

Physician - Valvular Diseases and Surgery

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Comparison of Plegisol and del Nido Cardioplegia on Right Ventricular Function and Outcomes in Cardiac Surgery

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Objective: This study aimed to evaluate the impact of plegisol and del Nido cardioplegia on right ventricular (RV) function and assess the associated mortality and morbidity.

Methods: This single-center prospective study was conducted with 70 patients who underwent aortic valve and ascending aorta procedures between March 2022 and August 2023. Plegisol was used in 35 patients (Group P), and del Nido cardioplegia was used in 35 patients (Group D). Right ventricular function was assessed preoperatively and postoperatively using the following echocardiographic parameters: TAPSE (tricuspid annular plane systolic excursion), fractional area change (FAC), TDI, pulmonary pressure time (PPT), and RV strain. Additionally, NT-proBNP (N-terminus pro-B-type natriuretic peptide) levels and MELD-Na (model for end-stage liver disease-sodium) scores were recorded.

Results: On the fifth postoperative day, there were no statistically significant differences in strain, TDI, TAPSE, and FAC between the groups; however, PPT was significantly higher in Group D (mean PPT: 238±36 sec, p=0.002). At six months, the mean RV strain was -13.8±3.4 in Group P and -16.1±2.6 in Group D (p=0.007). The mean FAC was 35.1±7.6 in Group P and 40.3±5.5 in Group D (p=0.01). No significant differences were found in NT-proBNP levels. Intraoperative ventricular temperatures were consistently higher in Group D (p<0.001). The mean postoperative MELD-Na score was higher in Group P (13.9±7.2) compared to Group D (10.4±5.6, p=0.006). No significant difference was observed in postoperative mortality; however, hospitalization was longer in Group P (p=0.01).

Conclusion: This study is the first to simultaneously evaluate five parameters for assessing RV function and to compare Plegisol and del Nido cardioplegia. The RV function declined postoperatively in both groups, with dysfunction persisting longer in Group P. No differences were found in mortality or morbidity. Differences in echocardiographic and laboratory tests did not affect clinical outcomes.

Keywords: Cardioplegia, del Nido, failure, MELD, right ventricle, St. Thomas II.