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DCD liver transplantation: current status

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DCD was introduced to try to improve organ donation rates and increase the rates of transplantation. To-date the majority of experience has been with controlled DCD. Although driven by organ shortage there is concern as to whether DCD has resulted in a real increase in organs for transplantation or replaced DBD as the mode of death.

Increasing experience with controlled DCD liver transplantation has confirmed that these should continue to be considered as 'marginal grafts'. The risk of primary non-function and graft failure is higher than with DBD liver transplantation. Risk factors for graft failure include cold ischaemia greater than 8 hours, donor age > 60 years, warm ischaemia > 30 minutes and donor weight > 100 kg. The importance of warm and cold ischaemia in determining the severity of the reperfusion injury and possibly of the ischaemic cholangiopathy is clear. This latter complication has been reported in upto 30% of controlled DCD liver transplants. Precise definition of the onset of warm ischaemia (systolic BP < 50 mmHg and/or oxygen saturation < 70%) and restricting the warm ischaemic time to less than 30 minutes appears to reduce the incidence of cholangiopathy and early graft failure. The pattern of early graft loss is higher than for DBD (20% vs 11%) and unlike DBD continues for up to 180 days (vs 20 days for DBD).

Graft failure is manifest with recurrent cholangitis and repeated hospitalisations and patients become malnourished. The likelihood of successful retransplantation is lower, with increased waiting times and with more marginal grafts. The complications of cholangiopathy and the need for retransplantation add significantly to the costs of treatment for the implanting centre.

Potential risks for recipient selection may include recipient age > 55 years, previous liver transplant or complex liver surgery, medical status at time of transplant, particularly the presence of respiratory or renal failure/support and regional or national sharing of grafts.

DCD liver transplantation presents a number of challenges for clinicians going forwards. Ensuring that DCD donation increases the overall number of liver grafts available is key rather than replacing DBD donation as appears to happening in some countries. The increased costs associated with DCD cholangiopathy are significant and the recipient is placed at risk and with less likelihood of being retransplanted. Developments in regional and organ perfusion may increase the potential for both controlled and uncontrolled DCD liver transplantation and lead to a real increase in the number of liver grafts available for transplantation.