

Outcomes in Simultaneous Liver-Kidney Transplantation Compared to Liver Transplantation Alone and Kidney Transplantation After Liver Transplantation

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Introduction

- Simultaneous liver-kidney transplantation (SLKT) for patients with end-stage liver disease and renal insufficiency has increased substantially in the United States.
- However, posttransplant outcomes of SLKT remain unclear. The aims of this study are to retrospectively compare recipient and graft outcomes for SLKT to liver transplantation (LT) alone and kidney transplantation (KT) after LT.

Patients and Methods

Adult patients listed for SLKT

Single center retrospective cohort, August 2017 – March 2020

n=63

SLKT

n=30

LT-alone

n=22

KT after LT

n=11

Study 1 Post-LT outcome comparison

- Patient mortality
- Graft (Liver and Kidney) mortality
- Post-LT withdrawal from Dialysis

Study 2

Multivariate analysis of patient mortality after SLKT

Results 2: Analysis of Patient Mortality after SLKT

Multivariate analysis

Variables	Hazard ratio (95%CI)	P value
Indication of LT: HCV	12.377 (1.766–86.753)	0.011
Preoperative eGFR	1.019 (1.002–1.037)	0.031

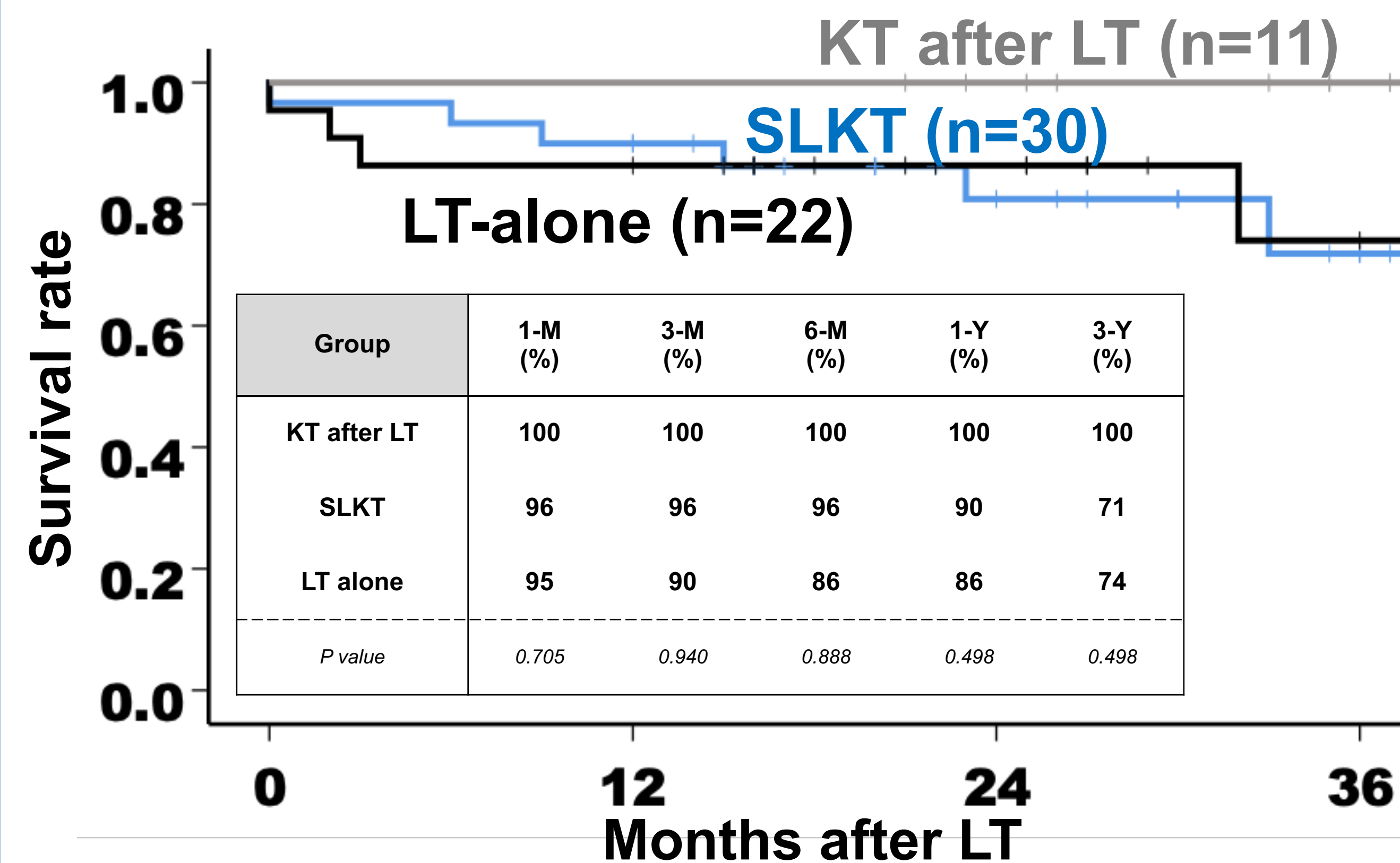
*All variables with p<0.1 from univariate Cox regression test were used.

