

Title: The Effect of Fluid Loading on Cerebral Desaturation Events and Hemodynamic Parameters in a Beach-chair Position

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Background: Beach-chair position (BCP) is considered that there is a risk of decrease in venous return, cardiac output, and cerebral perfusion.

Objectives: The aim of this study is to investigate the effect of fluid loading on the maintenance of regional cerebral tissue oxygen saturation (rSO₂) and hemodynamic parameters during BCP.

Methods: Patients undergoing orthopedic surgery in BCP under general anesthesia were included and randomly assigned to nonloading or fluid loading group. Fluid loading was performed with 300 ml of colloids. An indwelling radial artery catheter was simultaneously connected to the Philips IntelliVue MP90 monitoring system and the EV1000. Non-invasive blood pressure, invasive arterial blood pressure, pulse pressure variation (PPV), stroke volume variation (SVV), cardiac index (CI), and rSO₂ were recorded.

Results and Conclusions: Thirty four patients were analyzed. There was significant correlation between CI just before position change and mean blood pressure in beach chair position (P=0.031). Regional cerebral tissue oxygen saturation decreased in beach chair position, but it did not induce any postoperative neurologic complication. Fluid loading reduced the incidence of hypotension (P=0.017), but this did not contribute to a reduction in the occurrence of cerebral desaturation events (P=0.721). We suggested that fluid loading influenced the hemodynamic parameters and prevented hypotension event. Further studies to

predict the main factor of cerebral desaturation event are needed.