



Triumph Over Time: Navigating WIT & fWIT with NMP

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Introduction

The disparity between the need for liver transplants and available organs is a critical issue. Rescuing organs from donation after cardiac death (DCD) donors with extended warm ischemic time (WIT) presents a method to increase the donor pool. This case study demonstrates the effective use of normothermic machine perfusion (NMP) to assess and utilize a liver from a DCD donor with prolonged WIT, expanding the limits of organ viability.



Methods

A 36-year-old male DCD donor, after irreversible brain damage from an acute hemorrhage, had a WIT of 117 minutes. Despite a prolonged agonal phase, the functional WIT (fWIT), defined as SBP < 50 mmHg, was 13 minutes. Utilizing NMP, the liver's viability was assessed through various metrics, including pre-perfusion biopsies and continuous monitoring of liver function during perfusion.

DCD Livers Discarded by Year and WIT					
WIT Groups	2021	2022	2023	2024	Total
11-20	4	3	4	5	16
21-30	3	8	11	11	33
31-40	3	6	2	3	14
41-50	0	2	5	2	9
51-60	1	2	1	0	4
61-90	0	0	2	2	4
91-120		0	0	2	2
Total	11	21	25	25	82

Results

The liver showed positive signs of viability, including lactate clearance to 1.54 mmol/L, glucose metabolism, stable pH, and consistent bile production over five hours of perfusion. Based on these indicators, a previously hesitant transplant center accepted the liver, leading to a successful transplant. The recipient's length of stay was less than 7 days, with no readmissions. At 6 months post-transplant, there have been no signs of graft dysfunction or complications.

Conclusion

This case underscores the potential to broaden the liver donor pool by using NMP technology initiated by organ procurement organizations (OPOs). It challenges traditional limits on liver donation based on WIT, suggesting that a collaborative approach between OPOs and transplant centers can significantly impact transplant outcomes. Continued research and monitoring of long-term results are essential for advancing this practice.