Variables in univariate analysis:

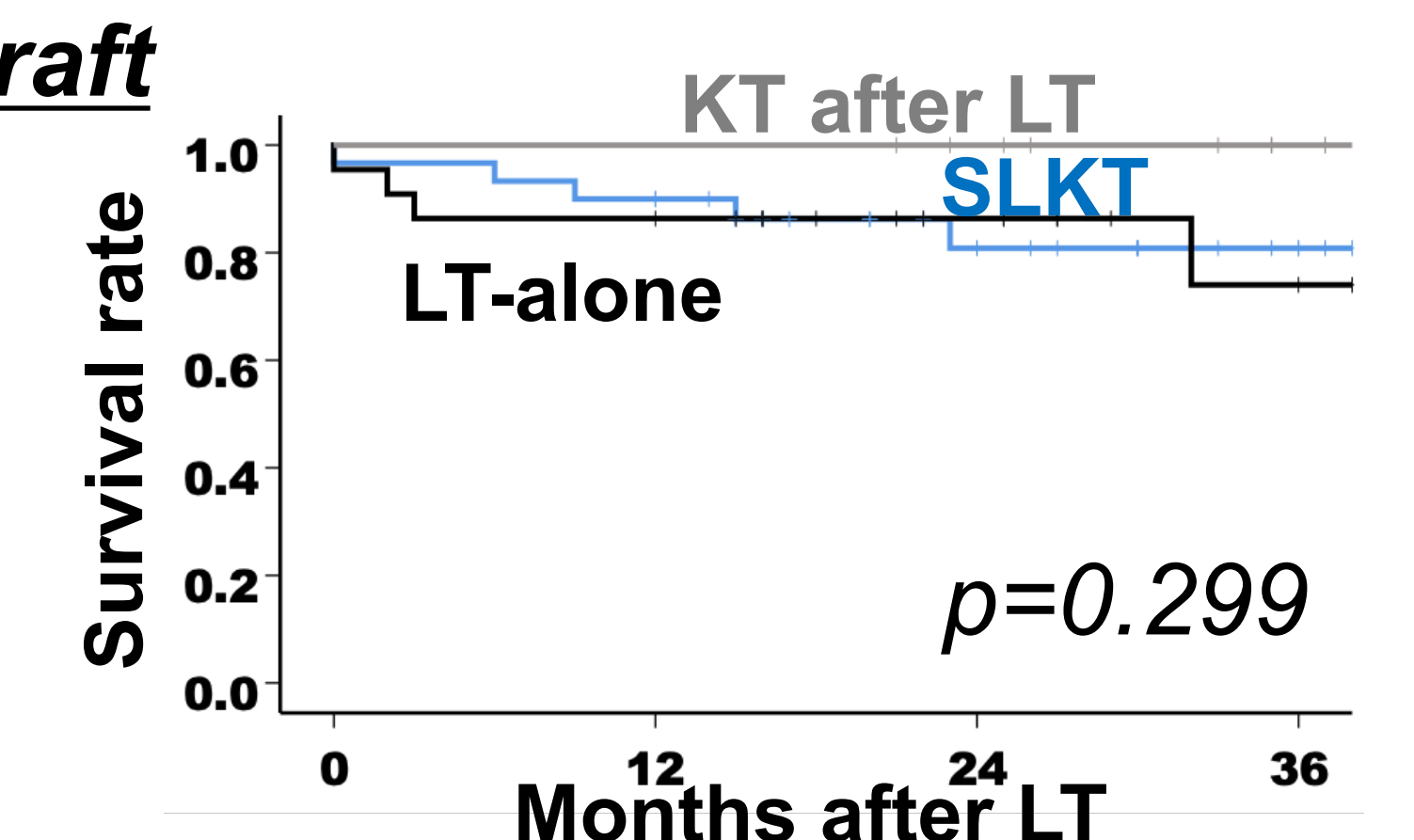
Age, gender, BMI, MELD at LT, pre-LT laboratory data, indication of LT and KT, acute and chronic morbidity, and donor variables

