



BEATING HEARTS, TOUCHING LIVES – OUR EXPERIENCE CARDIAC TRANSPLANT AT A TERTIARY CARE HOSPITAL

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INTRODUCTION

End stage heart failure commonly results in significant morbidity, need for recurrent hospitalization, decreased quality of life and increased mortality – causing an overall deterioration in the physical and general condition of not only the patient but also the personal caregivers. In such patients and situations, Cardiac Transplantation appears as an effective therapy. With tremendous achievements in the fields of immunosuppression, rejection, and infection, what was once considered an experimental intervention, has now become a routine worldwide treatment. First attempted by Alexis Carrel and Charles Guthrie in 1905 in an animal model, to the first human cardiac transplant, all be it unsuccessful, using a xenotropic heart from a chimp by James Hardy in 1964, due to restriction in freedom to proceed being in the form of the legal definition of death, with the patient succumbing within an hour of surgery due to hyperacute rejection, to the first actual human-to-human heart transplant in December 1967 by Christiana Barnard, from a brain dead young girl to an elderly male, cardiac transplant has now evolved in a multitude of ways to reach the current world scenario^[1].

In the current world situation, there are about at least 5000 cardiac transplants being done worldwide with over at least 3000 people waiting on a heart at any time. The American scenario has documented an approximate of about 2400 cardiac transplants a year^[2] with the National scenario being at over 200 heart transplants a year, the main reason for shortfall being a lack of donors, primarily due to a lack of awareness and counselling. This study aims to evaluate the current situation in our hospital, a large volume tertiary care government hospital set-up, with respect to cardiac transplantations, and its outcomes in this institute.

MATERIALS AND METHODS

The aim of the study was to evaluate the scenario and outcomes of cardiac transplant in Madras Medical College & Rajiv Gandhi Government General Hospital, Chennai, a tertiary care, and government headquarters hospital with the available resource pool; the objective being to assess the number of cardiac transplants in a tertiary government hospital set up and its outcomes both immediate and delayed.

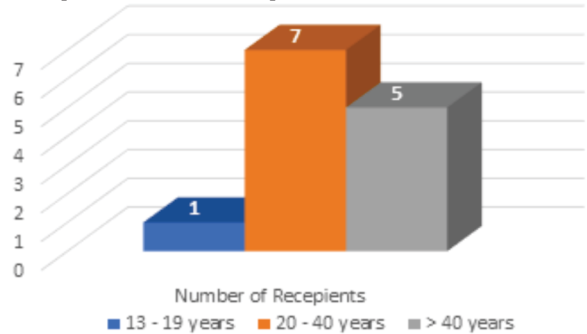
This was a retrospective observational study, over a period of 13 years since the inception of this surgery in this institute. Patient information was gathered from old medical records from the medical records department, with the spectrum of date collection including pre-operative, intra-operative and immediate post operative in hospital follow-up. In view of the rarity of the procedure, every case that underwent surgery was sampled as a census study, the study population being all patients who underwent cardiac transplant in our institute over the period from 2009 to 2022.

RESULTS

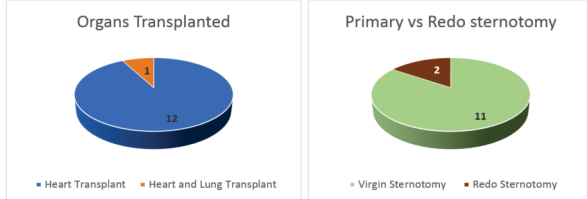
The first heart transplant in this institute was done in 2009 and there have been a total of 13 cardiac transplants since. There were 2 females (15.6%) of the total 13 patients, the remaining being males (84.6%).



The commonest age group into which most transplant patients fell was the age group of 20 – 40 years, with 7 patients in the age group (53.8%). 1 patient was less than 20 years old (7.6%) and 5 patients more than 40 years old (38.5%).



12 of the patients (92.3%) underwent isolated heart transplant, which only 1 underwent a heart and bi-lung transplantation. And 2 of the 13 surgeries (15.4%) were redo sternotomy, indicating that the indication for transplantation had occurred after failure of the heart following a primary corrective surgery.



Survival distribution in our cases showed a mortality of 11 cases due to various reasons; 2 of the transplant recipients are alive till date. 4 patients expired within the 1st month of the transplant, 4 within 1 – 6 months of the transplant and 3 patients within 1 year of the surgery. 2 patients are still alive till date (23% institutional survival rate)



Various causes of death of the 11 patients were identified, the distribution as follows.

Cause	Number
RV Dysfunction	03
Acute Rejection	01
Sepsis and MODS	03
COVID	01
Others	
Dissecting Aneurysm	01

Chronic Kidney Disease	01
Uncontrolled Bleeding	01
Total	11

The major cause of death identified amongst our patients were either RV dysfunction or Sepsis and MODS (27% each). One recipient died during the COVID-19 pandemic due to the same, and not of any cardiac or transplant related cause per se.

DISCUSSION

Cardiac Transplant is now considered the treatment of choice for end stage heart failure patients, the potential candidate evaluation being done by a multidisciplinary team to identify suitable donors who must be "relatively healthy patients" with end stage cardiac failure, refractory to appropriate medical and surgical therapies, however possessing the potential to resume normal active life and maintain a compliance with rigorous medications^[3]. Being a procedure with vast logistics and a need for life long strict compliance and on-going work from both the patient and the health care team's side, proper recipient selection plays a major role in the overall long-term success and survival of the patient post-surgery. Immediate post operative management plays a major role in patient outcome, however proper patient follow-up and compliance has a larger effect on long term survival. Even though considered the standard of treatment for end stage heart failure, cardiac transplant remains unreachable for a vast majority of the patients due to the costs, equipment and paraphernalia required. Apart from the fact that donor availability is restricted, poor socioeconomic status and lack of awareness of treatment options also play a major role in fewer recipients undergoing successful transplant. While a suitable donor does not only include a blood grouping-typing match and a HLA match but also requires a matching body surface area and a matching physical build and chest circumference with a gender match between the donor and recipient, finding the "perfect heart" is mostly a challenge oftentimes^[4]. This added to the cost of the procedure and the lack of equipment poses a serious challenge to perform cardiac transplants on a widespread and regular basis.

CONCLUSION

Heart transplants or heart and lung transplants are high end procedures, still posing various challenges to complete successfully. Being a government hospital set up, our institute, Rajiv Gandhi Government General Hospital has performed all 13 transplants totally free of cost to the patients, eliminating a major deterrent of cost for patients from the pool of general population. After appropriate donor selection, recipient evaluation, with available limited resources at our, we have been able to successfully perform to completion 13 cardiac transplant surgeries, overcoming logistic and other hurdles. Overall, we were able to achieve a survival rate of 23% for more than a year, with 2 of our recipients alive and well; and 7.6% for more than 2 years, as our latest successful transplant surgery was less than a year ago. RV dysfunction, sepsis and MODS were found to be the major causes of immediate and early cause of death amounting to 27% each. We however have taken lessons in management from each of our 13 cases and improved serially the patient outcome over the last few cases and with proper patient counselling, selection and follow up and donor awareness, hope to improve both donor prospects and recipient survival in the oncoming future.

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