

Efficacy of Pleth Variability Index (PVI) to Evaluate Intraoperative Fluid Management During Orthopedic Spinal Surgery: A Randomized Controlled Trial. Journal of Anesthesiology and Reanimation Specialists' Society.

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Objective: To prevent complications during major surgery, it is important to monitor blood and fluid treatment. The Pleth Variability Index (PVI) allows noninvasive assessment of fluid management. It is based on respiratory changes in arterial pulse pressure. In our study, we aimed to compare the management in terms of variations in PVI in response to fluid loading in the monitorization of intraoperative fluid management in major surgery using classical calculation method and CVP

Method: The patients were randomized into two equal (n=50) groups. In Group C, the required amount of fluid replacement was carried out with crystalloid solutions using the 4-2-1 rule and by calculating fasting, maintenance, and insensible losses. In the PVI group, 250 mL of crystalloid solution was administered in 5 minutes to patients with a PVI greater than 14%, patients with a PVI less than 14% were administered a fluid infusion with an initial dose of 4 mL kg⁻¹ h⁻¹.

Results: In the comparison of intraoperative fluid management the amount of intraoperative fluid replacement was 3522±1098.1 mL in Group C and 1914±542.86 mL in Group PVI (p<0.05). The mean amount of intraoperative red blood cell transfusion was 0.42±0.57 unit in Group C and 0.08±0.27 unit in Group PVI (p<0.05). There were no significant differences between the groups in terms of postoperative red blood cell transfusion (p>0.05) or intraoperative hemoglobin levels (p>0.05).

Conclusion: It has been thought that PVI assessment is more valuable than CVP monitoring because it is noninvasive and thus provides better cardiac stabilization with less fluid replacement. It can also provide more accurate results when evaluating intravascular volume status.