Results 1: Post-LT Outcomes

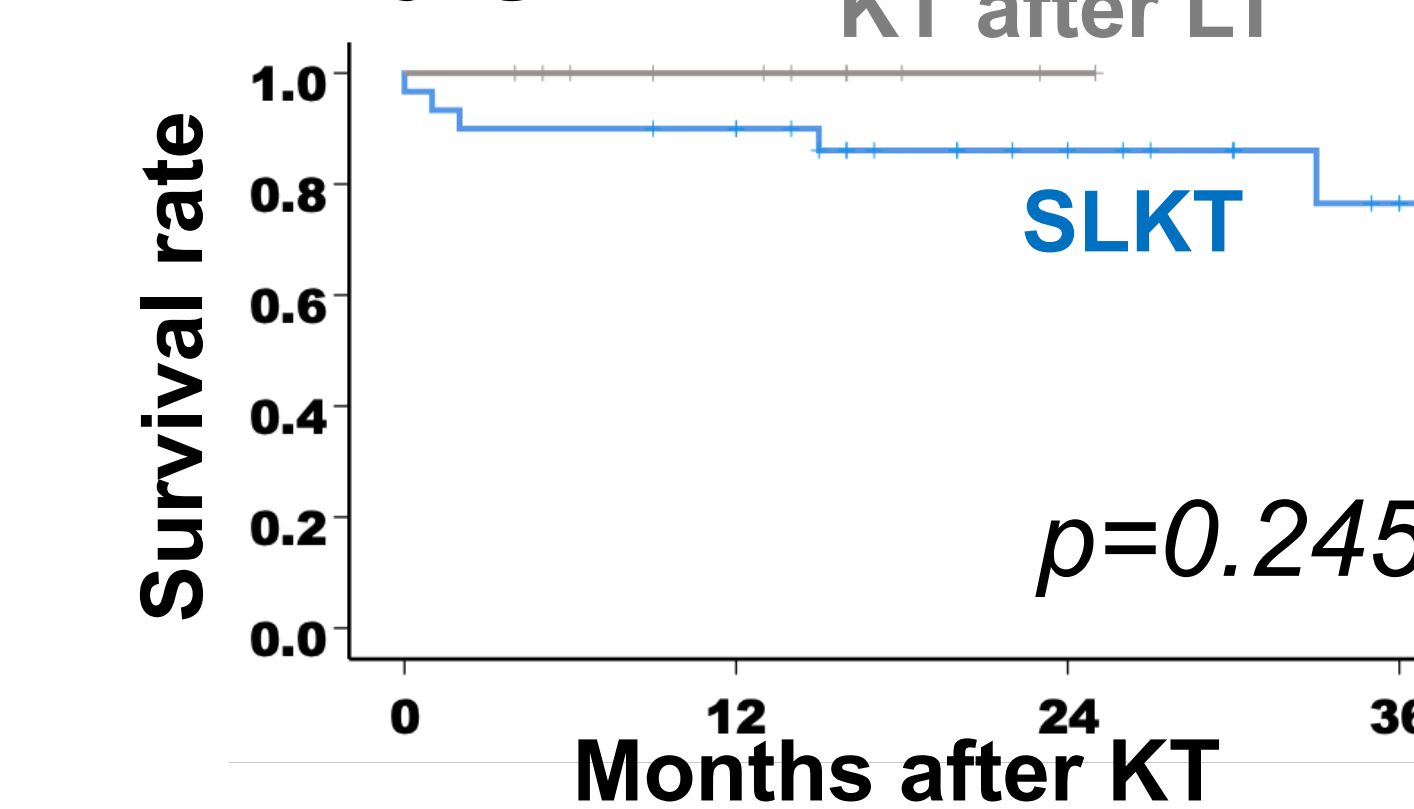
Patient mortality p=0.239



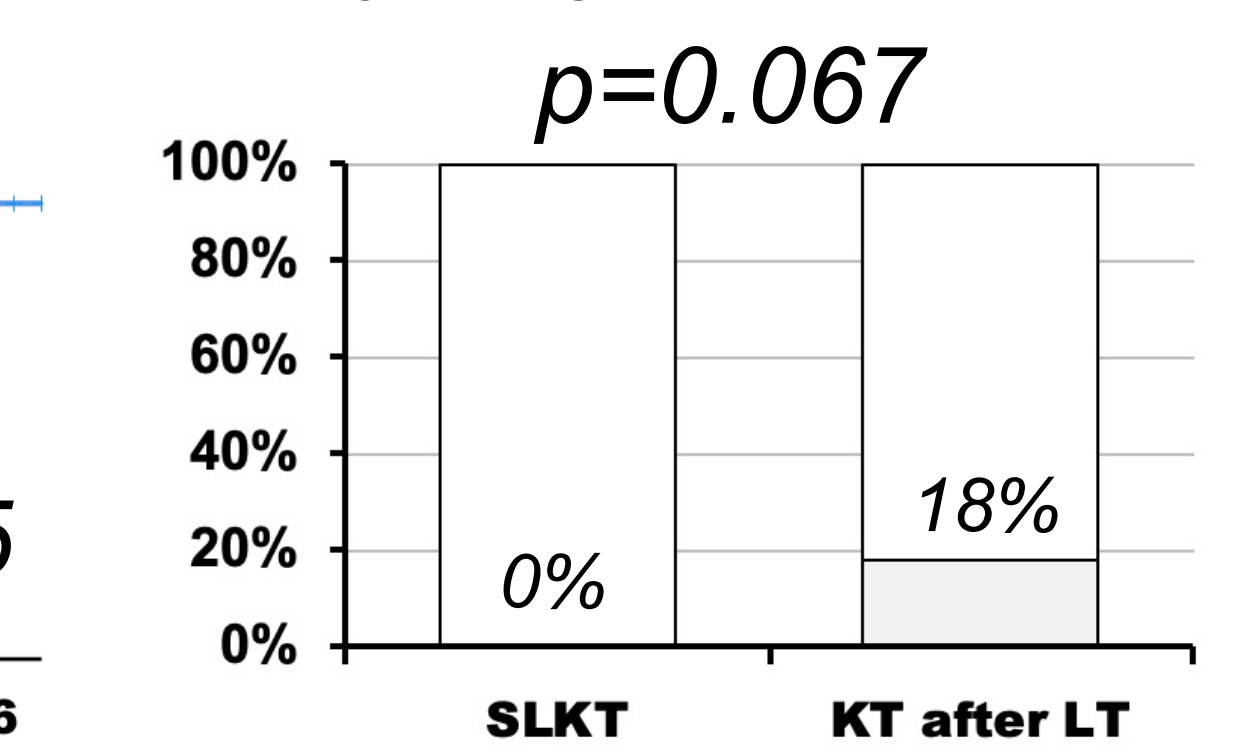
