

Title:

Effects of Preoperative Warming on Hemodynamic Changes Before Cataract Surgery

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Session Title:

Clinical Posters Session 2

Keywords:

Cataract patients, Preoperative hemodynamic change and Warming

References:

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Abstract Summary:

We assessed preoperative hemodynamic changes in patients receiving warming before cataract surgery and compared them with those who did not receive warming. Significant differences were found in the hemodynamic variability. Preoperative warming can reduce perioperative hemodynamic change.

Learning Activity:

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE
The learner will know the effects of warming on preoperative hemodynamic change in patients undergoing cataract surgery.	Preoperative warming can positively affect thermal comfort and sense of well-being.
The learner will understand that preoperative warming may help favorably improve the preoperative physiological status.	Tachycardia and hypertension can reflect a normal response to preoperative anxiety.

Abstract Text:

Background: Cataracts are the leading cause of visual impairment worldwide. Numerous studies show that physical function, mental health, emotional well-being, safety, and overall quality of life can be enhanced when visual function is restored by cataract extraction (Olson et al., 2016). Patients report the highest levels of anxiety preoperatively (Akhtar et al., 2016), with anxiety being common when anticipating surgery and being a major factor contributing to hemodynamic changes before entering the operating room (Tanaka et al., 2015). Preoperative warming has been shown to have a positive effect on thermal comfort and sense of well-being among patients. To the best of our knowledge, no study has assessed the effect of warming on preoperative hemodynamic change in patients undergoing cataract surgery.

Purpose: The aim of this prospective, randomized, controlled study was to assess the effect of preoperative warming on hemodynamic changes before cataract surgery.

Methods: After receiving approval from our local ethics committee and obtaining written informed consent from our patients, we enrolled 50 patients undergoing elective cataract surgery. Patients were randomized into preoperative warming or control groups using sealed, opaque envelopes containing computer-generated random numbers. Patients were then randomly allocated to receive either a resistive heating blanket or a cotton blanket. All patients were placed on a hospital bed 30 min before transfer from the ward to the operating room where non-invasive blood pressure monitoring and pulse oximetry were performed. We measured and recorded the heart rate, systolic and diastolic blood pressure, and the perfusion index at baseline, with the patient in a supine position. In the warming group, the resistive heating blanket was then switched on for 15 min and kept at 37°C; in the control group, the standard cotton blanket was used without active heating. When the patient entered the operating room, routine monitoring equipment was connected and the hemodynamic parameters were recorded again 5 min after entering the operating room.

Results: Of the 50 patients enrolled in the study, four patients were excluded because they could not complete the study. Therefore, 24 and 22 patients were randomized to the warming and control groups, respectively, with no statistically significant differences in characteristics between the groups. In addition, baseline hemodynamic parameters were not statistically significant within the warming and control groups. After entering the operating room, hemodynamic variability parameters were better in the warming group than in the control group, with the changes in heart rate (7.49 ± 7.82 beats/min vs. 13.59 ± 9.32 beats/min), systolic blood pressure (7.62 ± 6.56 mmHg vs. 20.24 ± 9.36 mmHg), and perfusion index (-3.99 ± 6.023 vs. -18.50 ± 10.38) being significant ($p < 0.01$).

Conclusions: The preoperative warming group showed a lower rate of change in key hemodynamic parameters compared with the control group. Thus, preoperative warming appears to reduce perioperative hemodynamic changes and stress-related increases in activity of the sympathetic nervous system.