

Goal-Directed Fluid Management Based on The Pulse Oximeter-Derived Pleth Variability Index Reduces Lactate Levels and Improves Fluid Management.

Forget P., Lois F., de Kock M. *Anesth Analg*. 2010 Oct;111(4):910-4.

Background

Dynamic variables predict fluid responsiveness and may improve fluid management during surgery. We investigated whether displaying the variability in the pulse oximeter plethysmogram (pleth variability index; PVI) would guide intraoperative fluid management and improve circulation as assessed by lactate levels.

Methods

Eighty-two patients scheduled for major abdominal surgery were randomized into 2 groups to compare intraoperative PVI-directed fluid management (PVI group) versus standard care (control group). After the induction of general anesthesia, the PVI group received a 500-mL crystalloid bolus and a crystalloid infusion of $2 \text{ mL} \cdot \text{kg}^{-1} \cdot \text{h}^{-1}$. Colloids of 250 mL were administered if the PVI was $>13\%$. Vasoactive drug support was given to maintain the mean arterial blood pressure above 65 mm Hg. In the control group, an infusion of 500 mL of crystalloids was followed by fluid management on the basis of fluid challenges and their effects on mean arterial blood and central venous pressure. Perioperative lactate levels, hemodynamic data, and postoperative complications were recorded prospectively.

Results

Intraoperative crystalloids and total volume infused were significantly lower in the goal-directed PVI group. Lactate levels were significantly lower in the PVI group during surgery and 48 hours after surgery ($P < 0.05$).

Conclusions

PVI-based goal-directed fluid management reduced the volume of intraoperative fluid infused and reduced intraoperative and postoperative lactate levels.