Graft mortality Liver graft p=0.299



Kidney graft p=0.245

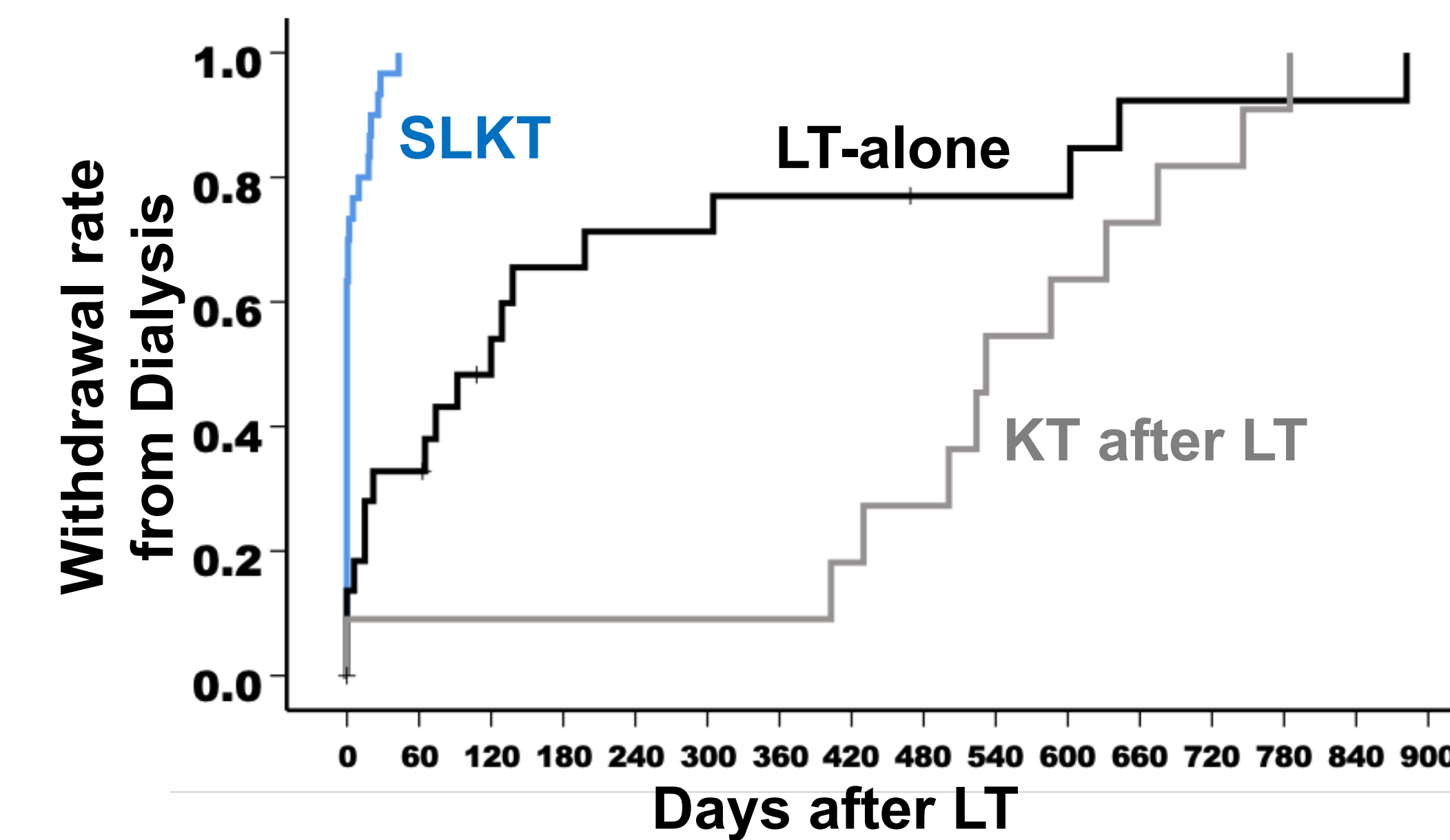


Kidney Rejection rate p=0.067



