSO<sub>2</sub>) monitoring with active display and treatment intervention protocol (intervention, n=100), or underwent blinded rSO<sub>2</sub> monitoring (control, n=100).

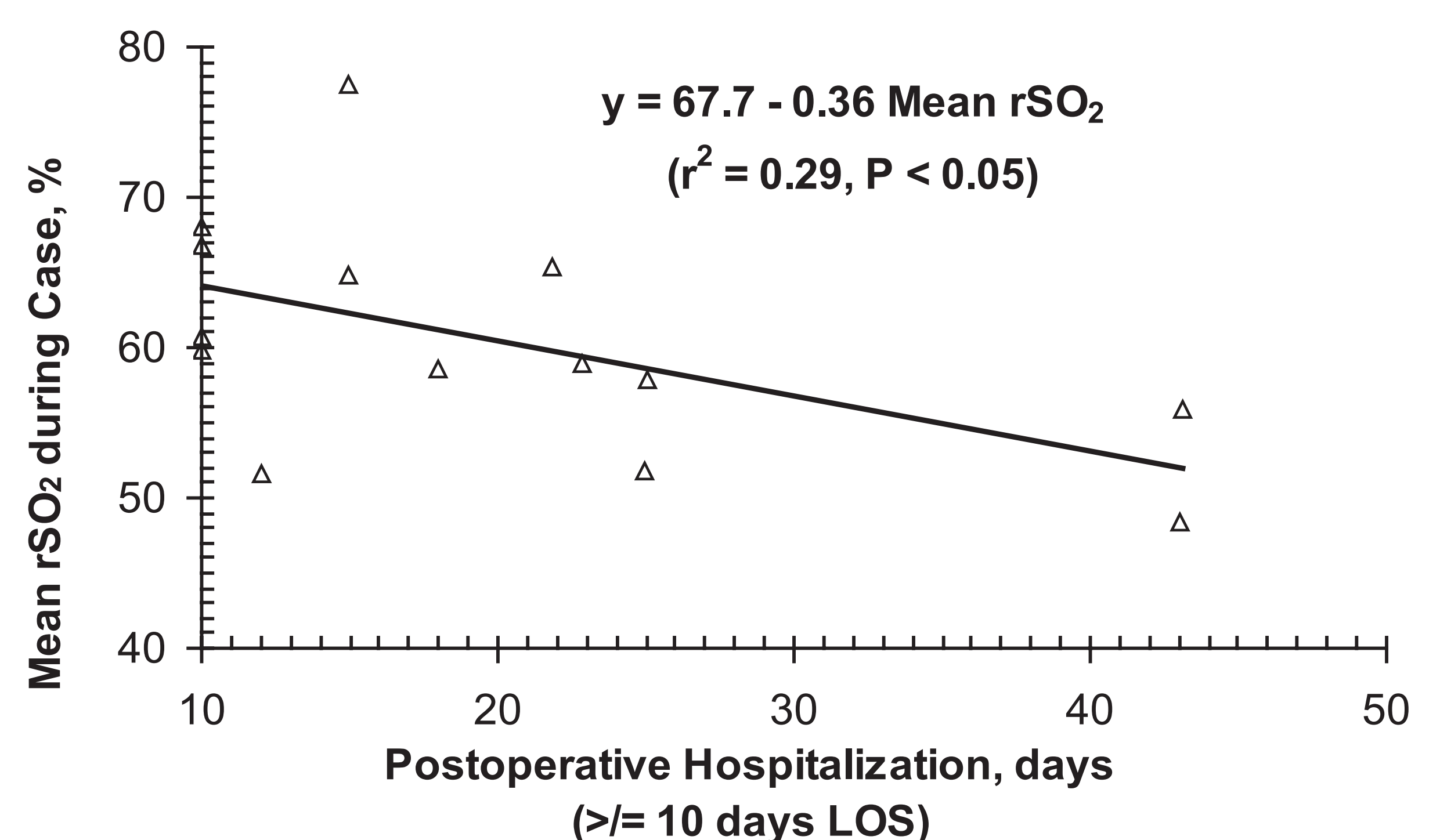
**In the intervention group**, a prioritized intraoperative management protocol was used to **maintain rSO<sub>2</sub> values at or above 75% of the baseline threshold.**

## Results

**Significantly more patients in the control group demonstrated prolonged cerebral desaturation (P=0.014) and longer duration in the intensive care unit (P=0.029) versus intervention patients.**

There was no difference in overall incidence of adverse complications, but **significantly more control patients had major organ morbidity or mortality** versus intervention group patients (P=0.048).

There was a significant (P<0.05) **inverse correlation between intraoperative rSO<sub>2</sub> and duration of postoperative hospitalization** in patients requiring ≥10 days postoperative length of stay.



## Conclusions of the authors

That treatment of declining rSO<sub>2</sub> prevented prolonged desaturations and was associated with a shorter ICU LOS and a significantly reduced incidence of major organ morbidity and mortality (MOMM).

While none of the interventions undertaken are outside the range of good clinical practice, it is clear that in the absence of feedback from a specific indicator of end-organ compromise (e.g., cerebral desaturations), the ability of the clinician to detect and optimize otherwise silent but potentially adverse perturbations in clinical variables remains limited.

This indicates a **clinical benefit to monitoring and managing cerebral oxygen saturation during CAB surgery.**

## Key message

Monitoring cerebral rSO<sub>2</sub> in coronary artery bypass patients avoids profound cerebral desaturation and is associated with significantly fewer incidences of major organ dysfunction.

Pubmed Link: <https://www.ncbi.nlm.nih.gov/pubmed/17179242>

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