

ON BYPASS

Personal Clinical Experience With A Modified del Nido Cardioplegia Solution

Microplegia is a technique that consists of mixing blood from the cardiopulmonary bypass circuit with small quantities of concentrated additives to arrest the heart and provide myocardial protection from ischemia and reperfusion. Large amounts of blood cardioplegia can be delivered with relatively minimal volumes of crystalloid being used. One of the major debates among clinicians is if blood cardioplegia is superior to crystalloid cardioplegia and how much blood is needed to optimize a technique. Currently, no major focus has been attempted in the study of using more blood in the del Nido cardioplegia solution. In this study, this practice is achieved through the use of a Quest Medical MPS cardioplegia delivery system.

See Table 1

Fifty patients undergoing valve surgeries were selected in the study. Inclusion criteria were age between 30-70 years and left ventricular ejection fraction greater than 40%. Exclusion criteria were for CABG procedures or other surgical procedure in addition to the planned valve surgery. Patients were randomized to the modified del Nido solution or the traditional del Nido cardioplegia solution group (n = 25 each). The perfusionists either used the Quest Medical Myocardial Protec-

tion System (MPS) to deliver the modified del Nido or the Sorin Vanguard Cardioplegia System to deliver the traditional del Nido cardioplegia solution.

Overall, initial results demonstrate earlier extubation time by 2-3 hours (3.27 hours vs 5.74 hours), shorter length of ICU stay by 24-36 hours (58.32 hours vs 88.8 hours), and less hemodilution among patients undergoing cardiopulmonary bypass (5.8% vs 10.25%) among patients who received the modified del Nido cardioplegia solution. The P values for all three metrics measured were all statistically significant (P value <0.05). P values were calculated using the unpaired t test. In addition, in the modified del Nido solution group, none of the cases performed required blood transfusion and 4% of the cases performed required a hemoconcentrator. In the other group, 36% of the cases performed required blood transfusion and 76% of the cases performed required the use of a hemoconcentrator. However, a more accurate finding regarding blood transfusion rates and hemoconcentrator use can be further assessed with a larger sample size.

The full manuscript of this article has been submitted to the journal Perfusion for possible publication.

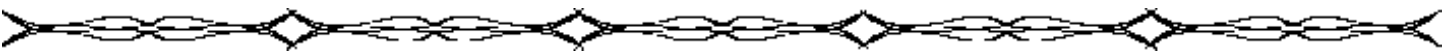
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**Table 1.** Modified Components of del Nido Cardioplegia Solution

25% Mannitol	10.4mL
50% Magnesium Sulfate	3.2mL
8.4% Sodium Bicarbonate	10mL
Potassium Chloride (2meq/mL)	13mL
1% Lidocaine	11mL

Table 1. Instead of the traditional 1:4 ratio (blood to crystalloid), the patient's pure blood is mixed with the modified components of del Nido cardioplegia solution designed to arrest, protect, and optimally maintain myocardial protection throughout the procedure via the Quest Medical MPS. The Plasmalyte A solution component is not used and substituted with the patient's own blood.