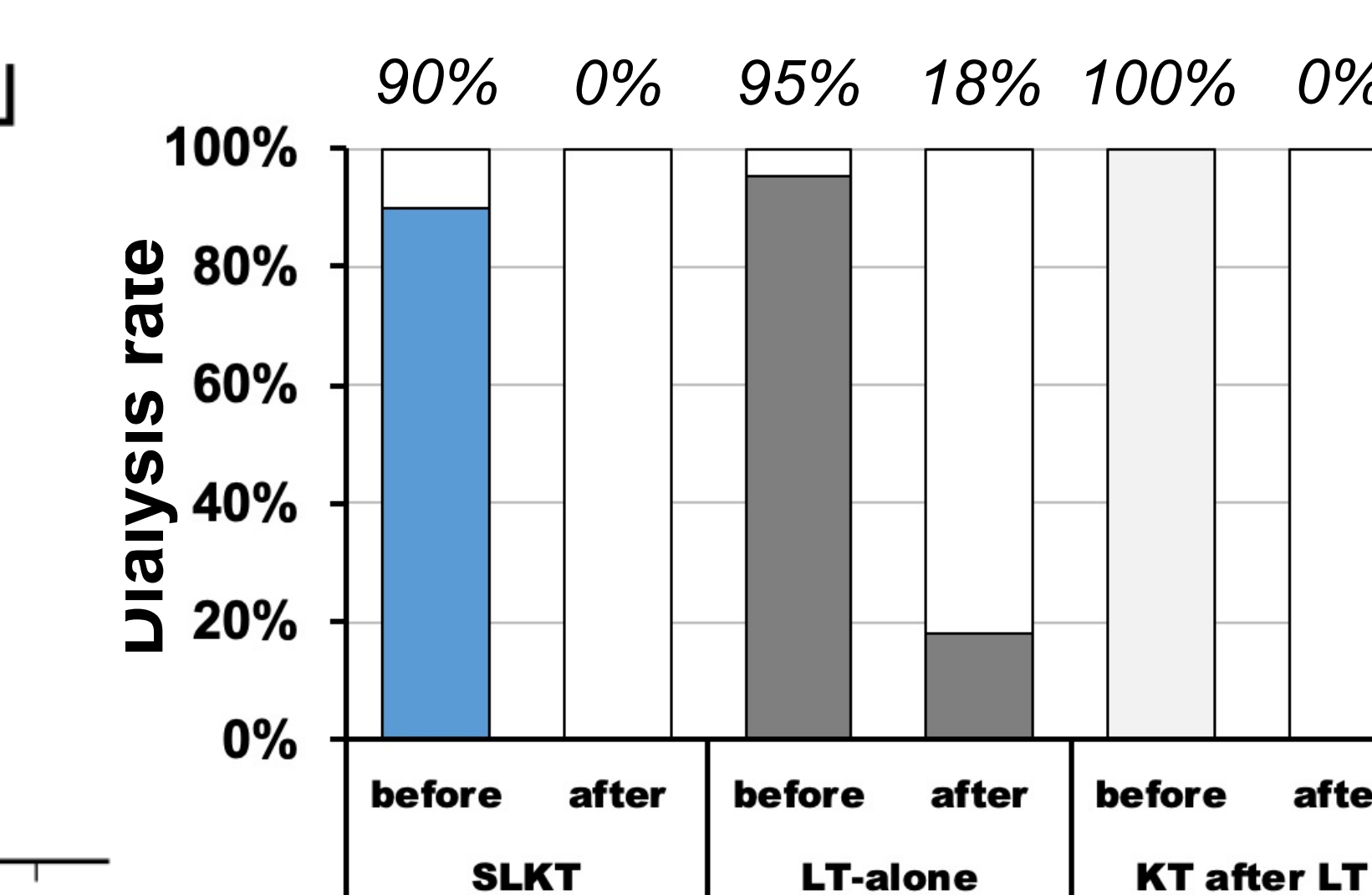
Post-LT withdrawal from Dialysis

Post-LT withdrawal rate

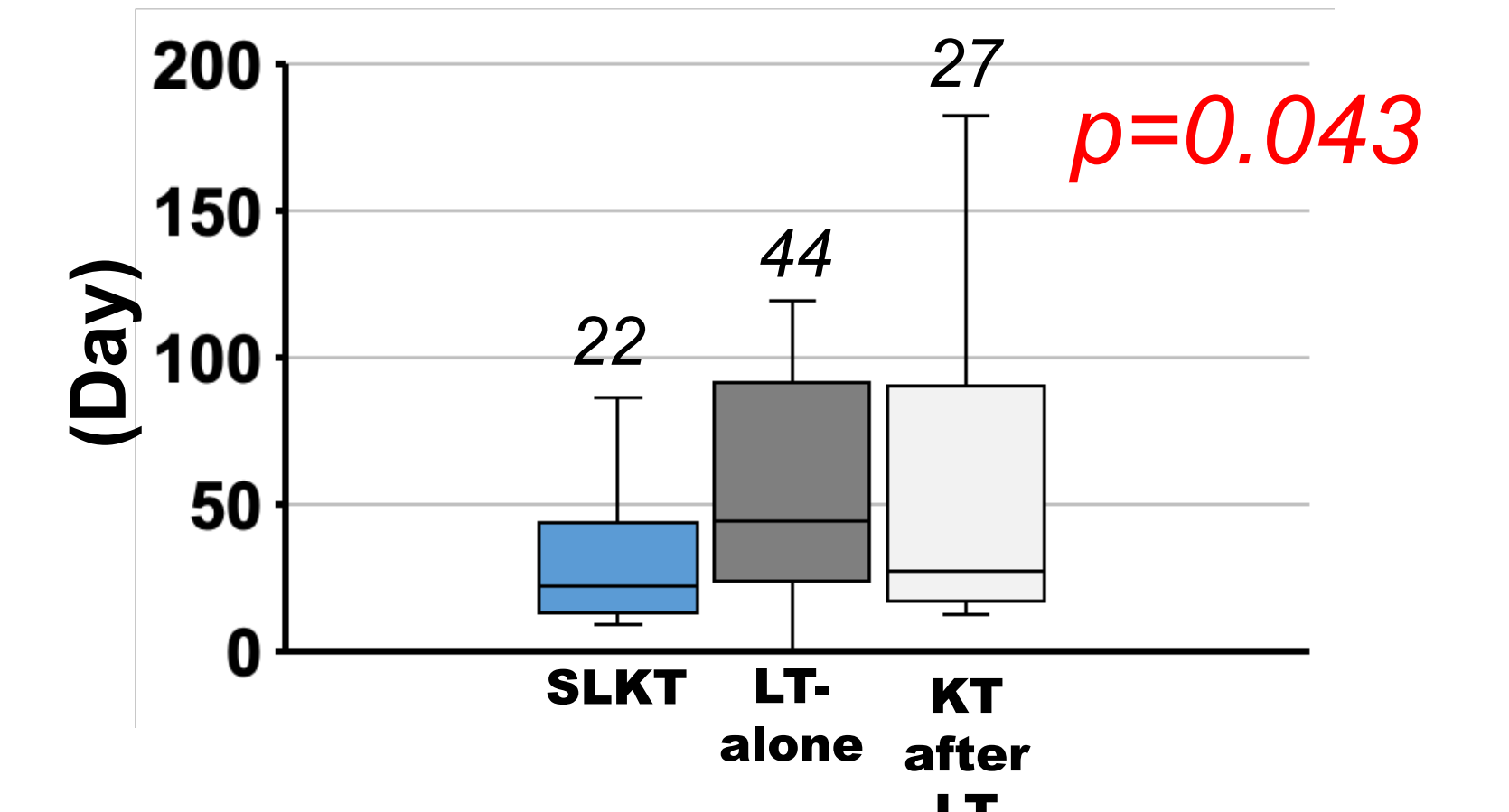


Comparison groups	P value
SLKT vs. LT-alone	<0.001
SLKT vs. KT after LT	<0.001
LT-alone vs. KT after LT	0.324

