



ORIGINAL RESEARCH **Plasmalyte and Ringer Lactate**

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Background: Pediatric heart surgery, particularly for

cyanotic congenital heart conditions, commonly

requires the utilization of cardiopulmonary bypass

(CPB) to assist with surgical interventions. The

choice of priming solution for the CPB circuit can

influence postoperative outcomes. This study aimed

to assess the impact of two different priming

solutions, Plasmalyte and Ringer's Lactate, on

postoperative outcomes, blood biochemistry,

pulmonary and renal function, bleeding, and

hemostasis in children undergoing open cardiac

surgery with CPB. Methods: This randomized

prospective study was conducted on 80 pediatric

patients aged 1 to 10 years, undergoing elective

cardiac surgery with CPB. Patients were randomly

assigned to receive either Plasmalyte (Group A) or

Ringer's Lactate (Group B) as their CPB circuit

priming solution. Standardized protocols for

anesthesia, CPB circuit components, and surgical

techniques were maintained. Postoperative

parameters including blood chemistry, perfusion

indicators, and physiological measurements were

recorded and analyzed. Results: After CPB initiation,

lactate levels were significantly higher in Group B

(Ringer's Lactate) compared to Group A

(Plasmalyte) (P-value <0.001). Calcium levels also

showed a significant difference between the two

groups (P-value <0.001). Postoperative lactate

levels remained higher in Group B (P-value < 0.001),

while bicarbonate, calcium, urine output, urea, and

creatinine levels at 6th hour postoperatively were

statistically significant (p<0.05). Conclusions:

Priming the CPB circuit with Plasmalyte may be

associated with favorable outcomes in terms of

lactate and calcium levels compared to Ringer

Lactate in pediatric patients undergoing cardiac

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Plasmalyte and Ringer Lactate as Priming Solutions

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Abstract

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Comparative Study

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