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Commentary: Vita nova or vanitas? Outcomes in cardiac retransplantation

Jason J. Han, MD, Benjamin Smood, MD, and Pavan Atluri, MD

Donor organs are a scarce entity. To arrive at the fairest consensus regarding allocation, recipient selection necessitates delicate negotiation among clinical urgency, organ quality, and prognosis. The guidelines were most recently updated in 2018,¹ and will continue to evolve in accordance with evidence-based and societal value systems. It is at this critical juncture that Zhu and colleagues² share their insights on patient outcomes following cardiac retransplantation from a historic institution whose name is synonymous with the birth of the field in the United States.^{3,4} Fundamentally, the question the authors pose is, Does repeated heart transplant equate to *vita nova* or *vanitas*—new life or futility?

In their institutional series comparing 1980 primary transplants to 123 patients who underwent cardiac retransplantation (~6.5 years after primary transplant), retransplantation expectedly involved an older population and incidence of comorbidities associated with aging and chronic immunosuppression, including nearly 20% with a history of cancer and successful treatment years before retransplantation.

After propensity score matching, postoperative complications and outcomes were similar between cohorts. Nevertheless, median survival among retransplant recipients remained inferior (4.6 vs 6.5 years). Zhu and colleagues² astutely observe that the groups' comparative survival curves cross by 10 years, concluding that the apparent disparate outcomes are most suggestive of early rather than long-term effects. However, exactly how long this hazard persists after retransplantation remains to be determined.

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Jason Han, MD (left), Benjamin Smood, MD (middle), and Pavan Atluri, MD (right)

CENTRAL MESSAGE

Cardiac retransplantation is a viable option; providers should consider survival disparities based on patient selection.

In addition, there are 2 nuanced, favorable observations. First, patients who underwent retransplantation within a year after primary transplant had dismal outcomes with a median survival <3 months. All of these were due to primary graft dysfunction, which historically required emergent retransplantation, but in the current era can be effectively treated with mechanical circulatory support (MCS) alone.^{5,6} Outcomes after retransplantation for indications other than primary graft dysfunction were auspicious. Additionally, there have been significant advancements in multiorgan transplantation over the past 2 decades leading to excellent outcomes comparable with those of single-organ transplantation.^{7,8} These options will help preserve candidacy for select patients who have end-stage renal failure in addition to heart failure, which pose a contraindication to either option alone.

The authors appropriately conclude that retransplantation should be considered for select patients. Indeed, retransplantation comprises only a fraction of the labyrinthine walls of cardiac transplantation, making it difficult to ascertain the future of the field in light of its dynamism regarding multiorgan transplantation, MCS, adult congenital heart disease, and donation after circulatory death. Median survival in either cohort also did not exceed 7 years in this study, which is comparable to survival with ventricular assist devices in highly select patient populations.⁹ These numbers foreshadow a future where transplantation and MCS may offer equivalent benefits in certain populations. Overall, the authors deserve our congratulations for their significant, timely, and thought-provoking contribution.

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Commentary: Heart transplant second chances: Retransplantation should be supported by allocation algorithms

James K. Kirklin, MD

Zhu and colleagues¹ provide an excellent review of an amazing 50-year experience in cardiac retransplantation. Seeing the simple notation in the Methods section of a clinical experience “from January 6, 1968...”, my mind promptly returned to an era of intense global competition to perform the world’s first human heart transplant. Of course, it all began with Norman Shumway’s pioneering work in the early 1960s with his close friend and colleague Richard Lower. Through seminal scientific studies, Shumway and his team paved a path toward clinical application of this extraordinary therapy. There was no shortage of drama in those early days, as Shumway, Christian Barnard, and Adrian Kantrowitz raced to accomplish this feat. Barnard achieved first success on December 3, 1967, in what is among the most celebrated events in medical history.

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CENTRAL MESSAGE

After risk adjustment, cardiac retransplantation provides similar long-term survival as does primary transplant, supporting this life-saving option in the heart transplant algorithm.

Shumway and his team performed the world’s fourth human heart transplant on January 6, 1968, and because of his critical contributions, Shumway is widely recognized as the father of clinical heart transplantation.

When cyclosporine gained Food and Drug Administration approval for clinical use in 1983, the rapid improvement in heart transplant outcomes heralded a dramatic proliferation of programs and heart transplants, promptly exposing the Achilles’ heel of this therapy: A shortage of donor organs. Predictably, ethical arguments abounded about the role of cardiac retransplantation: commitment to individual patients who are totally dependent on a transplanted heart for survival versus the community of advanced heart failure patients who