Donation after circulatory death guidelines

Continue

Donation After Cardiac Death (DCD)

For Donation After Cardiac Death to Occur:

- Severe Neurologic Insult or Injury
- Trauma (MVA, GSW)
- Cerebral Vascular Accident (CVA)
- Anoxia (MI, Drug Overdose, Drowning, Hanging)

Patients Do Not Meet the Criteria For Brain Death

- Gives Family the Option of Organ Donation for the Severely Brain Injured (but Not Brain Dead) Patient.
  - US DCD Donors Average: 10%
  - UW OPO DCD Donors Average: 30%

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Keynote Lecture Series

Heart transplantation from donation after circulatory determined death

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Fifty years since the first successful human heart transplant from a non-heart beating donor, this concept of heart transplantation from donation after circulatory determined death (DCD) promises to be one of the most exciting developments in heart transplantation. Heart transplantation has established itself as the best therapeutic option for patients with end-stage heart failure, with the opportunity to provide these patients with a near-normal quality of life. However, this treatment is severely limited by the availability of suitable donor hearts. In recent times, heart transplantation has been limited to using donor hearts from donors following brain stem death. The use of donor hearts from DCD had been thought to be associated with high risk and poor outcomes until recent developments in organ perfusion and retrieval techniques have shown that this valuable resource may provide an answer to the global shortage of suitable donor hearts. With established DCD heart transplant programmes reporting encouraging results, this technique has been shown to be comparable to the current gold standard of donation after brain death (DBD) heart transplantation.

Keywords: Heart; transplant; circulatory death

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Introduction

Heart transplantation worldwide has been accepted as the best treatment for patients with medically refractory end stage heart failure. Recent data from the International Society for Heart and Lung Transplantation from 1982 to 2014 including data on more than 100,000 heart transplants show continuously improving median survival with patients from 2002–2008 benefitting from a median survival of 11.9 years (1). Despite being such an effective therapy, its utilization is limited by the short supply of suitable donor hearts. In the United Kingdom (UK), only 27% of hearts from donors following brain stem death [donation after brain death (DBD)] that are offered are eventually accepted for transplantation. Unfortunately, this translates to 43% of patients on the heart transplant waiting list either dying or becoming too sick to be suitable for a heart transplant (1).

To address the increasing demand for heart transplantation, the heart transplant community were forced not only to extend the acceptability criteria for DBD hearts but also to re-explore heart transplantation using hearts from donation after circulatory determined death (DCD). Until recently, anxieties concerning the unquantifiable warm ischemic injury to the myocardium following cardiac arrest coupled with the inability to assess function of the asystolic heart have been major hurdles preventing further attempts at transplanting DCD hearts. However, with advances in technology, research and the desperate need for suitable donor hearts, successful DCD heart transplant programmes have been established with very encouraging results to date.

The potential for DCD heart donation

Donor shortage is not limited to cardiac transplantation alone. Despite early transplantation being largely from DCD, the mainstay of transplantation has been from DBD. It has only been since the end of the century following the

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ORIGINAL ARTICLE

WILEY Clinical TRANSPLANTATION

Ureteric complications in recipients of kidneys from donation after circulatory death donors

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Abstract

A large increase in the use of kidneys from donation after circulatory death (DCD) donors prompted us to examine the impact of donor type on the incidence of ureteric complications (UCs; ureteric stenosis, urinary leak) after kidney transplantation. We studied 1072 consecutive kidney transplants (DCD n=494, live donor [LD] n=273, donation after brain death [DBD] n=305) performed during 2008-2014. Overall, there was a low incidence of UCs after kidney transplantation (3.5%). Despite a trend toward higher incidence of UCs in DCD (n=22, 4.5%) compared to LD (n=10, 3.7%) and DBD (n=5, 1.6%) kidney transplants, donor type was not a significant risk factor for UCs in multivariate analysis (DCD vs DBD HR: 2.33, 95% CI: 0.77-7.03, P=.13). There was no association between the incidence of UCs and donor, recipient, or transplant-related characteristics. Management involved surgical reconstruction in the majority of cases, with restenosis in 2.7% requiring re-operation. No grafts were lost secondary to UCs. Despite a significant increase in the number of kidney transplants from DCD donors, the incidence of UCs remains low. When ureteric complications do occur, they can be treated successfully with surgical reconstruction with no adverse effect on graft or patient survival.

