

# PREINFUSION PREPARATION FOR CESAREAN SECTION: EFFECT ON THE INCIDENCE OF SPINAL- INDUCED HYPOTENSION

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**DOI: 10.52340/geoanesthesia.2026.09.04**

## Background

Spinal anesthesia is the method of choice for elective cesarean delivery; however, it is frequently associated with arterial hypotension due to sympathetic blockade, decreased systemic vascular resistance, and reduced venous return. Severe hypotension may be accompanied by nausea, vomiting, impaired uteroplacental perfusion, and the need for vasopressor administration. One component of preventing hemodynamic disturbances is rational fluid therapy before spinal anesthesia. Therefore, assessment of the effectiveness of crystalloid preinfusion before spinal anesthesia remains clinically relevant.

## Objective

To evaluate the effect of preinfusion with a balanced crystalloid solution on the incidence and severity of arterial hypotension during spinal anesthesia for elective cesarean delivery.

## Materials and Methods

The study included 320 pregnant women with singleton term pregnancies undergoing elective cesarean delivery under spinal anesthesia. The patients were divided into two groups of 160 each. In the main group (Group I), prior to spinal anesthesia, patients received a 15–20-minute preinfusion of the balanced hyperosmolar crystalloid solution Rheosorbilact. In the comparison group (Group II), fluid therapy was performed using Ringer's solution. In both groups, spinal anesthesia was performed with 0.5% hyperbaric Longocaine Heavy at a standard dose.

Systolic, diastolic, and mean arterial pressure, heart rate, incidence of hypotensive episodes, need for vasopressor support, incidence of nausea and vomiting, and neonatal status according to Apgar scores were assessed. Arterial hypotension was defined as a decrease in systolic blood pressure of more than 20% from baseline or a systolic blood pressure below 90 mmHg.

## Results and Discussion

Following the development of spinal block, more stable hemodynamics were observed in the main group. The incidence of arterial hypotension was 21.7% compared with 53.3% in the comparison group ( $p < 0.05$ ). A marked decrease in systolic blood pressure of more than 20% from baseline was recorded in 13.0% of patients in Group I and 36.7% in Group II ( $p < 0.05$ ). The need for vasopressor support was lower in the Rheosorbilact preinfusion group—10.4% versus 32.5% ( $p < 0.05$ ). Episodes of nausea and vomiting were also less frequent, occurring in 8.6% of patients in Group I compared with 25.0% in Group II. No clinically significant between-group differences in neonatal Apgar scores were observed.

The significant differences between the study groups were apparently related to the use of different solutions for preinfusion. Within 15–20 minutes after intravenous administration, crystalloid solutions are redistributed into the interstitial compartment, with only approximately 15–20% of the administered volume remaining in the intravascular space. The use of the hyperosmolar crystalloid solution

Rheosorbilact promotes redistribution of interstitial fluid into the intravascular compartment at a ratio of approximately 1:1.2 and helps maintain the intravascular volume effect for up to one hour.

### **Conclusion**

Preinfusion with the balanced hyperosmolar crystalloid solution Rheosorbilact before spinal anesthesia for elective cesarean delivery improves hemodynamic stability, reduces the incidence and severity of arterial hypotension, and decreases the need for vasopressor support compared with conventional crystalloid administration. Nevertheless, preinfusion should be considered a component of a comprehensive strategy for the prevention of spinal anesthesia-induced hypotension, together with timely hemodynamic monitoring and rational use of vasopressors.