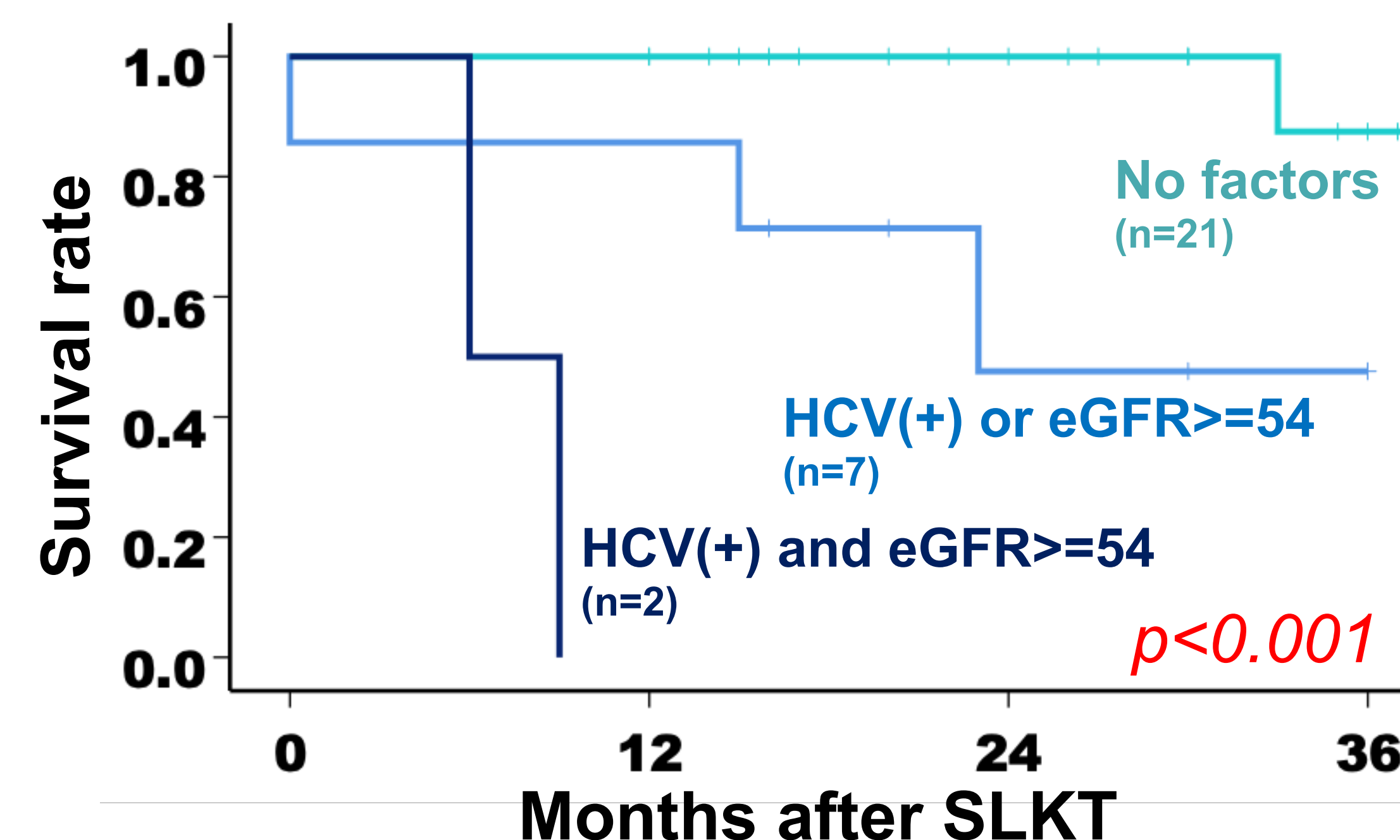
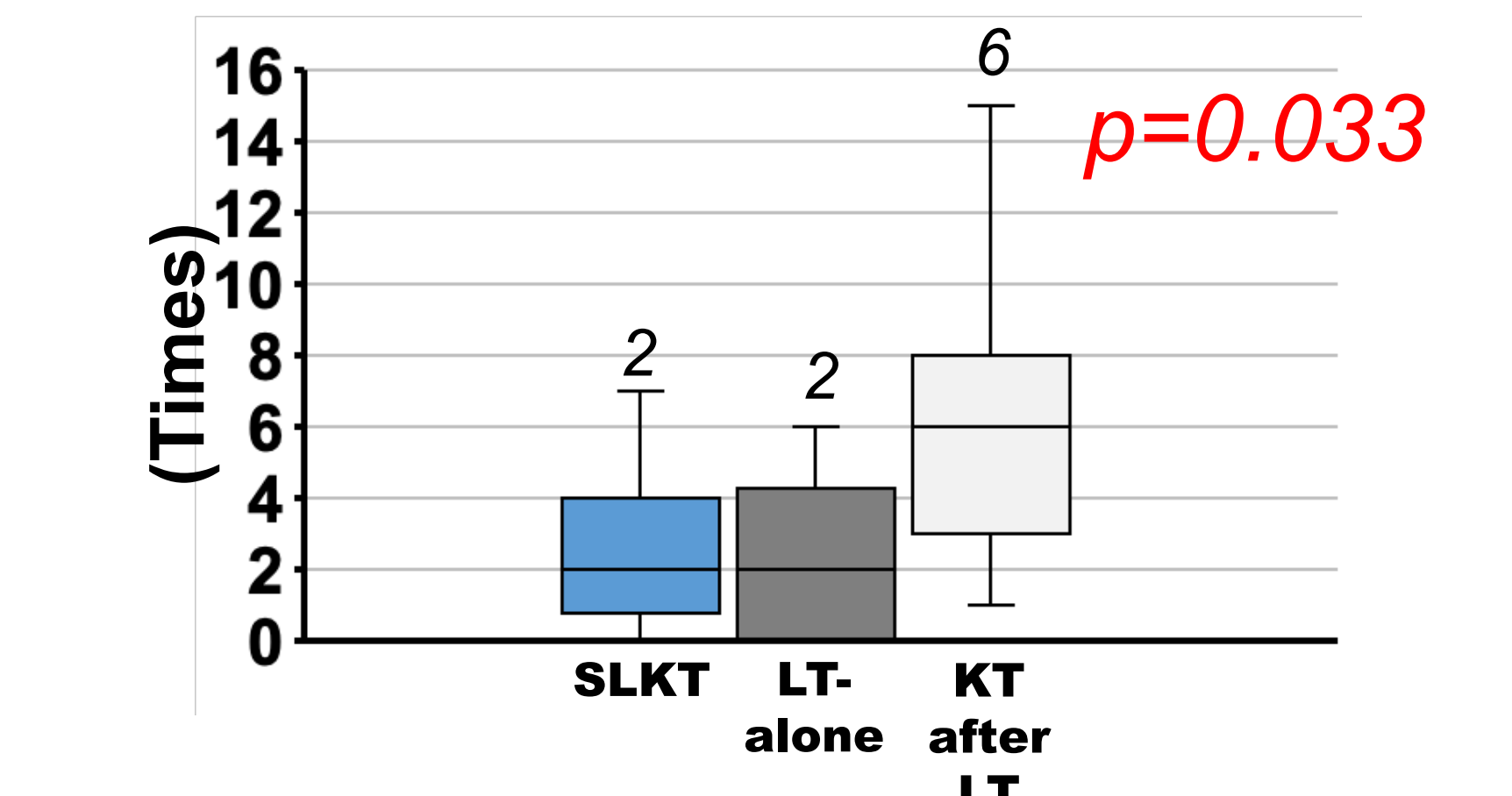
Change in Dialysis requirement