KEYWORDS
DCD kidney transplantation, ureteric complications

1 | INTRODUCTION

Ureteric complications (UC) after kidney transplantation are relatively uncommon but represent a significant cause of early and late morbidity. UCs comprise urinary leaks and stenosis, and their incidence in recently reported series ranges between 2.7% and 9.2%.[1-4] The majority of UCs occur during the first year after transplantation; risk factors for early complications may include increased donor age, delayed graft function, and multiple renal arteries,[5] whereas later complications may be associated with acute rejection, BK virus nephropathy, or recurrent urinary infections.[6,7] The stented extravesical anastomosis has now become the standard technique for ureteric implantation as it is associated with a relatively low complication rate.[8-10] When performing the ureteric implantation, preservation of the ureteric blood supply and avoidance of an unnecessarily long ureter are both thought to be important factors in minimizing UCs.[1]

Increased demand for kidney transplantation has prompted an expansion of the deceased donor pool by greater use of "marginal" donor kidneys, including those from elderly donors and those with significant cardiovascular morbidity. There has also been a large increase in the use of kidneys from donation after circulatory death (DCD) donors. It is widely thought that ischemic damage of the donor ureter due to compromised arterial blood supply may be a contributory factor to UCs and the warm ischemic injury integral to DCD may increase the risk of UCs following kidney transplantation. In an analysis of kidney transplants performed in our center from 1998 to 2008, we have previously reported that the incidence of ureteric stenosis was similar in kidneys transplanted from live donors (LD), donation after brain death

Review Article

Donation after circulatory death program in Italy

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Contributions: (I) Conception and design: A Palleschi; (II) Administrative support: A Palleschi, TM De Feo, M Cardillo; (III) Provision of study materials or patients: A Palleschi, V Musso, M Cardillo; (IV) Collection and assembly of data: A Palleschi, TM De Feo, M Cardillo; (V) Data analysis and interpretation: A Palleschi, V Musso, P Mendogni; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

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Abstract: Donation after cardiac death (DCD) donors may help increase the donor pool for lung transplantation. Here, we briefly describe the Italian organ transplantation system and present the Italian DCD program. Our country adopts a mixed "opting-in" and "opting-out" system. Death declaration is confirmed by neurological or cardiocirculatory criteria; in case of cardiac death, the Italian law requires 20 minutes of documented asystole. Organs are primarily allocated to urgent patients, otherwise they are offered to a centre within the region. Lung transplantation centres in Lombardy, instead, use Lung Allocation Score (LAS). In Italy organ donation activity and transplantation has been growing, but the gap remains between patients on the waiting list and the number of transplantations. DCDs may alleviate donor shortage, but the path towards a DCD Italian program was complicated, and physicians had to face the challenge of organ preservation with a prolonged no-touch period. The first DCD program (Alba protocol) started in 2007 and proved DCD after unexpected cardiac arrest [uncontrolled DCD (uDCD)] possible for kidney transplantation, using post-mortem normothermic regional perfusion (NRP) before recovery. In 2015 the first DCD liver transplantation in Italy was performed at Niguarda Hospital in Milan using innovative strategies based on NRP and ex-situ organ perfusion. The Careggi Teaching Hospital in Florence started a DCD protocol for kidney and liver transplantation. The first lung transplantation from an uDCD donor in Italy was performed at the Policlinico transplant centre in Milan in 2014: our protocol consists of a normothermic open-lung preservation, namely without chest drainages for topical cooling, avoiding lung hypoxia through recruitment manoeuvres, continuous positive airway pressure (CPAP), and protective ventilation. Lungs are assessed using ex-vivo lung perfusion (EVLP). Eventually, we also began including controlled DCDs (cDCDs). A dedicated protocol for thoracic and abdominal organs retrieval was established in 2017, combining NRP with our open lung approach, with good results. Over the last 5 years, transplantation with grafts from DCDs has been increasing: in 2019, they represented 4.5% of such procedures and 8.5% of lung transplantations. Our results showed the feasibility of combined procurement in different settings with no detrimental effects on abdominal organs despite extended ischemia times.

