

Supplementary Table 1 Baseline donor and recipient characteristics after propensity matching by biopsy status, *n* (%)/median (interquartile range)

| Characteristics | Not Biopsied (<i>n</i> = 26047) | Biopsied (<i>n</i> = 26047) | SMD |
|-------------------------|----------------------------------|------------------------------|--------|
| Donor | | | |
| Kidney | | | |
| Dual/ <i>en bloc</i> | 80 (0.3) | 173 (0.7) | -0.078 |
| Left | 12414 (47.7) | 12701 (48.8) | 0.044 |
| Right | 13553 (52.0) | 13173 (50.6) | 0.034 |
| Age, yrs | 42 (34-49) | 43 (33-52) | 0.106 |
| Male | 16095 (61.8) | 16059 (61.7) | 0.003 |
| Blood Type | | | |
| A | 9854 (37.8) | 9729 (37.4) | 0.015 |
| AB | 999 (3.8) | 912 (3.5) | 0.001 |
| B | 2880 (11.1) | 2986 (11.5) | 0.005 |
| O | 12414 (47.3) | 12420 (47.7) | -0.021 |
| Height, cm | 173 (165-179) | 173 (165-179) | 0.004 |
| Weight, Kg | 80.0 (68.0-94.6) | 80.0 (68.0-94.6) | 0.086 |
| History of Hypertension | 6758 (26.0) | 7789 (29.9) | 0.088 |
| Diabetes Mellitus | 1128 (4.3) | 1892 (7.3) | 0.126 |
| DCD | 9713 (37.3) | 10011 (38.4) | 0.024 |
| COD: CVA/Stroke | 6124 (23.5) | 6529 (32.8) | 0.036 |
| eGFR terminal | 107.0 (86.4-119.3) | 106.0 (84.3-119.7) | -0.032 |
| KDRI | 1.15 (1.03-1.31) | 1.18 (1.04-1.35) | 0.178 |
| Recipient | | | |
| Age, yrs | 55 (45-63) | 55 (45-64) | 0.043 |
| Male | 15534 (61.8) | 16059 (61.7) | 0.003 |
| Height, cm | 170.0 (162.5-177.8) | 170.0 (162.6-177.8) | -0.013 |
| Weight, Kg | 81.8 (68.5-96.2) | 81.2 (68.3-95.5) | -0.025 |
| Diagnosis | | | |

| | | | |
|--|------------------|------------------|--------|
| Autoimmune/Systemic | 920 (3.5) | 883 (3.4) | -0.004 |
| Cystic/Genetic | 1989 (7.6) | 1962 (7.5) | 0.007 |
| DM | 7646 (29.4) | 7826 (30.1) | -0.003 |
| Glomerular | 3459 (13.3) | 3343 (12.8) | -0.002 |
| Other | 2810 (10.8) | 2876 (11.0) | 0.003 |
| Retransplant | 3403 (13.1) | 3315 (12.7) | -0.013 |
| Vascular/Hypertensive | 5820 (22.3) | 5842 (22.4) | 0.012 |
| cPRA, % | 0.08 (0-62) | 0.08% (0-58) | -0.019 |
| Peripheral Vascular Disease | 3162 (12.1) | 3171 (12.2) | 0.01 |
| Dialysis Groups | | | |
| Preemptive | 2397 (9.2) | 2437 (9.4) | 0.017 |
| ≤1 year | 1837 (7.1) | 1851 (7.1) | -0.001 |
| > 1 year ≤3 years | 5589 (21.5) | 5682 (21.8) | 0.012 |
| >3 years ≤ 5 years | 5721 (22.0) | 5808 (22.3) | 0.012 |
| > 5 years | 10503 (40.3) | 10269 (39.4) | -0.04 |
| Wait List , days | 530 (125-1364) | 521 (124-1315) | -0.043 |
| EPTS, % | 50% (25%-77) | 52% (26%-78) | -0.039 |
| Transplant | | | |
| Year Transplant | 2020 (2017-2023) | 2020 (2018-2022) | -0.004 |
| HLA Mismatches | | | |
| 0 | 1493 (5.7) | 1481 (5.7) | -0.002 |
| 1-2 | 1682 (6.5) | 1667 (6.4) | -0.004 |
| 3-4 | 11194 (43.0) | 11126 (42.7) | -0.01 |
| 5-6 | 11678 (44.8) | 11773 (45.2) | 0.016 |
| Machine Perfusion | 12661 (48.6) | 13239 (50.8) | 0.044 |
| Cold ischemia time, hours | 17.5 (12.6-22.3) | 18.8 (14.0-23.4) | 0.151 |
| Distance Donor to Transplant Hospital, miles | 86 (15-198) | 92 (13-211) | 0.011 |

