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Commentary: Hope on the horizon: Heart transplantation with donation after circulatory death

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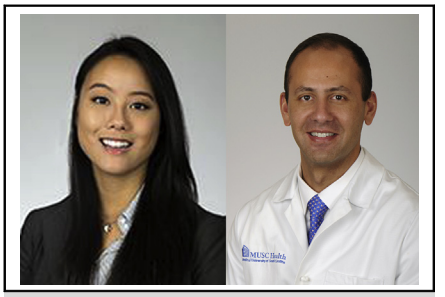

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CENTRAL MESSAGE

Heart transplantation with donation after circulatory death is being adopted across the United States. Ongoing evaluation of its impact on organ use and transplantation outcomes is warranted.

Several major changes have recently occurred in heart transplantation. The use of hepatitis C–positive donors rapidly expanded in the setting of a burgeoning opioid epidemic and development of highly effective antiviral therapies. Just a few days ago, xenotransplantation became a real phenomenon with the implantation of a pig heart into a human recipient.[1]

In their brief research report, Jawitz and colleagues[2] present findings regarding one of the newer trends in heart transplantation: organ donation after circulatory death (DCD). Focusing on donor characteristics in the early adoption of this practice in the United States, the authors queried the United Network for Organ Sharing (UNOS) dataset for heart donors using conventional donation after brain death (DBD) versus DCD. They show that DCD hearts made a considerable debut, with 143 DCD hearts used for transplant from January 2020 to March 2021. While this comprised only 3.3% of transplantations, the authors show that 14 distinct transplant centers procured these hearts, and all but 6 states provided them. With the potential to expand the donor pool by 30%, DCD heart transplant is attracting national attention.

The authors show that DCD heart donors are highly selected. Compared with DBD donors, DCD heart donors are more frequently male and white and have markers of better clinical status such as lower creatinine and greater left ventricular ejection fraction. More than three-quarters of DCD heart donors were blood type O, indicating another significant difference compared with DBD donors. Although this retrospective analysis of registry data cannot explain these differences, this may indicate (1) the selection of donor hearts believed to better tolerate warm ischemia, or (2) the selection of donors likely to benefit recipients with longer waitlist times such as those with large predicted heart mass who are likely to require male donors or blood type O recipients who require type O donors.

While this analysis does not report DCD heart recipient characteristics or their outcomes, it does anticipate these publications. A randomized clinical trial is nearing completion and will compare 6-month survival after DCD heart transplantation using the TransMedics Organ Care System against DBD transplant.[3] In addition, the first 3 US series of DCD heart recipient outcomes were recently published in 2021, including a UNOS analysis of 136 DCD heart transplants and 2 institutional series of DCD heart transplant using normothermic regional perfusion (NRP).[4-6] While 6-month mortality after DCD transplant appears to be equivalent to DBD in the UNOS analysis, this may not

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fully account for bias from a highly selected population of DCD donors and recipients. Not least of all, ongoing dramatic changes in the field of heart transplantation—and a worldwide pandemic—may confound early analyses of DCD heart transplantation.

In this era of great changes, wider adoption of DCD heart transplantation in the United States is likely to continue, with eager anticipation of outcomes data. Particular attention will likely be paid to ethical issues regarding various DCD practices such as NRP, comparative outcomes between direct procurement versus NRP, and the overall impact of DCD on national practice and patient outcomes.

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