Keywords: Donation after cardiac death (DCD); transplantation; lung transplantation; Italy; organ allocation

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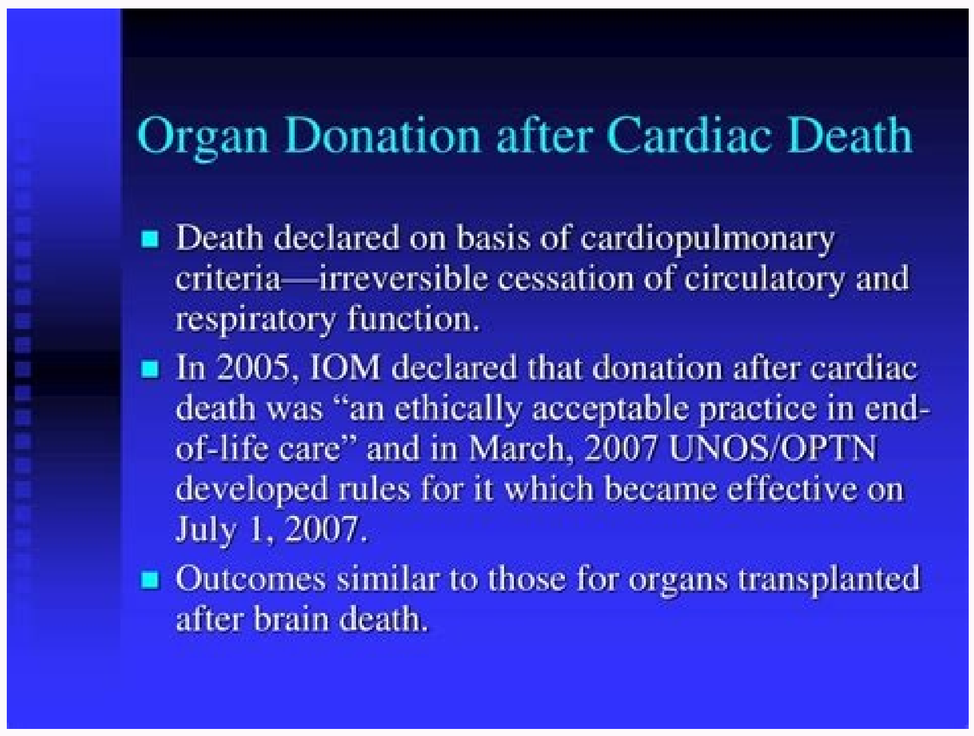

