

Sequential Use of Locoregional Abdominal Perfusion and End-Ischemic Normothermic Machine Perfusion in DCD Grafts with Extremely Prolonged Warm Ischemia Time

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INTRODUCTION

Italian law requires 20 min of continuous flat line EKG to declare individual's circulatory death both for controlled (cDCD) and uncontrolled (uDCD) donors. Such prolonged warm ischemia time (WIT) forced the introduction of abdominal normothermic regional perfusion (NRP) immediately after death declaration followed by post procurement ex-situ normothermic perfusion (NMP).

METHODS

uDCD suffer out-of-hospital cardiac arrest, undergo cardiopulmonary resuscitation and are transported to the hospital under mechanical chest compression. NRP is started immediately after death declaration. Functional (f-WIT) is the time from out of hospital cardiac arrest to the start of NRP. In cDCD f-WIT is the time from systolic blood pressure falling below 50 mmHg (or oxygen saturation below 70%) to the start of NRP. After procurement grafts are taken to the transplant center and normothermically reperfused.

RESULTS

Median donor age was 47 years (40-62) and median f-WIT 161 min (21-203). Eight grafts (53%) were discarded during NRP. Table 1 shows perfusion treatments characteristics.

| Variables | NRP | NMP |
|----------------------|---------------|-----------------|
| DCD GRAFTS (n) | 15 | 7 (47%) |
| Duration (min) | 342 (294-372) | 188 (120-360) |
| Last Lactate (mg/dl) | 13 (0.9-24) | 1 (0.6-6.2) |
| AST Peak (IU/L) | 290 (93-691) | 1157 (604-3164) |

Table 1: Perfusion Characteristics

NMP
 86% of ex-situ perfused grafts were uDCD. During NMP 1 uDCD graft was discarded for recipient cardiac arrest. All grafts except one produced bile

No PNF was observed, there were 3 cases (50%) of early graft dysfunction. One patient died for New Delhi metallo- β -lactamase-1 E. coli sepsis. All other post-operative periods were uneventful. No biliary complication was reported.

CONCLUSION

DCD donation is feasible even with the 20 minutes no touch rule. Strict NRP and NMP selection criteria are needed to optimize post-operative results.