JHLT Open. 2025 May 26:9:100289. doi: 10.1016/j.jhlto.2025.100289. eCollection 2025 Aug.

Donation after circulatory death with thoracoabdominal normothermic regional perfusion recovery has similar outcomes with donation after brain death for lung transplantation

Sarah Y Park [1], Emily Hay-Arthur [1], Elizabeth J Bashian [1], Han Le [1], Michal Schäfer [1], David N Campbell [1], Nicholas R Teman [1], Alice L Gray [2], Jordan R H Hoffman [1], Michael T Cain [1]

Affiliations

PMID: 40568346 PMCID: PMC12192336 DOI: 10.1016/j.jhlto.2025.100289

Abstract

Introduction: Donation after circulatory death (DCD) with thoracoabdominal normothermic regional perfusion (TA-NRP) has been increasingly used to procure cardiac allografts; however, concerns persist regarding its impact on lung allografts. We present our institution's experience with DCD TA-NRP and donation after brain death (DBD) lung transplants, comparing outcomes between the two techniques.

Methods: All lung transplants recovered with DBD or DCD TA-NRP performed between October 2022 and December 2024 were included. DCD TA-NRP procured lungs were retrieved using a lung protective strategy including early reintubation and pulmonary venting as previously described. The primary outcome was survival, with secondary outcomes of primary graft dysfunction (PGD) and pulmonary-related mortality.

Results: There were 85 DBD and 23 DCD TA-NRP lung transplants performed in the study period. Overall survival was not significantly different by Kaplan-Meier curve (p = 0.49), with 1-year absolute survival of 81.6% for DCD TA-NRP, with only one pulmonary-related mortality, and 89.4% for DBD, with six pulmonary-related mortalities. PGD grade 3 rates were not statistically different at postoperative day (POD) 0 (47.8% DCD TA-NRP vs 35.2% DBD, p = 0.27), POD 1 (21.7% vs 10.6%, p = 0.16), POD2 (8.7% vs 11.7%, p = 0.68), and POD3 (13.0% vs 11.8%, p = 0.87). Other intraoperative and postoperative outcomes were not significantly different.

Conclusion: Lung transplantation outcomes were not significantly different between lung grafts recovered by DCD TA-NRP and DBD. This early data suggests TA-NRP may not adversely impact DCD lung allografts during procurement.

Keywords: Donation after brain death; Donation after circulatory death; Lung transplantation; Normothermic regional perfusion; Primary graft dysfunction.