You may be trying to access this site from a secured browser on the server. Please enable scripts and reload this page. Reviewed and revised 13 July 2015 OVERVIEW Donation after Circulatory Death (DCD) refers to organ donation taking place once circulatory arrest has occurred following treatment withdrawalAdvantages of DCD: provides further donation opportunities for people who wish to be organ donors after their deathprovides an ethically acceptable means of increasing the availability of deceased donor organsQuality end of life care for a potential organ donor remains the priority and must not be compromised by the donation process ORGAN SPECIFIC ISSUES kidneys: higher incidence of delayed graft function with DCD kidneys but similar graft survivalliver: lower patient and graft survival at 1 yearpancreatic: similar to brain death donationlung: similar to brain death donation WARM ISCHAEMIC TIME time from withdrawal of treatment -> cold perfusionthe most important phase occurs when SBP < 60mmHgliver: < 30 minkidney and pancreas: < 60 minlung: < 90 min PRECONDITIONS ventilated patient from whom treatment is to be withdrawn (e.g. severe irreversible brain injury, severe cardiac or respiratory failure, ventilator dependent quadriplegia)death likely to occur within a time following treatment withdrawal that permits organ retrieval for transplantation (normally < 60-90 min, determined by whether the patient will breathe post-extubation)medical suitability as per TSANZ criteria (see Contraindications to Solid Organ Donation) PREPARATION contact with transplant co-ordinator to see whether possibleconsent obtained from family (must be informed that withdrawal of care will now take a longer time for planning and testing)may required permission from Coronerblood taken for serological testing and tissue typingpermission obtained for the administration of drugs (heparin) and procedures (bronchoscopy, femoral vessel cannulation for preservation solution infusion) to facilitate organ preservation (this can't be done in NSW for medico-legal reasons)mobilization of transplant team (must not participate in withdrawal or determine death)preoperative assessment PROCESS documentation of reasons for treatment withdrawal-> complete 'Authority for Organ and Tissue Removal' formanxiolytics and analgesics can be administered until the moment of deathtreatment withdrawal (in ICU/OT) -> extubation/ cessation of ventilation The Definition of Death immobilityapnoeaabsent skin perfusionabsence of circulation (no arterial pulsatility for 2 min) don't monitor ECGre-intubation to prevent aspiration is permissibledocumentation of death (time and date) by intensivistfamily can be present until deathorgan retrieval then must take place in a timely manner to minimise warm ischaemia timeif warm ischaemia time exceeded then tissue donation may still be appropriateif organs not suitable for transplantation due to prolonged warm ischaemia time, care of patient will continue in ICU POST-DONATION TIME patient transferred back to ICU/mortuary (whatever the family prefer) PREPARATION FOR POSSIBILITY OF UNSUCCESSFUL ORGAN DONATION medically inappropriatewarm ischaemia time exceededmay still donate tissue once death has taken place POSSIBILITY OF CONSENT WITHDRAWAL may occur at any time during the process References and Links Journal articles Manara AR, Murphy PG, O'Callaghan G. Donation after circulatory death. Br J Anaesth. 2012;108 Suppl 1:i108-21. [pubmed] [free full text] FOAM and web resources Chris is an Intensivist and ECMO specialist at the Alfred ICU in Melbourne. He is also a Clinical Adjunct Associate Professor at Monash University. He is a co-founder of the Australia and New Zealand Clinician Educator Network (ANZCEN) and is the Lead for the ANZCEN Clinician Educator Incubator programme. He is on the Board of Directors for the Intensive Care Foundation and is a First Part Examiner for the College of Intensive Care Medicine. He is an internationally recognised Clinician Educator with a passion for helping clinicians learn and for improving the clinical performance of individuals and collectives. After finishing his medical degree at the University of Auckland, he continued post-graduate training in New Zealand as well as Australia's Northern Territory, Perth and Melbourne. He has completed fellowship training in both intensive care medicine and emergency medicine, as well as post-graduate training in biochemistry, clinical toxicology, clinical epidemiology, and health professional education. He is actively involved in in using translational simulation to improve patient care and the design of processes and systems at Alfred Health. He coordinates the Alfred ICU's education and simulation programmes and runs the unit's education website, INTENSIVE. He created the 'Critically Ill Airway' course and teaches on numerous courses around the world. He is one of the founders of the FOAM movement (Free Open-Access Medical education) and is co-creator of litfl.com, the RAGE podcast, the Resuscitology course, and the SMACC conference. His one great achievement is being the father of three amazing children. On Twitter, he is @precordialthump. | INTENSIVE | RAGE | Resuscitology | SMACC On this page Donation after Circulatory Death (DCD), previously referred to as donation after cardiac death or non-heartbeating organ donation, refers to the retrieval of organs for the purpose of transplantation from patients whose death is diagnosed and confirmed using cardio-respiratory criteria. There are two principal types of DCD, controlled and uncontrolled. Uncontrolled DCD refers to organ retrieval after a cardiac arrest that is unexpected and from which the patient cannot or should not be resuscitated. In contrast, controlled DCD takes place after death which follows the planned withdrawal of life-sustaining treatments that have been considered to be of no overall benefit to a critically ill patient on ICU or in the Emergency Department. The clinical circumstances in which DCD can occur are described by the Maastricht classification The Maastricht classification of Donation after Circulatory Death Category Type Circumstances