



Smidt Heart Institute

The Outcome of Redo Heart Transplant Patients

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Abstract

Background: Redo heart transplantation remains the only treatment for cardiac graft failure. Past research has shown that redo heart transplantation appears to have acceptable outcomes in selected patients. However, it has been shown that redo heart transplant patients have a higher tendency towards developing circulating antibodies post- redo transplant and could be at risk for worse outcome. We sought to assess the outcome of redo heart-transplant patients at our large single center.

Methods: Between 2010 and 2018 we assessed 871 patients undergoing heart transplantation. We divided these patients into those who underwent their first transplant (T1: n=837) and those who underwent their second or third transplant (T2/3: n=34). Endpoints included 1 and 5 year survival, freedom from the development of CAV (as defined by stenosis ≥ 30% by angiography), non-fatal major adverse cardiac events (NF-MACE: myocardial infarction, new congestive heart failure, percutaneous coronary intervention, implantable cardioverter defibrillator/pacemaker implant, stroke), any treated rejection (ATR), acute cellular rejection (ACR), antibody-mediated rejection (AMR).

Results: There was no difference between the two groups in terms of 1 or 5-Year survival, freedom from CAV, NF-MACE or any rejection. However, there was a numerical difference towards worse 1-Year Freedom from NF-MACE in the redo transplant group.

Conclusion: Redo heart transplantation in our single-center appears to have acceptable outcomes compared to those undergoing their first transplant. Further study with larger numbers are warranted.

Demographics

Demographics	First Transplant (n=837)	Second or Third Transplant (n=34)	P-value
Mean Recipient Age, Years ± SD	55.5 ± 12.7	51.8 ± 14.7	0.099
Mean Donor Age, Years ± SD	35.6 ± 14.5	37.8 ± 12.2	0.390
BMI, Mean ± SD	25.2 ± 4.6	24.4 ± 4.4	0.329
Female (%)	28.4%	47.1%	0.032
Previous Pregnancy in Females (%)	73.5%	68.8%	0.771
Ischemic Time, Mean Mins ± SD	167.1 ± 55.8	183.5 ± 49.5	0.114
Primary Reason For Transplant, Underlying Diagnosis of CAD (%)	31.5%	52.9%	0.014
Status 1 at Transplant (%)	83.0%	67.6%	0.035
Cytomegalovirus Mismatch (%)	23.3%	12.5%	0.199
Diabetes Mellitus (%)	31.8%	55.9%	0.005
Treated Hypertension (%)	54.9%	62.5%	0.471
Insertion of Mechanical Circulatory Support Device (%)	28.6%	17.6%	0.242
Prior Blood Transfusion (%)	38.7%	72.7%	<0.001
Pre-Transplant PRA ≥ 10% (%)	31.2%	44.1%	0.132
Pre-Transplant Creatinine, Mean ± SD	1.5 ± 1.1	1.8 ± 1.4	0.131
ATG Induction Therapy (%)	53.8%	61.8%	0.386

Background

- Redo heart transplantation remains the only treatment for cardiac graft failure.
- Past research has shown that redo heart transplantation appears to have acceptable outcomes in selected patients.
- However, it has been shown that redo heart transplant patients have a higher tendency towards developing circulating antibodies post- redo transplant and could be at risk for worse outcome.
- We sought to assess the outcome of redo heart-transplant patients at our large single center.

Purpose

To assess the outcome of redo heart-transplant patients at our large single center.

Methods

- Between 2010 and 2018 we assessed 871 patients undergoing heart transplantation.
- We divided these patients into those who underwent their first transplant (T1: n=837) and those who underwent their second or third transplant (T2/3: n=34).
- Endpoints included:
 - 1 and 5-year survival
 - 1 and 5-year freedom from the development of cardiac allograft vasculopathy (CAV, stenosis ≥ 30% by angiography)
 - 1 and 5-year freedom from non-fatal major adverse cardiac events (NF-MACE: myocardial infarction, new congestive heart failure, percutaneous coronary intervention, implantable cardioverter defibrillator/pacemaker implant, stroke)
 - 1-year-freedom from any treated rejection (ATR), acute cellular rejection (ACR), and antibody-mediated rejection (AMR)

Outcomes

Endpoints	First Transplant (n=837)	Second or Third Transplant (n=34)	P-value
1-Year Survival	90.4%	88.2%	0.644
5-Year Survival	85.7%	82.4%	0.504
1-Year Freedom from CAV	92.2%	100%	0.107
5-Year Freedom from CAV	89.4%	94.1%	0.423
1-Year Freedom from NF-MACE	86.3%	76.5%	0.109
5-Year Freedom from NF-MACE	81.8%	73.5%	0.105
1-Year Freedom from ATR	86.3%	91.2%	0.419
1-Year Freedom from ACR	93.3%	94.1%	0.896
1-Year Freedom from AMR	94.5%	94.1%	0.883

Results Summary

- There was no difference between the two groups in terms of 1 or 5-Year survival, freedom from CAV, NF-MACE or any rejection.
- However, there was a numerical difference towards worse 1-Year Freedom from NF-MACE in the redo transplant group.

Conclusion

- Redo heart transplantation in our single-center appears to have acceptable outcomes compared to those undergoing their first transplant.
- Further study with larger numbers are warranted.

Author Disclosures

F Esmailian has received research grants from TransMedics Inc and is a consultant for Biom Up SA. D Ramzy has received honoraria from Abiomed, Cardiac Assist Inc, Medtronic Vascular Inc, and Zoll Services LLC and is a consultant/speaker for Abbott Laboratories, Baxter Healthcare, and Intuitive Surgical Inc. J Kobashigawa has received research grants and/or honoraria from CareDx, Inc., Sanofi-Genzyme, CSL-Behringer and One Lambda Inc. and is part of the advisory board for TransMedics. D Emerson, D Megna, and R Levine have no financial relationships to disclose.