Post-LT hospital stay duration



Number of readmissions after LT



Conclusion

Patients undergoing SLKT had earlier withdrawal rates from dialysis after LT, compared to LT alone and KT after LT. Patient and graft survival tended to be highest in the KT after LT group, followed by SLKT, and lastly LT alone. Additionally, the present study identified significant poor prognostic factors, HCV leading to LT and high eGFR, in patient mortality after SLKT. These results demonstrate the benefit of SLKT and KT in patients with end-stage liver and kidney disease and may inform clinical management for these patients.

- Nair S, Verma S, Thuluvath PJ. Pretransplant renal function predicts survival in patients undergoing orthotopic liver transplantation. *Hepatology*. 2002;35(5):1179-1185. doi:https://doi.org/10.1053/jhep.2002.33160
- Bahirwani R, Reddy KR. Outcomes after liver transplantation: Chronic kidney disease. *Liver Transplantation*. 2009;15(S2):S70-S74. doi:https://doi.org/10.1002/lt.21900
- Kim WR, Lake JR, Smith JM, et al. OPTN/SRTR 2016 Annual Data Report: Liver. *American Journal of Transplantation*. 2018;18(S1):172-253. doi:https://doi.org/10.1111/ajt.14559
- Miles CD, Westphal S, Liapakis A, Formica R. Simultaneous Liver-Kidney Transplantation: Impact on Liver Transplant Patients and the Kidney Transplant Waiting List. *Curr Transplant Rep*. 2018;5(1):1-6. doi:10.1007/s40472-018-0175-z