Typical location 1 Uncontrolled Dead on arrival Emergency Department 2 Uncontrolled Unsuccessful resuscitation Emergency Department 3 Controlled Cardiac arrest follows planned withdrawal of life sustaining treatments Intensive Care Unit 4 Either Cardiac arrest in a patient who is brain dead Intensive Care Unit World-wide, there is considerable variation in the contributions that DCD makes to deceased donation overall. While some countries have no DCD programmes whatsoever, in others such as the UK, Netherlands and Australia the contributions are significant. Furthermore, whilst some countries focus principally on controlled DCD (e.g UK, Australia) or uncontrolled DCD (e.g. France, Spain), other countries such as the Netherlands support both forms of DCD. Figure 1. Relative contributions of donation after brain death (DBD) and donation after circulatory death (DCD) to deceased donation in various countries around the world, as measured by donors per million population (pmp) in 2019. Source: Council of Europe – Transplant Newsletter The relatively high potential for controlled DCD in the UK is likely to be a reflection of the number of deaths in intensive care that follow a decision to limit or withdraw life-sustaining treatments that are considered to be of no overall benefit to a critically ill patient DCD in the UK DCD donation has increased substantially over the last two decades, from 42 donors in 2001-2002 to 612 in 2021-2022, representing 44% of all deceased organ donors in this year. Figure 2 - Number of DCD donors in the UK 2001/02-2021/22 The success of the UK DCD programme can be attributed to the resolution of the apparent legal, ethical and professional obstacles to this model of donation. The underpinning principle of the programme is that donation can on many occasions be legitimately be viewed as part of the care that a person might wish to receive at the end of their lives. Various publications and professional documents have supported the introduction of controlled DCD programmes into the UK, and they should form the basis for the local policies that describe how this type of donation is incorporated into a patient's end of life care. Important national documents relating to DCD include: Professional guidance This guidance was developed by the British Transplantation Society and Intensive Care Society: The guidance provides up to date guidance on all aspects of controlled donation after circulatory death, including: In the UK, an average of 2.8 transplantable organs are retrieved from DCD donors, compared to 3.2 from DBD donors. The biggest contribution of DCD is to kidney transplantation, with 43% of all deceased donor kidney transplants coming from this source in 2021-2022. The lower donation potential of DCD donors is in large part a result of the ischaemic injury suffered by solid organs in the time interval between treatment withdrawal and cold perfusion, with the liver and pancreas being particularly vulnerable. For kidney grafts this is reflected in a higher incidence of delayed graft function (requiring a short period of post-implantation renal support), although long term outcomes are similar to DBD grafts. However, the consequences of excessive ischaemic injury to the liver are rather more serious, with a higher incidence of graft failure, post-operative morbidity and ischaemic cholangiopathy. In contrast, DCD donors may be the preferred source of transplantable lungs because the organs have not been exposed to the sympathetic storm suffered by potential DBD donors. Future developments in controlled DCD are likely to centre around efforts to reduce ischaemic injury and increase the number of lung retrievals from DCD donors, including heart retrieval. Although some of this is dependent upon post mortem interventions such as regional normothermic recirculation and ex vivo reperfusion, a closer adherence to the standards for the confirmation and diagnosis of death as defined by the Academy of the Medical Royal College report and described in the Consensus statement on DCD from the Intensive Care Society and British Transplantation Society will also make an important contribution by limiting the initial warm ischaemic injury. For further details on the contribution of DCD to transplantation in the UK go to NHS Blood and Transplants latest Transplant Activity report. Due to a combination of factors the number of hearts available to transplant in the United Kingdom (UK) falls significantly short of demand. In order to balance the limited supply of donated hearts with the increasing demand alternative approaches continue to be explored. In the past it was not possible to facilitate heart donation from donors following circulatory death (DCD), but recent technology developments have enabled this to happen. The UK is the world leader in DCD heart retrieval and transplantation, to date the UK has carried out over 125 heart transplants. The outcome for recipients are comparable to hearts following DBD transplants and significantly has allowed many more donors to give a lifesaving transplant, an important outcome for donor families. DCD donors account for a high percentage of the total deceased donor pool in the UK and in an attempt to increase organ supply a 12-month UK wide pilot has been launched to support Cardio-Thoracic (CT) centres to successfully utilise hearts from DCD donors. CT teams have worked together to develop and implement the national pilot to facilitate heart retrieval and transplantation from DCD donors. In collaboration with stakeholders, including critical care and abdominal transplant teams, a DCD heart retrieval protocol and passport have been developed to support consistent and successful outcomes in this pilot phase. Download the UK National Protocol for retrieval of DCD Heart and Lungs Please note this document may be amended following clinical updates and is intended to be accessed at time of retrieval - most recent versions will be uploaded as updates are made. Although a number of transplant units have in the past supported uncontrolled DCD organ retrieval from nearby Emergency Departments, these programmes are currently inactive.

