Commentary: del Nido versus blood cardioplegia for aortic valve replacement: The choice is yours. Proceed with caution

Richard J. Shemin, MD

From the Division of Cardiac Surgery, Department of Surgery, Cardiovascular Center at UCLA, David Geffen School of Medicine at UCLA, Los Angeles, Calif.

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Address for reprints: Richard J. Shemin, MD, 100 UCLA Medical Plaza, Suite 730, Los Angeles, CA 90095 (E-mail: Rshemin@mednet.ucla.edu).

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The use of intermittent cold blood cardioplegia is a well-established technique to protect the myocardium used in the entire spectrum of cardiac surgery. The laboratory and clinical evidence is overwhelming and has led to almost universal adoption. The principles of achieving early diastolic arrest, periodic redosing, the basic myocardial protection solution constituents, cold temperature of the solution, antegrade and retrograde delivery, and controlled reperfusion maximize protection during several hours of ischemic arrest. It is effective in patients with low ejection fraction, ischemic, and valvular disease and donor organ preservation for heart transplantation.

del Nido cardioplegia has had significantly less basic research but clinically has been the solution of choice for many congenital cardiac surgeons for several years. The clinical experience is extensive. The growth in the number of congenital operations in the adolescent and adult populations has provided the early experience of their efficacy and safety in the mature heart. The expansion of their use in acquired adult cardiac surgery has been rapid in recent years. The early published case series is promising.

The primary lure is ease of administration (often single dose for up to 90 minutes) with a reliable degree of protection. However, we need to understand the limitations in specific patient subgroups. The reported effectiveness in published series for valve repair or replacement operations has led to expanded use in coronary artery surgery. The use in patients with low ejection fraction is more recent, and the experience is limited. Some clinicians have used del Nido solution for donor organ preservation. The advantages of not having to re-dose up to 90 minutes for robotic and minimal access procedures have resulted in enthusiastic adoption.

Is there a limit? What are the effects of combining intermittent cold blood cardioplegia for part of the operation and del Nido solution during the same crossclamp time?

Cold blood versus del Nido solutions and techniques of administration require continued investigation.

Central Message

This study with the accumulating clinical evidence continues to demonstrate the equivalent degree of myocardial protection for del Nido solution compared with cold blood cardioplegia. The exposure to subsets of patients with low EF and requiring complex surgery requires broader clinical experience.

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Without a modified reperfusion strategy, why does the protection appear to be equivalent to intermittent blood cardioplegia? Why don't we see return of electrical activity for up to 90 minutes because of wash-out and warming of the myocardium due to noncoronary collateral flow? There are still many unanswered questions.

Thus, the clinical results in this single-center series are consistent with published series by Mick and colleagues¹ and Ad and colleagues² demonstrating the equivalence or superiority of del Nido to blood cardioplegia.³ The impact on intraoperative blood glucose management and crystalloid requires management. However, the convenience factor (single administration) allows the surgeon to focus on the procedure and not on cardioplegia administration.

Therefore, the choice is up to the surgeon. We should proceed with caution. The limits of the del Nido solution and the single 90-minute technique need further investigation in various subsets of patients, for example, ischemic patients and patients with low ejection fraction and complex cardiac procedures. To compare published studies, we need consistency in the appropriate end points to measure.

Do we have equipoise? This author is enthusiastic about del Nido cardioplegia but remains cautious.

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