Shared Organ

| | | | |
|----------|--------------|--------------|--------|
| Local | 15381 (59.1) | 15208 (58.4) | -0.011 |
| Regional | 4669 (17.9) | 4781 (18.4) | 0.007 |
| National | 5997 (23.0) | 6058 (23.3) | 0.004 |

Supplementary Table 2 Cox proportional hazards model of biopsy pathology in the propensity-matched biopsied cohort

| Variables | HR | 95% CI | P value |
|--------------------------------|-----------|---------------|----------------|
| Pathology of Biopsy | | | |
| 0-5% GS | Ref | | |
| High Risk Vascular/IFTA | 1.48 | 1.23-1.78 | < 0.001 |
| ≥6% GS±High Risk Vascular/IFTA | 1.51 | 1.16-1.97 | 0.002 |
| Donor | | | |
| Kidney | | | |
| Left | Ref | | |
| Right | 0.99 | 0.94-1.06 | 0.89 |
| Age, yrs | 1.014 | 1.01-1.02 | < 0.001 |
| Male | 1.02 | 0.94-1.09 | 0.66 |
| Blood Type | | | |
| A | 0.94 | 0.89-1.01 | 0.06 |
| B | 0.98 | 0.89-1.07 | 0.61 |
| O | Ref | | 0.11 |
| Height, cm | 0.989 | 0.986-0.993 | < 0.001 |
| Weight, Kg | 0.99 | 0.98-1.01 | 0.09 |
| eGFR terminal | 0.997 | 0.996-0.998 | < 0.001 |
| History of Hypertension | 1.11 | 1.07-1.23 | < 0.001 |
| Diabetes Mellitus | 1.59 | 1.42-1.78 | < 0.001 |
| DCD | 1.27 | 1.18-1.36 | < 0.001 |
| COD: CVA/Stroke | 1.11 | 1.03-1.19 | 0.005 |
| Recipient | | | |
| Age, yrs | 0.975 | 0.972-0.997 | < 0.001 |
| Male | 0.92 | 0.85-0.99 | 0.03 |
| Height, cm | 1.003 | 0.99-1.01 | 0.13 |
| Weight, Kg | 1.005 | 1.004-1.007 | < 0.001 |

| | | | |
|-----------------------------|-------|-------------|---------|
| Diagnosis | | | |
| Autoimmune/Systemic | Ref | | |
| Cystic/Genetic | 0.65 | 0.54-0.80 | < 0.001 |
| DM | 0.99 | 0.85-1.17 | 0.93 |
| Glomerular | 0.95 | 0.81-1.12 | 0.55 |
| Other | 0.95 | 0.80-1.13 | 0.59 |
| Retransplant | 0.90 | 0.76-1.08 | 0.26 |
| Vascular/Hypertensive | 1.03 | 0.87-1.20 | 0.75 |
| cPRA | 1.002 | 1.001-1.003 | < 0.001 |
| Peripheral Vascular Disease | 1.12 | 1.02-1.23 | 0.02 |
| Dialysis Groups | | | |
| Preemptive | 0.78 | 0.67-0.90 | < 0.001 |
| ≤1 year | 0.93 | 0.80-1.06 | 0.28 |
| > 1 year ≤3 years | Ref | | |
| >3 years ≤ 5 years | 1.06 | 0.97-1.16 | 0.21 |
| > 5 years | 1.10 | 1.01-1.20 | 0.03 |
| Wait List, days | 0.99 | 0.98-1.01 | 0.59 |
| Transplant | | | |
| Year Groups | | | |
| 2014-2019 | Ref | | |
| 2020-2024 | 1.02 | 0.95-1.10 | 0.62 |
| HLA Mismatches | | | |
| 0 | Ref | | |
| 1-2 | 1.46 | 1.21-1.76 | < 0.001 |
| 3-4 | 1.48 | 1.26-1.74 | < 0.001 |
| 5-6 | 1.73 | 1.47-2.03 | < 0.001 |
| Cold ischemia time, hours | 1.009 | 1.005-1.014 | < 0.001 |
| Machine Perfusion | 0.99 | 0.92-1.06 | 0.69 |

| | | | |
|--|------|-----------|---------|
| Distance between donor and recipients' hospital by 100 miles | 0.98 | 0.97-0.99 | 0.03 |
| Shared Organ | | | |
| Local | Ref | | |
| Regional | 1.07 | 0.97-1.17 | 0.17 |
| National | 1.23 | 1.10-1.37 | < 0.001 |