03.08.2022 · A trend now is to retrieve organs from "donation after circulatory death" donors, typically people on life support with such a bleak prognosis … Donation after circulatory death may occur in controlled and uncontrolled settings. Controlled donation after circulatory death usually takes place in the hospital after withdrawal of life support. Uncontrolled donation usually takes place in an emergency department after exhaustive efforts at resuscitation have failed to achieve ROSC. 30.06.2021 · Organ donation after circulatory death (DCD) is one of the two ways by which a person can donate organs and tissues after death. In Australia the law which allows deceased organ and tissue donation says that a person has died where brain function or circulation of blood in that person's body has permanently stopped. 01.08.2022 · Clinical guidelines and protocols. Best Practice Guideline for Offering Organ and Tissue Donation in Australia; Best Practice Guideline for Donation after Circulatory Determination of Death in Australia; Clinical and Ethical Guidelines for Organ Transplantation; Professional statements; Australian Vigilance and Surveillance System; Contact us We want all Australians to talk about organ and tissue donation. If you want to be a donor, make sure you tell your family and friends. Registering is easy and only takes one minute. All you need is your phone, Medicare card and one minute to register. PTP usually occurs 5-12 days after a transfusion and is more common in women than in men. Transfusion-associated circulatory overload (TACO) Transfusion-associated circulatory overload occurs when the volume of blood or blood components are transfused cannot be effectively processed by the recipient. There are numerous types of apheresis. Donation. Blood taken from a healthy donor can be separated into its component parts during blood donation, where the needed component is collected and the unharvested components are returned to the donor. Fluid replacement is usually not needed in this type of collection. In many countries, apheresis donors can donate blood … Provincial Health Services Authority (PHSA) improves the health of British Columbians by seeking province-wide solutions to specialized health care needs in collaboration with BC health authorities and other partners. Welcome to the NHS Blood and Transplant Organ Donation and Transplantation clinical website, which provides key guidelines, relevant statistics and procedural documents to help clinicians in providing an excellent standard of care to organ donors and transplant patients.

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