

Hypothermic Oxygenated Perfusion in Liver Transplantation for Hepatocellular Carcinoma Patients with a Metroticket lower than 50%



Maria João Amaral¹, Mariana Duque^{1,3}, João Constantino^{1,2,3}, Pedro Oliveira^{1,2,3}, Marco Serodio¹, António Pinho¹, Emanuel Furtado^{1,2}, José Guilherme Tralhão^{1,3}, Dulce Diogo^{1,2}

¹ General Surgery Department, ULS de Coimbra, Coimbra – Portugal

² Adult Liver Transplant Unit, ULS de Coimbra, Coimbra - Portugal

³ Faculty of Medicine, University of Coimbra, Coimbra - Portugal

BACKGROUND

Liver transplant (LT) is the curative treatment in early stages of hepatocellular carcinoma (HCC), also treating the underlying liver disease. Individualized prognosis delivered by scores, such as the Metroticket score, help sharing decision-making between clinicians.

Hypothermic oxygenated perfusion (HOPE) methods have demonstrated protective results in HCC patients transplanted with perfused grafts.

METHODS

- Retrospective analysis
- HCC adult patients
- LT between 8/2020 - 10/2023: 100% DBD donors;
- same team; *Piggyback*; same preservation solution (Celsior®)
- Two groups:
 - Group 1: **without HOPE**
 - Group 2: **HOPE**

Perfusion

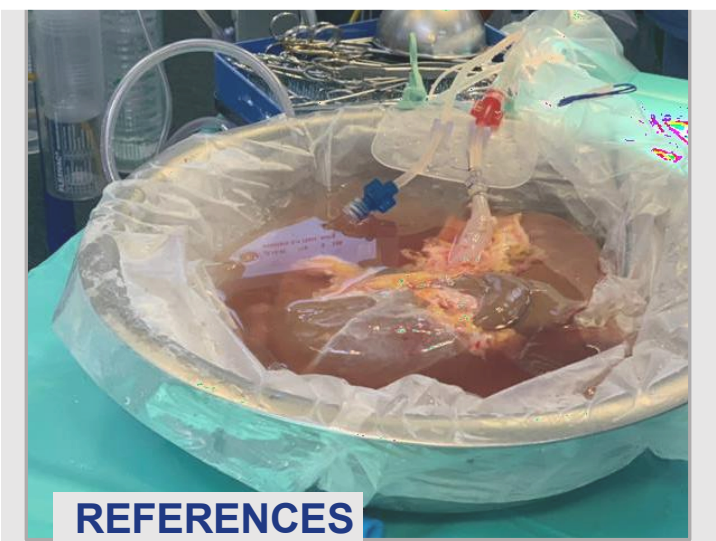
- VitaSmart ® – MEDICA
- Belzer MPS ®
- Portal Vein – minimum 120'**
- Maximum pressure / flow – 3 mmHg / 250 ml/min

Oxygenation

- PaO₂ 450 mmHg

Temperature

- 4-10°C



REFERENCES

1. Mazzaferro V, Llovet JM, Miceli R, Bhoori S, Schiavo M, Mariani L, et al; Metroticket Investigator Study Group. Predicting survival after liver transplantation in patients with hepatocellular carcinoma beyond the Milan criteria: a retrospective, exploratory analysis. Lancet Oncol. 2009 Jan;10(1):35-43.

AIM

To compare overall (OS) and disease free survival (DFS) in HCC patients with a Metroticket (Lancet Oncology 2009) < 50% transplanted with grafts perfused and not perfused with HOPE.

RESULTS

n=76	Without HOPE n=24	HOPE n=52	p
Sex (male)	23 (95.8%)	48 (92.3%)	1.000
Age (years)	61 (IQR 56-66)	62 (56.25-66.75)	0.618
MELDNa	12 (IQR 10-18.75)	12 (IQR 9-18.5)	0.302
Preoperative AFP (ng/dL)	4.65 (IQR 2.15-7)	5.1 (IQR 2.85-12)	0.175
Number of nodules	1 (IQR 1-3)	2 (IQR 1-3)	0.452
Largest nodule (cm)	2.5 (IQR 1.6-3.5)	2.7 (IQR 2.13-4.15)	0.234
Milan Out	6 (25%)	19 (36.5%)	0.320
Microvascular invasion	6 (25%)	23 (44.2%)	0.095
Differentiation (G2/G3)	17 (70.8%)	42 (80.8%)	0.220
Metroticket	72.9 (IQR 54.8-75.1)	68.9 (IQR 49.3-72.4)	0.067
Metroticket < 50%	3 (12.5%)	12 (23.1%)	0.255
Median Follow-up (months)	45 (IQR 22-50.75)	29.5 (IQR 23.25-37)	
Mortality	1 (33.3%)	2 (16.7%)	0.519
	Disease progression with liver recurrence	Unrelated to tumor recurrence	
Recurrence	1 (33.3%)	1 (8.3%)	0.255
2-year OS	50%	90.9%	0.190
2-year DFS	66.7%	91.7%	0.307

n=76	Without HOPE n=24	HOPE n=52	p
Donors' age	58.5 (IQR 54.25-67.75)	73 (IQR 68.25-79)	<0.001
Donors >80 years	0%	23.1%	0.014

CONCLUSIONS

Despite the small sample size in both groups, HCC patients with a Metroticket < 50% transplanted with garfts perfused with HOPE appear to have longer overall and disease free survivals at 2 years, according to our results.

However, further and larger studies are needed.